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Working Paper — Digitized Version

German unification: the economics of transition

Kiel Working Paper, No. 468

Provided in Cooperation with:

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Suggested Citation: Siebert, Horst (1991) : German unification: the economics of transition, Kiel Working Paper, No. 468, Kiel Institute of World Economics (IfW), Kiel

This Version is available at:

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Kieler Arbeitspapiere

Kiel Working Papers

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**GERMAN UNIFICATION :
THE ECONOMICS OF TRANSITION**

by

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The Kiel Institute of World Economics

ISSN 0342 - 0787

The Kiel Institute of World Economics
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March 1991

AG 1506 / 91
Weltwirtschaft
Kiel

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Paper to be presented at the Economic Policy Panel Meeting, London, 18. - 19. April 1991.

1. Introduction: The Policy Choices

1. In the transformation of a centrally planned socialist system into a market economy with private ownership, three major areas of reform have to be solved: establishing the institutional infrastructure, creating a stable currency and adjusting the real economy to the new economic environment, especially on the micro level (Siebert 1991b). In the German case, the institutional infrastructure and a stable currency represented issues of integration, namely the harmonization of the institutional systems and the introduction of a common currency.

In addition to these broad areas of reform and harmonization, more specific issues had to be or still have to be tackled. For each problem, there was a choice of policy options, the most important ones being:

- i) The method of institutional and political integration:
Article 23 versus Article 146,
- ii) The method of monetary integration: Extension of the
currency area of the D-Mark versus two different currencies
with a flexible exchange rate,
- iii) The method of privatization: Compensation versus
reinstating the previous owner. Privatizing agency versus
a voucher system. Quick privatization versus restoration by
the Treuhand before privatization,

- iv) The method of restructuring existing firms: Market process versus structural policy,
- v) The method of wage adjustment: Differentiation in the wage structure versus general levelling of the wage rates in East and West Germany,
- vi) The method of closing the deficit: Cutting expenditures versus raising taxes or financing by bonds.

2. The most important policy choices have been made. In principle, institutional integration was accomplished at one stroke by Eastern Germany taking over the institutional system of Western Germany and by joining the Federal Republic according to Article 23 of the German constitution. The other option of institutional integration according to Article 146 of the German constitution would have implied an explicit debate on integrating the two constitutions; this would have been a time-consuming process implying economic uncertainty, for instance in the area of private investment. Monetary integration was brought about at one stroke also by extending the currency area of the Deutsche Mark to East Germany and by establishing the monetary authority of the Bundesbank to the former GDR. The alternative to the currency union, a transitional approach with two currencies, might have been attractive from the point of view of using the exchange rate as a shock absorber for the East German industry and delegating the conversion of the currencies to the market. However, such an approach may not have stopped the emigration of

East Germans in mid-1990.¹ In any case, political rationality, necessitating a quick unification, and the economic rationality of using the exchange rate as a shock absorber were in conflict. With institutional and monetary integration being accomplished, the remaining aspect of integration is the adjustment in the real economy.

3. There is a contrast between the medium (and long-run) positive economic prospects of German union and the problems of transition. In the medium and in the long run, the integration effect, the incentives of a new economic system and the capital accumulation effect (Siebert 1990b,c) will be hammering in the basement. With these medium and long-run positive prospects, why do we not observe a burst of economic activity in Eastern Germany as after the economic and monetary reform in West Germany in 1948, but rather a fall of industrial output from July 1989 to November 1990 by roughly fifty percent? As a reminder, after the reform of 1948, the index of industrial production rose by 50 percent in the first five months (Statistisches Amt für das Vereinigte Wirtschaftsgebiet, Wirtschaft und Statistik, Mai 1949), and annual growth rates of real GNP were 17 percent between the second half of 1949 and 1951. In the following, I analyze the specific aspects of the transition process. The factors that impede the quick realization of the positive effects from integration, from the new economic system, and from capital accumulation will be studied. And the main policy options will be discussed.

2. Comparative Advantage versus Initial Distortions:

The Adjustment of Firms

2.1. Initial Distortions and the Shock to the Socialist Firm

4. From trade and integration theory, the unification of the two Germanies can be viewed as the integration of two economies which have a different factor endowment and different sectorial structures and which are at different levels of development. More specifically, economic integration can be interpreted as the addition of qualified labor, land and a partially obsolete capital stock to the West German economy. Merging two economies with different endowments implies integration gains. These integration gains, however, cannot play instantly.

The core of the transition process from a socialist system to a market economy lies in the adjustment of the firm. The socialist firm is inefficient for a number of reasons: It was steered by quantity signals and had adjusted to distorted prices, in the commodity markets as well as in the factor markets. Commodity prices were determined politically; they were deformed because of an incomplete integration into the world economy, because of subsidies and because of the monopolistic position of the socialist firm. The firm basically represented the whole industry and was a monopolist protected from internal competition by governmental market delineation and from external competition by international coordination in the COMECON. Factor markets including a capital market were non-existent, and environmental

costs were not signalled to the polluter. Under these conditions, the incentive to innovate in terms of product quality and in terms of new production processes was extremely weak, so that firms are not competitive in the international markets, especially with respect to product quality. The capital stock is old, for instance 70 percent of equipment in manufacturing (in Western Germany 50 percent) is older than ten years and, due to COMECON-technology, was outdated when installed. The transition to the market economy can be interpreted as if the ex-GDR would experience something like a super oil shock making the existing capital stock obsolete.

5. The transition to a market economy must be understood as an unexpected shock in the environment of the socialist firm.² Like Dinosaurs the huge "Kombinate" are exposed to a cosmic change in their economic conditions. The transition problem can be analyzed as a change in the constraints: a sudden drop in the producer's price, a change from a monopoly position to a competitive situation, competition in product quality, a modification in the system of subsidies and external protection and an alteration in access to new capital from a "soft budget restraint" to a competitive situation in the capital market.

The market economy reveals the inefficiency of the socialist firm, and clearly output of the representative firm must fall and firms have to close down. Thus, it is important to interpret the adjustment of industrial output not as a structural problem in the traditional sense, but as a transformation problem.

6. The inefficiency of firms is reflected in the distorted sectorial structure. The sector structure of Eastern Germany was biased in favor of agriculture and manufacturing, and against services: Whereas 47 percent of total employment was in agriculture, energy and mining, and manufacturing, this relation is 37 percent in Western Germany (Table 1). Western Germany had reduced employment in manufacturing from 10 (1970) to 8.7 million (1989), while Eastern Germany had increased it from 2.9 to 3.2 million during the same period. A more detailed picture of the sectorial structure of the ex-GDR is given in Table A1 in the Appendix.

Table 1 - Employment by Sectors in Eastern Germany and Western Germany, 1989
(shares in percent)

	Eastern Germany	Western Germany
Agriculture, forestry and fishing	9.9	3.9
Energy and Mining	3.2	1.7
Manufacturing	34.1	31.4
Construction	6.1	6.6
Trade	7.8	13.0
Transportations and communications	6.8	5.6
Financial institutions and insurance	0.7	3.1
Restaurants and hotels	1.9	3.1
Services, public administration, defense and others	29.7	34.7

Source: DIW [1990a]; Staatliche Zentralverwaltung für Statistik [1989];
Statistisches Bundesamt [1989a]; own calculations.

7. Trade structure is distorted as well. In 1989, 72.6 percent of East German exports went to the COMECON countries (the figure for West Germany is 4.6 percent; see Table 2). This is the result of the intra-bloc specialization philosophy of the COMECON. Moreover, like all centrally planned economies, Eastern Germany has followed an import substitution strategy with respect to Western market economies attempting to produce the product set of the world economy. Its structure in basic industry, which historically used to be complementary to West Germany's structure, became more and more a replica of the West German mold, albeit on a less efficient level. Exports of the ex-GDR to the market economies were biased in favor of semi-manufactured and against finished manufactured goods.

Table 2 Export Share of Eastern Germany and Western Germany by Countries, 1989 and 1990

	Eastern Germany		Western Germany	
	DM mill.	percent	DM mill.	percent
Total				
1989	41 105	100.0	641 041	100.0
1990 (a)	38 072	100.0	642 654	100.0
COMECON countries				
1989	29 839	72.6	29 306	4.6
1990 (a)	30 495	80.1	27 469	4.3
Western industrialized and developing countries				
1989				
1990 (a)	9 208	22.4	594 320	92.7
	7 130	18.7	596 042	92.7
(a) Preliminary				

Source: Deutsche Bundesbank (1991).

8. For the ex-GDR, the share of exports in GNP is estimated at 25 percent. This is low for a small open economy. If the international division of labor is given its full scope, one would expect Eastern Germany to have an export share similar to that of countries of comparable size in terms of population, i.e., in the range of 40-50 percent. This gap in the export share indicates the magnitude of the transformation of the economy that has to be performed.

2.2. The Adjustment of Firms

9. With the institutional infrastructure and the monetary system being established, the microeconomic restructuring of firms is the central problem in the economics of transition. We have to differentiate between the adjustment of existing firms and the creation of new firms. With respect to existing firms ("Kombinate"), three aspects must be distinguished: establishing legally independent organizational units, accomplishing economic efficiency and setting up private ownership.

10. Dismantling of the state-owned enterprises implies splitting up firms into smaller units. In the German case, 316 Kombinate were turned into 8000 legally independent firms which still existed in a legal sense. Breaking up government enterprises into smaller legally independent units is somewhat arbitrary in economic terms, and it does not yet solve the problem how to make these new units efficient. But a smaller unit is easier to handle and more flexible. In addition, the remaining 8000 units have to be dismantled if the sum of subunits have a higher capital value

than the overall unit itself. As a rule, it can be safely assumed that Treuhand has only limited information on the capital value of subunits. Therefore it is advisable that in many cases divestiture occurs after privatization and is left to the new owner. If firms as a whole are not viable and have to be closed, divestiture must take place in order to privatize the viable part. Moreover, organizational subunits of state monopolies should have the option to declare themselves as legally independent.

11. Making existing firms efficient requires a spectrum of measures ranging over a wide area. First, a firm has to establish the product or product set it can sell in the market. The firm may have to establish a new product. Second, firms tended to be as self-sufficient as possible producing their own inputs in order not to depend on the delivery from other suppliers. Thus, the production of intermediate inputs may have to be given up. This may also apply to the repair department, to the transportation division and other functions. Third, new production technology will be necessary in most cases requiring investment. Fourth, marketing is needed and a distribution system (and service system) has to be built up. Moreover, there are many other aspects of the adjustment of firms including organizational changes, introducing new management techniques and, in most cases, reducing the work force. Adjustment will imply costs, and the issue is whether adjustment will lead to a positive present value of profit or not. This determines whether a firm is viable and whether it has access to new capital. If the present value of profit is negative, the firm has to close down.

12. Eastern Germany will experience a process of structural change similar to other West European countries in the past thirty years, only with less time available for adjustment. Ailing industries, which are not competitive on the international markets, such as shipbuilding and parts of the steel and textile industry, and pollution- and energy-intensive sectors will have to shrink. The underdeveloped service sector will have to expand considerably. The size of the structural adjustment needed is the result of the distortions arising from central planning.

13. An important aspect of the restructuring of the economy is the creation of new firms. A successful transition requires a Schumpeterian process of the formation of new and small firms. As a matter of fact, it is more important to have new firms than to restructure the old ones. New firms will soak up workers from the inefficient old firms and will help to solve the unemployment problem. Thus, conditions have to be established such that new firms can come into existence. Market entry barriers must be abolished, location space must be available and finance must be accessible especially for new and small firms. The old firms should not be allowed to sit on their location space, if they are not viable; protecting employment at inefficient units impedes the birth of new firms. It is worth while to recall that the majority of employment occurs in the small firm; 79 per cent of employment in non-agricultural sectors in Western Germany is in firms with less than 500 employees (Schmidt 1990).

3. The Incentives of the Market System versus Ownership

Uncertainty: Privatization

3.1. Establishing Ownership

14. Moving from a centrally planned economy with government ownership of the means of production to a market economy will increase the incentive system of the economy and increase economic efficiency. Motivation of people will change. This holds for entrepreneurs, who were non-existent so far and for whom expected profits will represent a strong stimulus as well as for workers, for whom pay and effort will be more closely related. Economic decisions will be delegated to the market and will be depoliticized. Markets will allow gains from specialization; for instance, markets deliver products at the right time and the right place, so that large inventories are no longer necessary and idleness of labor can be prevented.

15. An important prerequisite for the incentive mechanism to play are property rights. With institutional integration according to Article 23, the new Länder took over the West German legal system so that property rights are clearly respected and there is no property right uncertainty per se. But the general respect for property rights does not yet solve the question who owns what; property rights certainty does not yet guarantee ownership certainty³. In the transition to a market economy, new owners have to be established, that is property rights for specific pieces of land and for firms have to be assigned.

For the assignment of property rights, the following options were available:

- Reinstating the previous owner
- Starting a completely new allocation of property rights, for instance through a voucher system or by selling firms (and land) to new owners
- Giving property rights to the actual user

16. Two main criteria were applied to the choice of the assignment method: the respect for private property rights and the necessity of a quick transition including the impact on investment, growth and employment. Clearly, the respect for private property rights dominated the choice. First, there was the political argument that you cannot start a market economy in Eastern Germany if the expropriations of the past are not corrected. Second, there was the risk that the Constitutional Court would not have accepted a solution in which previous ownership was not respected. For instance, restricting restitution to those expropriated in 1972 and after and compensating in the earlier cases was not sincerely discussed. Also, a completely new allocation of property rights never was an issue. With no time available for an academic Gedankenexperiment, the analytical implications of the allocation of property rights in the transformation of a socialist economy were not thought through and were thus not available as a counter position that might have influenced the intellectual debate. Finally, giving

the property rights to the actual users may be a possible approach in other cases of establishing ownership such as defining transferable emission rights, but this method is not applicable to the transition to a market economy because it would benefit the old nomenclatura.

17. With respect to the assignment of ownership the following decisions were taken:

- i.) The basic decision is to reinstitute the previous owners who were expropriated since 1949 by the GDR-government (and those expropriated prior to 1945). Reinstitution will not apply to those who were expropriated by the Russian military government in the period between 1945 to 1949, but a decision of the constitutional court is pending.

Compensation will be used when pieces of land of different owners had been combined into new units which cannot be easily separated, for instance when land was used for construction (housing, roads, industrial buildings etc.). So far, 1 million claims of previous owners relating to 1.5 million properties have been registered. It is estimated that these claims account for one third of all land (according to press reports).

- ii) Treuhand - a privatization agency - has become the owner of all joint stock companies that have been formed by law out of the "Kombinate" (§1 of the Treuhandgesetz). In addition, Treuhand is responsible for the publically owned agricultural estates as well as the forestry activities, and

the agricultural and foresty land which is used by cooperatives and individuals. This alone accounts for two fifth of the area of Eastern Germany.

- iii) Firms that were managed by municipalities and counties - and the land belonging to them - have become trustee ownership of the federal government (not of Treuhand). Municipalities can apply to obtain these firms. So far, there are 16000 applications. Public buildings are property of the respective political units (Länder, municipalities); there is special property of the railroads and the postal service.
- iv) Publicly owned housing has been turned over to municipalities. All other assets have become property of the Treuhand.

18. In practice, it has proven to be extremely difficult to solve the ownership problem. First, assigning new property titles requires an assignment rule that can be clearly applied. However, the assignment described above implies an inconsistent allocation of property titles. The matching of owners and properties to land and firms does not yield disjunctive sets. One specific problem is that it is difficult to distinguish between the ownership of a firm and the ownership of land. Second, for forty years title records have been neglected, especially for firms. Conflicting claimants are not unusual. Third, local administration has to reinstitute the previous owner and to decide the 1 million applications for reinstitution. So far, this has proven to be a severe bottleneck with decisions not being

taken as of February 1991. Fourth, when the market value of a piece of land and the compensation rate differ, there is a strong incentive to demand reinstitution instead of compensation and to go to the courts. Court decisions including the sequence in the hierarchy of the court system will take years, up to half a decade. Fifth, it so far was not possible to clearly delineate the cases where compensation has preference over restitution. As a practical matter, for an existing firm, there tend to be many claimants when the firm has changed over forty years adding pieces of land and additional buildings.

The implications of ownership uncertainty are severe. As of March 1991, the privatization of a firm by Treuhand was frozen if claims by previous owners were announced. Thus, Treuhand cannot proceed with privatization. This implies that the privatization of firms is blocked.

One solution lies in speeding up the process of reinstituting the previous owner, for instance through a preliminary installation of the owner, and of giving a clear preference to compensation when viable units would be destroyed by reinstitution. A new law (Gesetz zur Regulierung offener Vermögensfragen - Vermögensgesetz) on these issues has passed cabinet on February 6, 1991. However, one has to realize that these measures, though they may improve the actual situation, still stick to the concept that ownership titles are established by administrative decisions and the judicial system. The alternative is to give up the restitution principle and sell property rights. Though the supply side of such a market in property rights has to be organized

administratively, sales, as a rule, would not be checked by the judicial system.

As of March 1991, we can hope that the five months since October 3, 1990 will have sufficiently shown the negative implications of ownership uncertainty and that the constitutional court will weigh these negative effects sufficiently in its forthcoming verdict in the expropriations between 1945 - 1949. We can also hope that the Constitutional Court will provide some guidelines for the compensation procedure.

3.2. Treuhand

19. With respect to firms, solutions to privatization such as the voucher system were never seriously discussed in the German case, and a privatization agency - the Treuhand - has been set up charged with privatizing the 8000 firms with 40000 plants. Treuhand is a holding company owning firms with 5 million employees which amounts to the employment of the 100 largest West German firms. Its role is to

- "restructure - under competitive conditions - and privatize the previous government owned firms" (§25 of the Unification Treaty)
- to privatize (§2, (1), Treuhand Law) and to "promote the structural adjustment of the economy to the requirements of the market" (§2 (6) Treuhand Law)

20. In the German case, the conditions for privatization differ from Eastern Europe. First, there is a large potential to quickly attract new capital to the East German firms because there is no exchange rate risk (relative to Eastern Europe), no risk of changes in the institutional conditions (including no severe risk of sudden changes in taxation) and no political risk. The privatization procedure must tap this potential of private capital transfer; in this context, a voucher system would be too slow. In such an approach, a voucher defining a title to all government owned firms is given out to each member of the population, either for free or with payment. The voucher (or units of the voucher) then will be exchanged in a second stage against shares of a specific firm. The relative price between a unit of the voucher and a share is determined by a market equilibrium between the supply of and demand for shares of a firm. The opportunity costs of delay are especially relevant in the German case. A divergence in production levels and employment between East and West would necessitate additional transfers and may lead to an inefficient and extremely costly structural policy. Therefore, the Treuhand approach is better suited for the German case.

21. The success of privatization will depend on the privatization procedures used. Methods to privatize firms can be ordered on a continuum. Access of firms to the stock market establishes a reliable evaluation of the capital value of a firm by many buyers, including a market judgement on economic viability. In the German case, this would, in principle, represent a

possibility for some East German firms, but access to the stock market is subject to many preconditions which are not fulfilled. Moreover, it is a time-consuming process. In addition, only very few firms are viable. On the other extreme of the continuum, there is "informal selling" as a way to privatize, with one party or only some on the buyer's side. Here the advantage is that informal selling does not require much time, but the buyer's side of the market is too "thin" giving rise to the possibility of a too low selling price. In between the two extremes of privatization methods there is a formal bidding process. Such a bidding process has the advantage of avoiding a too "thin" market in revealing the willingness to pay of potential buyers; competition among potential buyers may be helpful in stimulating the imagination of potential new owners on what to do with a firm. Bidding also has the merit of providing new management quickly and - in the German case - injecting new capital. Thus, the bidding process which has been used extensively in the mergers and acquisitions in the US establishes a market for firms. The bidding process has the additional advantage of allowing to include international buyers and to prevent monopolistic positions of German firms.

22. Bidding will de facto be a two-stage process. In the first stage, potential buyers have to be identified, and the specifics of the contract have to be narrowed down. In the second stage, the formal bid, for instance in a closed envelope, occurs. Among the specifics to be determined is the allocation of environmental vintage damages (pollutants in the soil, health hazards of workers and residents), old debt and other liabilities. For

instance, firms were not covered against product liabilities. In practice Treuhand, i.e. the government, has to take over these risks. An open question is to what extent Treuhand should explicitly consider the intentions of potential buyers with respect to investment plans and employment guarantees. First, it is questionable to what extent these promises can be made binding. Second, these aspects move the privatization procedure to the informal selling approach. One solution may be that such stipulations are written into the sales contract, and the final bidding only refers to the price.

23. Establishing a semi-stock market for East German firms with a less formal stock exchange admission regulation (Börsenzulassungs-Verordnung) may be a possibility. This would mean that firms have an easier access to the capital market, and suppliers of capital possibly take a greater risk. However, this approach is only feasible when firms are viable. In addition, an issue may be that this procedure makes it easier for the old management to stay in power.

24. The approach of establishing a privatization agency has the potential advantage of separating the policy arena from privatization; however, there are several risks in such an organizational approach. First, any organization has a tendency to perpetuate its existence. Therefore, there should be some institutional constraints. One promising approach is to give firms the right to initiate a sale with a potential buyer and then to submit the contract to a bidding process within a prescribed time period. Additionally the potential buyer should

have the right to propose a sale and to initiate a bidding process. Second, the Treuhand cannot fulfil the role of making firms viable before they are privatized - a role that is explicitly stated in the preamble of the Treuhand law (Treuhandgesetz). Treuhand does not have information on the economic prospects of 8000 firms and 40000 plants. It is therefore mandatory that Treuhand concentrates on privatization. Third, there will be strong political pressure on the Treuhand to ease the structural adjustment of firms by giving credits and there is some risk, that Treuhand will degenerate into a ministry of structural policy. In the board of trustees, the governors of the new Länder (5) and representatives of the trade unions (4) form already a strong bloc voting in favor of a slow pace in structural adjustment. In addition, there are two representatives of the federal government so that the polity has 11 members out of 24. This definitely is a strong influence of the political arena. The Treuhand should not undertake structural policy because it would repeat the mistakes of the planning system that has been given up. Section 6 of § 2 of the Treuhand Law requiring to "promote structural adjustment" should not be interpreted too literally.

Firms that are not viable after adjustment must be closed. Viability of firms is to be defined according to bankruptcy law: Old debt should be foregone, and environmental damages should be taken over by government. If after these measures a firm still has a negative capital value the question is whether it can attract capital for adjustment and restructuring and whether its capital value will be positive, including the investment outlays.

If not, it must be closed down. The receipts from privatization should not be wasted by subsidizing non-viable firms.

25. Besides the initiative from below to privatize, Treuhand will be constrained by its budget. At this stage (March 1991), a balance sheet for Treuhand does not yet exist. The balance sheet of Treuhand contains the assets and liabilities of Treuhand itself (including its regional units) as well as the cumulative balance sheets of all the firms. The opening balance sheets of all firms may only be in later in 1991. Liabilities of Treuhand include old debts of firms taken over by Treuhand, if the debt cannot be passed on to potential buyers as well as liabilities taken over when firms are privatized. Old debt amounts to 100 bill. DM; Treuhand pays the interest on these debts. Treuhand has granted a credit line to firms of 30 bill. DM in order to allow them to pay wages and to operate in the starting phase of the currency union. So far 60 percent of these credits have been taken up. It is open to what extent these credits will be repaid. On the other side of the balance sheet, the value of the existing firms is not too large, possibly negative. Gross receipts from selling 450 out of the 8000 firms amounted to 2.5 bill. DM not counting liabilities taken over by Treuhand and funds needed to keep the firms afloat before the sale. Conceivably, firms will have a negative price, when sold. With respect to the current budget, Treuhand is funded by credits according to a credit line authorized by the federal government.

26. The opinion has been voiced that putting a whole economy on auction will severely affect the price of firms to be sold and

that a macroeconomic financial restraint of all buyers will limit the possibilities of privatization (Sinn 1991). This is not a relevant problem with the capital value of many of the firms to be sold being negative.

4. Investment and Growth versus the J-Curve of Transition:

Policies for the Take off

4.1. The J-curve of Output

27. From growth theory and from historical experience we know that a country with a relatively low capital stock per head initially but with technical skills and innovative potential will have high growth rates. Countries whose capital stock was partly destroyed by the war and that needed additional capital to equip the inflow of people (12 million into Western Germany) experienced high growth rates during the period 1950-1960 (West Germany 7.5 percent; Italy 5.7 percent; Japan 8.1 percent). High growth rates were accompanied by a high investment ratio. On the other hand, countries with a capital endowment not so much affected by the war had lower growth rates (United States 3.2 percent; United Kingdom 2.6 percent) and a lower investment ratio. In contrast to this long-run view, we observe a different short-run development.

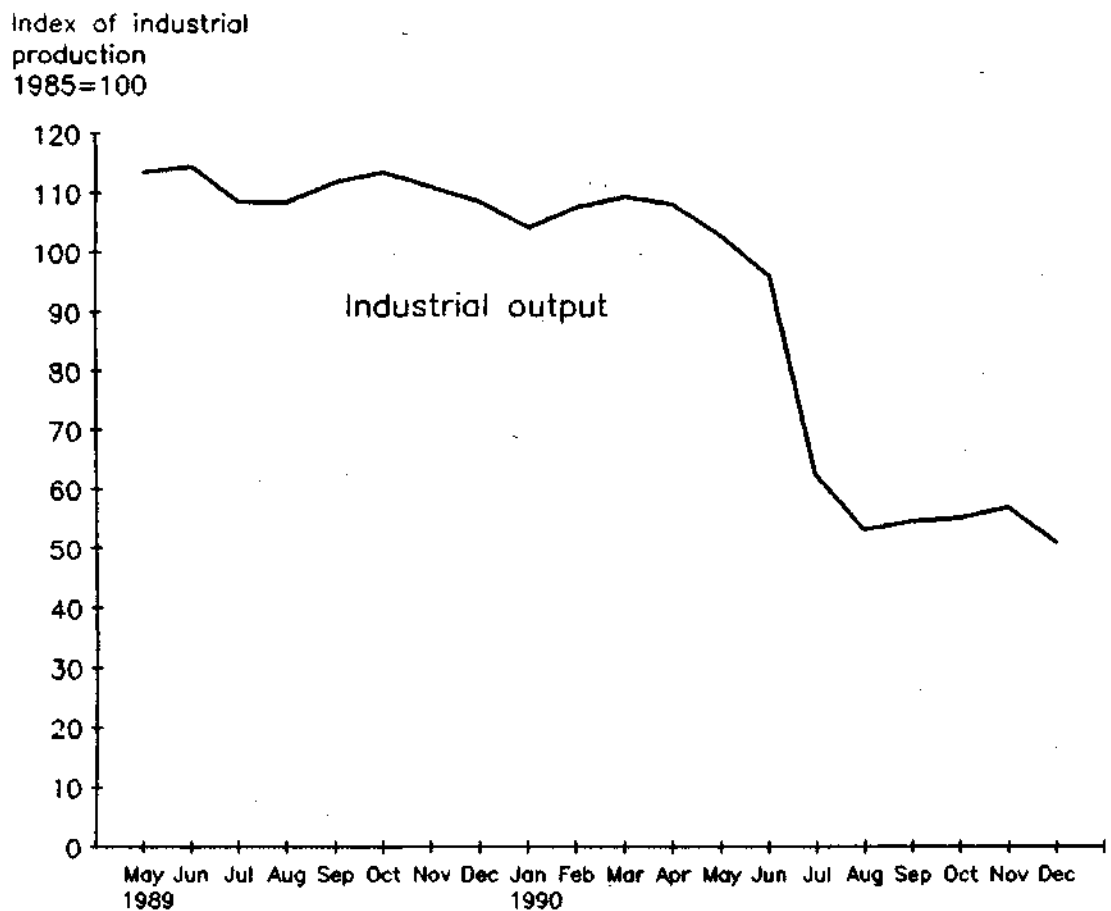
28. In the adjustment of output and employment, the inefficiencies of the old planning system are clearly revealed. Aggregating over the fall in output (or even the closing) of the

representative socialist firm, resulting from the shock in the economic environment, the transition from a planning system to a market economy is associated with a decline in output and employment for the economy as a whole. This tendency is supported both by the German and by the Polish case where industrial production has fallen by roughly 20 percent in 1990 (Schmieding 1991). It can be expected that output and employment will pick up at some time so that we have a J-curve in output with a dip, a valley or a deep gorge - where output will first fall and then start to rise. The shape of this curve is not exactly known. It depends on the inefficiency of the existing firms, on the speed and methods of privatization, on the speed with which new firms will come into existence and on the conditions of the process of restructuring.

29. The statistical measurement of the J-curve is loaded with difficulties. The transition implies a sizable change in the price vector of the economy, and indices of production use the outdated initial quantities and the obsolete price weights of the pre-reform period. For instance, for data on East Germany's industrial output the price weights of 1985 are applied. In addition to twisted price weights, the quantities of the pre-reform period are also distorted as an indirect effect of deformed prices. Moreover, statistics of the old period may be deliberately beautified, and gross and net values of production may be falsely specified. Consequently, indices of production may not be meaningfully compared.

30. So far, we only can observe the falling branch of the J-curve. In the East German case, the index of industrial output fell by about 50 percent from July 1989 to December 1990 with the main decline in mid 1990 (Figure 1, see also Table A.2 in the Appendix) despite subsidies of an unprecedented magnitude. Actually, available data seem to suggest that the fall in industrial output may have come to a stop, but so far decisions on closings have been postponed, and for the time being final assessment is not yet possible.

Figure 1: The J-Curve of Output in East Germany



Source: Gemeinsames Statistisches Amt der neuen Bundesländer
1990; Bundeswirtschaftsministerium 1991.

31. The fall in GNP is not exactly known. It is estimated that real GNP is one fifth lower than in 1989. So far there is no explicit survey of closings of firms, with most of the closings still to come.

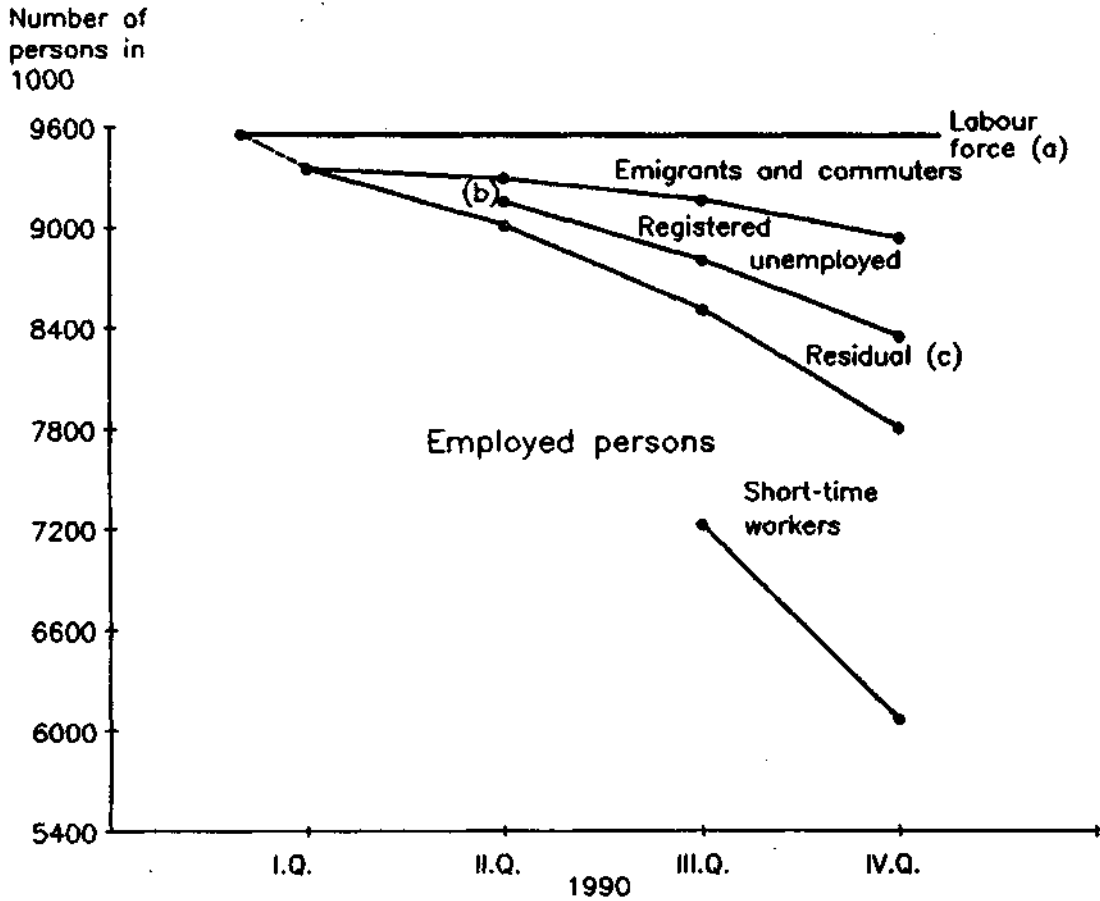
On the positive side, 281000 new businesses, mostly very small units including one-man firms, have been registered in the period from January to December 1990. About 26700 registrations, however, have already been cancelled during that period. New firms are registered at a rate of 25000 per month.

So far, we have have no data on private capital flows to East Germany. Investment plans for 1991 in Eastern Germany are at 50 bill. DM, with 20 bill. DM private investment, 10 bill. DM railway and postal service, and 20 bill. public infrastructure (Bessin et al 1991).

32. Registered unemployment rose from 140000 in June 1990 to 361000 in August, 642200 in December 1990 and 757200 in January 1991 (Figure 2). The number of people on short-time work amounted to 656000 in June and 1,9 million in January (see table A2 in the appendix). Moreover, net emigration rose from about 10000 per month in May and June to about 30000 in July - September. It is to be noted that the actual number of employees in Eastern Germany is not exactly known. It is estimated that it has been reduced by about one million persons during the past year (Müller-Krumholz 1990). Total employment of the pre-reform period reflects the conditions of the old system; therefore with higher wages, voluntary employment after all the adjustment has

taken place, that is the long-run equilibrium employment for instance for married women, will be considerably lower than the pre-reform employment. The transition of employment will not follow a full "J" but a "u".

Figure 2: The u-Curve of Employment in East Germany



(a) IV. quarter 1989. - (b) June 1990. - (c) E.g. persons in early retirement, unregistered job-seeking persons.

Source: Own calculations.

Employment responds with some time lag to output; it takes more time to adjust employment than output. Thus, employment is still falling while GNP and the industrial output are stagnating. For the upswing of the u-curve of employment this time-lag can also be expected. Thus, employment still has to fall for some time, when industrial output already recovers.

4.2. 1948 - The Wrong Analogy?

33. Why do we not observe the same spurt of development as in 1948 in Western Germany? The distortions in the representative socialist firm experiencing an unexpected shock and ownership uncertainty have already been pointed out. Another argument is that in Western Germany the shock occurred in 1945, and not in 1948 (Schmieding 1991). In 1945, production in Western Germany dropped to a fourth of the level of 1938 (Balogh 1950). In 1948, production had nearly doubled relative to the 1945 level, and some adjustment already had taken place prior to 1948. Compared to the J-curve of output and the u-curve of employment in Eastern Germany in 1990/91, both output and employment rose after the Erhard reforms in 1948. Four additional factors play a role in making 1990 different from 1948; the appreciation of the East German Mark, the wage setting process, specific bottlenecks and the aspiration of East Germans.

4.3. Appreciation of the East German Mark

34. In the adjustment of the firms in East Germany the transition problem to a market economy overlaps with the appreciation of the East German Mark. If we only are concerned with the competitiveness of firms of a socialist country in transition, a depreciation of the currency is an appropriate step to ease the burden of transition. However, depreciation of the currency cannot compensate lacking product quality, inefficient marketing,

an inadequate distribution network and the other shortcomings of the socialist firm. In the German case, there was the political problem that a very quick political union was required which did not allow a two-currency area with a flexible exchange rate serving as a shock absorber for the East German industry. Thus political rationality dominated purely economic considerations.

35. The extent of appreciation of the East German Mark is difficult to determine. Neglecting product, firm or sector specific exchange rates, the foreign currency coefficient⁴ of 1989 indicates costs of 4.4 GDR-Marks to earn one unit of the (West) Deutsche Mark. Relative to this admittedly distorted exchange rate, the East German Mark was appreciated by a factor of 4.4 whereas in 1949 the DM was depreciated by 21 percent. In addition, the artificial fixed exchange rate system of the COMECON, the transfer rouble, is not used any more with Eastern European currencies aiming at convertibility. As a consequence, intra COMECON-trade is breaking down. Moreover, the demand of the USSR, so important for East German firms, is falling considerably due to internal problems in the USSR.

4.4. Differentiating the Wage Structure

36. Labor market regulations and wage setting raise specific issues of transition. The application of West German labor market regulations (lay-off constraints) affects the process of transition including investment. Thus, article 613a of the West German Civil Code (Bürgerliches Gesetzbuch) requires that

existing labor contracts also hold for the new owner of a firm. This rule is intended to protect the employee against a lay-off in a normal ownership change, and it establishes already incentives not to buy a firm. However, this rule creates severe incentive problems for the transition of a socialist economy.

With the exchange rate no longer available to improve the competitiveness of East German firms, the wage rate should take over the function of giving East Germany a temporary advantage. However, one has to recognize some mechanisms that reduce the wage differential between East and West Germany. Since highly skilled workers are rather mobile, their wages cannot differ too much between Eastern and Western Germany. Commuters along the previous border will raise wages in the western parts of the former GDR; this also holds for Berlin. Firms in the service sector in Eastern Germany, such as banks and insurance companies, seem to pay the same wage to employees regardless of whether they come from Eastern Germany or Western Germany. Finally, trade unions will push for high wage increases. In 1990, the average wage per employee in Eastern Germany has increased by more than 30 percent; at the end of 1990, Eastern Germany has reached 50 percent of the West German wage level. In addition, converting wages with a rate of 1:1 did not improve the competitiveness of East German firms. Thus, a favorable labor endowment at low wages provides only a temporary comparative advantage. However, it should be recognized that the ex-GDR has a qualified stock of labor, which implies a comparative advantage due to the availability of skilled labor.

37. There seem to be three conflicting demands on the role of the wage rate in East Germany. First, the wage rate should take over the role of the exchange rate because the competitiveness of firms is heavily influenced by the wage rate. Second, the wage rate should be in line with the increase in labor productivity. Third, the wage rate should be high enough to keep people from emigrating. This may be too much of a task for one price variable.

The answer to this puzzle of conflicting demands on the wage rate is that the productivity rule should dominate. Then, competitiveness is assured and the role of wages analogous to the exchange rate is fulfilled. Moreover, qualified labor will be able to earn high wages in East Germany. Emigration and commuting is not bad in itself, because it can be considered to be a training-on-the job which is probably more efficient than any governmental qualification program. However, the productivity rule implies a differentiation in the wage structure and decentralized labor contracts. Wages for a highly qualified expert in East and West Germany cannot be too different and wages for any kind of qualification cannot be too divergent in East and West Berlin or along the previous border. But wages for work in Görlitz near the Polish border and East Berlin might very well be different. Thus, the answer to the unemployment problem is wage differentiation.

Clearly, workers laid off during the transition must be protected as is done via the short-term work arrangement. Protecting workers

is different from subsidizing inefficient firms. In addition, qualification programmes are called for.

4.5. Eliminating Bottlenecks versus Investment Subsidies

38. Besides ownership uncertainty, there are specific bottlenecks which hinder a quick development. One such bottleneck is the non-existence of an efficient administration especially in the heavily regulated German economy. In the German case, the regulations of a well developed market economy are applied to an economy in transition. Insufficient records of land titles are one example, but others are the licencing procedure for firms (licence to open a business, environmental licences etc.) and land use planning and zoning and the procedures of land use for infrastructure.

39. Infrastructure, an important prerequisite for private activity, is deficient. This holds for communication, transportation such as railways and roads as well as environmental quality. In Germany infrastructure in these areas has traditionally been a domain of government which implies that the provision of new infrastructure is subject to the relatively slow decision process of government, to the specific constraints of governments for instance in hiring personnel and due to the budgetary process as well as to budget constraints. Unfortunately, the political process is not imaginative enough to introduce the private provision of infrastructure and of private funding.

40. Lacking location space being relevant for the creation of new firms is another bottleneck. The availability of location space is linked to the uncertainty of ownership, to the not yet efficient administration and to the deficiency in infrastructure, for instance with respect to industrial parks, energy supply for specific locations or the capacity of the water purification system and sewage pipes. Moreover, old firms block location space for new firms.

41. Firms can collect an investment tax-credit (bonus) of 12 percent (up to June 30 according to the still existing legislation, up to December 1991 in a low risk forecast), 8 percent (up to June 30, 1992, respective December 1992) and subsidies of up to 23 percent of investment outlays according to the federal-states programm "Improving the regional economic structure". As an alternative to the tax credit, special depreciation allowances of up to 50 percent in the first five years can be applied. For investment in machinery and equipment, under relatively normal conditions 50 percent and a 10 percent linear depreciation can be used in the first year. There are special programmes for new and small firms. It seems to be quite clear that in the sense of a causal therapy lacking investment incentives are not the decisive factor for the slow development in Eastern Germany.

4.6. The Market versus Structural Policy

42. An important policy choice is to what extent real adjustment in East Germany will come about by market forces or by the political process. There is a definite risk that the political process will dominate the privatization of firms and sectorial adjustment. Moreover, there is a strong political demand for the structural protection of the East German industry, for a slowed adjustment process and other types of intervention. There is a tendency that the increase in wages is not steered by market forces, especially by the increase in productivity, but by political bargaining.

The aspirations of the inhabitants of the GDR are high, resulting in a political demand for quick improvements in income, environmental quality, housing, social security and physical infrastructure. There seems to be a belief that government policy can solve these issues quickly. In this respect, the situation differs from 1948 in Western Germany. If these political demands are allowed to influence the course of events and if they dominate the market process, prices will be politicized. In this case, structural change in the ex-GDR will take place along similar lines to West Germany's experience with the sectorial policy for ailing industries. Then, the forecast is that financial resources will be wasted, that the burden for the taxpayer will be high and that the positive supply side effect will be severely inhibited.

5. Long-Run Benefits versus the Costs of Unification: Budget Policy and the External Account

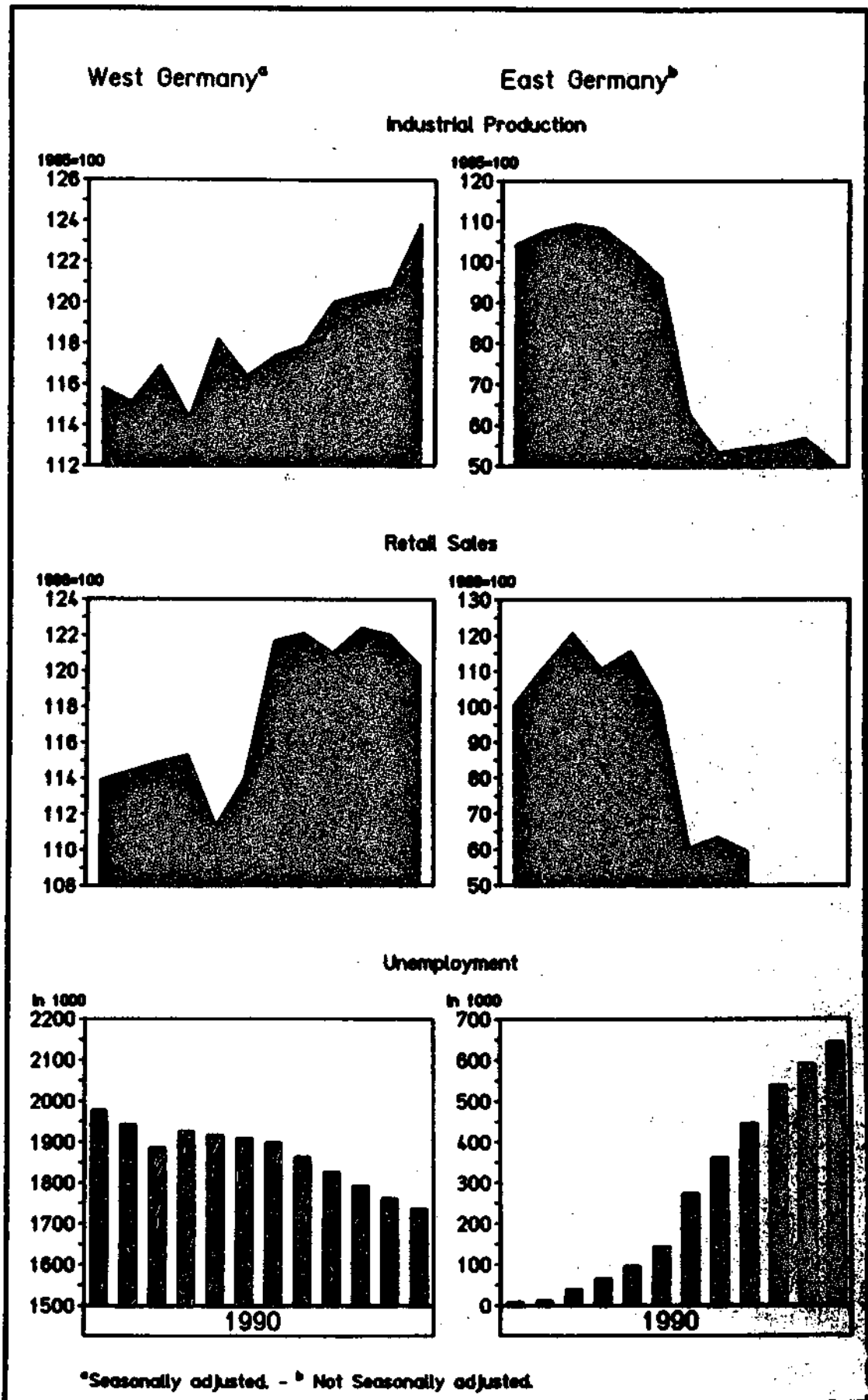
5.1. Diverging Macroeconomic Conditions and Transfers

43. In the medium and in the long-run, the integration effect, the impact of the new economic system and the capital accumulation effect will play, and there will be the long-run benefits from German unification. In the transition period, costs are incurred, and as in any large-scale investment project, there is a cash-sink hole before the gains come in. Besides this intertemporal asymmetry in expenditures and receipts, there is the issue to what extent transfers are needed to smoothen the process of transition and to alleviate the social problems in Eastern Germany.

44. In the transition period, there are diverging macroeconomic conditions between East and West Germany. In West Germany, real GNP has increased by 4.6 percent in 1990, whereas GNP in Eastern Germany has fallen by about 20 percent. Aggregate demand for West German products has increased, creating excess demand and inflationary pressure in the West. It is estimated that East German demand has contributed one percentage point to the real growth rate in West Germany in 1990 (and may contribute an additional half percentage point in 1991). In the last years of high capacity utilization with almost 100 percent, production capacity proved to be elastic possibly due to the immigration from the ex-GDR and Eastern Europe. Due to a lack of demand for East German goods, we have a structural crisis in the East

reflecting the transition from a socialist system to a market economy. An indication of the split macroeconomic situation can be seen in the three variables industrial production, retail sales and the unemployment data in West and East Germany (Figure 3).

Figure 3: Diverging Macroeconomic Conditions



45. In East Germany there is a difference between production and absorption which is estimated at 40 bill. DM in 1990 (DIW 1991, own calculations). This difference, socially easing the process of transition, can only be explained by explicit or implicit transfers to East Germany. Governmental transfers (federal government, states) amounted to 40 bill. DM; in addition, the conversion of the East German Mark has given purchasing power to East Germans. Income of commuters earned in West Germany is another factor. In West Germany the growth rate of GDP is greater than that of GNP, due to commuters from East Germany. For 1991, government transfers are estimated to reach 120 bill. DM (see Table 4).

46. Government transfers from West Germany are needed for financing most of the expenditures of the new Bundesländer and the local governments in the East. Government revenue in the East will be low mainly relying on the value-added tax and on excise taxes. Expenditures will be necessary not only for the government's administrative role but also for building up infrastructure and improving the environmental situation. There is now the risk that massive subsidies will be paid in order to alleviate structural problems from a lack of competitiveness of industry and agriculture.

It is extremely difficult to estimate the amount of future government expenditures and transfers. For social overhead capital, the back-of-the-envelope calculation of the GDR capital stock in infrastructure amounts to roughly DM 530 bill. This figure can be derived by adjusting the West German capital stock

in infrastructure of 2044 bill. DM according to the proportion of the population in Eastern Germany of 25 percent (Siebert 1990b, Table 3). Assuming that part of the infrastructure (buildings, roads) is physically intact, maybe 300 bill. DM will have to be spent on physical infrastructure over a ten-year period. It is even more difficult to estimate the costs of correcting the environmental damages of the past. These costs are not included in this calculation. Note that costs for abatement of new facilities must be borne by the individual firms and therefore do not represent a cause of public transfer.

47. A large part of the transfers to East Germany stem from the "German Unity Fund" (22 bill. DM in 1990, 35 bill. DM in 1991). The fund was built in May 1990. The federal government finances about 10 percent of the means of the fund directly; the rest of the burden is shared by the states (Länder) including the local governments and the federal government (50 percent each). The fund's means are used in Eastern Germany to finance expenditures of the local governments and the states.

In February 1991, a new programme "Reconstruction of Eastern Germany", was decided upon. It includes about 12 bill. DM mainly for building up the infrastructure of the new states; substantial labour market policy measures are intended too. In addition, a 5 billion transfer to the new Länder and the municipalities in Eastern Germany was decided upon.

Contrary to the 1990 intentions, the new Länder will receive their share in the VAT revenues according to the size of the

population already in 1991 instead of 1994. This means a shift of 5 bill. DM from West Germany to East Germany. Nevertheless, the new states do not yet fully participate in the traditional West German transfer mechanism that transfers tax revenues from rich states to the poor ones. According to the 1990 plans, the new states only would have been included in this transfer process in 1995. However, this will probably happen earlier because of strong pressure from the new states.

Explicit transfers to the East German Länder and municipalities do not represent the only item explaining transfers to East Germany. The social security system in the transitional period has to be financed, and this represents a transfer to East Germans. It is estimated that 7 bill. DM were necessary for the initial financing of the social security system (mainly old age pensions, unemployment, short-time work) in 1990. Another item are the financial needs of the Treuhand. In this context, the financial status of Treuhand is not yet known (Boss 1991).

Moreover, the previous GDR banking system and its successors have so-called "equalization claims" (Ausgleichsforderungen) against a special fund (Ausgleichsfonds-Währungsumstellung) on their asset side. These claims arose when the assets and liabilities (savings of the population) of the GDR banking system were converted at different rates. Equalization claims amount to 24 bill DM according to preliminary calculations. In 1991, interest of about 2 bill. DM is paid by a special fund of the federal government.

Table 3 - The Public Sector Budget of East Germany (a) (bill. DM)

	1990	1991
Revenues	121	224
Taxes	37	39
Contributions to social security	43	60
Other current transfers	3	5
Capital transfers from West Germany	38	120
Expenditures	160	256
Interest on public debt	8	17
Government consumption	71	70
Transfers to		
Households	43	94
Firms (subsidies)	34	53
Net investment	2	18
Capital transfers	2	4
Balance	-39	-32
Balance excluding capital transfer from West Germany	-77	-152
(a) Public sector in the definition of National Income and Product Accounts (including the social security system and the Treuhandanstalt)		

Source: Own calculations based on DIW [1991a]

A special fund of the federal government also has taken over foreign debt of the ex-GDR amounting to 16 - 17 bill. DM. This represents a yearly burden of roughly DM 1,5 bill. In addition, the federal government will incur other expenditures for Eastern Germany, for instance for building up the infrastructure without explicitly transferring the funds to the Länder. These expenditures of the federal government are included in the figures of Table 3. For the financing of the long-run sales contracts to the USSR, more than DM 2 bill. were paid in 1990.

48. The East German budget for 1990 (ex-GDR until October 3, since October 3 new Länder, local governments, fictitious part of the central government, social insurance, Treuhandanstalt) included expenditures of DM 160 bill. and government revenues of DM 83 bill. Transfers from Western Germany amounted to DM 38 bill. in 1990. Thus

the Eastern German budget deficit was DM 39 bill. in 1990. Transfers are summarized in Table 4.

Table 4 - Government Transfers from West to East Germany, 1990 and 1991
(bill. DM)

	1990	1991
Transfers to the social security system	7	40
Old age pension scheme	2	4
Unemployment insurance	2	35
Health insurance	3	1
Transfers to the governments	31	80
Total transfers	38	120

Source: Boss (1990); corrected according to new information.

Table 5 : Government Budget (a) - bill. DM

	1990	1991
Revenues	1132	1250
Taxes	611	673
Contributions to social security	453	505
Other items	68	72
Expenditures	1214	1400
Interest on public debt	73	92
Government consumption	518	543
Transfers to		
Households	425	497
Firms (subsidies)	86	108
Net investment	40	60
Other items	72	100
Balance	- 82	- 150
(a) Public sector in the definition of the National Income and Product Accounts (including the social security system and the Treuhandanstalt)		

Source: Boss [1990]; corrected according to new information.

5.2. The Overall Budget Deficit

49. The overall government budget deficit amounted to about 80 bill. DM in 1990, which is 3 percent of GNP (Table 6). In March 1991, a budget deficit of 150 bill. DM (5,3 percent of GNP) is expected for 1991. A comparable budget deficit existed in 1975 (5,6 percent; 1981: 3,7 percent). From 1981, this ratio was brought down to 2,1 percent in 1988. In 1989 there was even a small budget surplus (0,2 percent).

Table 6 : Budget Surplus/Deficit in Percent of GNP, 1988 - 1990

	1988	1989	1990
Austria	- 3,1	- 2,7	- 1,5
Belgium	- 6,4	- 6,2	- 6,0
France	- 1,8	- 1,5	- 1,5
Germany			
- West Germany	- 2,1	+ 0,2	- 2,0
- Federal Republic of Germany	-	-	- 3,0
Italy	-10,9	-10,2	-10,0
Netherlands	- 5,1	- 3,9	- 4,0
Japan	+ 2,1	+ 2,7	+ 3,0
Spain	- 3,2	- 2,8	- 3,0
United Kingdom	+ 1,1	+ 0,9	+ 0,5
United States	- 2,0	- 1,7	- 2,5

Source: Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung (1990), own calculations for the Federal Republic of Germany.

50. In principle public investment can be financed by bonds and a temporary budget deficit of 3 percent of GNP is not a matter of concern. 5 percent, however, may be a different matter. Bond financing of a budget deficit of this magnitude is not advisable in the medium run. A deficit of this size would reduce the political manoeuvring space of future governments considerably due to heavy interest payments. Thus, a large budget deficit reflects a risk factor if unforeseen developments occur. Moreover, there is the risk that the political process will not control expenditures sufficiently (especially before elections) and that the dynamics of the political process will go on a spending spree. Last not least, bond financing will raise the interest rate and crowd out private investment.

51. The issue whether to raise taxes or use other options of reducing the deficit has become an academic question. Part of the financial burden on the German budget should have been financed by a reshuffling and reduction of expenditures including the cutting of subsidies. Expenditures in the overall budget amount to 1214 bill. DM (1990), and it should have been possible to reduce (and stretch) at least some of the expenditures. Subsidies are estimated for West Germany alone at 130 bill. DM per year (explicit payments 80 bill. DM)⁵, and it should have been possible to cut 20 percent or 26 bill. DM. Especially, the former border areas of West Germany and Berlin were subsidized with 13 bill. annually, and these subsidies now represent severe distortions relative to the new Länder. However, the political process does not have enough vigour to reduce expenditures only succeeding in cutting 2 bill. DM 1991, as the program of the new coalition government indicates. In 1994, the subsidies are to be reduced by 10 bill. DM, mainly because of the abolition of the subsidies for Berlin and the former border areas. Additional efforts to cut subsidies were announced by the Minister of Economic Affairs in early March 1991.

Another option, financing government expenditures by partly privatizing infrastructure in Eastern Germany, was never seriously taken up. This option would have had the additional advantage of providing infrastructure much more quickly than the budgetary process. The communication industry could have been privatized financing itself

through user charges. Financing through user charges could also have been applied to airports, other areas of transportation, and industrial parks and local environmental projects like water purification plants. In these cases, government would only have to set the frame of reference under which private projects can be undertaken.

Another source of financing would have been the sale of governmental assets in West Germany where some firms are still owned by the federal government, but a large number by the states and the municipalities, especially on the savings and loans sector. The revenue potential from privatization in Western Germany is substantial. In the end of 1989 the financial assets held by the government amounted to 370 bill. DM (Schlesinger 1990). Finally, in the medium run, economic expansion in East Germany will bring about an increase in tax revenue.

52. With transfers to East Germany estimated at 120 bill. DM for 1991 representing roughly fifty percent of East Germany's GNP one has the impression that politicians use what has been called the firefighter approach: "Where is the fire? We stop it". Unfortunately, this approach does not start with the causal therapy isolating the basic reason for a problem, instead it applies a neutralization policy trying to alleviate the problem, not curing it at its roots. It can be expected that a transfer of 120 bill. DM will necessarily lead to political demand for subsidizing inefficient firms (instead of protecting people by transfers) implying a waste of resources.

53. An important issue for the future is the division of labor among the federal government, the states and the towns and counties with respect to public expenditure and revenue. In the long run, a new system of intergovernmental transfers (Finanzausgleich) will have to be developed for Germany with new rules for allocating government income and expenditure to the three layers of government, the central government, the states (Länder) and the municipalities. In the actual system, the states only have a minor authority in determining their revenue. More autonomy on the revenue side, and consequently on the expenditure side, could be introduced by letting states explicitly decide on tax rates, for instance with a state-specific income tax

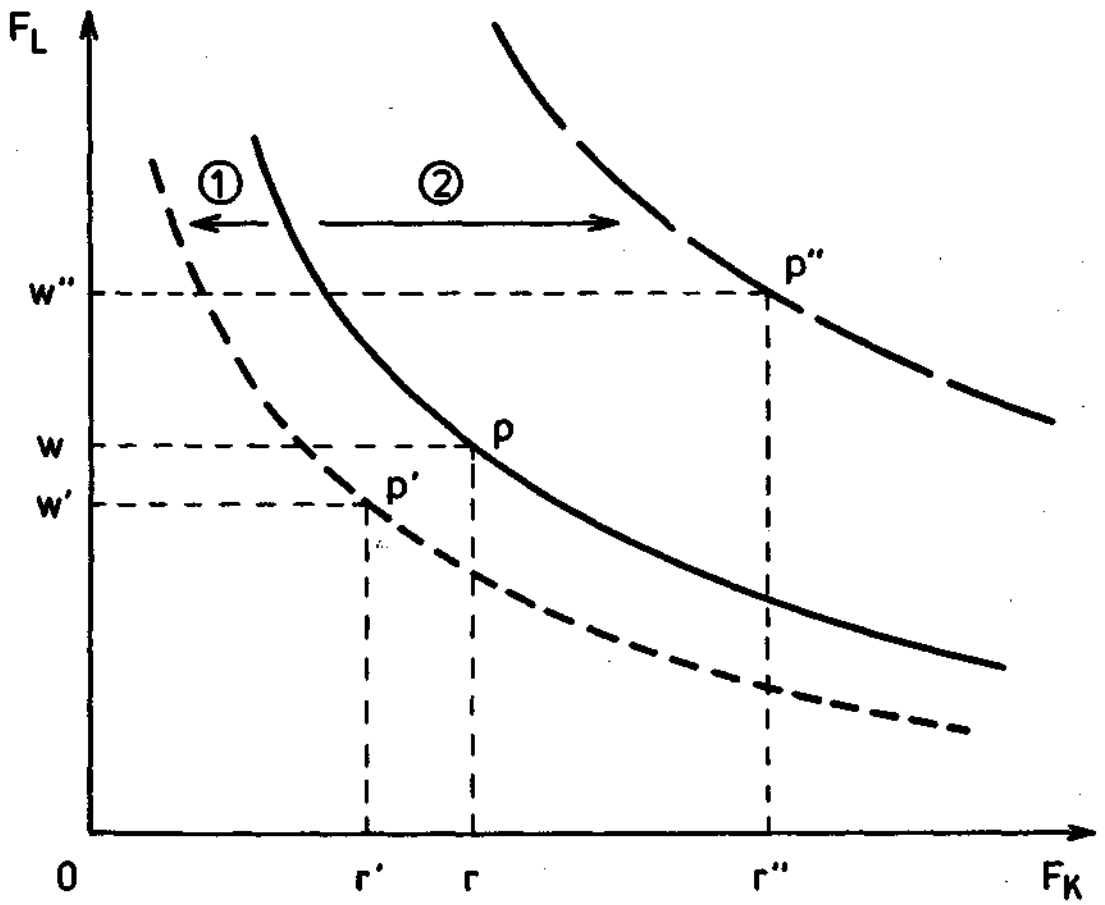
rule. This would introduce a process of institutional competition among states both on the expenditure as well as the revenue side. A precondition for such an approach would be a redefinition of states so that they are viable.

5.3. Interest Rate Effect

54. From the long-run effect of integration, from new investment opportunities and from the incentives of the market system, German union can be interpreted as a "new frontier" in the sense of Alvin Hansen (1955) or as a positive supply shock. Clearly, the potential marginal efficiency of capital in Eastern Germany has increased, and the real interest rate will be driven up from the supply side. Due to a higher marginal efficiency of private investment, demand for capital increases. This supply shock effect is operating in the real economy.

55. A way to view the supply shock effect on the interest rate is a shift in the marginal productivity curve of a two-country diagram (Figure 2, Siebert 1990b) or as a shift in the factor price frontier defining the maximum possible real factor prices. As the production possibility set of an economy, the factor price frontier is also affected by the institutional arrangement of an economy as a third factor of production operating in the background. With the given technology and capital in place, the transition to the market economy makes the existing capital stock obsolete, for instance by changing the price for energy and the environment. The factor price frontier shifts to the left (arrow 1 in Figure 4). New technology and new capital will shift the factor price frontier to right implying a higher marginal productivity of capital and/or of labor. Moving from P to P'', implies a higher real interest rate and allows at the same time a higher wage rate. Note that the movement from P to P' corresponds to the J-curve effect.

Figure 4: The Factor Price Frontier

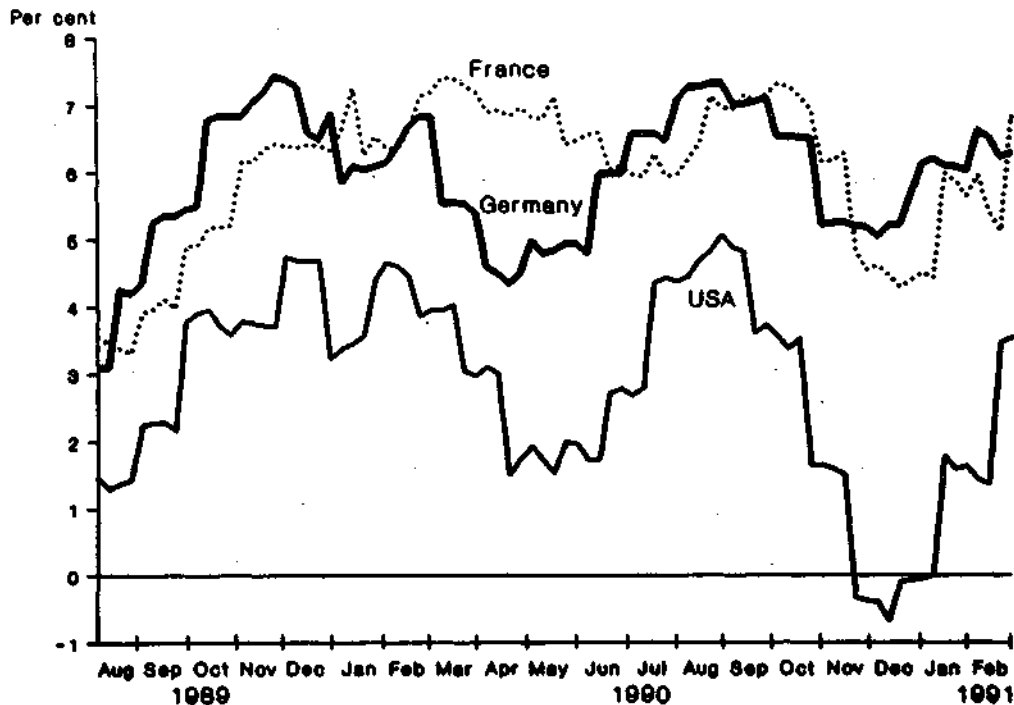


In addition to the supply shock effect for private capital, there is a supply side effect on the interest rate from infrastructure capital. With the infrastructure capital in Eastern Germany being inefficient, it "pays" to improve it, that is, infrastructure has a high marginal productivity.

56. The supply shock rise of the real interest rate will be influenced by the availability of capital. In an open economy, capital inflows reduce the tendency of the interest rate to rise. To what extent the supply shock can play, will also depend on the institutional arrangement of financing infrastructure, for instance whether it is financed privately, by bonds or by taxation. In addition, government demand for capital is not only caused by spending on infrastructure, but by other areas of spending leading to a deficit. Thus, the interest rate will be driven up by a budget deficit, and the supply shock effect and government behavior of spending may be difficult to be separated. Finally, the interest rate observed may reflect inflationary and currency expectations.

57. The data show an increase in the nominal long term interest rate (on Government bonds) in Germany from below 7 percent in the middle of 1989 to around 9 percent after the announcement on the German monetary union on February 7, 1990. The nominal interest rate has remained on that level (as of January 1991; Siebert, 1991b, Figure 6). The real long-term interest rate defined as the difference between the nominal interest rate on government bonds and the rate of change of the consumer price index rose from around 3 percent (August 1989) to a range between 6 and 7 (October 1989 to March 1990 and June to November 1990 and January to February 1991; see Figure 5). Statistical analysis is required to discriminate against other determinants of the real interest rate such as the business cycle situation in order to isolate the impact of German unification.

Figure 5: Long-Term Real Interest Rates, 1989-1991⁶⁾



5.4. Fiscal Expansion versus Monetary Restraint

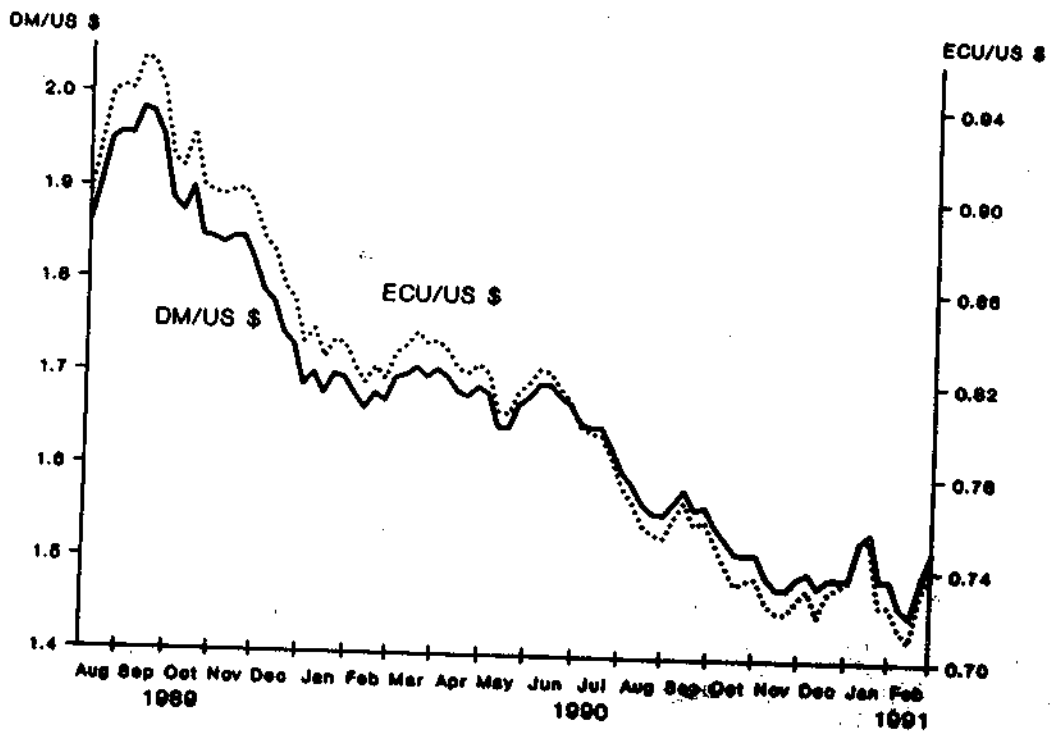
58. The transitional period will be characterized by expansionary fiscal policy. With transfers being largely financed by bonds, there is pressure for the interest rate to rise from the demand side in addition to a supply shock increase in the rate of return. If the Bundesbank strictly sticks to a monetary expansion according to the increase in production capacity, irrespective of the behavior of other players in the arena of stabilization policy such as the finance minister and the trade unions, the non-inflationary rate-of-output growth is realized by the interest rate: The interest rate rises and chokes off demand that may affect the price level. In addition, if the price level rises, the real supply of money is reduced implying again an increase in the interest rate.

An alternative view is that the Bundesbank also takes into account the behavior of the other players, i.e. of the finance minister and the trade unions. In such a context, an expansionary fiscal policy limits the manoeuvring space for the Bundesbank in the future, and monetary policy may very well have to be restrictive in order to maintain price level stability. Thus, the economic policy situation is similar to the early eighties in the United States, and we may see a conflict between an expansionary fiscal policy and monetary restraint. In addition, high wage demands by the trade unions as in Western Germany in early 1991 may aggravate the situation and may induce the Bundesbank to pursue a stricter monetary policy. Note that the two explanations of the behavior of the Bundesbank clearly show the advantage of sticking to a rule, i.e. commitment, and thus establishing credibility. Sticking to a rule excludes strategic behavior of other players and moral hazard problems.

5.5. The Exchange Rate

59. From the supply side, there should be an appreciation of the D-Mark. This appreciation can be motivated both from the capital account and the current account. From the capital account, the appreciation of the D-Mark is due to a higher marginal efficiency of capital, i.e. higher rates of return in Eastern Germany, to a larger capital inflow (reduced capital outflow out of the D-Mark area) and consequently to an increased demand for the D-Mark; the appreciation is a vehicle to bring about a reduction in the overall German trade surplus. This reduction is necessary because East Germany has a trade deficit thus reducing the overall German trade surplus. In 1990, the German current account surplus was 32,1 bill. DM lower than 1989. Of course, the appreciation of the D-Mark as shown in Figure 6 cannot only be explained by the German unification but is also due to factors in the U.S.

Figure 6: - Exchange Rates, 1989-1990 (weekly averages)⁷



60. In a world of tradeables and non-tradeables, the real exchange rate $w_R = w_{P_T} / p_{NT}$ will appreciate as well. In such a context the price for tradeables (p_T) will be given by the world market. The price for non-tradeables (p_{NT}) will rise for a number of reasons: The income transfer to East Germany will increase the demand for non-tradeables, supply-side growth will lead to an increase in income, again raising the demand for non-tradeables, and infrastructure outlays in East Germany will increase the demand for non-tradeables. All these forces will raise internal absorption. Moreover, wages and consequently production costs for non-tradeables will rise; price controls on non-tradeables will be lifted. At the same time, the transformation function between tradeables and non-tradeables will shift upward due to productivity gains and capital inflow. The bias in the shift in the transformation curve between tradeables and non-tradeables will influence the opportunity costs of producing non-tradeables. This supply-side effect may counteract the impact of the increase in absorption on the relative price of non-tradeables. It is sufficient for an increase in the opportunity costs of non-tradeables if the shift in the transformation function is neutral or if it is biased in favor of tradeables. Then the price of non-tradeables would rise from the production side. Under this condition, the relative price between non-tradeables and tradeables (p_{NT}/p_T) rises, implying an appreciation of the real exchange rate.

61. In contrast to this view of an appreciation of the D-Mark (see also Burda 1990, Lehment 1990), Wyplosz (1991) and Melitz (1991) come to the conclusion that the real exchange rate will depreciate. The argument is that in the transitional period investment in East Germany will be financed from capital inflows, and Germany will accumulate foreign debt; in the long run, debt has to be repaid, requiring a real depreciation to generate a surplus in the current account. According to this scenario, Germany would repeat the story of the US in the eighties, with an investment boom, financed by foreign debt, and a transitional appreciation which is corrected later on. Even if German unification is not financed by foreign debt, the intertemporal mechanism of stocks is operating: With a reduced current account, the stock of foreign direct investment and of portfolio investment by Germans is reduced, and consequently, the tendency of appreciation for the Deutsche Mark is weakened.

This result hinges, however, very much on the assumption that the West German production function will be relevant for the united Germany, but it neglects the integration gains and the embodiment effect of new technology through investment in Eastern Germany. These phenomena change the German macro-economic production function (see Baldwin 1989, Romer 1986). Moreover, economic integration can increase variety and product quality and can thus stimulate exports in areas of inelastic international demand preventing negative terms of trade effect. Under these conditions, there will be a dynamic supply side effect over time counterbalancing the stock effect of a lower German capital accumulation abroad and not necessarily implying a long-run depreciation.

5.6. Brakesman versus Locomotive

62. The tendency for an appreciation of the D-Mark will put pressure on the EMS for a realignment. Without realignment, the EMS countries will experience an increase in the interest rate. This pressure for realignment will arise from the forces in the real economy such as supply-side growth, increased internal absorption and capital inflow into Germany. In addition, the ECU will be pulled up by the DM and thus can be expected to appreciate against the Dollar area, thereby reducing the competitiveness of ECU-area exports to the non ECU currency area.

63. The rise in the interest rate in other countries is seen as a burden to these countries, and Germany is viewed as the brakesman of economic development elsewhere. There is no doubt, that higher interest rates in Germany choke off investment elsewhere, but from the point of view of gross national product of a country, its capital owners earn a higher income in Germany. With capital income no longer being limited to a specific group of society, these benefits can be widely spread.

But the increase in the interest rate is only part of the story. At the same time, there is an increase in import demand. In July - October 1990 German imports have increased by 12,8 percent (constant 1980 prices), whereas exports were up by 1.5 percent only (Table 7). From the current account, Germany plays the role of a locomotive. The

conflicting view of brakesman versus locomotive stressed in the policy debate of international macroeconomics is misleading because the current account and the capital account are determined simultaneously by the same decisions. The net impact of the role of the brakesman and the role of the locomotive on a specific country will depend on the specific conditions in the neighbouring country. On average, we should, however, expect, that a positive supply shock in one country will have positive spillovers for the world economy as a whole.

Table 7

Foreign Trade of Germany

	Exports			Imports		
	1989	1990	1990	1989	1990	1990
		First Half	Jul.-Oct. (a)		First Half	Jul.-Oct. (a)
Percentage change over corresponding period of previous year						
At current prices						
Total	12.9	1.9	5.5	15.2	4.7	13.0
EC-countries	14.4	-0.3	0.7	13.7	5.3	15.0
of which:						
France	18.3	-0.3	0.3	13.8	2.9	15.1
Italy	15.8	1.6	2.3	12.3	10.4	16.0
United Kingdom	12.2	-7.0	-6.0	13.9	2.9	8.2
Other industrial countries	9.1	4.5	0.7	17.1	3.1	6.6
LDCs (without OPEC)	17.9	8.0	4.0	13.6	2.6	5.3
OPEC	6.0	9.6	12.0	14.2	0.9	12.3
Centrally planned economies	18.5	-1.4	94.2	22.9	15.0	48.0
At 1980 prices						
Total	8.1	2.2	1.5	7.3	8.3	12.8
EC-countries	8.4	-0.67	0.5	6.8	7.2	12.6
Other industrial countries	6.7	4.9	2.8	9.4	7.6	12.7
LDCs (without OPEC)	11.0	8.4	4.0	7.1	11.7	17.4
OPEC	1.2	4.1	9.0	-3.0	10.4	2.1
Centrally planned economies	15.8	3.6	-5.7	9.2	13.6	15.9

(a) The figures at current prices include transactions of the former GDR with foreign countries.

Source: Statistische Beihefte zu den Monatsberichten der Deutschen Bundesbank, Reihe 3, Zahlungsbilanzstatistik. - Statistisches Bundesamt, Fachserie 7, Reihe 1, Zusammenfassende Übersichten für den Außenhandel. - Own calculations.

6. Outlook

64. Barring serious political mistakes as in structural policy, the economic integration of the two Germanies will be a growth stimulus for both Germanies, for Europe and for the world economy. German unification represents a new frontier, an investment opportunity or in Schumpeter's terms a case of "creative destruction". With the German trade surplus being reduced in the transition period, Germany's demand for other countries' exports will increase. Europe, the United States and other countries will experience an increase in the demand for their exportables and will thus benefit from the German unification.

65. The case of Eastern Germany can be considered as a specific case in the transition of a socialist economy to a market economy in which the institutional infrastructure and the monetary system were provided externally and in which the adjustment of the real economy is the only remaining decisive issue. The transition of Eastern Germany thus can be considered as a laboratory experiment of real adjustment which is still to come for Eastern Europe (Siebert 1991a, Siebert, Schmieding, Nunnenkamp 1991). Establishing the institutional infrastructure and creating monetary stability are additional problems to be solved in Eastern Europe. Some specific constraints of the German case such as high labor mobility, orienting the aspiration level to the West German standard and not having the exchange rate as a shock absorber do not hold for Eastern European countries, but these countries face different financial restraints with debt as a burden to start with and a lower possibility to attract foreign capital.

Appendix

Table A1 - Structure of Employment by Sectors in East Germany and West Germany, 1989

	Eastern Germany		Western Germany	
	1000	percent	1000	percent
Agriculture, forestry and fishing	920	9.9	1066	3.9
Energy and mining	295	3.2	472	1.7
Energy and water	120	1.3	282	1.0
Mining	175	1.9	190	0.7
Manufacturing	3168	34.1	8668	31.4
of which				
Manufacture of chemicals	152	1.6	638(a)	2.4(b)
Basic metal industries	183	2.0	673(a)	2.5(b)
Manufacture of machinery	548	5.9	1123(a)	4.2(b)
Transport equipment	208	2.4	1020(a)	3.8(b)
Electronics	398	4.3	1175(a)	4.3(b)
Clothing industries	197	2.1	251(a)	0.9(b)
Textile industries	217	2.3	253(a)	0.9(b)
Food industries	336	3.6	720(a)	2.7(b)
Others	929	10.0	2732(a)	10.1(b)
Construction	563	6.1	1810	6.6
Wholesale and retail trade	721	7.8	3600	13.0
Wholesale trade	258	2.8	1289(c)	4.7(d)
Retail trade	463	5.0	2254(c)	8.3(d)
Transports and communications	628	6.8	1559	5.6
Railroads	245	2.6	285(a)	1.1(b)
Navigation	33	0.4	48(a)	0.2(b)
Other transports	233	2.4	662(a)	2.4(b)
Communications	127	1.4	532(a)	2.0(b)
Financial institutions and insurance	63	0.7	852	3.1
Restaurants and hotels	180	1.9	848(c)	3.1(d)
Services, public administration, defense and others	2762	29.7	9596	34.7
Total	9300(e)	100	27623	100

(a) Data for 1987. - (b) Calculated for total employment of 1987, i.e. 17050. -
(c) Latest available data of 1988. - (c) Calculated for total employment
i.e. 27249. - (e) This figure does not take into account apprentices
prentices. Including them would raise the number of total employment by 353000.

Source: DIW [1990a]; Staatliche Zentralverwaltung für Statistik [1989];
Statistisches Bundesamt [1989a]; own calculations.

Table A2: Adjustment in Transition, Data for the ex-GDR

	GNP	Industrial Output (a)	Total Employment	Net (b) Emigration	Commuters	Short-Time Workers	Registered Unemployed	Consumer Price Index	Monetary Aggregate M3
		1985=100		1000		1000	1000	1989=100	bill. DM
July 1990	not available	62,0	not available	- 31,1	not available	656	272	94,5	177,9
August 1990		53,2		- 31,1		1500	361	94,9	176,2
September 1990		54,5		- 26,8		1729	445	96,6	176,5
October 1990		55,1		- 20,3		1704	537	98,2	170,0
November 1990		56,9		...		1774	589	98,1	163,2
December 1990		50,9		...		1795	642	99,1	163,2
January 1991							1860	757	
(a) - Not seasonally adjusted. - (b) Data incompletely recorded.									

Source: Gemeinsames Statistisches Amt der fünf neuen Bundesländer 1990; Deutsche Bundesbank; (1990); Statistisches Bundesamt 1991)

Footnotes:

I appreciate critical comments from Alfred Boss, Bert Hofman, Michael Rauscher, Birgit Sander, Klaus-Dieter Schmidt, Peter Trapp and Charles Wyplosz.

1

The appreciation of the East Mark has contributed to unemployment and unemployment influences emigration.

2

The adjustment problem of the representative firm can be modeled as a shock. The firm maximizes the present value of profit

$$\int_0^T [p(t) Q(t) - w(t) L(t) - r(t) K(t)] e^{-rt} dt \quad (1)$$

Output is limited by the production function representing the old technology

$$Q(t) = \gamma K(t)^\alpha L(t)^\beta \quad (2)$$

The firm starts from an initially given, obsolete capital stock

$$K(0) = K_0 \quad (3)$$

By attracting (or accumulating) capital, the firm can change its production function; a simple way to model this would be to make α or γ a function of K so that a larger capital stock implies a higher productivity (new management).

$$\alpha = \alpha(K) \text{ or } \gamma = \gamma(K) \quad (4)$$

In addition, we introduce the usual function for capital accumulation where I is gross investment

$$\dot{K} = I - dK \quad (5)$$

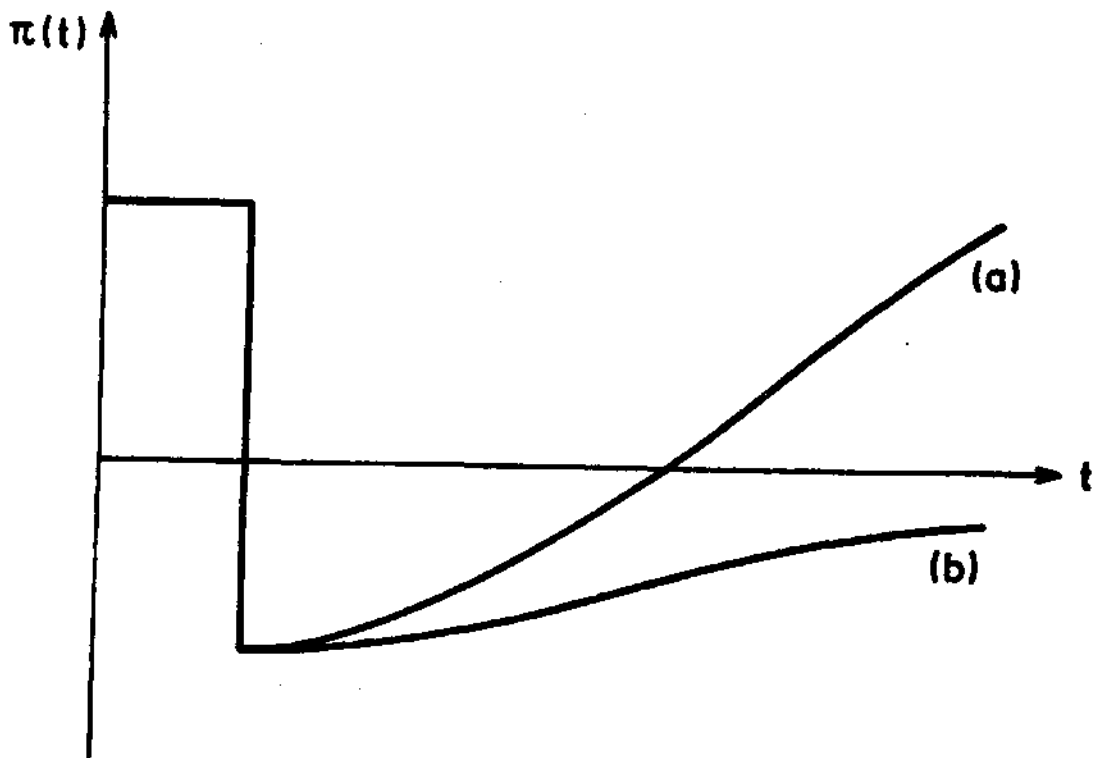
In such an approach, the cost of adjustment to the change in the environment show up in the optimality conditions.

The firm faces a shock, for instance a price shock where the monopolist producer's price falls abruptly. The price shock is a "catch all" for the change in the economic environment of the socialist firm.

It can be expected that in most cases the present value of the socialist firm for a given obsolete capital stock will be negative; without adjustment, the firm is not viable. An intertemporal analysis would determine the present value of the firm in the new environment under the assumption of adjustment. This analysis should show how period profits of the firm change over time and whether the present value of the firm is positive or negative.

The result should hinge on the costs of adjustment. We can expect two different scenarios for the time profile of period profits: If period profits

of the future cannot compensate the losses of today (b), the capital value of the firm is negative and the firm must be closed down. If positive period profits arise in the future, compensating the cash sink hole and implying a positive capital value, the firm is viable.



3

The distinction of property rights and ownership uncertainty is crucial for the comparison of the German, and Eastern European and the USSR case. In the German case, property rights are clearly established, but there is uncertainty with respect to ownership. In the USSR and to some extent in Eastern Europe, property rights themselves are uncertain.

4

The foreign currency coefficient rose from 2.4 (1980) to 2.9 (1985) and to 4.4 (1988) indicating a depreciation of the East German Mark.

5

The definition is different from that in tables 3 and 5.

6

Data: The Economist, various Issues

7

Weekly averages, constructed from the official daily figures, Blick durch die Wirtschaft.

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