

## **AN EXERCISE IN FUTILITY: EAST GERMAN ECONOMIC GROWTH AND DECLINE, 1945–89**

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## ABSTRACT

### An Exercise in Futility: East German Economic Growth and Decline, 1945–89\*

This paper assembles and reviews data on growth performance for East Germany. Conclusions are only tentative, as data reliability is still poor. Examining factor growth and total factor productivity performance, the paper arrives at three main conclusions. First, large-scale dismantling of capital by the Soviets was outweighed by migration, such that the aggregate capital-labour ratio in East Germany around 1950 was similar to that of West Germany. Second, the record of productivity growth follows the common pattern for Western countries. The productivity slowdown set in with a delay, however, as foreign borrowing and subsidized oil imports isolated East Germany from the first oil shock. Third, when these subsidies ended and debt service mounted, East Germany ran into a debt crisis, with productivity growth becoming zero or even negative in the 1980s.

JEL classification: N1, N4, O5, P3

Keywords: East Germany, comparative productivity, socialist planning, autarky, economic transition

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## NON-TECHNICAL SUMMARY

This paper surveys evidence on the main features of post-war growth in East Germany. Since most economic data published by East German authorities at the time are ambiguous, the paper attempts to draw together and assess the evidence which is scattered across the German literature. Despite the lack of reliable data, some clear patterns do emerge.

During communist rule, East German writers tended to ascribe the economic backwardness of their country to its bad starting conditions after World War II. Based on recent German research the paper shows that as a result of Soviet reparation policies, losses in productive capacities were indeed much larger than in West Germany. On a per-capita basis, however, remaining capital endowment by 1950 was probably about as large as in West Germany. The reason for this is that the geographical distribution of incoming refugees from the East was rather asymmetrical. Of the eight to nine million refugees from the lost Eastern provinces of Germany and from other parts of Eastern Central Europe, most sought to settle in the US and British zones of occupation in what later became West Germany. As far as factor intensities are concerned, the starting conditions in both halves of post-war Germany were therefore more similar than has traditionally been argued.

East Germany could also draw on the peculiar industry structure left by Nazi autarky policies. These had created a chemical industry complex in central Germany which was based on large natural deposits of brown coal. Almost all of these industries were located in East Germany. It is reasonable to assume that under free international competition, most of these would have found it difficult to survive without major restructuring. Indeed, after the unification of 1990 it was mainly these industries and their upstream suppliers in heavy machine building that Germany's Treuhand found most difficult to sell off. But under the auspices of continued autarky policies after World War II, the industry structure inherited from Nazism was on the balance certainly very favourable and had no counterpart elsewhere in Eastern Central Europe.

Examining productivity performance, the paper argues that despite similar capital-labour ratios, a considerable productivity gap *vis-à-vis* West Germany had opened already by 1950. Only a minor part of this can plausibly be attributed to technical obsolescence. Hence it must in some way or another be a direct consequence of the transition to communism itself. Interestingly, during the supergrowth phase of the 1950s, East Germany failed to catch up, and the gap continued to increase. One very obvious reason for this may have been the continuing drain of human resources to West Germany until 1961, when the Berlin Wall was erected to prevent further mass flight of qualified personnel. Another reason for East Germany's disappointing growth performance is to be

found in the concentration of investment activity in heavy industry, which apparently failed to result in appropriate output growth. As a consequence, consumer-oriented industries lagged behind, which in turn explains much of the decline in the opportunity cost of emigrating to West Germany in the late 1950s.

For the period immediately after the erection of the Berlin Wall, the paper finds evidence of a marked slump in output growth, which was accompanied by short-lived attempts at reforming the planning system and at opening society to more political pluralism. This policy was ended in successive steps during the second half of the 1960s, when economic recovery rendered political concessions unnecessary.

Difficulties, which were partly due to inconsistencies in the post-reform planning system, reappeared around 1970 and soon led to the overthrow of the Ulbricht administration. His successor, Erich Honecker, proved very successful in relaunching the East German economy during the early 1970s and in avoiding a spillover of the oil shock. Evidence examined in the paper supports the hypothesis that much of this 'kleines Wirtschaftswunder' of the 1970s was due to excessive foreign borrowing and to cheap imports of Soviet crude oil under the COMECON trade agreement. The end to this came in the early 1980s, when steeply rising debt service combined with a sharp increase in Soviet oil prices led to a debt crisis in East Germany. In 1982, East Germany was bailed out from its most imminent problems by West German credits, for which it had to make substantial political concessions on human rights issues.

Assessing East Germany's aggregate performance during the 1980s is especially problematic, as data were increasingly faked to accommodate the needs of the political leadership rather than reflect economic activity. Such data that are available from recalculations show that East Germany's external position recovered only briefly and then deteriorated again. Eroding terms of trade made it increasingly difficult for East Germany to supply its traditional markets in Western Europe. As for the domestic economy, massive attempts were made to substitute oil by domestic brown coal and its derivatives, as in the 1930s. This resulted in heavy investment activity whose effect on aggregate productive capacity was negligible.

The paper concludes that given the mounting balance of payment difficulties and the continuing deterioration of its terms of trade, the breakdown of communism by the end of the decade is not too surprising. Also, the debt burden on the East German economy makes it easy to see why there existed hardly any viable alternatives to reunification on the fast track.

## 0. Introduction

Social experiments do exist. Divide a country in such a way as to create a rich mix of industries, of natural resources and of human capital in either part. Then isolate both halves from one another and expose them to entirely different sets of economic policies. After forty years of experimenting on various stages, just lift barriers again and let markets decide on the final outcome.

This, in short, shapes the economic history of East Germany. It sets the frame for the questions to be asked to East Germany's economic record. In what respect were the starting conditions for East Germany different from those of the West? When did East Germany experience prosperity, and what were the principal moving forces behind it? And are there obvious economic reasons for the final demise of communism on German soil?

Observers have often pointed to the general inefficiency and backwardness of communism as the principal explanation. Though this is evidently true, it is also superficial. In history, backwardness itself has not necessarily been unstable, nor have phenomena like massive state intervention or the lack of political freedom.

This paper is intended, not to give easy answers but to attempt to set a frame for asking these questions in a more specific way. There are two reasons for this limitation. First, existing literature on East German economic growth is only scattered and still quite small. In the sequel, it shall be attempted to draw some of the literature together and to review the scattered bits of available evidence. Second, methodological problems arise in dealing with the growth record of a communist economy. Many of these will be disregarded in the following and standard techniques be used. However, existing figures often cannot be taken at face value, and data quality is discussed whenever possible. As revised macroeconomic data are still scarce, future research needs to be directed towards elaborating a more reliable database.

The subsequent, still very tentative remarks are organized as follows. Section I gives a quick overview of macroeconomic performance. Section II turns to the experience of the 1930s and the starting conditions around 1950. Section III reviews evidence on East German productivity performance around 1950, arguing for an emerging productivity gap vis-à-vis West Germany in that very period. Section IV gives a brief review of the East German transition to communism and the idiosyncracies of its planning system. Section V examines the record of the 1950s. In Section VI, the Not-So-Golden Age of the 1960s is reviewed. Section VII turns to what could be termed the Golden Seventies, a phase of

continuously increasing living standards that has little reflection in Western European performance. In Section VIII traces the gathering storm, or the advent of the economic conditions that contributed to the collapse of the old system in late 1989. Section IX gives a brief retrospective of the economic aftermath of unification, trying to identify some of the motives that guided German economic policies during 1990, and Section X concludes.

#### I. Macroeconomic Performance: A Quick Overview

Assessing the growth and productivity record of East Germany depends heavily on the data employed. Official figures for East Germany put annual growth of output since 1950 at about 5.6%. By comparison, the respective figure for West Germany is around 4.5%. If East German official data were true, East Germany would have easily caught up to West German productivity and living standards, and the revolution of 1989 would probably not have occurred.

The notion that East German output data were often fabricated was common to West German debates in the 1950s. This changed during the late 1960s when West Berlin's Deutsches Institut für Wirtschaftsforschung (DIW) started reporting on the East German economy using official figures. In the 1970s, the view became dominant that both German economies grew at similar rates, although a productivity gap of roughly one third was assumed to still exist (DIW, 1971, 1976). This observation was placed in the context of general disillusionment about the sources of West Germany's Wirtschaftswunder. Conventional wisdom had mostly seen postwar recovery in West Germany as a lucky combination of German work ethics, market-oriented policies, and Marshall Aid. In contrast, revisionist interpretations emphasized that West Germany's Wirtschaftswunder was just part of a common European trend (Jánosy, 1966, Abelshauser, 1975, 1981).

The evidence presented by Jánosy seemed to indicate that sort of an economic miracle had occurred in communist Eastern Europe as well. Even worse, Jánosy had argued forcefully that postwar recovery would soon be over and that a general productivity slowdown would follow, irrespective of prevailing economic systems. His argument, which anticipates Abramovitz's (1979, 1986) catching-up hypothesis, induced West German writers (Manz, 1968, Abelshauser, 1975, Borchardt, 1991) to de-emphasize the role of institutional change for explaining postwar growth<sup>1</sup>.

Evidence on East German economic growth is presented in Table 1.

Table 1  
Growth of Per Capita Output and Productivity

	East Germany			West Germany
	I (plausible)	II (official)	III (pessimistic)	
1950-1960				
GDP or Nat. Income/Head	5.8	10.8	3.5	7.1
Labour Productivity	4.4	9.4	2.8	5.7
TFP growth	4.0	9.0	2.9	4.4
1960-1973				
GDP or Nat. Income/Head	3.8	4.7	2.9	3.9
Labour Productivity	3.5	4.4	2.6	4.1
TFP growth	2.4	3.3	1.8	2.3 (3.2)
1973-1979				
GDP or Nat. Income/Head	3.9	4.8	2.7	2.5
Labour Productivity	3.0	3.9	1.8	2.6
TFP growth	1.9	2.7	1.0	0.9 (1.3)
1979-1989				
GDP or Nat. Income/Head	2.7	4.1	0.5	1.6
Labour Productivity	2.2	3.9	-0.2	1.3 (1.8)
TFP growth	1.2	2.6	-0.5	0.6 (1.0)

Note: All data refer to annualized percentage growth rates.

Sources:

- East Germany I: Based on SNA-type GDP per capita and per person employed. Calculated from Merkel/Wahl (1991, Table 7).  
 II: Based on MPS-type produced national income (excluding services) per capita and per person employed. Calculated from official East German data in *Statistisches Amt der DDR* (1990, p. 14).  
 III: Based on SNA-type GDP at West German deutschmark values. Calculated from Merkel/Wahl (1991, Table 7).  
 West Germany: Calculated from *Statistisches Bundesamt* (1993a, Tables 24.2, 22.2, 1993b, Table 1). Bracketed figures are per person-hours worked, using spread between monthly and hourly wages (*Sachverständigenrat* 1991, Table 77, rows 6 and 10) as proxy for labour time change.

Table 1 rests on three different estimates of East German output and productivity performance. The first (column I), derived from GDP estimates by Merkel/Wahl (1991), appears to be the most useful one. The second, rather more optimistic estimate (column II) is based on official data of aggregate output. The reason for the discrepancy is that official output data for East Germany exclude the service sector, as published national accounts followed the MPS system which focuses on manufacturing and resource extraction. Merkel/Wahl (1991) have argued that because of ideological emphasis on physical goods production, the service sector was systematically neglected and grew slower both with regard to size and productivity. Adding estimates of output in the service sector, they arrive at a GDP series which underlies column I. These data suggest that growth was much slower than indicated by the MPS-type figures underlying column II. Taking the average for the whole 1950-1989 period, this revision would put annual growth at 3.77% instead of 5.62% as given by the official data. Accordingly, growth of labour productivity and TFP is remarkably lower, the latter dropping to less than 2% p.a. in the post-1973 period.

The third estimate (column III), again based on estimates of Merkel/Wahl (1991), gives growth evaluated in West German deutschmarks. The rationale for this is that due to quality deterioration and disguised inflation, the external value of East German output declined steadily (see Section VI. below for more on this). The procedure of applying an overall imputed exchange rate to GDP is obviously questionable, as deutschmark prices of East German non-traded goods are hard to determine. However, results are not entirely implausible. The deutschmark deflator for East German domestic product applied by Merkel/Wahl drops by about 50% during the postwar period. Annualizing, this would put the average inflationary bias in East German growth data at 1.78% per annum, which appears to be a fairly reasonable estimate (see Section VI below). Data in column III would indicate that all was not well with East Germany's performance from the very beginning. According to them, TFP growth was below 2% already during the 1960s, and in the 1980s it even became negative. In sum, column III appears to provide a lower bound for the range of plausible growth paths.

Comparing with West German data, much depends on the standard adopted. Judging from official figures, East Germany outperformed the West during the whole period, both with regard to overall growth and productivity. This result has been refuted even by former members of East Germany's State Planning Commission (Kusch et al., 1991). Accounting for East Germany's stagnant service sector as in column I, East Ger-



many looks worse than West Germany during the 1950s and 1960s but manages to catch up a bit thereafter. Accounting for East Germany's worsening terms of trade, this impression changes, and during the 1980s, productivity growth even becomes negative. We note in passing that from 1973 on, West German productivity performance is remarkably poor as well, even if the trend reduction in West German working hours is accounted for.

Table 1 also reveals that despite their vastly different economic policies, both parts of Germany underwent fairly similar patterns of growth and productivity slowdown, whatever the true growth figures for East Germany. During the 1950s, this was hardly anticipated. East Germany's economy wrestled with high rates of outmigration into West Germany, to the effect that in the period from 1949 to 1960, population decreased by more than 10%. Table 2 reports on population and the labour force in East Germany.

Table 2  
Population and the Labour Force

	Population	Employment <sup>1)</sup>	Labour Force Participation <sup>2)</sup>		Share of Children in Kindergarten <sup>3)</sup>
	-- 1000s --	--	Male	Female	
1950	18360	7196	82.1	44.1	20.5
1960	17188	7686	85.3	61.9	46.1
1973	16951	7844	80.7	77.5	76.7
1979	16740	8184	77.7	78.0	92.3
1988	16675	8594	77.8	81.0	94.0 (94.2)
1989	16434	8547	78.4	82.3	95.1 (95.3)

- Notes:
- 1) Excluding apprentices
  - 2) As percentage of labour force aged 15-65 (males) and 15-60 (females)
  - 3) Definition of kindergarten age changed in 1985. Bracketed term for 1989 is calculated according to previous definition.

Source: Zentralverwaltung für Statistik (1975), Statistisches Amt der DDR (1990)

Table 2 shows that the effects of both emigration (prior to 1961) and population decline were more than offset by an increase in the labour force arising from a spectacular surge in female labour force participation. During the early 1970s, East Germany had an

international record low of fertility, which has generally been attributed to East German labour policies. From the mid-1970s on, pro-natal programmes were launched, expanding the already elaborated network of free daycare and kindergarten facilities but including also preferential allocation of housing to families with children. In a cohort analysis of East German fertility, Dinkel (1984) has argued that although these policies failed to completely offset fertility reduction, marked effects on reproductive behaviour existed.

From the last column in Table 2 it becomes apparent that before the unification, virtually all children in East Germany attended nursery schools. East Germany thus invested a lot to increase the number of persons employed. Combining this evidence with TFP data from Table 1, it becomes apparent that even during the 1950s, growth of domestic output in East Germany was to a large part on the extensive margin.

Investment in human capital, which was generally at a high level, peaked in the mid-1970s and experienced a certain decline thereafter. This is mostly due to a drop in cohort size. Table 3 surveys evidence on human capital formation in East Germany.

Table 3  
Human Capital Investment in East Germany

	Enrolment in		Graduates from		Size of Age Group 15-21  - 1000s -
	Secondary Schools	Vocational Training	<i>Fachschulen</i>	<i>Hochschulen</i>	
	— 1000s —				
1950		385	8000	3000	1592.7
1960	1883	307	24544	15005	1461.0
1973	2736	463	46638	32846	1570.6
1979	2424	500	39663	24562	1707.5
1989	2090	338	40523	24167	1211.6

Source: Statistisches Amt der DDR (1990)

During the 1950s and 1960s, all parts of the educational sector expanded rapidly. As before the erection of the Berlin Wall in 1961, high emigration rates prevailed among educated young people, this policy failed to translate into higher per-capita levels of human capital. Assuming that human capital formation is a factor of production, the

erection of the Berlin Wall should, therefore, have helped to boost productivity. In the context of Table 1 above, this would introduce upward bias into Solow-type TFP estimates for the period from 1960 on. However, as can be seen from Table 1, East Germany experienced a drop in TFP that was at least as large as in West Germany at the same time.

During the decade between 1979 and 1989, the total number of 15-21 year old decreased by roughly 30%. This is reflected by a similar drop in vocational training participation which is the lowest category of secondary education. In contrast, graduation from professional Fachschulen colleges and from Hochschulen, or universities and other advanced schools, even increased during that period. In the aggregate, per-capita human capital appears to have increased throughout the decade, which would imply that human-capital adjusted TFP growth was even lower than the Solovian calculations of Table 1 would suggest.

Numerous attempts have been made to compare East Germany's productivity performance with West Germany directly. Calculations made during the 1970s put the comparative productivity performance of East Germany in a rather optimistic perspective, possibly reflecting wishful thinking under the influence of political détente. After the unification of 1990 and the subsequent slump of East German output, a series of downward revisions of productivity estimates has set in. Data are presented in Table 4.

Table 4  
Estimates of Comparative East German Levels of Productivity  
West Germany = 100

	High	Low	Source
1950s	78		Melzer (1980)
		44	Merkel/Wahl (1991)
1960s	67-78		DIW (1971), Wilkens (1976), Melzer (1980)
		34	Merkel/Wahl (1991)
1970s	63-70		Wilkens (1976), DIW (1979) Melzer (1980)
		46	DIW (1987)
		33	Merkel/Wahl (1991)
			Collier (1985) CIA (1986) Summers/Heston (1988) Görzig/Gornig (1991)
1980s	54		DIW (1987)
	103		Görzig (1992)
	80		Merkel/Wahl (1991)
	61		Beintema/van Ark (1993)
		47	
1991		13-30	<u>Sachverständigenrat</u> (1993)
1993		40-60	

Starting with a high of over 100% in a CIA publication of 1986, estimates of comparative East German productivity performance range from over 70 % of West German levels in the early DIW studies (which also include Wilkens, 1976, and Melzer, 1980) to around 40% in DIW's most recent release (Görzig, 1992) and a record low of only 29 % in studies of Merkel/Wahl (1991) and Beintema/van Ark (1993). Whatever the true figure is, data appear to confirm the impression from Table 1 that the gap between West and east Germany was never closed and possibly even widened again during the 1980s.

Downward revisions of East German output and productivity figures have also been made for the post-unification period, which confirms the more pessimistic views on

East Germany's pre-unification performance. Comparisons at industry levels recently released by the *Sachverständigenrat* (1993, p. 82) show productivity to have been consistently below 30% of comparative West German levels in 1991, with a recovery to around 40-60% in 1993.

## II. The Legacy of the 1930s and the War: How Bad A Start?

To explain the economic backwardness of their country, Marxist-oriented East German writers (e.g. Neumann, 1980, Barthel, 1979, Roesler et al., 1986) have often pointed to unfavourable initial conditions that gave the later GDR's economy a bad start. Three frequently mentioned reasons are disproportions of East German industry, wartime destruction of productive stock, and reparations to the Soviet Union and its satellites.

As far as disproportions are concerned, lacking capacities in heavy industry are said to have hampered growth by creating bottlenecks that were difficult to overcome. According to this view, the predominance of light industry in East German manufacturing created disproportions that rendered a significant part of East Germany's capital stock almost useless.

Western writers have commonly refuted this view, pointing to the possibilities of international trade and the principles of comparative advantage, see e.g. Stolper (1960). In the sequel, yet a different perspective will be adopted. Instead it shall be argued that with regard to both natural resources and industry structure, the initial endowment of the GDR was in many respects almost optimal the autarky policies intended. Possibly it was not so much lack of heavy industry but rather the ideological fixation on heavy industry that created disproportions in GDR output and possibly led to insufficient growth.

East Germany had inherited a relatively rich mix of industries from Nazi Germany, ranging from innovative industries like Saxonian machine tools, Berlin electronics and communication industry, Dessau and Rostock based aircraft, jet and rocket propulsion plants to the large organic chemical industry complex around Leuna and Bitterfeld. Natural resources included Europe's largest supplies of brown coal and substantial deposits of copper and other non-ferrous metals.

This composition of industry on GDR territory in 1945 was not just the outcome of a market process. Rather, it emerged from conscious decisions under Nazi economic planning - and in some cases from the war economy of World War I. Economic planners had sought to build up a new heavy industry base focused on chemical import substitution

industries in Central Germany. Being located at the geographical center of the former German Empire between the cities of Leipzig and Hanover, it would be less exposed to enemy attacks than Germany's traditional industry centers of the Ruhr, the Saar, and of Upper Silesia, which were all close to Germany's borders. Also, being halfway between the coal basins of the Ruhr and of Upper Silesia, it would have access to coal even when cut off from one of these suppliers. And in the worst case, it could still get energy and raw materials from the nearby brown coal fields.

Synthetic nitrogen production at Leuna had helped the armies of the Kaiser overcome their shortage of explosives in 1915/16. During World War II, synthetic rubber from Buna and synthetic fuel from a whole number of hydrogenic fuel plants in the later GDR kept Hitler's army going and his air force in the air until allied precision bombing starting in mid-1944 reduced capacities at too fast a rate to repair the damage (see Birkenfeld, 1961).

As has become apparent again after the unification of 1990, many of these plants were of little or no use under the conditions of free trade. Indeed, industry had been fairly reluctant to invest in Hitler's autarky programs (see e.g. Hayes, 1987). However, the conditions created by Nazi economic planning were quite favourable for a program of continued autarky. Table 5 highlights some characteristics of the industrial structure of East Germany in 1944.

Table 5  
Output of GDR Industry as Share of Total Output of Potsdam Germany

Potash	58.9%
Brown Coal	66.9%
Fertilizers	63.0%
Electric Power	34.8%
Iron	1.6%
Steel	7.9%
Industry Total	28.7%

Source: Matschke (1988, p. 61)

As becomes visible, the weakest part of the GDR economy was the lack of iron and steel capacity. This was due to the fact that after the war, not all of Central Germany's new industrial district came under Soviet control, the Nazi-built steel works and low-grade ore mines of Salzgitter and the nearby Volkswagen car plant of Wolfsburg being only a few miles behind the border in West Germany. - Had these been included in the

GDR as well, the whole Nazi ISI complex with its built-in division of labour would have been preserved intact for the use of communist autarky policies.

Indeed, war damage was apparently far lower than initially expected. Early studies (Harmssen, 1951) seems to confirm the impression of heavy damage, estimating surviving capital stock after the war at a 100% of its 1936 value and the remaining capacity after subsequent dismantling by the Soviets at a mere third of 1936<sup>2</sup>. Later studies, however, have arrived at much more moderate figures, pointing out that high investment during the war had far outweighed the losses due to war damage (see Kupky, 1957, and Kregel, 1958). Results are shown in Table 6.

Table 6  
Capacity Losses Due To War Damage and Dismantling  
(Remaining Capital Stock in Manufacturing, 1936=100)

	East Germany			Zank	West Germany Kregel
	Harmssen	Melzer (a)	(b)		
1936	100	100	100	100	100
1944	100	143	143	138	136
1946	33	102	86		116
1948		103	89	80	113
1950		107	95		122

(a) including, (b) excluding Soviet-owned SAG companies

Sources: Melzer (1980, p. 35f.), Zank (1987, p. 191).

As Table 6 shows, recent estimates conclude that by the end of the war, the capital stock of later East Germany was around 40% higher than in 1936, which comes close to similar data for West Germany.

However, what differs between both Germanies is the behaviour of capital stock during the subsequent years of dismantling until 1949. Considerable dismantling of Germany's armament industry and its heavy industry base had been agreed upon at the 1945 Potsdam conference on Germany (see e.g. Gimbel, 1976). However, disagreement over the details and the scope of the dismantling program soon arose among the victorious powers. Difficulties to reach a consensus were aggravated by the failure of the German economy in 1947 to settle on a stabilized growth path. As a result, dismantling programs were curtailed in the Western zones of occupation from 1947 on, whereas they

were continued at full gear in the Soviet zone, the later GDR<sup>3</sup>.

As a consequence, East German capacity declined more strongly than that of West Germany. By 1948, the year of currency reforms in both halves of Germany, to have decreased to markedly less than its 1944 level by 1948, the year of currency reform in both parts of Germany. Comparing to West Germany, the East German capital stock around 1950 was thus indeed less well preserved than that of the Western zones. As investment rates were minimal in both parts of Germany during 1945-1948, most of this capacity loss is due to large-scale dismantling by the Soviets. In West Germany, total dismantling during the whole period amounted to around 1.6 bn(US) RM in 1944 prices, or 2.4% of existing capital stock of 1944, whereas the respective figures for East Germany are 6.4 bn(US) RM, or 22% of 1944 capital stock (Melzer, 1980).<sup>4</sup>

The effects of dismantling were partly magnified by the bottlenecks it created. Although much dismantling concerned armament and its related suppliers, bottleneck industries were affected as well. In the short run, therefore, the remaining production potential was constrained to less than what aggregate data would indicate. A well-known example is the railway system whose capacity was reduced to almost 50%. Therefore, additional investment (albeit of very high marginal productivity) was required to render existing stock productive again. However, studies of the West German transportation system (above all, Abelshauser, 1975) have argued that even before the return to free markets in 1948, removal of bottlenecks to the West German railroad system proceeded at an amazing speed and had significant effects on aggregate productivity. Similar observations were made in East German key industries (see Karlsch, 1993, for a detailed account of the effects of dismantling on East Germany).

The long-term effects of dismantling on East German factor endowment were partly outweighed by labour migration. A massive influx of refugees and expellees from the lost provinces of Pomerania, Silesia and East Prussia<sup>5</sup> and of ethnical Germans from all over Eastern Europe had increased the total population of Potsdam Germany<sup>6</sup> from 59.74 million in 1939 to 64.06 million in 1946<sup>7</sup> (see Table 7).



Table 7  
Population in Potsdam Germany, 1939 to 1950  
Million

	Total	Western Zones	Eastern Zone
1939	59.74	42.99	16.74
1946	64.06	46.56	18.36
1950	69.18	50.79	18.39

Source: Statistisches Bundesamt (1952)  
Zentralverwaltung für Statistik (1958)

In the Soviet zone of occupation, population had increased by 9.6%. Thus the increase was slightly larger than in West Germany, where population growth was 8.3%. However, migration continued after 1946, affecting both halves of Potsdam Germany quite asymmetrically. As incoming refugees from the East often went on to the West, by 1950 the population of West Germany had increased by another 4.2 million people, while population on GDR territory stagnated.<sup>8</sup>

The overall effect of wartime destruction, dismantling and immigration on East German factor endowment must therefore be split into a pure level effect on the one hand and into a structural effect on the capital-labour ratio on the other. Aggregate capital-labour ratios in East and West German manufacturing are given in Table 8.

Table 8  
Capital-Labour Ratios in German Manufacturing, 1950

	West	East
Capital (bn/US DM)	62.46	28.38
Employment (million)	4.80	2.24
K / L (thousand DM)	12.73	12.68

Source: West German data from Krengel (1958, p. 90).  
East German data from Melzer (1980, p. 36, p. 58).

As can be seen from Table 8, there is no visible difference in capital-labour ratios in manufacturing between both parts of Germany. This suggests that the aggregate effects of dismantling on the East German economy must have been offset or even outweighed by migration, to the effect that in 1950, East Germany's per-capita endowment with productive stock was not significantly smaller than in West Germany.

Hence, in order to argue that East Germany's starting conditions were significantly

worse than in West Germany, one would have to take resort, not to capital stock but to human capital embodied in the labour force. However, migration followed the westward route to individual freedom, which East Germany did not provide. Thus, lack of human capital cannot plausibly be considered part of the starting conditions facing East Germany's economy, as it was endogenous to the conditions created by communist policy.

Two things stand out from the discussions in this section. First, the East German capital/labour ratio was not vastly different from that of West Germany. Neither the losses of capacity nor the gains from immigration had resulted in obvious disproportions between capital and labour that could significantly explain the subsequent difference in macroeconomic performance. Hence, the effects of wartime destruction and subsequent dismantling on capital stock, which have been such a dominant theme in the literature on East Germany, are relevant only with regard to the short-term bottleneck problems they created. Only with regard to human capital itself, East Germany failed to take advantage of the postwar influx of expellees and refugees. However, this fact was not exogenous to East German policies. Second, with the exception of steel production, East German autarky policies benefitted to a considerable extent from Nazi import substitution industries, which had their regional center on the territory of the later GDR. It seems safe to say that the effects of this on East Germany's endowment far outweighed the adverse consequences of Soviet dismantling on industry structure.

### III. The Productivity Gap in the Making, 1945-1950

Investigating into East Germany's productivity performance has two different aspects. On the one hand, the standard comparison of productivity with the US as the international leader in productivity performance could be made. On the other, interest can be focused on a comparison with West Germany as a measure of what East Germany's performance under free-market conditions would have been. Asking this second question, it is interesting to gain more information on the timing of East Germany's comparative productivity record. Given the results of the previous section, differences in initial factor endowments as a source of the discrepancy can possibly be ruled out. As a consequence, only two explanations remain. The first would be technical obsolescence that emerged over time, assuming e.g. that technical progress is embodied in either the capital stock or human capital. The second alternative would focus the inefficiencies of a communist economy. Then, a productivity slump would follow from the very transition to commu-

nist planning itself, regardless of the technical degree of obsolescence of the capital stock.

An easy way to isolate both factors from one another is to examine productivity performance in East German industry during the process of transition to communism. Owing to low investment in both parts of Germany at the time, it can be safely assumed that technological differences played no role. Also, it is plausible to assume that a lack of qualified personnel, which became a problem in the late 1950s, was not a major difficulty during the first post-war years.

To examine East Germany's productivity record in manufacturing, output data are needed. The officially published figures of industrial production for 1950 show an increase to 111% of industrial output of 1936. If that was true, the speed recovery in East Germany would even have exceeded that of West Germany. Accounting by the same method, the East German figure for 1958 would stand at 276 index points as compared to 232 in west Germany (Stolper, 1960).

Contemporaneous observers already presumed that the East German figures gave nominal, not real output (see Grünig, 1950). This was soon admitted by East German sources (Schmidt, 1953)<sup>9</sup>. As Zank (1987) has argued, there is a structural break in official figures from 1948 on, switching from real output to nominal output. Official data would then describe output correctly up until 1947 but include price changes thereafter. Table 9 provides official output data along with more plausible archival data reported in Barthel (1979) and a rather pessimistic estimate of Stolper (1960)<sup>10</sup>.

Table 9  
Output in East German Manufacturing, 1945-1950  
1936=100

		1946	1947	1948	1949	1950	1952	1955	1958
Plausible	(I)	46	52	63	75	87			
Official	(II)	42.1	53.7	71.4	87.2	110.6	157	210	266
Stolper (1960)	(III)					75.3	95.3	127.1	148.8
Sources:	(I)	Barthel (1979)							
	(II)	<u>Zentralverwaltung für Statistik</u> , 1958							

In the light of the remaining discrepancies, it shall be attempted to give plausible upper and lower bounds for productivity in East German industry. For this, series I of Table 9 is used as a plausible output estimate, with Stolper's pessimistic estimate (series III of Table 9) as a lower bound. Both series were spliced to 1936 output. West German

industry output data are taken from Statistisches Bundesamt (1952), again spliced to output in 1936. Data for employment and hours worked for a comparable coverage of industry in both Germanies come from Melzer (1980). Results are summarized in Table 10.

Table 10  
East German Manufacturing Output Per Person Employed

	1936	1944	1950	1950
(a) Total in 1000 RM at Prices of 1936				
West	4.636		4.544	98.0
(b) Relative to West Germany = 100				
East				
(I) Plausible	4.055		3.110	76.7
(II) Official	4.055		3.954	97.5
(III) Pessimistic	4.055		2.771	68.3
(I) Plausible	87.5		68.4	78.2
(II) Official	87.5		87.0	99.4
(III) Pessimistic	87.5		61.0	69.7

Sources: See text.

Table 10 compares output per person in East German industry in 1950 to West Germany. Inspection of the upper part of Table 10 shows that in 1950, productivity in East German manufacturing was still around 25% lower than in 1936 while at the same time, it had recovered to the full 1936 level in West Germany. Official East German figures, however, would suggest that the speed of recovery was almost identical.

Looking at productivity relative to West Germany, first it shows that in the aggregate at least, East German productivity was lower than in West Germany already before the war. By 1950, the GDR had apparently lost further ground, the distance increasing by some 20%, or even more, if the pessimistic estimate (III) based on Stolper (1960) is believed in.

Two things stand out from these results. First, already by 1950 there existed a sizeable productivity gap that cannot be plausibly attributed to technical obsolescence in East German industry. Second, productivity differences existed already before the war. This implies that about 12 percentage points of the post-war productivity difference could

be attributed to the pre-war gap.

The evidence reviewed so far can be supplemented with disaggregate data. East German calculations from archival material (Roesler et al., 1986) provide output per person for a variety of industries on either a firm- or industry level. Though not statistically representative, these data appear to confirm the above results, suggesting that in many industries, productivity in 1950 was still around 20% lower than before the war. Results are summarized in Table 11.

Table 11  
Company Data on East German Productivity, 1936-1950

	1936	1938	1939	1940	1944	1945	1946	1947	1948	1949	1950
Spinning Mills	100	-	100.7	-	104.0	-	-	81.9	-	-	-
Brown Coal Mines	-	-	100	-	102.6	85.6	82.6	65.0	76.2	-	-
Cable production (KWC)	-	-	-	100	-	-	80.2	96.9	97.8	-	-
Potash Mining	-	100	-	-	-	-	-	-	-	126.6	143.9
Bast Fibres	100	-	-	-	90.6	22.0	48.8	46.5	56.1	64.5	64.9
Cotton Jersey Textiles	100	-	-	-	88.2	-	50.4	41.4	-	-	-
Machine Tool Builders	100	-	-	-	99.5	-	72.5	62.5	-	-	-
Printing Machines	100	-	-	-	74.3	-	53.6	53.1	-	-	-
Locomotives and Railway Cars	100	-	-	-	-	7.4	33.7	47.5	71.3	79.6	88.6
1941.					85.2 <sup>1</sup>	42.6	26.9	34.0	39.0	45.5	

Data in Table 11, taken from Roesler et al. (1986), seem to bear out two things. First, a slight productivity decline appears to have occurred already during World War II. Second, there is a huge productivity slump in 1945. Apparently, it was overcome only slowly, and dispersion of productivity among the various industries increased rapidly. This latter observation is probably as interesting as the level effect itself, as it can be directly attributed to the idiosyncracies of central planning in the various different branches of industry. Indeed, surveys made by planning boards and the Soviet economic administration during mid-1947 revealed planning imperfections, fixed prices, and above all, a dire lack of work discipline to be the major reasons why productivity was so unsatisfactory (Mühlfriedel/ Wiessner, 1989, p. 76).

Comparable data for West Germany reveal considerably less dispersion of productivity levels and, more importantly, display rapid convergence after the West German economic reforms of 1948. The evidence of this section thus confirms that it was indeed East Germany's transition to communism itself that had an adverse hysteresis effect on productivity.

#### IV. East Germany's Transition to Communism: A Quick Review

In post-war East Germany, central planning did not have to be introduced by the communists, as it already existed before. Economic planning during the war had been based, first on an elaborate system of fixed prices, second on cost accounting regulations, and third on a system of circulating, partly tradeable ration coupons from which a given producer would receive supplies in proportion to the output he passed on to his downstream customer. The assignment of these tickets had been left to committees of industrialists, who bargained with the Central Planning Bureau over targeted output rates.

However, the Soviet administration and later the GDR did not base their own planning system on the structures left by Nazi planning boards. Instead, these were dissolved entirely and central planning rebuilt from scratch. Only a few weeks after the surrender of Nazi Germany, the Soviets had created both a Soviet Military Administration (SMAD) and a body of German economic planning boards. Being interested both in appeasing the German working class and making resources available for economic reconstruction in the USSR, the Soviets initially managed to revive industrial activity in their zone at a faster rate than did the Western Allies. Large parts of heavy industry were nationalized and put under provisional control of local and regional "Treuhand" agencies, the control of individual plants being given to often spontaneously formed workers' councils and initiatives. In Saxony, nationalization of industries according to a specified list was accepted by the population in a referendum of June 30, 1946, with a reported majority of 72.7% in favour of the proposal. By the end of 1948, about 40% of East Germany's industrial capacity is said to have been nationalized; most of them were subsequently reorganized in the form of *Volkseigene Betriebe* (VEB). To this added another 20% of industrial capacity put under direct Soviets control as Soviet joint stock companies (SAG), using the legal frame of Germany's joint stock company law of 1937.

The decisive steps in Soviet policies towards nationalization and increased production were apparently taken in early 1947 as a reaction to inter-allied struggle over the German reparation issue (on the latter, see Gimbel, 1976). In March 1947 the SMAD allowed East German industry to exceed the output limit laid down in the inter-allied Level of Industry Plan of 1946 (see on this Gillingham, 1991) by three to four times (Mühlfriedel/Wiessner, 1989, p. 71 f.), whereas similar decisions in the Western zones were only taken half a year later (Berger/Ritschl, 1994).

In June 1947, a German central planning board, *Deutsche Wirtschaftskommission* (DWK), was established by the Soviets and given additional power over the *Länder*, or

state economic administrations that had been established since 1945. Its competences were rapidly increased and control over nationalized industry brought in its final shape when the Soviets had left the Berlin Control Commission in early 1948. Soon after, separate monetary reforms were implemented in the Western zones on the one hand and the Soviet zone on the other. The subsequent Soviet blockade of West Berlin marked the true beginning of Germany's division. It was accompanied by a breakdown of inter-zonal trade with West Germany, which apparently caused severe shortage of essential supplies to East German industry and thus a reorientation towards increased autarky and also towards economic integration with Eastern Europe (Neumann, 1980).

At the same time, the DWK implemented its first aggregate plan for the second half of 1948, followed by a biannual plan for 1949/50. After the GDR was founded formally, the DWK was converted into a number of ministries for industry. Central coordination was placed in the hands of a ministry for planning that was soon renamed Staatliche Plankommission (State Planning Commission), which existed to 1990.

The German planning boards created by the Soviets were apparently not free to choose their planning methods, bound first by socialist ideology in general and second by the planning practices of the SMAD. Nazi economic planning had typically worked backward from final products to upstream supplies without overall frames, giving more political weight to downstream producers. In contrast, the SMAD imported the USSR-type rationing planning system that favoured primary suppliers over light industry. Also, the ideological approach to motivating workers and increasing productivity was imported from Russia. The East German publication of Barthel (1979, p.138) is a typical, surprisingly recent praise of the efficiency of Stachanov-type pioneer worker methods.

#### V. The 1950s: An East German "Wirtschaftswunder?"

At first glance, East Germany's growth record during the 1950s looks favourable. As Table 1 above bears out, average growth of per-capita GDP during the 1950s may have been around 5% p.a. However, the data hide structural problems that plagued the East German economy and inhibited full reconstruction.

Under the first five-year plan from 1951 on, preference was given to investment in primary products and capital-goods industries at the expense of consumer-oriented light industry. To a considerable extent, this choice appears to have been dictated by Soviet demands for reparations out of current production, which focused on intermediate products and capital goods. Until very recently, the quantitative picture of reparations out of

current production has been lacking, and the reparation burden been subject to extended speculation. Early estimates (Bundesminister für innerdeutsche Beziehungen, 1985) arrive at a total of 34 bn(US) DM for the period from 1945 to 1953, which would be roughly equivalent to East Germany's net national product (in MPS classification) of 1951. Later calculations have tended to produce far higher figures. Recent work by Karlsch (1993) tends to confirm the earlier estimates. Also, it shows that the heavyweight of reparation burdens was on rather indirect forms, consisting of items like costs of occupation and uranium deliveries by the Soviet-owned Wismut AG. A breakdown is given in Table 12.

Table 12  
East German Reparations to the USSR  
bn (US). RM/M

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	Total
1945	2.0	0.5	0.1	-	-	1.0	-	3.6
1946	3.0	1.5	1.0	0.5	0.1	2.5	0.1	8.7
1947	1.0	2.0	1.5	0.6	0.4	2.5	0.1	8.1
1948	0.1	2.2	1.6	0.5	0.6	-	0.1	5.1
1949	-	2.2	1.7	0.5	0.8	-	0.1	5.2
1950	-	2.1	2.1	0.5	1.1	-	0.2	6.0
1951	-	2.1	1.2	0.4	1.6	0.6	0.2	6.1
1952	-	2.1	1.1	0.3	1.4	0.6	0.2	5.7
1953	-	2.1	1.2	0.3	1.3	0.6	0.1	5.4
Total	6.1	16.8	11.5	3.5	7.3	7.8	1.1	53.9

Deviations in sums due to rounding

Legend:	(1)	Dismantling.
	(2)	Cost of Occupation.
	(3)	Reparations Out of Current Production.
	(4)	Transferred Profits of Soviet-Owned SAGs.
	(5)	Cost of Uranium Production of <u>Wismut AG</u> .
	(6)	1945: Wild Dismantling; 1946-47: Seignorage from Occupation Money Issue etc.; 1951-53: Profits from East German Buybacks of SAG companies.
	(7)	Subsidies to Bilateral Trade.

Source: Karlsch (1993, p. 230).

The single largest item in Table 12 is occupation cost, which mainly covered the requirement of Soviet troops (around 450,000) stationed in East Germany. Deducting this position from reparations, the total burden would be around 37 bn(US) M. Less than 20% of these took the form of dismantling, while the remainder is to be regarded as reparations out of current production in a wider sense. It is noteworthy that the bulk of these came in dis-



guised form, with official reparations (column 3) taking only one third of the share.

As a consequence, the living standard in East Germany was initially depressed at very low levels. Table 13 gives an overview of estimates of private consumption per capita around 1950.

Table 13  
Per-Capita Consumption in Early Postwar Germany  
1936 = 100

	1936	1947	1948	1949	1950	1951
(a) Grünig (1950)						
East Germany	100	36	39	44		
West Germany	100	52	58	75		
East/West	100	69	67	59		
(b) Stolper (1960)						
East Germany				51	75	90
West Germany				92	99	106
East/West	88			48	67	75

Data in Table 13 exhibit a deterioration of East Germany's relative position in the late 1940s. Partly this is a direct consequence of an upward jump in West German living standard after the currency reform of July 1948, which in West Germany was accompanied by large-scale abolition of central planning. Also, a certain catching up in consumption during the early 1950s becomes visible. However, the sources from which Table 13 is derived warn their reader against upward bias in East German data arising from quality deterioration and disguised price increases.

Insufficient supply of consumer goods, an increase in labour norms (that is, a cut in real wages) and mounting unrest in the population in early 1953 led to a surge in emigration rates and caused the political leadership to devise a "New Plan" in mid 1953, cutting back its investment goals. Also, the party admitted policy mistakes and promised a certain reorientation towards the middle class. However, failure to give in on the labour norms issue provoked wild strikes among Berlin workers on the eve of 17 June that soon spread over the whole country. Under the impression of this revolt, which was suppressed by Soviet occupation troops, the labour norms were soon taken back. Perhaps more

importantly, this revolt was also the reason for the Soviets to abandon further reparations (see Lentz, 1979, and Buchheim, 1990b, for a detailed discussion)<sup>11</sup>.

Contrary to political promises at the time, the principal concentration of efforts on heavy industry at the expense of living standards remained largely unaffected by the events of 1953. This is also reflected in the composition of investment, shown in Table 14.

Table 14  
Composition of Output and Investment by Major Sectors  
Percentage Shares

	1936		1950		1951		1955		1960	
	I	Y	I	Y	I	Y	I	Y	I	Y
Primary Goods	59.9	31.2	53.2	30.0	62.2	28.9	69.6	29.0	73.4	27.9
Metal Processing	18.3	25.8	27.3	24.2	26.9	24.4	12.0	27.0	14.4	31.9
Light Industries	22.8	43.0	19.5	45.8	10.9	46.7	18.4	44.0	12.2	40.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Calculated from data in Melzer (1980).

As can be seen from Table 14, the share of investment in the primary-goods sector including mining and energy, shows a remarkable increase over pre-war levels from 1951 on. As a long-run consequence, investment dragged in the other sectors, especially in light industry. In the short run, however, there was a major exception to this rule, indicated by a hump in the share of investment in metal-processing industry around 1950. Apart from possible replacement of previously dismantled equipment, this appears to reflect a concentration of investment within the SAG sector that produced exclusively for Soviet reparation demands.

What also stands out from Table 14, however, is a surprising failure of investment to boost output<sup>12</sup>. In fact the share of primary products in total output continued to fall throughout the decade, in spite of concentrated investment efforts. Certainly the desire to increase the degree of self-sufficiency from West Germany and reduce the disproportions in East Germany's initial capital endowment been a major reason for the concentration of investment in heavy industry. However, the increase of capacities in bottleneck sectors should have had the effects of an initial big push, with more balanced growth thereafter. In contrast, data in Table 14 appear to indicate that there was substantial over-investment

with regard to primary products, which lead to sharply decreasing returns (a good discussion of these policies and their effects by a former East German planner is Obst, 1973).

Comparing this to capital productivity in the aggregate is difficult because of the aforementioned data problems. Indeed, the picture looks more favorable. Table 15 provides marginal capital-output ratios for manufacturing in both Germanies and an estimate of the aggregate investment-output ratio in the East German economy.

Table 15  
The Efficiency of Investment, 1950-60

	Marginal Capital-Output Ratio in Manufacturing		Average Investment-Output Ratio
	East	West	
1950/1	0.48	0.57	6.38
1951/2	0.82	1.40	7.46
1952/3	1.16	1.45	8.87
1953/4	1.35	0.89	10.19
1954/5	1.64	0.85	9.86
1955/6	3.73	1.57	10.65
1956/7	2.84	2.58	12.93
1957/8	1.61	3.86	12.80
1958/9	1.28	1.45	14.27
1959/60	2.36	0.99	16.72

Sources: Manufacturing data calculated from Melzer (1980)  
Aggregate percentage investment-output ratio calculated from Merkel/Wahl (1991)

For the first half of the decade, Table 15 exhibits a relatively good performance of East Germany. Partly this arises from the inflationary bias in output figures, which was referred to above. During the recession of 1957/58, East Germany appears to have fared relatively better than the West. Subsequently, however, West Germany recovered to high marginal efficiency levels whereas East Germany did not.

Another striking feature of Table 15 is the low share of investment in aggregate output at a time when investment-output ratios in West Germany were above 20%. This phenomenon seems to have been largely neglected in the literature. The only source I could find, Baar (1983), attributes the lack of investment during the 1950s, first to the relatively high capital endowment inherited from the war and second to reparations during the first half of the decade.

During the second half of the 1950s, planners became increasingly dissatisfied, as the envisaged growth of output in raw materials and heavy industry did not come forth at the expected rates. The same was true for labour productivity. East German writers complain that during the second half of the decade, wage growth consistently outstripped productivity growth, save for machine building (Mühlfriedel/Wiessner, 1989, p. 202). Apparently, remembrances of the revolt of 1953 were strong enough to prevent the party leadership from further attempts to bring labour norms and real wages into line.

However, these developments also reflected continuing emphasis of economic planning on heavy industry. At a time when West German mining was at the brink of the first of its subsequent crises and most investment was diverted into machine building and consumer-oriented industry, East German planners still hoped for a big push in heavy industry that would lay the base for catching-up with West Germany.

East German economists had a debate about the reasons for this emphasis on heavy industry (see Mühlfriedel/Wiessner, 1983, Roesler, 1983, Baar, 1983). Baar's paper includes a relatively open discussion of the dangers of concentrated investment efforts in a specific industry. As far as the use of officially correct language in these contributions permits interpretation by an outsider, Baar's warnings which he puts in the context of the 1950s can be read as a critique in the vein of Table 15 above (Baar, 1983, pp. 13 ff.).

Hopes for a big push were soon disappointed, and so the second five-year plan starting in 1956 was abandoned in 1958 and a new seven-year plan launched. However, this plan was again based on unrealistic extrapolations, as it envisaged an increase in average growth rates to over 9% per annum. Moreover, as West German analysts pointed out (e.g. Gleitze, 1967 a,b), the seven year plan took the planning goals, not actual output and capacity of 1958 as its starting base, thus being burdened with a deficit from the very beginning.

In the very short term, however, the seven years plan appears to have fared pretty well. All available output indicators show an increase in growth rates to over 10% around 1958. East German writers have attributed this to intensified Eastern European trade relations in the wake of political stabilization after the revolts in Hungary and Poland (Neumann, 1980, Roesler et al., 1986). Indeed, for the first time since the war, signs of relative prosperity seemed to appear. Food rationing was finally abandoned, and emigration rates to Western Germany dropped. It was during this period of relative optimism that East Germany's party leader, Walter Ulbricht, formulated his famous goal of catching up to and surpassing West German levels of consumption by 1961 (Christ/Neubauer, 1991).

## VI. 2 Fast 4 You: Frustrated Catching Up, the Berlin Wall, and Attempted Reform During the 1960s

The East German dream soon proved to be short-lived. Much of the seeming prosperity during the late 1950s had been accompanied by a certain decline of political pressure on the remainders of the private sector. All this evaporated in the wake of accelerated collectivization in agriculture. In a first wave during 1958, land under collective ownership had increased by over 40%. In 1960, the area covered by agrarian cooperatives doubled again (Hartmann, 1971). These waves of de-facto expropriation of private farmland are commonly interpreted as the primary reason why output of agrarian products fell and emigration into West Germany increased sharply (e.g. DIW, 1974, Weber, 1988). Soon it turned out that the plan goals of 1958 had been unrealistic. The years of 1959 and 1960 experienced a sharp productivity slowdown. As a consequence, the seven year plan was abandoned *fe facto* in 1961. Communist planners made the most severe of all possible plan revisions: during the night before 13 August, 1961, the Berlin Wall was erected, closing the last remaining gap of the Iron Curtain. This documented most clearly that the idea of competing openly with Western consumerism had been given up altogether.

The erection of the wall marks the beginning of a period of economic reform in East Germany. Being relieved from the pressure towards short-term success, authorities attempted to introduce elements of economic rationality into the planning system. In this wake, the so-called New Economic System (NES) was introduced in 1963. The idea of this reform was to exert planning through indirect methods, using credit, taxes and intervention prices as policy instruments, or economic levers, as socialist planning language termed it. This new concept, borrowed from proposals of the Soviet economist Evsey Liberman, centered around obtaining realistic shadow prices to reflect relative scarcities (see Roesler, 1990, for a review). Thus, firms were given the right to retain considerable parts of their accounting profits and invest them according to their own priorities.

Accordingly, the central industry ministries in Berlin were dissolved and planning authority transferred to the "Vereinigungen Volkseigener Betriebe" (VVB). These VVB, bearing some resemblance to cartels, had been created as early as 1948 but gained little significance. Now they would plan their own activities, being only loosely coordinated by a central planning board in Berlin. To render this efficient, rational cost accounting methods and enforceable business contracts had to be reintroduced. The VVB thus started producing aggregate balance sheets for all the VEB they encompassed, attempting to steer

investment and output within these conglomerates according to cost accounting methods.

In order to make it possible for firms to calculate profits in a more rational way, the system of planning prices was reformed. The old price system had largely been inherited from the Nazis, with only minor corrections by the Soviet military administration during the late 1940s (see Stolper, 1960, for an account of East German pricing methods in the 1950s). The main feature of the new price system was a revaluation of existing stock. Under the traditional depreciation procedures, real capital was typically undervalued. Given the lack of a market for stocks, these accounting values would be the only basis for calculating profit rates, signalling spuriously high profitability.

Finding a suitable price vector proved difficult in practice, and the idea of steering investment by profits was probably never really carried out. Indeed, the blessings of the planning reform, were mixed (see e.g. DIW, 1974, for details. A rather more optimistic view is Roesler, 1990). On the one hand, output of consumer durables continued to increase, which reflected the party's preferences for appeasing East Germany's population. On the other, authorities were apparently disappointed by aggregate growth, which according to official figures lingered around 4% per annum.

To this added growing concern over the political consequences of the reform. In the initial atmosphere of economic liberalization, an opposition movement had blossomed both within and outside the party. Later commentators have seen this as an East German version of reformist communism that got to power in Czechoslovakia during the short-lived Prague spring (e.g. Weber, 1988).

In East Germany, the first signs of political spring ended in late 1965. Critical voices in cultural and political life were suppressed again. Also, authorities determined that indirect planning was insufficient to produce the politically desired structures. The party thus introduced what was called the second phase of NES policy. De facto, however, it was an attempt to superimpose central planning on the newly devised system of indirect regulations. The industry ministries were reintroduced, using annual plans and five-year perspective plans as their major planning devices.

To improve capital productivity, it was attempted to concentrate investment effort on high-technology industries. Indeed, the shares of electrical and optical industry and of machine building in total investment increased markedly during the 1960s. However, these programs failed to have permanent effects on the efficiency of investment (see Obst, 1973, for a discussion). Table 16 shows estimates of marginal capital-output ratios during the 1960s on both the industry and the aggregate level.

Table 16  
The Efficiency of Investment, 1960-70

	Marginal Capital-Output Ratio		Aggregate Investment/Output Ratio
	Manufacturing	Aggregate	
1960/1	3.66	11.1	17.8
1961/2	3.63	5.7	17.8
1962/3	7.41	5.8	17.7
1963/4	4.43	6.3	17.4
1964/5	3.53	4.6	18.5
1965/6	3.17	5.9	19.3
1966/7	2.94	4.6	19.8
1967/8	3.11	5.9	20.6
1968/9	2.53	6.8	22.0
1969/70	3.20	6.2	24.5

Notes: Data for manufacturing from Melzer (1980)  
Aggregate output data from Merkel/Wahl (1991) GDP estimate underlying column I/Table 1. Aggregate investment from Statistisches Amt der DDR (1990).

Data in the first two columns of Table 16 are for manufacturing; like their counterparts in Table 15 above they may be slightly optimistic with regard to output growth. In the third column, official investment data at 1985 prices have been divided into the GDP data of Merkel/Wahl (1991) at 1985 East German prices. As can be seen, an overall increase in marginal capital-output ratios was accompanied by a large surge in the ratio of investment to output. Recovery from the critical years of 1960-2 partly exploited the gains from investment during those years. From 1966 on, however, marginal capital-output ratios increased again. The Merkel/Wahl series offers an interesting comparison, as it reflects that services were hit less by the recession of 1961/2, whereas during the late 1960s, GDP was apparently hit comparatively harder than the manufacturing sector. In sum, during the 1960s the economy began running into quickly decreasing returns to capital, which must have been a hard lesson to learn for planning bureaucrats whose ideology was built around the labour theory of value.

The fact that returns to investment had decreased did of course not go unnoticed. In 1965, East Germany's party leader Ulbricht addressed this very explicitly: "Whereas during 1951 to 1955, aggregate investment of 32 bn(US) M. increased national income by 21 bn M., 63 bn M of investment during 1956 to 1960 brought about an increase in income of only 21 bn M. And during 1961 to 1964, 66 bn. M of investment have produced only

10.7 bn M. of additional national income" (cited after Melzer, 1980).

On top of this, new difficulties developed at the end of the decade. This is also reflected in the output of consumer durables. For several categories, production slowed down and aggregate growth fell short of the envisaged targets. Output data for consumer durables are shown in Table 17.

Table 17  
Output of Consumer Durables by Categories, 1950-1970  
Thousands

	Cars	Refrig'ors	Washers	TV Sets
1950	7.1	0.7	0.7	-
1955	22.2	17.3	18.4	38.6
1956	28.1	23.9	24.8	55.4
1957	35.6	24.9	34.9	108.8
1958	38.4	53.4	44.0	180.0
1959	52.7	86.6	107.7	289.7
1960	64.1	138.6	132.5	416.5
1961	69.6	166.1	160.1	374.0
1962	72.2	191.6	196.1	461.2
1963	84.3	245.1	255.5	580.0
1964	93.1	323.9	276.8	591.2
1965	102.9	561.6	364.8	536.7
1966	106.5	359.6	474.7	288.9
1967	111.5	403.0	400.4	314.3
1968	114.6	377.0	292.9	323.9
1969	120.9	366.0	274.9	356.8
1970	126.6	380.3	254.5	380.1

Source: Statistisches Amt der DDR (1990)

In the 1950s, output of consumer durables had started from very low levels. Data in Table 17 also reflect the massive effort of consumer goods industry to grow into sizeable proportions around 1959, the starting year of the failed seven-year plan. During the late 1960s, however, output in major categories slowed down or even fell around 1968. Observers have blamed this on the inconsistencies between the NES on the one hand and reintroduced central planning on the other (see e.g. Obst, 1973, Weber, 1988). A similar view was apparently adopted by the party itself, which abandoned the whole NES experiment in 1970.



## VII. The Golden Seventies: A Belated "Wirtschaftswunder"?

The year of 1971, when Ulbricht was replaced by Honecker as party leader, is generally seen as the end of economic experimenting in East Germany (Weber, 1988, Christ/Neubauer, 1991). The Honecker administration re-centralized the economy in several steps, forcing industry into huge Kombinate, or combines, which had a monopoly in their respective market.

Also, the new leadership aimed to improve living standards and adopt a more active stance in welfare policies. Welfare support schemes and housing construction were scaled up considerably. Partly this was financed by an old-age security reform that promised attractive internal returns to those willing to increase their social security contributions (Hockerts, 1994a). In the short run the additional revenue created this way helped finance Honecker's ambitious welfare programmes. However, it is difficult to see how this scheme could have been supported after reaching maturity. Indeed, assuming liability for East Germany's social security system became one of the largest burdens of unification after 1989.

In the short term the new approach was apparently successful. National income and the output of consumer durables resumed to grow at satisfying rates, at least as far as official figures are concerned. Apparently, East Germany evaded from the worldwide recession of 1973/4, producing what appeared to be a small economic miracle of its own. At the same time, East Germany gained international political recognition, and relations to West Germany were also normalized to a certain extent.

During the ninth party congress of 1976, however, this strategy was modified (Hockerts, 1994b). Debates about setting priorities were suffocated under a new policy formula, which proclaimed the "identity of economic and social policy". To this day the motivation which guided party leaders is not quite clear. Apparently the idea had been to redirect emphasis towards productivity growth and increased investment. Only one week after the party congress, a whole bundle of costly welfare measures was presented in an apparent attempt to appease the disappointed population.

Even the official figures show that by 1975, East Germany's small miracle of the early seventies was over. Returns to investment remained low and decreased further. Employing official data in 1985 prices as in Table 16 above, the marginal capital-output ratios during both halves of the 1970s were 6.85 and 8.99, respectively. During the second half of the 1970s, growth rates also declined. Although official figures of aggregate performance look pretty good, output growth in sensitive branches of consumer goods

industry gives the impression of a marked slowdown from 1975 on. Table 18 provides a breakdown of official growth figures for the 1970s.

Table 18  
Growth in the East German Economy, 1970-1980  
Annualized Growth Rates

	GDP	Investment	Housing Constr.	Output of		
				Refrig'ors	TV Sets	Passenger Cars
1970/5	4.23	5.00	8.86	6.73	6.01	4.68
1975/80	3.24	3.32	1.27	3.86	2.59	2.12

Source: GDP: Merkel/Wahl (1991)  
All other data: Statistisches Amt der DDR (1990)

The discrepancy between the aggregate and industry-specific figures that emerges during the second half of the 1970s pertains to the 1980s as well (see Section VIII below).

Again, this may be supplemented with data on investment-output ratios. In Table 19, marginal capital-output ratios at the aggregate level are compared to average investment-output ratios.

Table 19  
The Efficiency of Investment, 1970-80

	Marginal Capital-Output Ratio	Average Investment- Output Ratio
1970/1	8.89	25.12
1971/2	5.19	24.83
1972/3	5.62	24.83
1973/4	6.67	25.68
1974/5	6.20	26.02
1975/6	6.65	26.07
1976/7	7.88	26.85
1977/8	9.26	27.30
1978/9	9.37	27.25
1979/80	10.95	26.78

Source: All data computed from Merkel/Wahl (1991).

Table 19 shows that the marginal efficiency of investment decreased further during the decade, despite very high shares of investment in total output. This tendency was

obviously stronger towards the end of the decade. Measured by the effect on output, East Germany thus invested a lot to accomplish very little.

Nevertheless, both Tables 17 and 18 indicate that during the first half of the decade, East Germany fared relatively well. Later observers have pointed to a surge of foreign borrowing as a possible explanation. In a fierce criticism of the Honecker period, former staff members of East Germany's State Planning Commission (Kusch et al., 1991) have argued for a link between East German capital imports during the 1970s and balance of payments problems during the 1980s.

Comprehensive time series data on East Germany's balance of payments appear to be unavailable even today (Steger, 1993). Working from the balance of trade, a certain pattern emerges nevertheless. Table 20 provides cumulative balance of trade figures by periods and areas.

Table 20  
East Germany's Cumulative Trade Balance in the 1970s  
Million "Valuta Mark" at Current Prices

	All Countries including:	COMECON	Western Hemisphere
1966-70	+ 1,383	+ 1,668	- 2,180
1971-75	- 6,989	+ 4,928	-12,868
1976-80	- 28,813	- 3,841	-25,207

Source: Statistisches Amt der DDR (1990)

Table 20 indicates that during the 1970s, foreign indebtedness built up at fast rates. Cumulative deficits with Western countries amount to 27 bn(US) valuta mark. Assuming that all transactions within the COMECON were made on a clearing basis and neglecting trade with LDCs, this provides for a back-of-the-envelope estimate of East Germany's foreign indebtedness at the time. Internal documents on foreign reserves published in Suhr (1991) reveal that one "valuta mark" was evaluated at 0.5405 US \$. This would put East Germany's foreign debt around the end of the 1970s at roughly 14.5 bn(US) \$, which in turn would imply interest obligations close to 1 bn(US) \$ per year. These figures are possibly overstated, as East Germany had additional foreign exchange revenues from West German tourists visiting their families in the East and from West German government transfers (see Section VIII below). For 1982, Kusch et al. (1991) estimate the dollar worth of East Germany's foreign debt at 12.3 bn. Whatever the true figure, the estimates

give an impression of the burden that had accumulated during the Golden Seventies, waiting to be borne during the 1980s.

#### VIII. The Way to Bankruptcy, 1980-89

By 1983, East Germany was at the brink of default. "We could not make our debt service any more. We lived from hand to mouth. Imports were cut down. I negotiated credits on deliveries in the Soviet Union and then sold the merchandise in the West. There was only one solution: The Federal Republic (i.e. West Germany) had to give a signal. Whether the whole thing was about one or two billions was entirely ridiculous. This could not solve the problem. The delicate question was: would the Federal Republic be willing to sustain the GDR?". This is how East Germany's former chief administrator of foreign exchange affairs, Alexander Schalck-Golodkowski (Forbes Magazine, 1991), described the balance of payments crisis of 1983 in retrospect.

The precise political terms of the deal made between both Germanies in the early 1980s are still unclear, as is the role of Schalck-Golodkowski himself, who fled into West Germany soon after the Berlin Wall had opened, presenting himself to West Germany's secret service (see e.g. Suhr, 1991, for details). In essence, East Germany was bailed out from its foreign exchange impasse through a credit of 1 bn deutschmarks.

But other stabilizing forces were also at work. Under the COMECON pricing system of 1959, clearing prices had been set proportional to a five-year moving average of past world market prices. Temporarily this would relieve East Germany from the effects of oil price explosions, as Soviet output of crude oil was large enough to supply all of East Germany's needs. This dragging effect was possibly operative already in the 1970s, helping to explain why the aforementioned slowdown of growth occurred only in the second half of the decade. But it also afforded opportunities for East Germany around 1980, when Soviet COMECON oil prices were significantly lower than the world market level.

East Germany specialized in dumping growing proportions of its entitlement to Soviet oil on the Western European market. In this way, it was possible for East Germany to stabilize its trade balance again and service its debt from external surpluses.

Social costs of this policy were apparently high. To economize on its oil budget, East Germany launched an extensive autarky programme in the energy sector, drawing

on its natural deposits of brown coal and uranium. The substitution of oil products by coal necessitated large investments whose marginal product was close to zero, if not negative. Kusch et al. (1991) estimate the direct cost of substituting oil with brown coal at 18 bn marks.

Aggregate output data for the 1980s must be interpreted with extra caution, as there appears to be evidence that frequent changes in classifications, reporting methods, and sometimes simple fabrication were used to hide the mounting problems of East Germany's economy. But even from the noisy data we have for that period it becomes apparent that the marginal efficiency of investment was at extremely low levels (Table 21).

Table 21  
The Efficiency of Investment, 1980-1989

	Marginal Capital-Output Ratio	Average Investment-Output Ratio
1980/1	11.22	26.18
1981/2	12.77	26.19
1982/3	10.61	24.37
1983/4	6.06	23.75
1984/5	5.69	21.78
1985/6	8.24	21.66
1986/7	7.91	22.20
1987/8	10.91	23.27
1988/9	19.26	24.40

Source: Calculated from Merkel/Wahl (1991)

These data indicate that after a bad slump around 1982, there were signs of recovery during the mid-1980s<sup>13</sup>. However, the tide turned again when the Soviets insisted that their oil export quotas within COMECON be fully exhausted and that payment be made in convertible exchange. In this way, the same effect that had been operative in the 1970s was working again, albeit in the reverse direction. Table 22 provides estimates of crude oil prices pertaining to East German imports.

Table 22  
World Market and COMECON Prices for Crude Oil,  
1972-1989  
US \$ per Barrel

	World Market Price	COMECON Import Price	COMECON Price as Percentage of World Market Price
1972	2.10	2	94
1973	3.39	2.7	79
1974	11.29	3.3	29
1975	11.02	5.4	49
1976	11.77	5.9	50
1977	12.88	7.7	60
1978	12.93	10.1	78
1979	18.67	12.5	67
1980	30.87	18.3	59
1981	34.50	20.2	59
1982	33.63	27.8	83
1983	29.31	30.9	105
1984	28.70	32	111
1985	27.16	31	114
1986	15.35	36.2	236
1987	17.70	35.9	203
1988	14	32.2	230
1989	17	27.1	159
1990	22		

Source: Schröter (1994, Table 2)

Table 22 compares world market prices for crude oil with East German import prices under trade agreements within the COMECON. According to these data, East German oil imports from the Soviet Union remained significantly below world market levels up until 1983. To the extent to which East Germany could substitute oil by domestic brown coal and its derivatives, this opened obvious arbitrage possibilities. It is noteworthy that this form of reswitching is very analogous to Nazi autarky policies in the 1930s. Indeed, the hydrogenic plants that enabled East Germany to do this all had been built under the conditions of foreign exchange shortage (and war preparation) in Nazi Germany.

The closing of the price gap in the early 1980s apparently contributed to the aforementioned foreign exchange crisis of 1982 (Kusch et al., 1991). Desperate attempts to further economize on the use of convertible exchange were frustrated by the Soviet policies in 1985, when the Gorbachev administration started to insist on payment of further oil deliveries in foreign exchange. This way, the East Germans were forced to repay the de facto foreign exchange credit extended to them by the Soviets during the past decade.

To examine the growth record of the 1980s more closely, Table 23 continues Table 18, examining growth rates in the East German economy at different levels of aggregation.

Table 23  
Growth in the East German Economy, 1980-1989  
Annual Growth Rates

	GDP	Investment	Housing Constr.	Output of		
				Refrig'ors	TV Sets	Cars
1980/81	2.39	2.44	8.15	2.86	6.97	1.96
1981/82	1.95	-5.13	-17.52	6.97	5.45	1.50
1982/83	2.29	-0.30	17.27	8.89	2.27	2.94
1983/84	3.73	-4.87	-2.83	17.39	-4.15	7.28
1984/85	3.96	3.37	-1.14	8.62	4.49	4.14
1985/86	2.77	5.32	0.37	4.65	6.54	3.59
1986/87	3.03	8.00	-4.95	5.63	1.59	-0.38
1987/88	2.29	7.25	-3.05	4.56	7.05	0.44
1988/89	1.28	0.90	-10.26	1.44	0.06	-0.49

Source: GDP growth calculated from Merkel/Wahl (1991).  
All other data calculated from Statistisches Amt der DDR (1990).

Data in Table 23 are obviously paradoxical. In the first years of the decade, GDP growth combines with continuously falling investment. At the same time, more disaggregate indicators of output and investment growth display very high, mutually uncorrelated fluctuations. During the second half of the decade, aggregate data indicate high rates of investment growth, while disaggregate figures fail to exhibit any common pattern.

The wild fluctuations exhibited by these data strongly contrast the general image of a stagnant, if not declining economy that is usually given in the literature. It is generally accepted, however, that due to frequent and arbitrary changes in reporting bases and methods, East German output data for the 1980s are especially unreliable. The implausibly

high volatility in sectoral growth rates shown in Table 23 would support this view.

More reliable information is available from balance of payment data, for which there exist internal estimates. Available figures suggest that during the second half of the 1980s at least, the terms of trade of East Germany's economy worsened steadily. East German authorities estimated this by calculating an index of foreign exchange receipts per unit of domestic resource cost, called "Devisenertragskennziffer", or indicator of foreign exchange profitability. This number measured receipts of "valuta mark" per unit of effort in East German marks, where valuta marks were defined as an index of convertible currencies (a discussion is Akerlof et al., 1991).

Table 24  
VM/M Exchange Rate for East German Exports  
(Devisenertragskennziffer)

	1970	1980	1985	1986	1987	1988	1989
Stat. Amt der DDR (1990)						0.227	
Kusch et al. (1991)	0.536	0.454	0.275			0.246	
Sinn/Sinn (1992)		0.42	0.35	0.28	0.23	0.23	0.23
Akerlof et al. (1991)			0.535	0.292	0.258	0.246	0.265

Akerlof et al. (1991) calculate their data from unpublished disaggregate figures at the Kombinate level, while the figures of Sinn/Sinn (1992) reflect the rates applied by East Germany's Statistical Office. The precise timing differs between the various estimates. However, there is a marked decline during the second half of the decade. Although a deterioration of the dollar/deutschmark exchange rate at the same time may have contributed to this, data leave little doubt that after 1985, stabilizing the balance of payments put a strongly increasing burden on the East German economy.

A full quantitative picture of East Germany's balance of payment is still lacking (a preliminary report on activities of a Bundesbank working group is Steger, 1993). Up to 1988, East German trade statistics were denominated in valuta marks, a weighted average of convertible foreign exchange, evaluated at fixed exchange rates (see *Statistisches Amt der DDR*, 1989). In the last edition of East Germany's Statistical Yearbook (*Statistisches Amt der DDR*, 1990), balance of trade statistics from 1985 on switch from valuta marks to valuta equivalents (*Valutagegenwert*), or domestic East German mark. West Germany's Statistical Office, *Statistisches Bundesamt* (1992), has released a deutschmark-based trade balance for East Germany, which also extends back to 1985. As these latter figures exclude



West Germany, intra-German trade was added to arrive at a full account of East Germany's overall trade position. Data on East German trade are surveyed in Table 25.

Figures in valuta marks (VM) exhibit a fairly stable trade surplus throughout the second half of the decade. In contrast, both the valuta equivalent (VE) and deutschmark (DM) figures indicate that during that time, East Germany's trade position deteriorated strongly.

Table 25  
East Germany's Trade Balance and Foreign Debt, 1980-89

	I. Trade Balance (million)			II. Foreign Debt
	VM	VE	DM	(million) US \$
1980	-5,840			
1981	-1,073			
1982	5,353			12.3
1983	8,030			12.0
1984	6,901			11.3
1985	6,789	19,941	4,178.8	13.3
1986	1,040	1,815	- 266.6	15.7
1987	3,264	-2,552	-2,004.5	16.8
1988	3,015	-6,417	-2,121.5	18.5
1989		-3,614	- 935.1	
1990			2,168.4	
1991			-31,157.6	

Key: VM = Valuta marks.  
VE = Valuta equivalents, domestic currency  
DM = West German deutschmarks

Sources: VM figures Zentralverwaltung für Statistik (1989)  
VE figures Statistisches Amt der DDR (1990)  
DM figures Statistisches Bundesamt (1992)  
\$ figures Kusch et al. (1991)

That East Germany's position worsened also becomes visible from the estimates of East German foreign debt in the last column Table 25. This deterioration is even more pronounced when trade with Western industrialized countries and West Germany is singled out. Data shown in Table 25 reveal that from 1987 on, East Germany accumulated considerable trade deficits vis-à-vis Western countries. During the 1985-89 period, exports to Western countries other than West Germany dropped by more than 25% while imports from the same area continued to increase. At the same time, intra-German trade which was bound by a clearing agreement remained relatively stagnant.

Table 26  
East German Trade with Western Countries, 1980-89  
million VM, VE, DM

	Official Trade Balance vis-à-vis all Western Countries			Deutschmark Balances vis-à-vis all Western Countries					
	(1)	(2)	(3)				West Germany		
	VM	VM	VE	(4) EXP	(5) IMP	(6) BAL	(7) EXP	(8) IMP	(9) BAL
1980	-	5464	-5425						
1981	+	197	-1682						
1982	+	5219	+2726						
1983	+	4690	+3129						
1984	+	3846	+2949						
1985	+	4212	+19993	9404	7126	+ 2013	7636	7901	- 265
1986	+	1495	+ 4760	8273	7534	+ 128	6844	7454	- 611
1987	+	1349	- 5433	6667	8624	- 2678	6645	7367	- 721
1988	+	250	- 9482	6307	9115	- 3254	6789	7234	- 446
1989			- 8398	6914	9256	- 3240	7205	8103	- 898
1990				5105	5660	- 13607	8274	21326	- 13052
1991				4454	3935	- 37229	8985	46733	- 37748

Key: (1) Export surplus (+) in valuta marks vis-à-vis all non-socialist countries  
 (2) Export surplus (+) in valuta marks vis-a-vis Western industrialized countries  
 (3) Export surplus (+) in valuta equivalents vis-a-vis Western industrialized countries  
 (4-6) Trade balance with Western industrialized countries  
 (7-9) Trade balance with West Germany

Sources:

- (1) Zentralverwaltung für Statistik (1989).  
 (2,3) Statistisches Amt der DDR (1990).  
 (4-9) Statistisches Bundesamt (1992).

Although East Germany continuously ran deficits in intra-German trade this did not contribute to her foreign indebtedness, as the unique situation at the border between both Germanies afforded extra foreign exchange revenues to the East German state. These were caused, first by West German tourists visiting relatives in the East and second by government transfers. For the period from 1975 to 1989, East Germany's cumulative foreign exchange surplus from transactions with West Germany on service and transfer account amounted to 25 bn(US) deutschmarks net of East German debt service to West German creditors (Bundesbank, 1990a). During 1988 where a breakdown is available, net flows of services and transfers from West to East Germany were 1,967 million DM.

This sum also marks the feasible combined deficit on trade account and debt service that East Germany could run, assuming that no other major source of foreign exchange revenue existed (see Bundesbank, 1990a, for a similar argument). If the deutschmark data in Table 26 can be taken at face value, this in turn implies that in 1987 at the very latest, a new debt crisis was developing.

This is confirmed by preliminary data on East Germany's balance of payments of 1989 computed under a Bundesbank project (Steger, 1993). According to these figures, East Germany's deficit on current account with regard to non-socialist countries was almost 16 bn East German marks. Applying a conversion rate of 4.4 marks per West German deutschmark (DM), this is equivalent to 3.6 bn DM. During the same year, net transfers and service incomes from West Germany amounted to 1,908 million DM. As trade was negative, net receipts on current account from West Germany totaled 1,277 million DM, leaving East Germany with a current account deficit of 6,855 mill East German marks or 1,558 million DM. In passing we note the tremendous deficits after the unification, which are mostly due to large real resource transfers from West Germany (see bottom of Table 26). Also it is interesting to observe that exports to Western countries other than West Germany have continued to fall after the unification.

Drawing the arguments of this section together, it seems safe to conclude that balance of payments troubles contributed strongly to the mounting difficulties of East Germany's economy in the 1980s. During the first half of the decade, the counter-productive effects of dumping Soviet oil on the world markets and drawing on domestic brown coal instead were still felt. During the second half, the relative rise of COMECON oil prices dried up this source of foreign exchange revenue. Soviet insistence on convertible cash payment for intra-COMECON oil deliveries even developed into a significant drain on East Germany's position. Dire lack of foreign exchange made it impossible to continue boosting East German living standards artificially, which prevented government from appeasing its population like in the 1970s. Last, the increasing need for fresh money made East Germany susceptible to pressure from its creditors, especially from those in West Germany who had already bailed out their communist partners from a previous BOP crisis in the early 1980s.

## IX. The Aftermath of Unification

When the Berlin Wall opened on the night of 9 November, 1989 - a date which has many historical connotations for Germans<sup>14</sup> -, West Germany should have had no problem in preparing for unification. Everything had been arranged perfectly. At least theoretically so. West Germany's constitution of 1949 provided not just one but actually two ways for East Germany to join.<sup>15</sup> Official West German doctrine continued to regard Berlin as the official capital. As a consequence, the Federal Government long refused to erect other than provisional buildings in West Germany's capital of Bonn, and parliament, the Bundestag, continued to reside in a former lecture hall. In the same spirit, Article 2 of the Bundesbank Act stated that its headquarters after unification would have to be moved to Berlin. All government measures were so designed as to provide for future reunification: the system of ZIP codes introduced in the early 1960s provided free slots for East Germany, and so did the systems of telephone area codes and car license plates. To settle all practical questions, West Germany's federal government had operated a thinktank in the rank of a ministry whose main task was to prepare all kinds of reserve programmes for the X-day of unification.

However, unification came one generation too late, to the effect that the old doctrines had fallen into oblivion. Indeed, policy consulting with regard to unification restarted from scratch, and new priorities were set. In the town of Bonn, a new House of Parliament was just nearing completion when the Wall came down. After currency union, the Bundesbank Act was changed and all hints to Berlin were eliminated. Instead of enlarging the old ZIP code system, a new one was created. Whether or not the Bundestag and central government should move from Bonn to Berlin was debated fiercely and continues to be a matter of speculation and suspicion.

East Germany's economy as well did not follow the course which was anticipated at the time of unification. Expectations had been rising high, as it was held that with the inclusion of East Germany into West Germany's institutional and monetary framework, a new Wirtschaftswunder was ahead. However, since early 1990, East Germany has experienced the worst peacetime slump since the Great Depression. This phenomenon has generated a large and fast growing literature (standard references include Akerlof et al., 1991, Sinn/Sinn, 1991, Siebert, 1991a,b. See Sinn/Sinn, 1992, for a review).

Basically, three main hypotheses for the failure of East Germany's economy to pick up can be discerned. The wage pressure view attributes the slump to an irresponsible wage bargain over East Germany between West German trade unions and employers'

associations (Sinn/Sinn, 1992, Siebert, 1991b). According to it, the West German wage bargaining system proved counter-productive when imported into East Germany, as both trade unions and employers came from West Germany and shared a common interest in not generating a low-cost competitor east of the Elbe river. The second interpretation argues from an endogenous growth point of view that convergence of East Germany's economy will take very long to occur (Barro/Sala-i-Martin, 1991). The third interpretation emphasizes the de-facto appreciation of the East German mark through conversion at par by the currency reform of July, 1990 (Siebert, 1991b).

Available figures indeed indicate that wages are disproportionate. In 1992, East Germany's wage bill accounted for 91.4% of national income, where the latter figure still includes depreciation (Statistisches Bundesamt, 1993a). Also, GDP per person employed was around 42% of West Germany (equivalent to the West German level of 1959/60), whereas wages per person stood at 64.2%.

Evidence for the appreciation of East German currency can be inferred from the implicit exchange rates of Table 24 above. According to them, the unit export value of East German products quadrupled as East German marks were converted to deutschmarks at par. The adverse impact effects of this on East German competitiveness are the main theme in Siebert (1991b)<sup>16</sup>.

Additional explanations have been put forward, e.g. the breakaway of East Germany's traditional markets in the East, the manifold uncertainties associated with property restitution, and the Treuhand policies of privatization (on the latter see Christ/Neubauer, 1991, Suhr, 1991).

An economic historian's contribution to an explanation of how all this could happen would have to focus on the interests and expectations that guided policy-making in Germany during 1989/90. Early advisory reports (Sachverständigenrat, 1990a, Wissenschaftlicher Beirat, 1989)<sup>17</sup>, were dominated, not by concerns over recovery as such but rather by fears of a huge wave of immigration from East Germany. According to these reports, clear and credible signals would have to be given to induce East Germany's population to stay. Among other things, this would have to include measures to stabilize living standards.

Written only weeks after the Wall had opened, these reports anticipated that keeping East Germany independent would not help convince the East Germans that the abandonment of communism was irreversible and pro-market policies would be followed. Instead, the Wissenschaftlicher Beirat, or advisory council to the Ministry of Commerce,

went so far as to recommend quick and unconditional unification as the only way to prevent further mass flight from the East.

Others, including the Sachverständigenrat, were more reluctant. Heavy criticism developed when in January, 1990, the spokeswoman of the opposition party in West Germany's parliament, Matthäus-Maier, published a press article proposing quick adaptation to currency union and conversion at par. The DIW's president, Hoffmann (1990a), wrote a fervent reply warning against continuous mass unemployment in East Germany should these plans be realized. However, only a few weeks later the government jumped on the bandwagon and announced to offer negotiations with East Germany about currency union. Consideration of credibility effects and fear of further immigration from East Germany seems to have played a dominant role in this decision (Christ/Neubauer, 1991, Schui, 1991). However, only two days after this announcement, the Sachverständigenrat (1990b) published a worrisome letter to the Chancellor, pointing out that currency union as a way to halt mass emigration from East Germany was not very credible and would be counter-productive.

Apparently, a divide between Germany's two major economic advisory boards opened over this issue. In a report to the Ministry of Commerce in March, 1990, the Wissenschaftlicher Beirat (1990) reemphasized the need for quick currency reform and also discussed in detail the problem of finding optimal conversion rates. The majority proposal recommended conversion of flows at par and of stocks at 2:1 M/DM, which comes very close to what was finally adopted in mid-1990.

In this report, concern over living standards again dominated fears of spoiling East Germany's competitiveness. It was argued that while conversion of flows at par was economically feasible, halving wage rates by converting flows at 2:1 M/DM would be socially unreasonable and raise emigration rates again. Fear of further emigration from East Germany is also reflected in Bundesbank (1990b). This source documents the details of currency reform in East Germany and also gives an outline of the conceptual differences between the Bundesbank's own plans and those of the federal government which were realized in the end.<sup>18</sup> It is interesting to note the emphasis in this document on purchasing power arguments. To make a case against fears of inflation, it pointed out that due to low East German prices of non-traded goods, purchasing power was about equal and conversion at par thus justified. The same point is also made in detail in Sinn (1991) and Sinn/Sinn (1992)<sup>19</sup>.

Interestingly, in the German discussion the issue of competitiveness has commonly

been dealt with in terms of aggregate productivity, not competitiveness in traded goods. For example, the aforementioned Bundesbank report estimates East German aggregate productivity at about 40% of West German levels to conclude that, given the wage differentials which prevailed at the time, conversion at par was feasible. The same point is also made by Wissenschaftlicher Beirat (1990). On the other hand, exchange rates in the export sector as presented in Table 24 above would have suggested far lower conversion rates (about 4:1). Sinn/Sinn (1992, ch. 3) elaborate on this in detail, pointing to low relative prices of non-traded goods as the explanation why during the communist years, low exchange rates coexisted with purchasing power parity at par. Choice of the conversion rate for nominal contracts thus entailed two aspects, first competitiveness of East German industry, second the propensity of East Germans to migrate. Sinn (1991) has referred to this as the problem of two-sided competitiveness, arguing that the risk of mass emigration from East Germany would have been a danger to East German competitiveness as well.

It is apparent that caution must be applied in interpreting the political decision making process unless all internal documents have become available. However, it does not seem unreasonable to conclude tentatively that currency conversion at par and the promise of quick catching-up to West German living standards were not simply the result of lacking analysis but rather of rational decision making. Both West German policy makers and an influential wing among its economic advisors preferred subsidizing East German living standards at the risk of macroeconomic difficulties to the risks of mass migration that a more cost-oriented approach would have entailed. Winning the East German elections of March, 1990, may also have played a role in this setting of priorities, as possibly did foreign policy considerations (see e.g. Hoffmann, 1990b). But certainly, the idea of exposing East German consumers to conversion rates oriented towards competitiveness was never seriously considered.

One caveat remains to be discussed. Several observers, e.g. the Sinns (1992), have stressed that whatever the optimal rate of currency conversion might have been, competitiveness was much more severely hurt by the huge rise of wages after monetary union. Thus the blame for the slump would be on the outcomes of collective wage bargaining and not on currency conversion itself.

Apparently, this point is one about expectations. In its letter to West Germany's chancellor of 9 February, 1990, two days after the announcement of currency union, the Sachverständigenrat (1990b) expressed concern that currency union would create expecta-

tions of fast catching-up in living standards. West Germany, they argued, would implicitly commit itself to huge public subsidies for East Germany, which would be all the larger as introducing convertibility on the fast track would hamper self-sustained recovery of the East German economy. Other critics joined in, warning that fast currency reform and purchasing-power oriented conversion would create overly optimistic expectations (e.g. Hoffmann, 1990a). Indeed, before the first nationwide elections the Kohl administration campaigned with the promise that East Germany's states would turn into "flourishing landscapes" within a few years and that the real cost of unification would be almost zero.

Given this expectational context, wage arbitration policies after monetary unification cannot plausibly be considered to have been exogenous. To put this in more pronounced fashion, the wage increases negotiated between trade unions and employers' associations were well in line with official policy statements that had declared quick adaptation to West German levels of living standards the primary policy goal. How could wage arbitrators successfully advertise a low-cost approach to East German recovery to their constituencies at a time when politics downplayed the cost of unification in the aggregate?

To analyze whether there existed feasible alternatives to the policies actually pursued, a counterfactual would have to be considered in which politics had adopted a "blood, sweat, and tears" attitude towards generating expectations. Whether or not such a way of preparing the public for the burdens of reconstructing East Germany would have been superior to the consumer-oriented approach actually chosen could be a matter of future research.

## X. Conclusion

This paper has tried to summarize evidence on East German postwar growth and to present a synopsis of the literature. To a large extent, the above discussions were dominated by issues of data quality and interpretation. At present, available data are still unsatisfactory, and methods of adjustment necessarily crude.

Despite the existing measurement problems, however, some patterns do emerge. Although reparation burdens were heavy, the starting position of East Germany's economy was probably not as bad as is generally maintained. Reexamining output and productivity during the early postwar years, evidence obtained indicated that it was the transition to communism itself which had a hysteresis effect on productivity. During the 1950s, outmigration to West Germany apparently hampered catching up with West



Germany's pace of reconstruction. Data show that after the erection of the Berlin Wall, East Germany missed the chance to boost productivity. Whereas during the 1970s, East Germany's record looks comparatively favourable, there was evidence of a marked productivity slowdown in the 1980s. This phenomenon combined with mounting balance of payments problems to lay the ground for the breakaway of communist power in East Germany prior to the unification of 1990.

Inspection of scattered evidence on East Germany's balance of payment and foreign debt data during the 1970s and 1980s suggested that a debt crisis built up during the early 1980s and, after an interplay of recovery, again towards the end of the decade. Increases in living standards during the 1970s thus came at the expense of wealth during the 1980s. We conclude that a severe economic crisis was mounting in East Germany even before unification.

In the final section, evidence on the policies of economic unification has been reviewed briefly. The result is that the main motive for West German policy makers at the time was to prevent mass emigration from East Germany, and that policy advisors well understood the macroeconomic risks of the strategies adopted. Thus the conclusion suggests itself that the East German slump of the post-1990 years is the result, not of analytical or policy failures but rather of conscious choice under uncertainty about the East Germans' willingness to migrate.

#### Notes:

1. Recent contributions which reconsider the role of institutional change for West German growth include Giersch et al. (1992), Berger/Ritschl (1993). Evidence in favour of Jánosy's hypothesis is presented in Dumke (1990). See Eichengreen/Uzan (1992) for a critique.
2. Output and capacity of 1936, for which detailed industry survey data are available, were generally accepted as a benchmark for Germany's peacetime capacity requirements during the negotiations on industrial dismantling. See e.g. Gimbel (1976).
3. Buchheim (1990a, p. 80 ff.) has pointed out that in West Germany, the time profile of dismantling may have been quite different from the pattern implicit in the data in Table 5, as many dismantling programmes agreed on already in 1946 were not carried out until 1949. However, his estimate of total capital stock lost comes very close to Krengel's (1958).
4. Discrepancies between the various different series in Table 5 partly result from adjusting for Sowjet-Aktiengesellschaften (SAG), or Soviet joint-stock companies. These had been formed by the Soviet military administration out of seized property in 1946 to ensure

reparations from current production. Their value in 1944 prices has been estimated by Melzer (1980) at 3.3bn(US) RM. Beginning in 1950, these SAGs were successively handed back to the East German central planning bureau. Melzer's own series, reproduced in Table 5 as Melzer (a), includes these capacities. We calculated a companion series excluding SAG stocks as Melzer (b), using his own data and methods. The estimates of Zank (1987) are slightly more pessimistic. However, Zank is basically inferring capital stock from estimated levels of output, apparently assuming constant capital/output ratios. Baar et al. (1993) have examined hitherto unaccessible material from East German archives to conclude that during 1944-48, East Germany lost about one third of its industrial capital stock. However, their estimate of dismantling in absolute terms is very close to that of Melzer (1980), which underlies Table 5. Hence it is not quite clear where the discrepancies with existing estimates come from.

5. The first two were handed over to Poland as a compensation for the territories it lost to the Soviet Union, whereas East Prussia was divided between Poland and the USSR. Together, the territories lost encompassed 114 thousand square kilometers or 24% of Germany's territory of 1937, with a total prewar population of 9,6 million or 13.8% of Germany's total population, see Länderrat des Amerikanischen Besatzungsgebiets (1949, p. 8).

6. By Potsdam Germany I refer to the four zones of occupation (which excluded the lost Eastern territories) plus the Saar region of Southwest Germany, which remained under French administration up to 1953. Together, these territories are equivalent to present-day Germany after the unification of 1990. Data for both halves of divided Berlin are split between East and West Germany.

7. Results of the population census of October 29, 1946, residential population ("Wohnbevölkerung"). See Statistisches Bundesamt (1952, p. 12).

8. The reliability of East German population figures has been doubted by Zank (1987, p. 197). Zank argues for large inaccuracies in the population census of 1946 to conclude that East Germany's population must have increased by some 0.5 million from 1946 to 1950. However, his estimates crucially depend on the time profile of the return of released POW's to East Germany, which is unknown. Also, it is not clear how migration of persons in transit camps (about 130,000 in 1946) was accounted for in East Germany's population statistics. Table 2 therefore adheres to traditional West German usage, which excludes the latter from the population census of 1946.

9. These results have not prevented later studies from using the nominal values again. In Melzer (1980, Table 6), the official data for the pre-1950 period are used to splice later real output figures to the prewar index of production, thus obtaining a long series of output which, like the official data, is systematically upward biased.

10. To construct a real output series from the official data and thus check into the validity of the other estimates, the official output data shown in row II of Table 9 can be deflated provisionally by using prices of capital goods series which are given in Kupky (1957) and Melzer (1980) (see Abeken, 1957, for a discussion of proper GDP deflators for East Germany). Results were very close to the estimate reported as row I in Table 9. One reason for the difference with Stolper's series (and also with related attempts of Gleitze, 1950, and Gröning, 1950) this may be that they substituted West German prices for their lacking East German equivalents, assuming price equality. This assumption is probably not quite justified.

11. In West Germany, the revolt of 17 June was memorized in a public holiday which was abandoned only after the unification of 1990.

12. Data on the composition of output in Table 13 are taken from Melzer (1980) where it is attempted to regroup branches of industry such as to allow for comparisons both with data on Nazi Germany and postwar West Germany. Official archival material for 1950 to 1955 released in Steiner (1994, Table 1) gives slightly different results, which are apparently due to differences in classification. According to these data, there is a shift towards primary products between 1936 and 1950.

13. It is noteworthy that official output data hide this slump almost entirely. Growth rates look quite favourable when measured by MPS national income data and by a companion set of official SNA-type national product data which are available for the 1980s. (Merkel/Wahl, 1991).

14. On 9 November 1918, the armistice of World War I was signed. On the same day of 1923, Hitler launched the failed Munich Beer Hall putsch. On 9 November, 1938, in what became known as Reichskristallnacht, Nazi stormtroopers waged an anti-semitic pogrom, marking the route to the Holocaust.

15. Under Article 23, any German-speaking part of the former Reich could join the Federal Republic by majority vote of its state assembly. This is the way actually chosen by East Germany in 1990. In contrast, Article 146 sketched the way to a confederation which would have altered the constitutional order. The preamble of West Germany's constitution, which pointed out its provisional nature, made it clear that Article 146 had been considered the default option for unification. Both articles and the preamble were abandoned after the unification in exchange for gaining sovereignty from the former victorious powers of World War II.

16. Siebert is also one of the more prominent members of the Sachverständigenrat, Germany's equivalent to the US council of economic advisors.

17. Wissenschaftlicher Beirat is the advisory board to the Ministry of Commerce.

18. As the Bundesbank Act included no provision for the conversion of East German currency it was a matter of federal legislation, to the effect that the details of conversion had to be negotiated between the federal government and the Bundesbank. The Bundesbank's president at the time, Karl Otto Pöhl, resigned in protest against the terms of planned currency reform in East Germany (Sinn/Sinn, 1991).

19. It should be noted that conversion rates differed between stocks (which were converted at an average rate of 1.8M/DM) and flows, including wage contracts, which were converted at par. See Bundesbank (1990b) for details.

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