

Table II-3. Unemployment and the Wage Gap

Measure of Labor Supply: Hours Worked (Sample Period: 1970-1995)

Included observations: 26

$$U = C(1) + C(2) * YGAP + C(3) * WGAPH + C(4) * DUM$$

	Coefficient	Std. Error	T-Statistic	Prob.
C(1)	3.015585	0.467225	6.454242	0.0000
C(2)	-0.403814	0.151558	-2.664417	0.0142
C(3)	0.329610	0.044927	7.336539	0.0000
C(4)	2.941780	1.568146	1.875960	0.0740
R-squared	0.799285	Mean dependent var	6.000000	
Adjusted R-squared	0.771915	S.D. dependent var	3.132922	
S.E. of regression	1.496230	Akaike info criterion	0.946535	
Sum squared resid	49.25146	Schwartz criterion	1.140088	
Log likelihood	-45.19735	F-statistic	29.20270	
Durbin-Watson stat	0.519578	Prob(F-statistic)	0.000000	

III. THE CONVERGENCE PROCESS IN EASTERN GERMANY¹

Introduction and Overview

97. This chapter reviews economic developments in eastern Germany (the new Länder) and discusses prospects for revitalizing the convergence process. Seven years after unification, integrating the new Länder remains a major item on Germany's policy agenda. The initial unification strategy sought a rapid transformation to a market economy through swift privatization of the former state-owned enterprises. It was hoped that sufficient capital investments would raise labor productivity in the east to the levels in the west. With comparable labor productivity, similar real wages and income could prevail without undue public support and full economic integration would have been achieved.

98. After a sharp contraction in 1990-91, real GDP per capita in eastern Germany rose substantially but sectoral output developments were, however, uneven (Chart III-1, Table III-1 and Table III-2). The convergence process for the new Länder has been much slower than anticipated and capital per worker has risen only to about half of that in the old Länder. Excessively rapid wage convergence—well beyond productivity gains—has been the main problem. The high-priced workforce in the east discouraged private sector investment because rates of return were not sufficiently high (without public subsidy). Indeed, tax subsidies for construction activities led to overbuilding of commercial office spaces and directed investment capital toward residential housing instead of expanding of productive capital. Moreover, extension of western Germany's social welfare system has increased reservation wages and consumption.

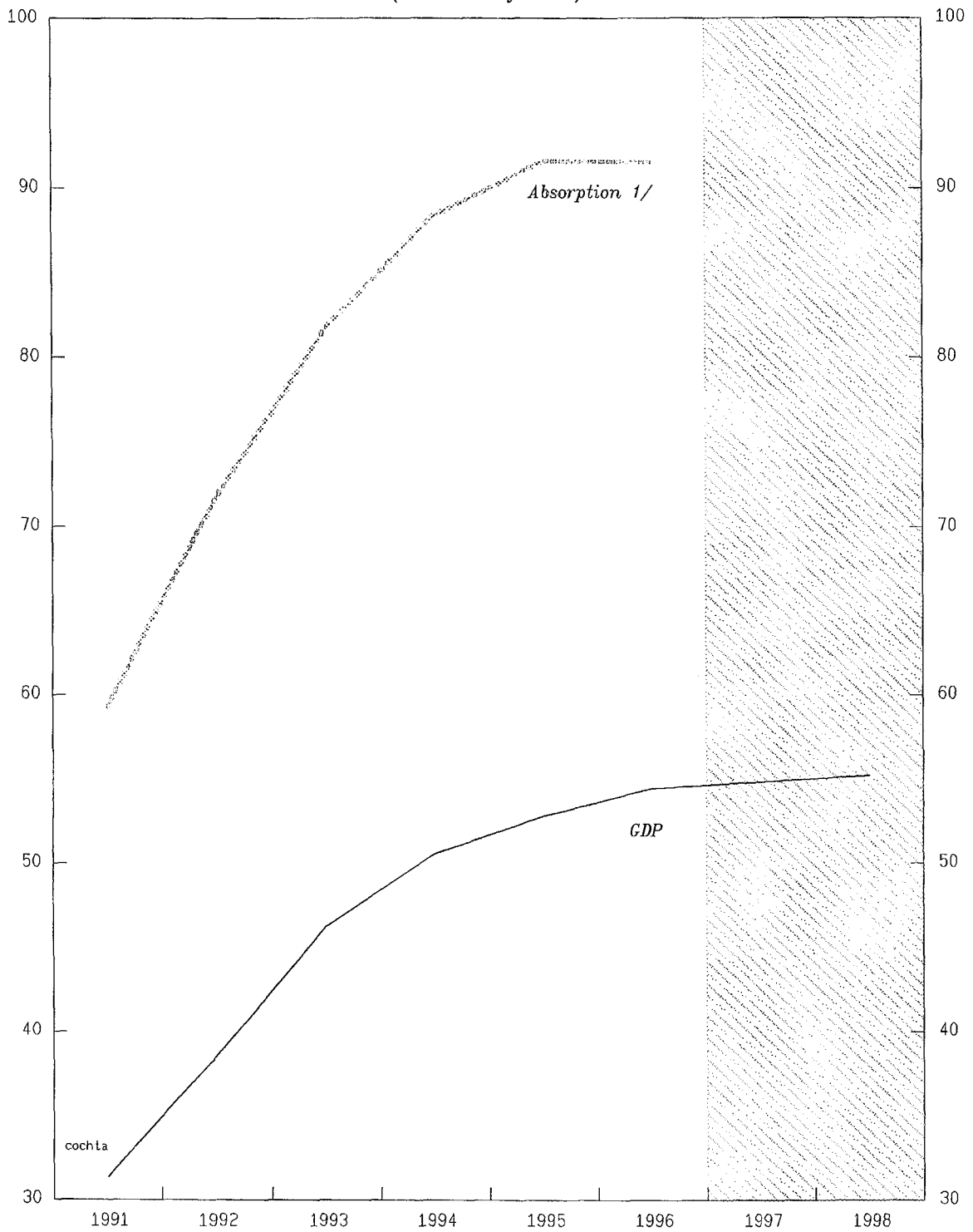
99. These factors have left the new Länder with two large macroeconomic imbalances: (1) Aggregate demand in the east has exceeded production by a large margin, giving rise to a historically unprecedented "absorption gap" (or "current account deficit") of over 50 percent of east German GDP;² (2) Real wage levels in the east exceed labor productivity, causing a large "unit labor cost gap" to emerge which has placed east German labor at a severe competitive disadvantage and has itself become a key impediment to a more dynamic convergence process by lowering the expected profitability of capital investment.³ In this

¹Prepared by Albert Jaeger.

²This absorption gap was present across all main spending components of aggregate demand (Chart III-2, Table III-1). For comparison, rough estimates for Italy's southern region (the *Mezzogiorno*) indicated an absorption gap of some 19 percent of regional GDP in 1988. See Andrea Boltho, Wendy Carlin, and Pasquale Scaramozzino, "Will East Germany Become a New Mezzogiorno?", CEPR Working Paper No. 1256 (London: Centre for Economic Policy Research, 1996).

³The difficulties in implementing the convergence strategy, especially the likely harmful
(continued...)

Chart III-1
Germany
Eastern Germany: Convergence of GDP and Absorption
(Per Capita)
(West Germany = 100)



Sources: Federal Statistical Office; staff estimates of per capita absorption in 1995-96; and spring 1997 projections of per capita GDP in 1997-98 by the six research institutes.

1/ Absorption (or final domestic demand) is defined as total spending on consumption and investment; values for 1995-96 are staff estimates.

Table III-1. Germany: Eastern Germany—Convergence Indicators

(West Germany = 100)

	1991	1992	1993	1994	1995	1996	1997 1/	1998 1/
Nominal GDP and absorption 2/								
Private consumption	51.0	58.5	64.0	65.7	68.7	69.0	...	...
Public consumption	77.3	91.0	99.0	100.8	98.9	99.0	...	...
Gross fixed investment	65.5	89.7	117.5	144.9	155.1	156.3	...	...
Machinery and equipment	63.6	75.3	99.5	111.7	113.0	112.7	...	...
Construction	67.2	100.8	129.1	164.9	180.6	184.5	...	...
Absorption	59.3	71.7	81.7	88.4	91.6	91.5	...	...
GDP	31.3	38.5	46.2	50.6	52.8	54.4	54.8	55.2
Wages and social benefits								
Wage level 3/	46.8	60.7	67.9	70.4	72.4	73.8	74.7	75.6
Pension benefits 4/	50.9	58.8	67.8	73.7	77.6	81.3	...	...
Unemployment benefits 5/	55.6	63.5	73.8	77.1	77.6	81.5	...	...
Social assistance benefits 6/	87.0	91.6	93.0	96.7	98.0	98.1	...	...
Memorandum items:								
Population	24.8	24.2	23.9	23.6	23.4	...	...	...
Labor force	27.7	25.5	24.8	25.2	25.3	...	...	...

Sources: Federal Statistical Office; Ministry of Economics; projections by the six research institutes; and staff estimates.

1/ Spring 1997 projections by the six research institutes.

2/ In per capita levels.

3/ Gross wage bill divided by dependent employment.

4/ Pension benefit of average wage earner with 45 contribution years.

5/ Average unemployment insurance and assistance benefits per recipient.

6/ Social assistance benefits for single household.

Table III-2. Germany: Eastern Germany—Sectoral Output Growth and Shares

(In percent)

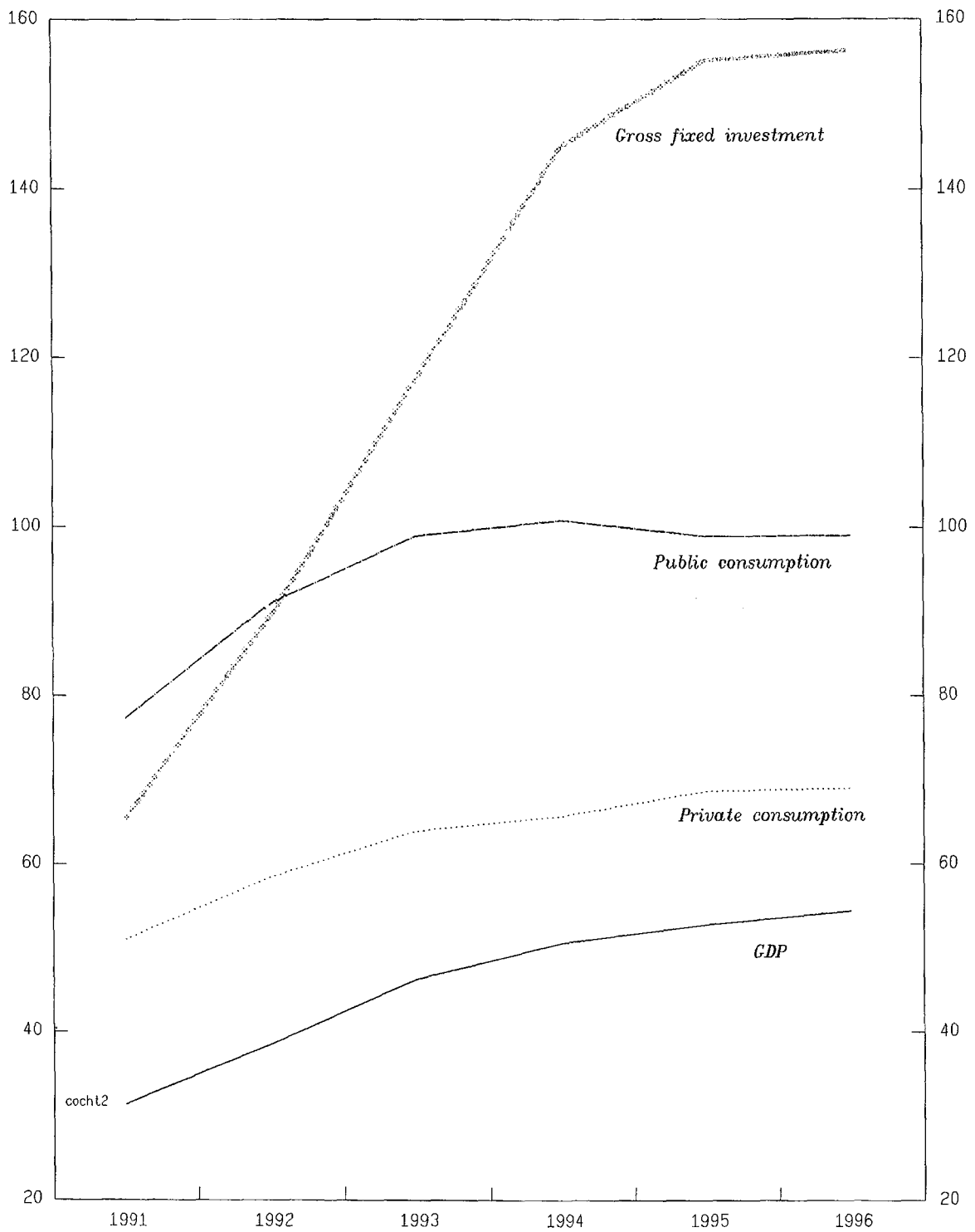
	1992	1993	1994	1995	1996	1997 1/
Real output growth						
Total economy	7.8	8.9	9.9	5.3	2.0	2.4
Manufacturing	5.2	11.7	15.5	6.7	6.1	7.4
Construction	30.4	12.8	24.5	8.4	-2.0	-4.5
Trade and transportation	4.5	12.1	7.3	4.2	2.3	1.2
Other private services	19.1	6.5	8.6	7.5	5.7	5.8
Other sectors 2/	-4.4	4.1	-1.1	1.4	0.6	1.1
Real output shares						
Total economy	100.0	100.0	100.0	100.0	100.0	100.0
Manufacturing	16.4	17.0	17.9	18.1	18.8	19.6
Construction	14.1	14.8	16.7	17.2	16.6	15.4
Trade and transportation	13.7	14.2	13.9	13.7	13.8	13.6
Other private services	24.2	23.9	23.7	24.1	25.0	25.7
Other sectors 2/	31.6	30.1	27.9	26.8	25.8	25.7
Memorandum item						
West Germany: Real output growth	1.8	-1.9	2.2	1.6	1.3	2.3

Sources: Federal Statistical Office; and projections by the Institute for Economic Research Halle.

1/ Projections.

2/ Includes agriculture, energy, mining, and public sector services.

Chart III-2
Germany
Eastern Germany: Convergence of Absorption Components
(Per Capita)
(West Germany = 100)



Sources: Federal Statistical Office; and staff estimates of absorption components in 1995-96.

difficult situation, the key policy challenge is to establish more propitious conditions for self-sustaining growth based on private investment.

100. Section A of this chapter provides an overview of convergence developments in the new Länder, highlighting the size and persistence of the absorption and unit labor cost gaps. It also discusses developments in wage setting and its implications for the cost competitiveness of east German labor. Labor market conditions are examined in Section B, while developments in official budgetary transfers to eastern Germany, which contributed to the over-sized public sector in the new Länder, are reviewed in Section C. The final section presents an analysis of convergence prospects and recent government initiatives. Because growth in the new Länder has mainly been supported directly or indirectly by government subsidies, the prospective withdrawal of support (including the prospective lowering of pension and unemployment benefits) opens the question of whether additional private-sector investment will compensate for the likely drop in consumption.

A. Convergence Developments

101. At the time of unification, the initial conditions for rapid “catch up” growth in the new Länder were considered propitious. Western Germany enjoyed low inflation, a balanced structural fiscal position, a high domestic savings rate, and a large current account surplus. Reflecting, inter alia, a long-standing constitutional mandate to reunify, substantial resources were pledged to integrate the new Länder and a transfer of legal and administrative structures would avoid some of the vexing governance problems that plagued other transition economies. On the side of the former GDR, the high level of general and technical education of the labor force was considered a valuable asset. The principal economic obstacles were highly distorted relative prices and an obsolete capital stock. To optimistic commentators, a new *Wirtschaftswunder* (economic miracle) appeared to be in the offing.

102. The initial transformation strategy sought to achieve the free play of market forces within a secure and unobtrusive legal and financial framework based on the principles of *Ordnungspolitik*. The speedy transition to a market economy would be softened by the extension of western Germany’s comprehensive social safety net to the east. Moreover, the transition would be supported by intergovernmental transfers to the new states and municipalities, to finance infrastructure investments, business promotion programs, and active labor market policies. Although these government programs involved untidy departures from *Ordnungspolitik*, the historic transformation task was thought to justify temporary deviations.

³(...continued)

consequences of substantially misaligned wages for the medium-term convergence process in the new Länder were noted in the collection of studies edited by Leslie Lipschitz and Donogh McDonald, *German Unification: Economic Issues*, Occasional Paper No. 75 (Washington: International Monetary Fund, December 1990).

103. At the inception of economic, monetary, and social union on July 1, 1990, wages and salaries in eastern Germany were converted from GDR mark to deutsche mark at the rate GDR M 1 = DM 1. After the conversion, the actual wage level in eastern Germany averaged about one third of the west German level, broadly in line with estimates of relative labor productivity levels in eastern Germany.⁴ The average relative wage level appeared to be in line with relative productivity, particularly given the expectation of further labor productivity gains as labor dishoarding would take place.

104. In the wage bargaining following unification, union and employer representatives quickly agreed to multi-year contracts that envisaged raising tariff wage rates in eastern Germany quickly to west German levels, without linking actual wage adjustments to future developments in labor productivity. The metal and electronics industry was especially aggressive; the initial wage bargaining agreement envisaged increasing tariff wage rates in four stages from about 65 percent of the west German level in April 1991 to 100 percent by spring 1994. Even when subsequent modifications delayed full tariff wage convergence to mid-1996, tariff wages in this sector rose by over 100 percent from 1991 to 1996. Indeed, by end-1996, tariff wages in most industries in the new Länder had reached at least 80 percent of west German levels.⁵ The rapid convergence of tariff wages in eastern Germany has not, however, been reflected in a corresponding convergence of effective wages.⁶

105. Collective wage bargaining in the east also sought to achieve the relatively narrow sectoral and regional wage dispersion patterns observed in the west (Table III-3 and Table III-4). In fact, the sectoral wage dispersion in the new Länder appears to be narrower than in the old Länder. The narrow wage dispersion in west Germany has often been cited as a factor underlying the high unemployment rate of unskilled persons in the face of skill-biased

⁴See Deutsche Bundesbank, "The Trend in Agreed Pay Rates and Actual Earnings Since the Mid-Eighties," Monthly Report August 1994, Vol. 46, No. 8, pp. 29-44.

⁵Ministry of Labor and Social Affairs, *Tarifvertragliche Arbeitsbedingungen im Jahre 1996* (Bonn: Ministry of Labor and Social Affairs, February 1997).

⁶Several reasons account for the incomplete convergence: the tariff agreements do not cover non-wage remuneration and other benefits, including leave pay and bonuses that have remained significantly below west German levels; effective wage payments in the old Länder include past positive wage drift, while wage drift in the east has been negative (averaging 1½ percent per annum during 1993-96); the payment of below-tariff wages, while exceptional in western Germany, appears to be a widespread practice in the east; and firms facing financial difficulties have applied for exceptions to labor agreements (including those related to wages and work conditions) or in extremis, some firms have ignored their agreements often with the tacit consent of the unions.

Table III-3. Germany: Eastern Germany—Sectoral Labor Cost Competitiveness Indicators

(West Germany = 100)

	1991	1992	1993	1994	1995	1996	1997 1/	1998 1/
Wage level 2/								
Total economy	46.8	60.7	67.9	70.4	72.4	73.8	74.7	75.6
Manufacturing	37.0	52.1	56.6	63.4	67.0	68.7	...	...
Construction	59.6	71.1	75.4	77.3	77.7	78.0	...	...
Trade and transportation	46.2	62.9	71.0	72.4	73.0	73.7	...	...
Other services	55.6	63.4	69.9	69.3	74.0	75.6	...	...
Labor productivity 3/								
Total economy	31.0	43.1	51.6	54.3	55.2	56.8	57.9	58.6
Manufacturing	19.6	32.1	42.5	49.0	50.7	54.6	...	...
Construction	48.4	60.5	65.0	73.4	77.1	77.2	...	...
Trade and transportation	34.0	41.5	47.2	48.9	49.8	50.9	...	...
Other services	34.6	44.0	51.2	51.4	50.8	51.1	...	...
Unit labor cost 4/								
Total economy	150.7	140.9	131.7	129.8	131.2	130.0	129.1	128.9
Manufacturing	189.0	162.1	133.3	129.5	132.2	126.0	...	...
Construction	123.2	117.6	115.9	105.4	100.7	101.1	...	...
Trade and transportation	136.1	151.6	150.5	147.9	146.6	144.7	...	...
Other services	160.7	144.2	136.7	134.8	145.8	147.9	...	...

Sources: Federal Ministry of Economics; and projections by the six research institutes.

1/ Spring 1997 projections by the six research institutes.

2/ Gross wage bill divided by dependent employment.

3/ Nominal value added divided by total employment. A measure of “nominal labor productivity” —as opposed to “real labor productivity”—is used to take account of the distorted reunification price structure in east Germany, which may have included many below-market prices.

4/ Gross wage per employee divided by nominal value added per employed person. A measure of “nominal unit labor cost”—as opposed to “real unit labor cost”—is used to take account of the distorted reunification price structure in east Germany.

Table III-4. Germany: Eastern Germany—Sectoral and Regional Wage Dispersion, 1995

	West	East
Intersectoral wage dispersion 1/	10.5	9.4
Intrasectoral wage dispersion 2/	2.8	2.7
Regional wage dispersion 3/	4.8	6.0

Source: *Statistisches Jahrbuch 1996*, Table 22.7.

1/ Coefficient of variation measuring the standard deviation of average monthly wage of male white-collar workers across all sectors divided by the average (in percent).

2/ Unweighted average across all sectors of ratio between highest and lowest tariff grade for white-collar workers.

3/ Coefficient of variation measuring the standard deviation of average monthly wages across the Länder (in percent).

technological progress.⁷ For eastern Germany, limited wage dispersion has also been inconsistent with significant differences in labor productivity across sectors and firms within a sector.

106. Labor costs in the old Länder are an appropriate yardstick to measure integration of the new Länder. However, this yardstick may obscure two other dimensions of eastern Germany's competitiveness problem: (1) Labor costs in the west—as measured by hourly manufacturing wages converted at prevailing exchange rates—exceeded labor cost in other industrial countries by considerable margins during the 1990s (see Table III-4); (2) Labor costs in the new Länder are high relative to those in neighboring transition economies and the rapidly growing economies of southeast Asia, which may offer alternative production locations for west German and foreign investors (Table III-5).

107. The sharp rise in wages relative to productivity has opened up a large gap in unit labor costs between east and west, placing east German industries at a severe competitive disadvantage (Chart III-3; see Table III-3).⁸ Unit labor costs have declined since 1991, from about 150 percent of the west German level, but have remained some 30 percent above west German levels during the period 1994-96—and projections by the Halle Institute for 1997-98 foresee no marked decline.

108. Unit labor costs show significant variation across sectors and within sectors, reflecting variations in labor productivity but also deliberate wage restraint. In 1996, unit labor costs for eastern Germany exceeded the west German level by 30 percent, but sectoral unit labor costs ranged from close to parity in the construction sector to a unit labor cost gap of almost 50 percent in the service sector (see Table III-3). Unit labor costs also differ significantly across industries within the manufacturing sector, as illustrated by a comparison of labor cost data for the metal and electronics industry and the chemical industry (Table III-6). By contrast with the previously mentioned metal and electronics industry, wage agreements for the chemical industry in eastern Germany eschewed a direct link to west German tariff wage levels. More

⁷See, e.g., Kornelius Kraft (1994), "Wage Differentials Between Skilled and Unskilled Workers," *Weltwirtschaftliches Archiv*, Vol 130, pp. 329-47.

⁸The measures of unit labor cost reported in Tables III-3 and III-6 are defined as labor cost per employee divided by nominal value added per employed person. This "nominal unit labor cost" measure—as opposed to the conventional "real unit labor cost" measure which are based on real labor productivity—has been employed to avoid overstating the loss of labor competitiveness following the equalization of prices in the east with those in the west. In particular, it has been argued that the distorted price structure in the east before unification (on which real labor productivity would be based) included many below-market prices that were subsequently adjusted to market levels without loss of competitiveness. However, this is unlikely to apply to all goods. Thus, the real measure is likely to overstate the true magnitude of the unit labor cost gap, while the nominal measure is likely to understate it.

Table III-5. Germany: Eastern Germany—Hourly Compensation Costs in Manufacturing in East Germany and Selected Countries

(West Germany=100)

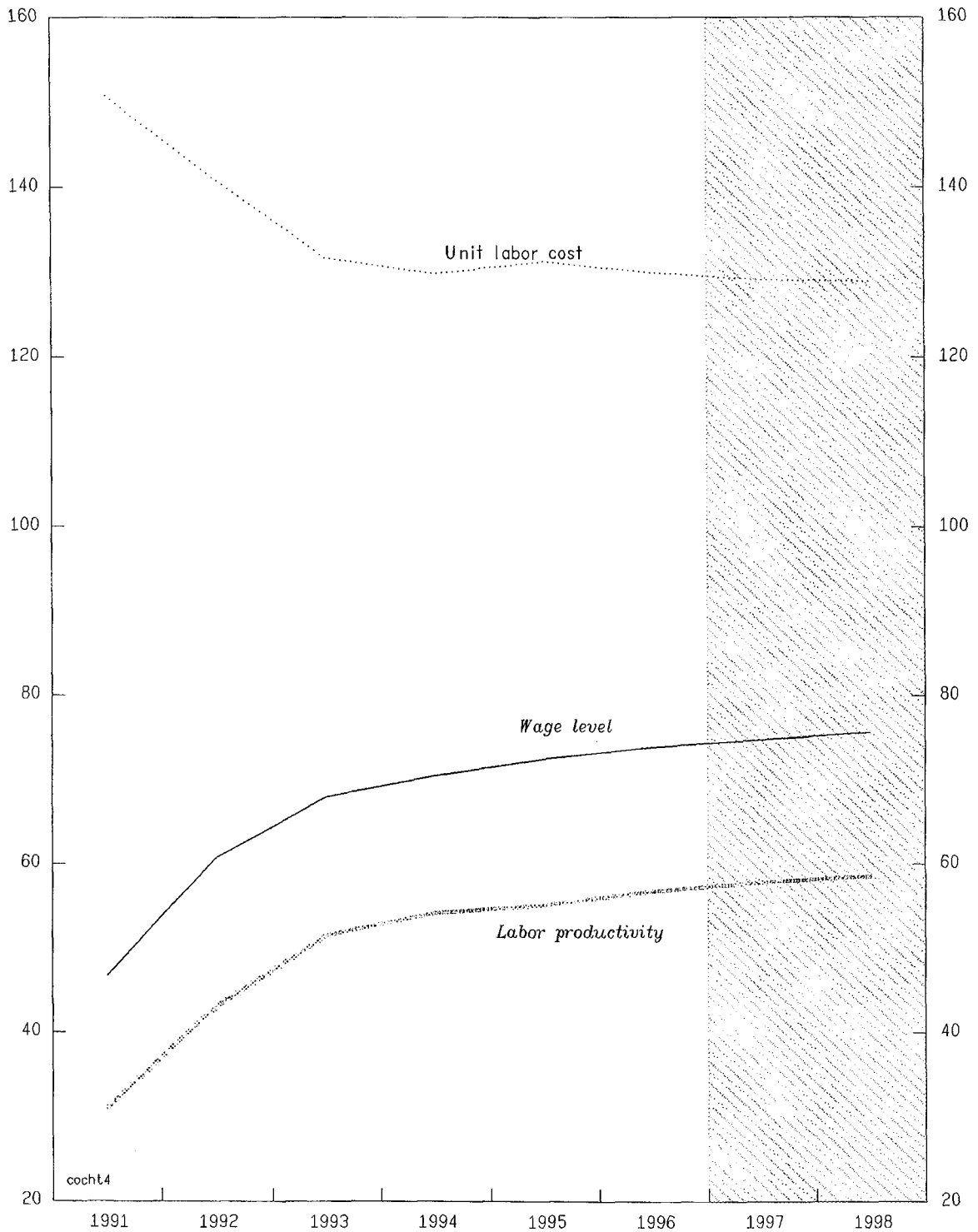
	1990	1996
East Germany 1/	...	63.2
Austria	80.8	78.3
Belgium	87.5	81.8
Denmark	81.8	76.5
France	69.4	60.7
Ireland	53.6	44.3
Italy	80.8	56.7
Netherlands	83.3	73.2
Portugal	17.0	...
Spain	51.6	41.7
Sweden	95.3	77.1
United Kingdom	57.9	44.5
Canada	72.1	52.3
Japan	58.3	66.0
United States	67.9	55.7
Korea	16.9	25.8
Singapore	17.2	26.1
Taiwan Province of China	17.9	18.4
Czech Republic 2/	...	7.6
Hungary 2/	...	6.6
Poland 2/	...	6.2

Sources: U.S. Bureau of Labor Statistics (BLS); OECD data base; and staff estimates.

1/ Staff estimates based on data for manufacturing wages in Table 4 adjusted for difference in effective work hours in east and west Germany.

2/ Staff estimates for 1995 based on OECD data; due to different definitions and conventions, these estimates may not be fully comparable with BLS data.

Chart III-3
Germany
Eastern Germany: Convergence of Wages, Labor
Productivity and Unit Labor Cost
(West Germany = 100)



Sources: Ministry of Economics; and spring 1997 projections by the six research institutes.

Table III-6. Germany: Eastern Germany—Labor Cost Competitiveness in Selected Industries

	1992	1993	1994	1995	1996
Metal and electronics industry					
Tariff wages: Index end-1991=100 1/	119.4	147.0	165.4	167.2	206.4
Tariff wages: West Germany=100 1/	63.5	75.0	82.8	83.5	97.0
Effective wages: West Germany=100 2/	46.9	54.0	61.8	69.3	...
Labor productivity: West Germany=100 2/	22.6	29.4	39.3	44.6	...
Unit labor cost: West Germany=100 2/	207.6	183.8	157.3	155.4	...
Chemical industry					
Tariff wages: Index end-1991=100 1/	119.8	136.9	141.8	143.0	172.2
Tariff wages: West Germany=100 1/	59.8	67.0	68.6	69.0	80.0
Effective wages: West Germany=100 2/	40.1	50.1	51.7	58.1	...
Labor productivity: West Germany=100 2/	10.2	25.9	40.2	55.3	...
Unit labor cost: West Germany=100 2/	393.0	193.4	128.5	105.0	...

Source: Ministry of Labor; Institute for Economic Research Halle; and staff estimates.

1/ Based on *Tarifvertragliche Arbeitsbedingungen in 1996* by Ministry of Labor (1997).

2/ Data provided by the Institute for Economic Research Halle.

restrained wage rounds in the chemicals industry combined with more rapid gains in labor productivity reduced unit labor costs by 1995 to almost the west German level.⁹

109. The extension of the social security system in western Germany to the east led to even faster convergence of social benefits (compared to wages). This underpinned a sharp rise in living standards, but it also raised the reservation wage in the new Länder (Chart III-4; see Table III-1). For a representative average wage earner with 45 contribution years, pension benefits in eastern Germany reached more than 80 percent of the level in the west in 1996.¹⁰ Average unemployment benefits per recipient rose to 80 percent of the west German level by 1996.¹¹ Finally, the level of social assistance benefit payments had already practically converged to the level in the west by 1996.

110. The competitiveness problem in the new Länder has slowed the convergence process. Since 1994, growth rates for the new Länder have progressively declined toward growth rates in the old Länder. In 1996, real GDP growth for the new Länder (2 percent) was only marginally higher than those in the old Länder (1¼ percent), raising the specter that convergence has stalled. This virtual halt in GDP convergence is also projected by the Halle Institute to continue in 1997 and 1998.

111. Absorption has surged ahead of east German production levels and is estimated to have reached some 90 percent of western Germany's per capita level in 1996.¹² As a consequence, eastern Germany's absorption gap—or if it were a country, a “current account” deficit—that has averaged some 65 percent of GDP in the new Länder during 1991-96, about two thirds of which were financed by “official transfers” and the remainder by private capital flows, which were in part induced by generous fiscal investment incentives. Although on a

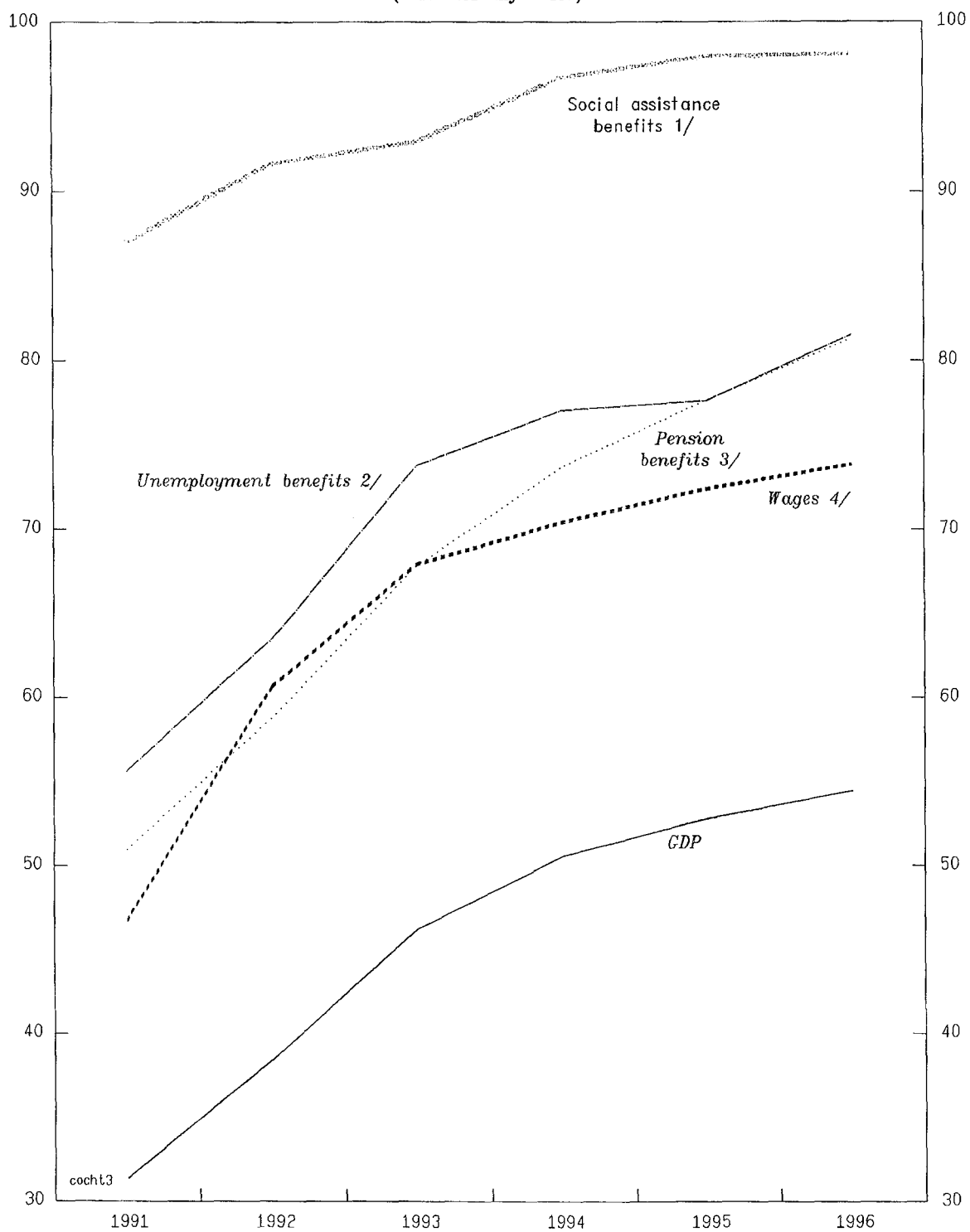
⁹It has been pointed out that low labor productivity levels in some sectors in the new Länder may also reflect low capacity utilization levels due to the lack of successful marketing of products. In support of this hypothesis, it has been noted that industries with a large share of companies owned by west German firms and therefore with better market access—such as the chemicals industry—have performed significantly better than other industries. See Hilmar Schneider, “Die ostdeutsche (Maschinenbau-)Industrie im Transformations- und Globalisierungsprozess,” in: Rüdiger Pohl and Hilmar Schneider (eds.), *Wandeln oder Weichen: Herausforderung der wirtschaftlichen Integration für Deutschland* (unpublished, 1997).

¹⁰The ratio for effective average pension benefits in eastern Germany is even higher, reflecting the longer average pension contribution records of wage earners in the east.

¹¹Including both unemployment insurance benefits (*Arbeitslosengeld*) and unemployment assistance (*Arbeitslosenhilfe*).

¹²Official data on absorption in the new Länder are only available through 1994, and the data for 1995-96 represent staff estimates.

Chart III-4
Germany
Eastern Germany: Convergence of Wages
and Social Benefits
(West Germany = 100)



Sources: Ministry of Labor; and staff estimates.

- 1/ Single household social assistance benefits.
- 2/ Average unemployment insurance and assistance benefits.
- 3/ Average wage earner with 45 contribution years.
- 4/ Gross wage bill divided by dependent employment.

moderate downward path, the absorption gap was estimated at about 54 percent of east German GDP in 1996. This gap was spread across all the main spending components of aggregate demand (see Chart III-2). Private consumption reached about 70 percent of the west German per capita level in 1996, underpinned by a concomitant rise of disposable income in eastern Germany to about 70 percent of the level in western Germany. Thus, the private household savings rate appears to have become aligned with the level in western Germany.¹³ Public consumption spending per capita reached west German levels already in 1993, reflecting, inter alia, the higher civil service staffing levels in eastern Germany. Finally, spending on gross fixed investment exceeded west German per capita levels by 1994; spending on construction in particular exceeded west German spending levels by some 85 percent in 1996.

112. Estimates of the capital-labor ratio for eastern Germany indicate a sharp rise relative to the ratio for western Germany during the period 1991-96 (Chart III-5, Table III-7).¹⁴ The convergence speed for the capital-labor ratio—as measured by the reduction in the lagged gap between capital-labor ratios in east and western Germany—was exceptionally high by historical standards.¹⁵ For example, the average convergence speed of the east German capital-labor ratio during 1994-95 was estimated at about 11 percent, requiring gross fixed investment ratios in eastern Germany of about 60 percent of GDP. This convergence speed is also high by international standards.¹⁶ Nevertheless, actual developments in the east German capital-labor ratio clearly fell short of the investment level required to achieve the rapid

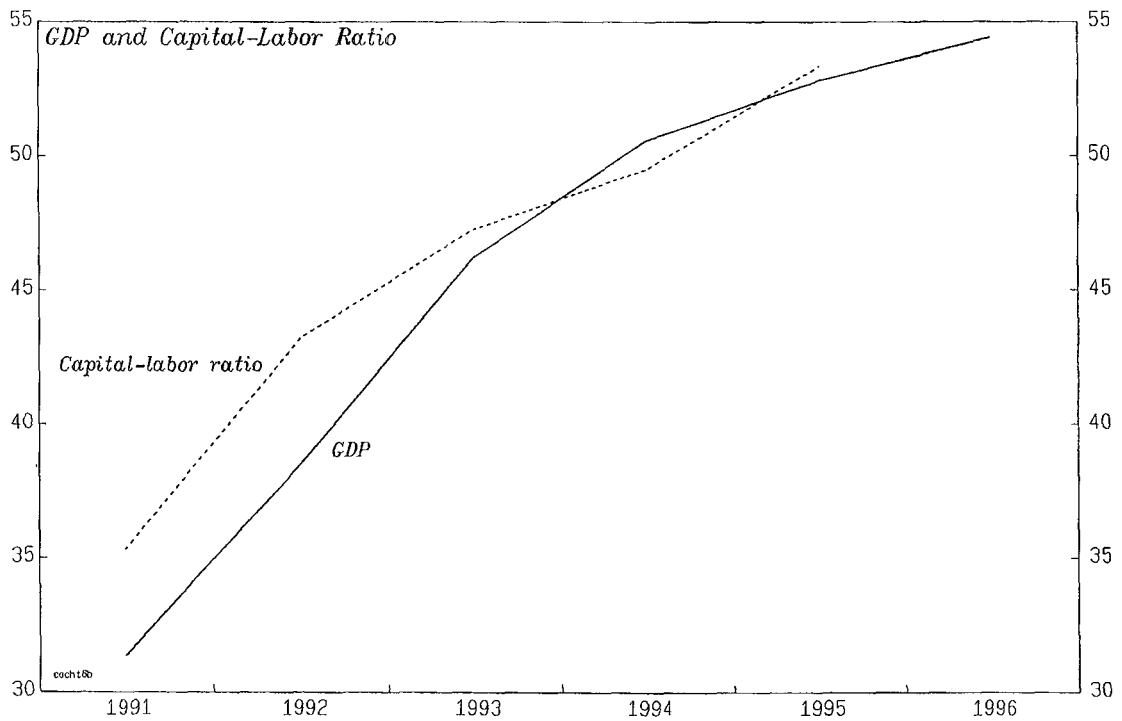
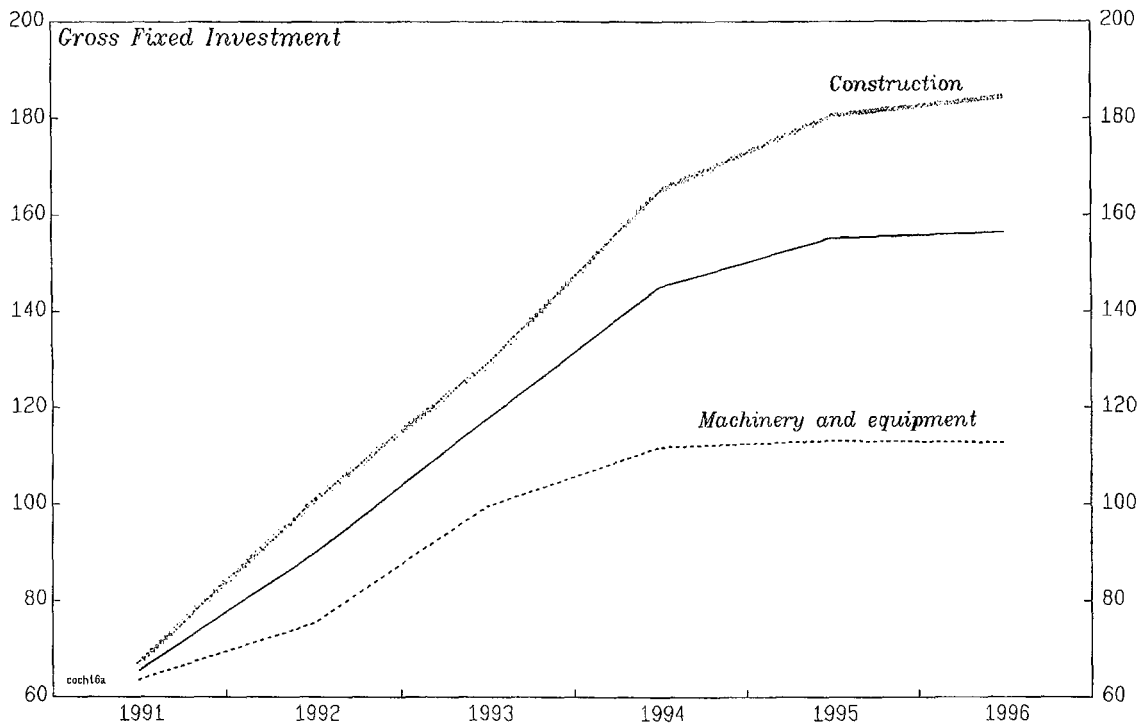
¹³However, net financial assets of private households in eastern Germany lagged far behind west German levels—reaching only about 30 percent of the west German level in 1994. See Deutsche Bundesbank, “Overall Financial Flows in Germany in 1994,” *Monthly Report May 1995*, Vol 47, No. 5, pp. 17-42.

¹⁴The official estimates of the east German capital stock are sensitive to the initial value of capital in 1991 and include the value of residential buildings. Capital stock estimates based on a production function approach indicated that the initial east German capital stock was probably some 30 percent below the official estimates used in this chapter. See Christian Thimann, *Aufbau von Kapitalstock und Vermögen in Ostdeutschland: Der lange Weg zur Einheitlichkeit der Lebensverhältnisse* (Tübingen: J.C.B. Mohr, 1996). Investments in residential buildings do not add directly to the productive capacity. About 22 percent of gross fixed investment in eastern Germany during 1991-94 was investment in residential buildings (compared to a share of 30 percent in western Germany).

¹⁵For example, a convergence speed (β) of 0.10 means that in each period 10 percent of the gap in the capital-labor ratios in the previous period is closed.

¹⁶See Robert J. Barro and Xavier Sala-i-Martin, *Economic Growth* (New York: Mc Graw-Hill, 1995) for evidence on convergence speeds for low-income regions in the United States, Europe, and Japan. The reported convergence speed estimates are generally around 0.02-0.03 per year.

Chart III-5
Germany
Eastern Germany: Convergence of Capital Endowments
(West Germany = 100)



Sources: Federal Statistical Office; and staff estimates and projections.

Table III-7. Germany: Eastern Germany—Capital Investment and Capital-Labor Ratios

	1991	1992	1993	1994	1995	1996
Actual developments						
Capital-labor ratio 1/	38.0	45.1	47.7	48.1	50.1	53.7
Gross fixed investment 2/	44.5	53.2	56.2	61.4	58.9	
Convergence speed (β) 3/	0.31	0.11	0.02	0.08	0.14	
Counterfactual catch up scenario 4/						
Capital-labor ratio 1/	38.0	49.6	61.6	73.0	82.6	90.0
Gross fixed investment 2/	106.3	145.7	137.6	108.0	68.0	
Convergence speed (β) 3/	0.50	0.50	0.50	0.50	0.50	

Sources: Federal Ministry of Economics; and staff estimates of capital-labor ratio in 1996.

1/ Total real capital stock including residential buildings at the beginning of the year as a ratio to actual employment (in persons).

2/ In percent of east German GDP.

3/ Convergence speed (β) measures the reduction in the gap between the capital labor ratio in east and west Germany in the previous year. For example, a constant convergence speed of 0.10 would mean that in each time 10 percent of the lagged gap between capital labor ratios in east and west is closed.

4/ This scenario assumes counterfactually convergence of the east German capital-labor ratio to 90 percent of the west German level by the beginning of 1996. The employment data used to calculate capital-labor ratios are actual employment in east and west Germany during the period 1991-96.

convergence envisaged initially. For example, achieving a capital-labor ratio in the new Länder that was 90 percent of the level in the old Länder in 1996, would have required a convergence speed of 0.50 over the period 1991-95. The required gross fixed investment would have exceeded total east German GDP during those years (see Table III-7).¹⁷

113. A comparison of eastern Germany's GDP growth with that in selected eastern European countries—using purchasing power parity (PPP) adjusted per capita GDP estimates— suggests that the real GDP of eastern Germany rebounded quickly from the initial sharp drop in production levels in 1990-91 (Chart III-6). Thus, the per capita GDP rankings that prevailed before 1990 appear to have been largely restored. At the same time, taking account of eastern Germany's massive absorption gap, average living standards in the new Länder have moved far ahead of those in other transition economies.

B. Unemployment

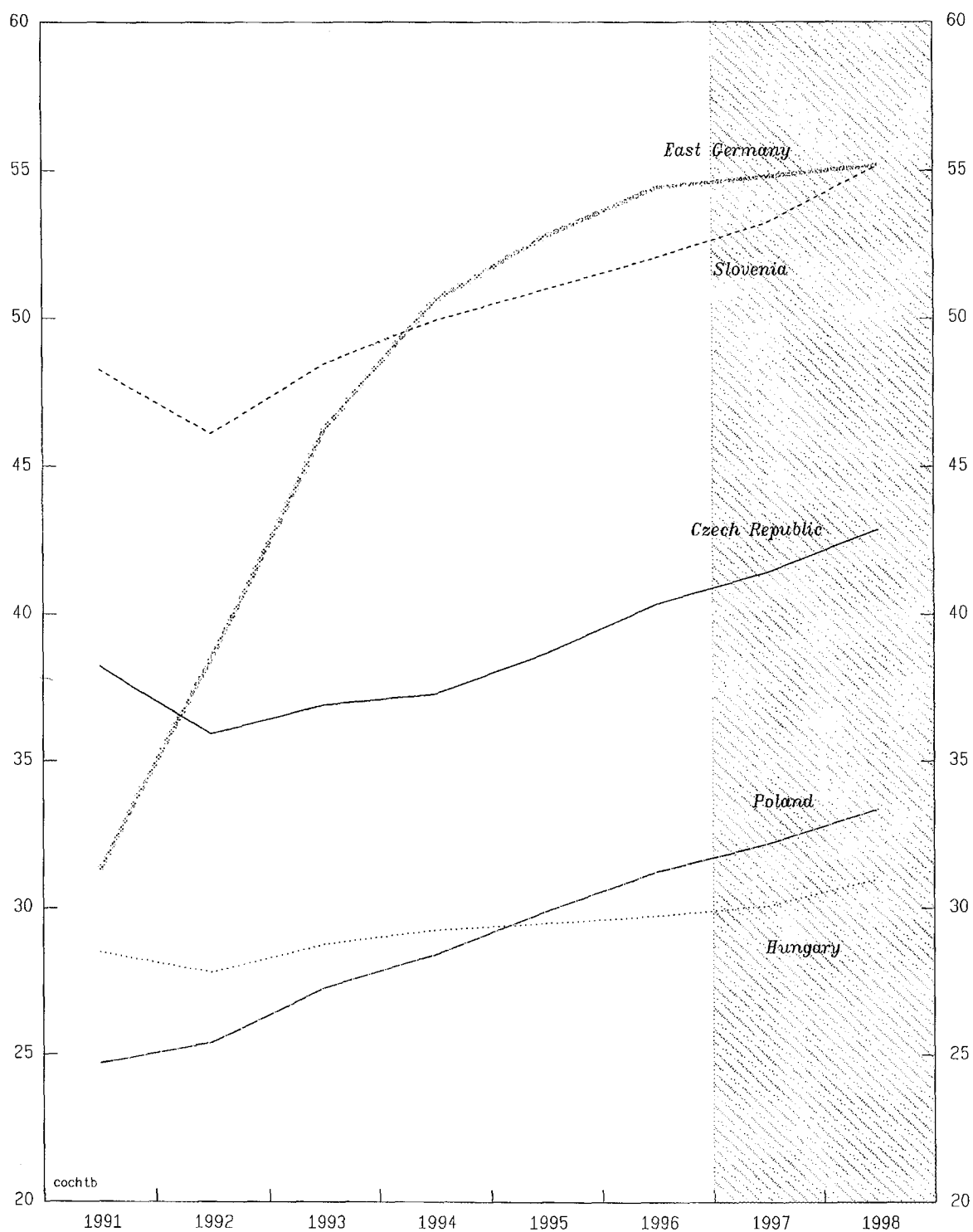
114. Unemployment in eastern Germany rose sharply after unification, and it has become entrenched at a high level (Chart III-7, Table III-8). In 1992, the number of registered unemployed persons climbed to 1.2 million persons or 15.5 percent of the labor force. However, broader measures indicate that registered unemployment substantially underestimates the actual slack in the labor market in the new Länder. More comprehensive measures of labor market slack that take account of persons in job creation, retraining, and other active labor market programs, indicate "underemployment" rates of up to 25 percent in 1996. Somewhat surprisingly, statistics of flows into and out of registered unemployment suggest that a significant number of workers change their labor market status in eastern Germany each month; flows in and out of registered unemployment were at, or above, those in the old Länder and far higher than observed in transition economies (Table III-9).¹⁸ However, this churning could reflect "circular flows" between registered unemployment and the secondary labor market, which includes persons in job creation and retraining programs.¹⁹

¹⁷This scenario was based on actual employment during the period 1991-96. To achieve higher employment in eastern Germany, and thereby reduce unemployment, the investment requirements would have to increase substantially.

¹⁸On average during 1992-96, the inflow into unemployment expressed as a percent of employment amounted to 2¼ percent per month, while outflows from unemployment expressed as a percent of unemployment averaged 12½ percent per month.

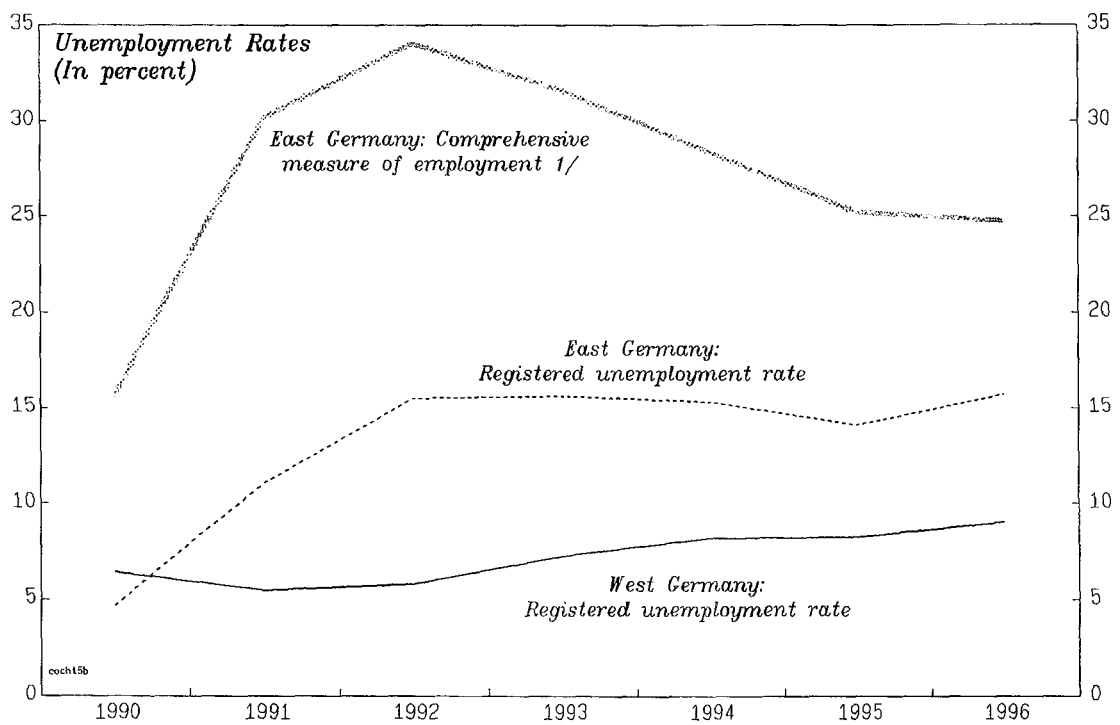
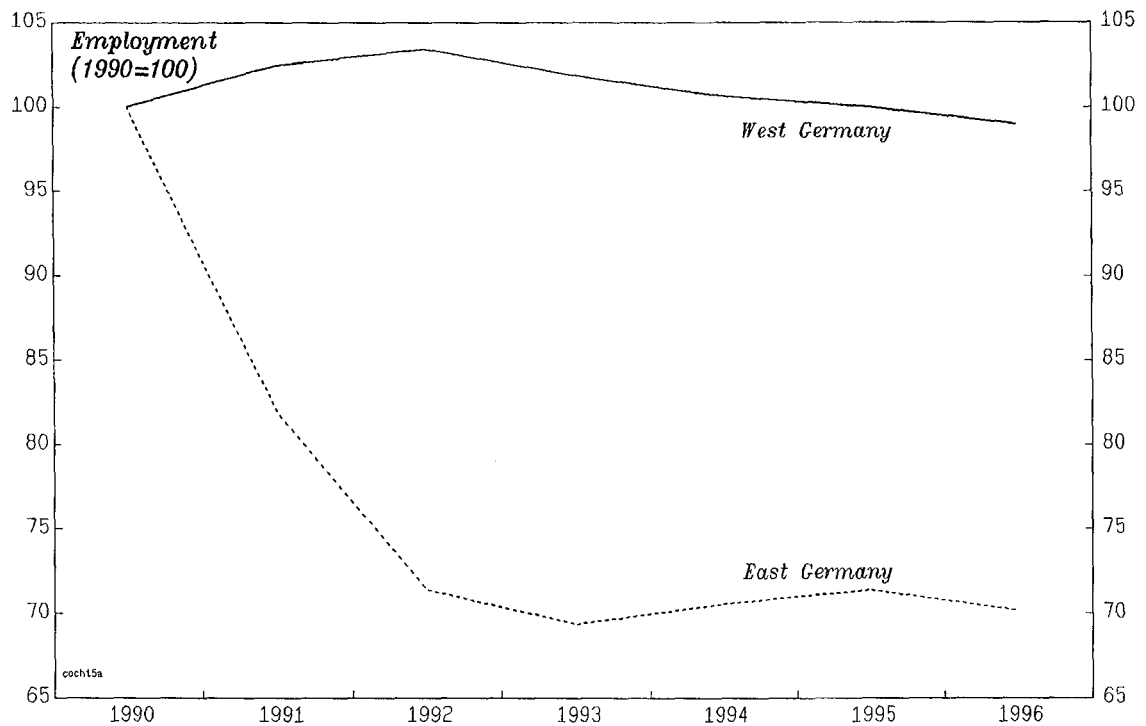
¹⁹An earlier analysis of unemployment flow dynamics in eastern Germany, reported that substantial "circular flows" between job creation programs and registered unemployment could have occurred during 1991-92. See Michael C. Burda, "Modeling Exits from Unemployment in Eastern Germany: A Matching Function Approach," CEPR Working Paper No. 800 (London: Centre for Economic Policy Research, 1993). This paper also provides evidence on unemployment flow dynamics in other eastern European economies.

Chart III-6
Germany
Eastern Germany: Per Capita GDP in East Germany and in
Selected Eastern European Countries (PPP Adjusted)
(West Germany=100)



Sources: WEO Database; Federal Statistical Office; and staff estimates and projections.

Chart III-7
Germany
Eastern Germany: Employment and Unemployment



Sources: Federal statistical office; and staff estimates.

1/ Including short-term workers etc.

Table III-8. Germany: Eastern Germany—Labor Market Developments

	1990 1/	1991	1992	1993	1994	1995	1996
(In thousands)							
Registered unemployed persons	433	913	1,170	1,149	1,142	1,047	1,169
Persons in:							
Short-term jobs	1,516	1,616	370	181	97	71	71
Job creation programs	7	183	388	262	280	312	278
Retraining programs	39	280	491	381	259	256	230
Early retirement programs	381	554	811	853	650	374	186
Other programs	0	162	127	74	83	92	122
(In percent)							
Registered unemployment rate	4.7	11.1	15.5	15.6	15.3	14.1	15.7
Underemployment rate A 2/	11.8	19.6	17.6	16.7	15.9	14.5	16.1
Underemployment rate B 3/	12.2	23.9	26.2	23.4	21.6	20.6	21.5
Underemployment rate C 4/	15.7	30.2	34.0	31.6	28.4	25.2	24.8
Memorandum items:							
Commuter balance net (in thousands) 5/	80	269	338	325	326	328	328
Vacancies (in thousands)	...	31	33	36	51	55	57
Labor force participation rates 6/							
East Germany	...	84.4	81.4	78.6	78.2	78.7	77.0
West Germany	...	70.5	71.1	71.0	71.1	70.7	70.3

Sources: Federal Statistical Office; German Council of Economic Experts; and staff estimates.

1/ Second half of 1990.

2/ Registered unemployment rate adjusted for short-time jobs weighted by average non-working time.

3/ Alternative underemployment rate A adjusted for persons in job creation and retraining programs.

4/ Alternative underemployment rate B adjusted for persons in early retirement and other programs.

5/ East German residents working in west Germany minus west German residents working in east Germany.

6/ In percent of population aged 15-65 years.

Table III-9. Germany: Eastern Germany—Average Monthly Unemployment Flows

(In percent)

	1992	1993	1994	1995	1996
Eastern Germany					
Inflows into unemployment 1/	2.0	2.0	2.1	2.4	2.9
Outflows from unemployment 2/	10.8	10.3	12.9	14.1	15.0
Western Germany					
Inflows into unemployment 1/	1.1	1.3	1.3	1.4	1.5
Outflows from unemployment 2/	16.9	14.8	14.6	14.7	13.9

Source: Federal Labor Office; and staff estimates.

1/ Average monthly inflow as a percent of employment.

2/ Average monthly outflow as a percent of unemployment.

115. Although labor market dislocations may have been inevitable, underemployment is clearly linked to the severely misaligned wage structure.²⁰ In addition, the combination of the withdrawal of social assistance payments along with other aspects of the social security and tax system implies a very high implicit marginal tax rate on labor earnings for low-income earners (poverty traps).²¹ Reflecting the convergence of social assistance payments, estimates of the implicit marginal tax rates on monthly gross labor earnings at income levels ranging up to DM 2,000 are similar for east and western Germany (Chart III-8).²² However, given the lower average wage levels in eastern Germany, a relatively larger share of the working age population may be adversely affected by poverty traps in eastern Germany.

116. Since unification, labor force participation rates in the new Länder have declined sharply, reflecting a normalization process and unfavorable labor market conditions in the east. During the period 1991-96, the labor force participation rate (measured as a percent of the population aged 15-65 years) in eastern Germany dropped by about 7½ percentage points to 77 percent in 1996. Nevertheless, participation rates were still about 7 percentage points above the level in western Germany. This lower participation rate is, in part, a “normalization” of labor force participation to west German levels from the artificially high levels in the former GDR but it has also been due to discouraged worker effects. In addition, the extension of western Germany’s social security system to the new Länder may have induced a withdrawal from the labor force through, e.g., early retirement.

C. Official Transfers

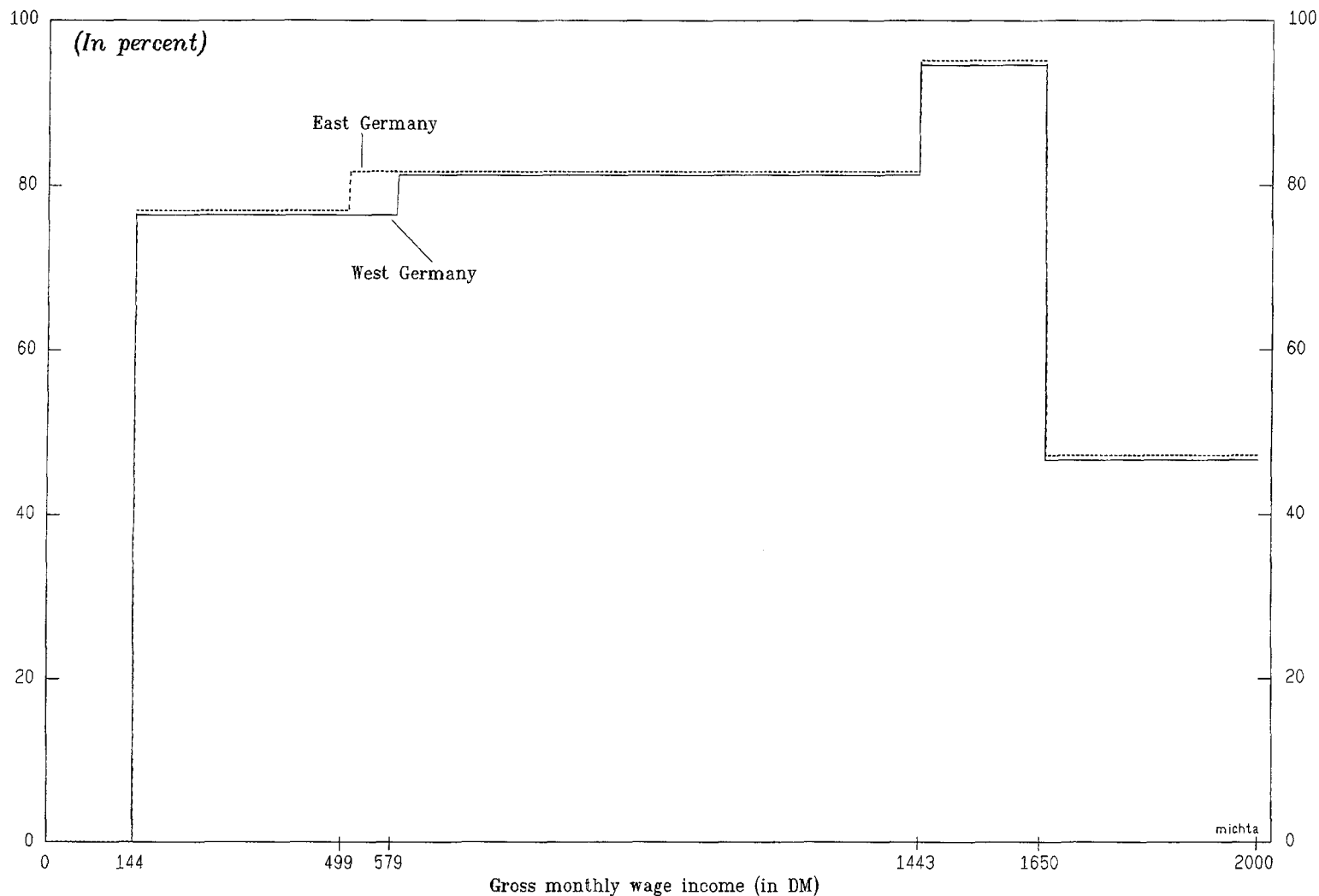
117. Budgetary transfers to the new Länder from the old Länder covered on average about two thirds of the absorption gap in the new Länder. In 1996, net official transfers to the new Länder (DM 150 billion) represented 4.2 percent of overall German GDP, equivalent to about 38 percent of east German GDP (Table III-10). About two thirds of gross official transfers comprise two components that are broadly mandated by constitutional requirements for maintaining relatively uniform social safety net conditions throughout Germany: spending on

²⁰To soften potential labor market dislocation, the privatization of firms by the *Treuhandanstalt* was often tied to temporary employment guarantees (usually in the range of 2-5 years) by the new owner. About 80 percent of these employment guarantees expired by 1996 or earlier. Some 10 percent of the guarantees is scheduled to expire in 1998 or later (information provided by the Economic Research Institute Halle).

²¹See, e.g., Christian Thimann, “Effective Taxation for Recipients of Social Assistance in Germany and the Consequences of the 1996 Tax Reform,” IMF Working Paper 95/120 (Washington: International Monetary Fund, 1995).

²²The differences in estimates of the implicit tax rate in 1996 are due to differences in the earnings ceiling exempt from social security contributions (DM 580 in western Germany and DM 500 in eastern Germany) and the somewhat higher social assistance payments in western Germany.

Chart III-8
 Germany
 Eastern Germany: Marginal Implicit Tax Rates on
 Additional Labor Earnings in West and East Germany in 1996 1/



Source: Staff estimates based on Thimann (1995).

1/ Combined marginal tax burden on additional labor earnings representing the combined effect of wage income tax, employees' social security contribution rate, and the withdrawal rate of social assistance payments.

Table III-10. Germany: Eastern Germany—Official Transfers

	1991	1992	1993	1994	1995	1996	1997 1/
(In billions of DM)							
Gross transfers	156.0	194.0	215.0	212.0	198.0	203.0	193.0
Social expenditures	49.6	73.8	76.8	73.2	79.7	84.7	72.6
Intergovernmental transfers	40.0	38.9	39.2	38.5	44.7	46.0	47.0
Infrastructure programs	19.8	20.2	19.1	23.9	29.6	28.1	26.4
Business promotion programs	7.0	12.9	18.9	20.5	23.4	25.3	22.9
<i>Of which</i>							
Tax expenditures	3.2	7.4	9.2	10.0	12.9	16.0	13.0
<i>Treuhandanstalt</i> and successor agencies	19.9	29.6	38.1	34.4	1.17	0.50	1.4
Other official transfers	19.7	18.6	22.9	21.5	19.5	18.4	22.7
Receipts	-34.0	-40.0	-43.0	-47.0	-50.0	-53.0	-52.0
Net transfers	122.0	154.0	172.0	165.0	148.0	150.0	141.0
(In percent of nominal GDP) 2/							
Gross transfers	5.5	6.3	6.8	6.4	5.7	5.7	5.3
Social expenditures	1.7	2.4	2.4	2.2	2.3	2.4	2.0
Intergovernmental transfers	1.4	1.3	1.2	1.2	1.3	1.3	1.3
Infrastructure programs	0.7	0.7	0.6	0.7	0.9	0.8	0.7
Business promotion programs	0.2	0.4	0.6	0.6	0.7	0.7	0.6
<i>Of which</i>							
Tax expenditures	0.1	0.2	0.3	0.3	0.4	0.5	0.4
<i>Treuhandanstalt</i> and successor agencies	0.7	1.0	1.2	1.0	0.0	0.0	0.0
Other official transfers	0.7	0.6	0.7	0.6	0.6	0.5	0.6
Receipts	-1.2	-1.3	-1.4	-1.4	-1.4	-1.5	-1.4
Net transfers	4.3	5.0	5.4	5.0	4.3	4.2	3.9
Memorandum item:							
Net transfers (percent of east German GDP)	59.2	58.6	54.8	46.5	38.9	37.7	34.3

Source: Data provided by the authorities.

1/ Official projections.

2/ Percent of German GDP.

social benefit entitlements for recipients in eastern Germany and transfers deriving from Germany's intergovernmental revenue sharing and financial equalization system. The remaining one third of gross transfers is comprised of spending on infrastructure programs, business promotion schemes, and other official transfers. Net transfers crested in 1994—reflecting the peak in transfers required to finance the privatization activities of the *Treuhandanstalt*. Since 1994, official transfers have been on a moderate downward trend.

118. The main social benefits in eastern Germany including pensions, unemployment benefits, and social assistance have converged close to west German levels (see Chart III-4 and Table III-10). The rapid rise of social benefits combined with widespread labor market slack boosted the number of benefit recipients. These developments have kept social expenditure transfers at a high plateau of some 2¼ percent of unified Germany's GDP since 1992. In 1996, official transfers related to social expenditures were equivalent to more than 20 percent of east German GDP. High benefit levels and early retirement have boosted pension expenditure in the new Länder.

119. Since 1995, intergovernmental transfers to the new Länder have been based on a new financial equalization scheme. This scheme provides the new local governments in the east with a high level of support equivalent to about 1¼ percent of GDP of unified Germany or 11½ percent of east German GDP.²³ Transfers to finance investment in transportation infrastructure and communal infrastructure have been stable at around ¾ percent of GDP. The intergovernmental transfers and infrastructure programs have allowed the east German Länder and communes to finance high levels of public consumption and public investment spending.

120. Official transfers to finance business promotion programs were about ¾ percent of unified German GDP per year since 1993. The major "special support" instruments included investment allowances, special depreciation provisions, equity capital supports, and interest subsidies. The 1996 Annual Tax Act extended many of the main tax expenditure programs until 1998. Investment allowances amounted to 5 percent of the costs of the investment project for manufacturing firms in general and 10 percent for small- and medium-sized manufacturing and trade firms. Special depreciation allowances provided up to 40 percent write-offs in addition to linear depreciation in the first five years and have been available for investment in machinery and equipment as well as investment in structures in manufacturing. Additional investment allowances and grants have been offered through a variety of regional promotion programs.

D. Prospects

121. Significant progress has been made toward integrating the new Länder into the German economy. Creating self-sustaining growth based on private investment remains, however, a key policy challenge. Indeed, failure to do so, would impose a drag on the entire

²³Before 1995, a large share of intergovernmental transfers to eastern Germany were received from the German Unity Fund, which ceased operation at end-1994.

German economy. While the task is daunting, broad agreement exists within Germany that reinvigorating the convergence process requires a substantial narrowing of the unit labor cost gap and more wage differentiation across sectors and firms. Continued public support to alleviate infrastructure bottlenecks and to promote investment and business start ups are also viewed as needed to overcome the locational disadvantage of the new Länder.²⁴

122. The *Joint Initiative for More Jobs in East Germany* (1997) by the federal government, business, and the unions has appropriately called for durable wage moderation as the key building block for revitalizing the convergence process. Effective wage moderation at the firm level appears to have begun, as indicated by substantial, and often widening deviations between tariff and effective wage levels.²⁵ For example, the latest tariff agreement for the construction sector in the new Länder contained several important signals: (1) nominal tariff wages were frozen at the level of October 1996; (2) the agreement to achieve wage parity with the west by October 1997 was suspended; and (3) financially-distressed firms would be allowed to pay wages as much as 10 percent below the tariff level.

123. The Government also announced an overhaul of the special support programs for businesses in the new Länder.²⁶ While maintaining funding for such programs at their present levels, the Government intends to reduce the large number of schemes and to impose an explicit sun-set clause on them. In particular, the duration of the revised special support programs would be 1999-2004. To compensate for the locational disadvantages of production activities in eastern Germany, a basic investment grant of 10 percent would be provided for manufacturing, production-related services, crafts, and retail traders inner-urban areas. Grants for small-and medium-sized companies in manufacturing and production-related services are 20 percent.) This grant scheme would replace the present system of investment and special depreciation allowances. Additional investment grants would be available for regional promotion schemes. Special support programs would continue to provide credit for new

²⁴See the *Fifteenth Report on Economic Developments in East Germany* by the German Institute for Economic Research Berlin, the Institute for World Economics Kiel, and the Institute for Economic Research Halle (1997).

²⁵A strategy of temporary wage subsidies has often been proposed as a promising approach to mitigate the labor market distortions in eastern Germany. See, e.g., the analyses in Akerlof and others, "East Germany in from the Cold: The Economic Aftermath of Currency Union," *Brookings Papers on Economic Activity*, 1991, pp. 1-87. The wage subsidy proposal has, however, not found much public support in view of fears that it could impose severe additional distortions on factor allocation and prove ineffectual if unions were to press for still higher wages.

²⁶See "Mittelfristiges Förderkonzept der Bundesregierung für die wirtschaftliche Entwicklung in den neuen Ländern nach 1988," *Aktuelle Beiträge zur Wirtschafts- und Finanzpolitik* (Bonn: Presse- und Informationsdienst der Bundesregierung, May 1997).

enterprises to promote start ups and public loan guarantees for existing firms with insufficient collateral.

124. The initial hopes for a quick convergence process in the new Länder were clearly too sanguine. Recent developments have given rise to new pessimism about the likely time horizon and costs of convergence. However, several considerations suggest one should guard against both excessive optimism and pessimism:

125. First, simulations employing different assumptions for the convergence speed of the capital-labor ratio in eastern Germany suggest that convergence in per capita GDP in the east to 90 percent of level in the west, would take at least 20 years. A convergence speed (β) of 8 percent—close to the average for the period 1992-96—would reach this convergence target around the year 2020 (Chart III-9).²⁷ Slower convergence speeds (4 percent and 2 percent) would lengthen considerably the time horizon required, as illustrated in Chart III-9. Convergence speed is hard to project, depending as it does on the expected profitability of investments in the new Länder. This underscores the need for a credible and sustained wage moderation and increased labor market flexibility.

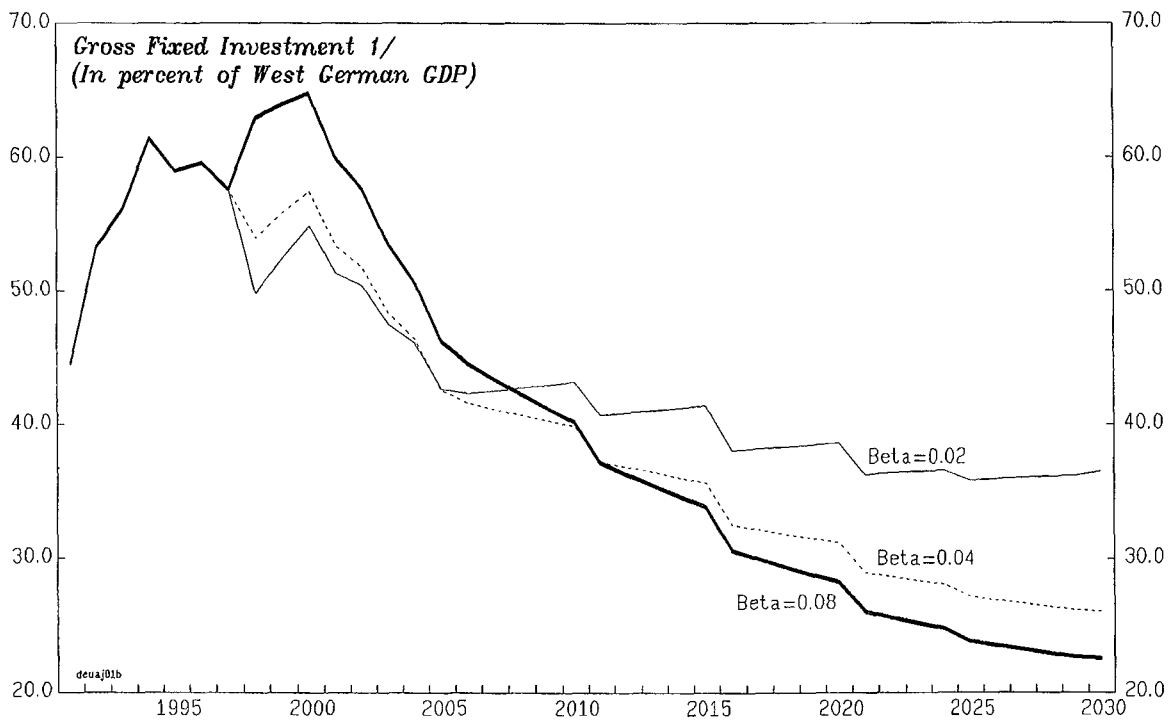
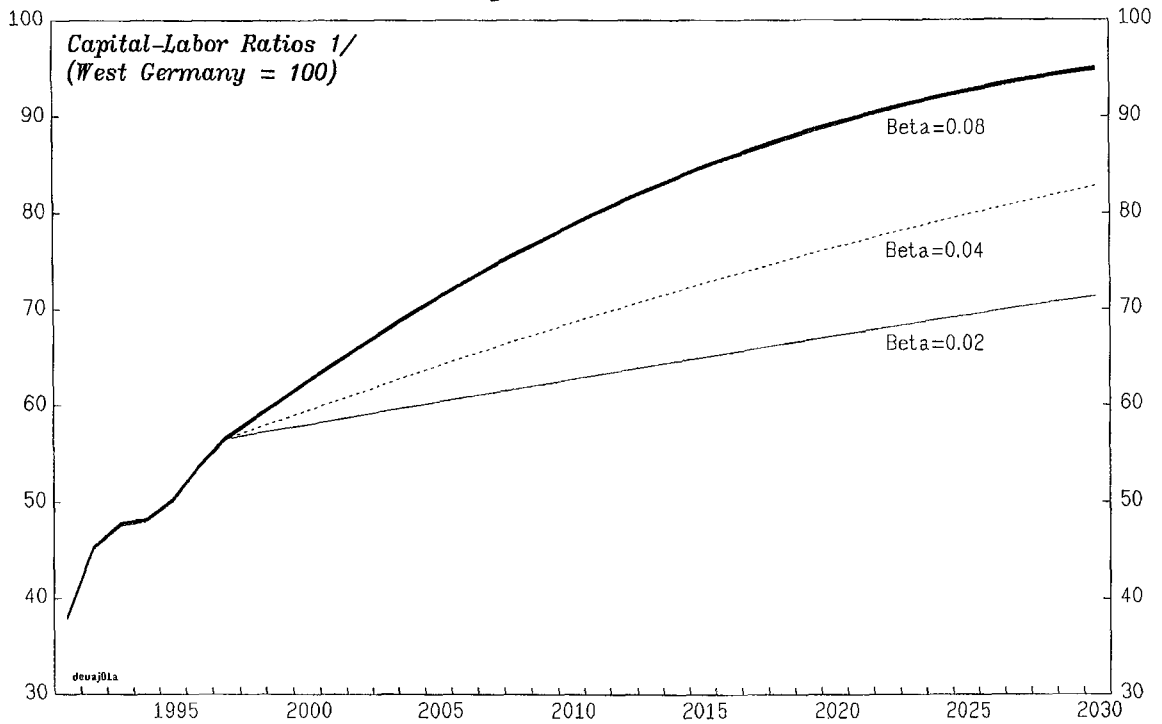
126. Second, part of the growth slowdown in the new (and old) Länder may be overstated, particularly the unavoidable temporary retrenchment of the oversized construction industry caused by now-expired tax incentives. The impact is felt disproportionately larger in the east compared with the west because of the relatively large size of the construction sector there (in 1995 about 17 percent of east German GDP compared to 7 percent of west German GDP respectively) (Table III-11).

127. Third, sustained wage moderation in eastern Germany could help establish the conditions for more rapid convergence than was experienced during 1994-97. The catch-up growth of Ireland since the early 1970s—which was accompanied by a sharp decline in the share of wages in national income (Chart III-10) and significant net EU transfers to Ireland—supports this view.²⁸

²⁷These simulations are based on the long-term employment projections underlying the staff's pension expenditure projections reported in Chapter V and assume an identical depreciation rate (4 percent) for the capital stock in east and western Germany.

²⁸The *World Economic Outlook* (May 1997, pp. 62-63) provides a brief description of Ireland's catch up growth experience.

Chart III-9
Germany
Eastern Germany: Catching-Up Scenarios
for Capital-Labor Ratios



Source: Staff estimates.

1/ The convergence speed beta measures the reduction in the gap between capital-labor ratios in West and East Germany. For example, beta=0.08 indicates that 8 percent of the lagged gap between the capital-labor ratios in West and East Germany is closed in a given time period.

Table III-11. Germany: Eastern Germany—Sectoral Shares of GDP and Employment, 1995

	<u>Real GDP</u>		<u>Employment</u>	
	East	West	East	West
Manufacturing	18.1	29.1	16.4	29.1
Construction	17.2	7.0	17.3	7.0
Trade and transport	13.7	18.4	16.9	18.4
Other private sector services	24.2	20.4	18.6	20.4
Public sector services	17.2	16.6	20.5	16.6
Other sectors 1/	9.6	8.4	10.3	8.4
Total	100.0	100.0	100.0	100.0

Source: Federal Statistical Office.

1/ Includes agriculture, mining, energy, and private household services.