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August 12, 1994

To: Members of the Executive Board

From: The Secretary

Subject: Germany - Economic Developments and Selected Background Issues

This paper provides background information to the staff report on the 1994 Article IV consultation discussions with Germany, which was circulated as SM/94/203 on August 2, 1994.

Mr. Corker (ext. 37304), Mr. Habermeier (ext. 38857), or Ms. van der Willigen (ext. 38861) is available to answer technical or factual questions relating to this paper prior to the Board discussion.

Unless the Documents Preparation Section (ext. 36760) is otherwise notified, the document will be transmitted, in accordance with the procedures approved by the Executive Board and with the appropriate deletions, to the Commission of the European Communities (CEC), the GATT Secretariat, and the Organisation for Economic Cooperation and Development (OECD), following its consideration by the Executive Board.

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INTERNATIONAL MONETARY FUND

GERMANY

Economic Developments and Selected Background Issues

Prepared by a Staff Team 1/

Approved by the European I Department

August 8, 1994

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Germany: Basic Data

Area and population	
Total area	357,041 square kilometers
Total population (1993)	81.1 million
GNP per capita (1993)	$23,203
West Germany	$26,088
East Germany	$11,117

Germany	1991	1992	1993 1/	1994 2/	1995 2/
	(Percentage changes at 1991 prices)				
Demand and supply					
Private consumption	4.2	2.3	0.1	-0.1	0.4
Public consumption	-0.2	3.8	-0.7	-1.0	0.4
Gross fixed investment	9.1	4.2	-3.3	3.0	5.2
Construction	3.3	9.5	3.1	5.1	4.7
Machinery and equipment	16.5	-1.9	-11.4	-0.1	6.1
Total domestic demand	4.7	2.7	-1.4	0.7	2.0
Exports of goods and nonfactor services	-1.6	0.1	-9.5	6.7	5.7
Imports of goods and nonfactor services	11.5	2.6	-10.0	2.2	3.4
Foreign balance 3/	-3.1	-0.6	0.2	1.0	0.6
GDP	1.5	2.1	-1.2	1.7	2.6
	(In millions)				
Employment and unemployment					
Labor force	39.1	38.8	38.6	38.5	38.5
Employment	36.4	35.8	35.1	34.7	34.7
Unemployed	2.6	3.0	3.4	3.8	3.8
(In percent of labor force)	6.7	7.7	8.9	9.9	9.9
	(Percentage changes)				
Prices and incomes					
GDP deflator	5.0	5.3	3.9	2.6	2.2
Consumer price index	4.6	4.9	4.7	3.1	2.2

1/ Preliminary.
2/ Staff projections.
3/ Change as percent of previous year's GDP.

Germany	1991	1992	1993 1/	1994 2/	1995 2/
		(In billions of deutsche marks)			
Public finances 3/					
General government					
Expenditure	1,395.4	1,516.8	1,589.5	1,663.6	1,767.3
Revenue	1,304.5	1,438.3	1,487.7	1,574.4	1,677.0
Financial balance	-90.8	-78.5	-101.8	-89.3	-90.3
(In percent of GDP)	-3.2	-2.6	-3.3	-2.8	-2.7
Deficit of the territorial authorities	-122.7	-116.2	-137.5	-145.3	-138.4
(In percent of GDP)	-4.4	-3.8	-4.4	-4.5	-4.1
Borrowing requirement of the Treuhand	19.9	30.0	38.0	38.0	--
Federal Government					
Financial balance	-53.2	-39.3	-66.9	-69.1	-76.5
(In percent of GDP)	-1.9	-1.3	-2.2	-2.1	-2.2
General government debt	1,173.9	1,345.2	1,495.7	1,701.6	2,128.6
(In percent of GDP)	41.7	44.4	48.1	52.5	62.6
Balance of payments 4/					
Trade balance (f.o.b./f.o.b.) 5/	39.5	50.0	71.0	106.1	120.9
Services balance	-13.3	-34.4	-54.6	-71.4	-75.2
Net private transfers	-11.7	-13.4	-13.5	-14.1	-14.8
Net official transfers	-46.8	-36.5	-38.2	-39.8	-41.8
Current account	-32.2	-34.4	-35.2	-19.3	-10.8
(In percent of GDP)	-1.1	-1.1	-1.1	-0.6	-0.3
Foreign exchange reserves (e.o.p)	94.8	141.4	120.1	...	...
		(Percentage changes in annual averages)			
Monetary data 6/					
Money and quasi-money (M3)	10.7	8.5	8.2	...	...
Domestic bank lending	11.9	10.6	9.8	...	...
Of which lending to:					
Public authorities	8.0	8.4	18.6	...	...
Private nonbanks	13.0	11.2	7.5	...	...
		(Period averages in percent)			
Interest rates					
Three month money market rate	9.2	9.5	7.2	5.5 7/	...
Yield on government bonds	8.6	8.0	6.3	6.2 7/	...
		(Levels)			
Exchange rates					
DM per US$ (end of period)	1.52	1.61	1.73	1.59 8/	...
DM per US$ (annual average)	1.66	1.56	1.65	1.69 7/	...
Nominal effective rate (1990=100)	98.9	101.7	104.6	104.4 9/	...
Real effective rate (1990=100)	98.6	101.8	107.3	106.9 10/	...

1/ Preliminary.
2/ Staff projections.
3/ Data for the federal government and the territorial authorities are on an administrative basis and incorporate east Germany from the second half of 1990. Data for general government are on a national account basis and incorporate east Germany from 1991. Debt data are end-of-year data for the territorial authorities, including the German Unity Fund and east Germany from 1990.
4/ West Germany until June 1990; united Germany from July 1990.
5/ Including supplementary trade items.
6/ Monetary data include east Germany from end-June 1990; thus changes in 1990 incorporate east Germany for half of the year.
7/ Average January-June.
8/ As of July 25, 1994.
9/ June 1994.
10/ May 1994.

West Germany	1991	1992	1993 1/	1994 2/	1995 2/
	(Percentage changes at 1991 prices)				
Demand and supply					
Private consumption	4.5	1.7	-0.0	-0.3	0.2
Public consumption	0.3	3.2	-1.3	-0.8	0.6
Gross fixed investment	6.1	1.1	-6.9	0.5	3.6
Construction	3.6	5.5	-0.5	2.5	3.0
Machinery and equipment	9.1	-3.9	-15.0	-2.4	4.5
Total domestic demand	3.6	1.5	-2.6	0.1	1.5
Exports of goods and nonfactor services	13.7	3.7	-6.1	5.5	4.9
Imports of goods and nonfactor services	12.1	3.9	-9.5	2.5	3.5
Foreign balance 3/	1.2	0.2	0.6	1.2	0.8
GDP	4.5	1.6	-1.9	1.2	2.1
Manufacturing output	3.2	-2.1	-7.7	3.6	2.5
	(In millions)				
Employment and unemployment					
Labor force	30.7	30.9	30.9	30.9	30.9
Employment	29.0	29.1	28.7	28.3	28.2
Unemployed	1.7	1.8	2.3	2.6	2.7
(In percent of labor force)	5.5	5.8	7.3	8.4	8.6
	(Percentage changes)				
Prices and incomes					
GDP deflator	3.9	4.4	3.3	2.4	2.1
Consumer price index	3.5	4.0	4.1	3.0	2.1
Average hourly earnings (industry)	7.3	7.0	6.0	3.5	1.8
Unit labor costs (total economy)	4.1	4.8	3.5	0.0	0.5
Real disposable income 4/	4.0	0.9	-0.7	-1.2	0.0
Personal saving ratio (In percent)	13.5	12.8	12.3	11.5	11.4

East Germany	1991	1992	1993 1/	1994 2/	1995 2/
	(Percentage changes)				
Real gross domestic product	-28.6	9.7	7.1	8.0	8.0
Real fixed investment	33.4	24.0	15.6	13.6	11.4
(In percent of GDP)	48.2	54.5	58.8	61.9	63.8
Employment	-18.3	-12.1	-3.4	-1.7	1.1
Unemployment (In percent of labor force)	10.8	14.8	15.1	15.7	15.2
Consumer prices	...	11.1	8.9	3.5	2.5
GDP deflator	16.6	17.6	10.2	3.5	2.5

1/ Preliminary.
2/ Staff projections.
3/ Change as percent of previous year's GDP.
4/ Deflated by the national accounts deflator for private consumption.

I. Overview

Economic developments in Germany over the past few years have been influenced significantly by policy changes associated with unification. The unexpectedly high cost of supporting incomes, and promoting the establishment of a well-functioning market economy, in east Germany led at first to the emergence of large public sector deficits. While these deficits did not prevent a major contraction of economic activity in the new Länder, they did serve to amplify the economic upswing that was already well under way in west Germany (and many other European countries) at the time of unification in 1990. Inevitably, pressures on resources intensified and inflation began to accelerate.

Subsequently, both monetary and fiscal policies were tightened in an effort to contain inflation and redress fiscal imbalances. Partly in response to this, the post-unification boom came to an end by mid-1992 and gave way to a deep recession. Inflationary dangers, on the other hand, receded and the Bundesbank was thus in a position to permit monetary conditions to ease progressively. By mid-1994, short-term interest rates had fallen about 5 percentage points below their peak in the summer of 1992. Fiscal consolidation, by contrast, continued to be pursued throughout the recession, and the structural component of the general government deficit in 1993 was some 3 1/2 percent of GDP lower than in 1991. By the beginning of 1994, the macroeconomic problems of inflation and recession had been largely overcome, and the economy was poised for recovery.

Since unification, the German economy has also undergone a profound structural transformation. The most sweeping changes have occurred in eastern Germany, where the bulk of the state-owned enterprises has been placed in private hands, and massive infrastructure investment has been undertaken, laying the foundation for economic convergence with the west. In western Germany, the deep recession forced industrial enterprises to increase productivity in an environment of high costs and mounting international competition. The industrial shake-out was mirrored in the policy debate, which began to focus on keeping Germany attractive as a location for investment. There has also been a rethinking of the proper division of labor between the private and public sectors, and the switches have been set for an eventual privatization of the railways and of the state-owned postal and telecommunications companies.

This paper takes up some of the themes that have dominated the policy debate in the recent past and are likely to remain prominent in the years to come. Chapter II sets the stage, with a review of recent economic and financial developments and an overview of ongoing adjustments in policies and institutions in areas such as the labor market, health care, the financial markets, the railways, telecommunications, trade policy, and official development assistance.

The appreciation of the deutsche mark in recent years, and the rapid growth of labor costs in Germany have raised concerns about the

competitiveness of the German economy. Chapter III presents various measures of competitiveness, including conventional indicators and others that are less widely used. It concludes that the size of the real appreciation of the deutsche mark has almost certainly been exaggerated by standard indicators such as relative unit labor costs in manufacturing, and that export performance does not appear to have been impaired.

The medium-term prospects for the public finances are discussed in Chapter IV. In addition to a comparison between the official medium-term outlook and the staff projection, this chapter uses the Fund's MULTIMOD to explore the macroeconomic effects of changes in the structure of the public finances. The results suggest that a reduction in the size of the public sector may be beneficial, as may a lesser reliance on wage taxes.

Among the most intractable problems facing the German economy is unemployment. Chapter V examines the link between high and rising unemployment and labor market institutions in Germany. It argues that labor markets in Germany have become increasingly segmented between high- and low-productivity workers, and that only a small part of the unemployment problem is cyclical in origin. Reform of income support for the unemployed, a re-examination of social assistance, and some relaxation of employment protection could facilitate the reintegration of lower-skilled workers.

Chapter VI asks whether the overshooting of the money supply target in the last three years raises the specter of a renewed acceleration of inflation. A monetary conditions index is constructed which combines short-term interest rates and the real effective exchange rate. The analysis suggests that in the past, both money and the index have provided an early warning signal of inflation. More recently, however, the two indicators have moved in opposite directions, with the index suggesting that monetary policy has been relatively tighter. In this light, the Bundesbank's policy of easing short-term interest rates in the face of continued rapid monetary growth is seen to be appropriate.

Finally, Chapter VII investigates the prospects for self-sustaining growth in eastern Germany. This subject has important ramifications for economic performance in Germany as a whole--including the public finances and the balance of payments. Following an analytical overview of the principal forces that are likely to sustain or impede economic growth in the east, the chapter develops a two-sector growth model which links investment, the labor market, and technological change. This framework is used to assess the evolution of potential output in eastern Germany and to gauge the effect of excessive wages on the demand for labor. The simulations show that the economy is likely to expand at a rate of around 8 percent for a number of years, but that the large imbalance in the labor market poses a risk to this outlook.

II. Recent Economic Developments

It is becoming less and less appropriate to analyze developments in west and east Germany separately. The recent recession in the western Länder, for example, must be recognized to be to some extent a counterpart to a reorientation of fiscal resources from west to east, where there has been some compensating recovery in output. Nevertheless, the following discussion of economic developments in Germany is organized in several places along regional lines, both because the regional developments are themselves of interest from a policy perspective, and because the most comprehensive and reliable statistics still refer to west Germany.

1. Output, employment, and inflation 1/

a. Aggregate supply and demand

The German economy is emerging from the severe recession that set in in mid-1992, after the overheating attendant on unification. In 1993, real GDP fell by 1 1/4 percent, with west Germany recording a decline of almost 2 percent even as east Germany grew by 7 percent. In west Germany, output reached a trough in the first quarter of 1993, some 3 percent below its level of a year earlier, and has since fluctuated erratically around what now appears to be a very gentle upward trend. According to staff estimates, for 1993 as a whole output in west Germany was some 2 percent below potential. 2/ By early 1994, a clear, albeit weak, recovery had begun to take shape, with west German GDP in the first quarter growing at an annualized rate of 2 1/4 percent. All indicators suggest that strong growth in east Germany continued into 1994; preliminary estimates by the Deutsches Institut für Wirtschaftsforschung (DIW) put east German GDP in the first quarter of 1994 10 1/2 percent above its level a year earlier.

In west Germany, the recession was concentrated in the manufacturing sector, as demand from abroad fell particularly sharply, reflecting both the recession in trading partners and a loss of competitiveness in 1992-93. 3/ Manufacturing output fell by an unprecedented 7 1/2 percent in 1993 (Chart II-1) (compared with declines of the order of 4 percent in the recessions of 1975 and 1982). Construction (especially residential) proved a little more resilient than in previous recessions, but fiscal consolidation and a weak performance of agriculture kept the contribution to growth from other sectors subdued. With manufacturing clearly the centre of cyclical weakness, the upturn in industrial production in early 1994, after

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1/ Supporting data are provided in Tables A1 through A7.

2/ The estimate of potential output is based on a Cobb-Douglas production function (for details, see SM/93/151, page 4). Potential growth in west Germany in 1993-94 is estimated at about 2 percent, somewhat lower than historical peak-to-peak growth rates on account of slower labor force growth and low investment.

3/ See Chapter III for a detailed assessment of German competitiveness.

its stagnation during most of 1993, is particularly significant. In April-May 1994, industrial production stood 2 1/2 percent above its level of a year earlier, and capacity utilization in manufacturing has risen steadily since late 1993.

From a demand perspective, the west German recession was led by a sharp contraction in domestic expenditures (Table II-1), under the influence of fiscal consolidation and high real interest rates. Tax increases, a moderate wage round, and a sharp decline in employment all bit into disposable incomes, and, despite a fall in the saving rate by half a percentage point, private consumption stagnated in 1993. At the same time, both public consumption and public investment were cut back sharply, and business investment collapsed, albeit from an unusually high level, as business confidence and capacity utilization plummeted (Chart II-2), and as real interest rates remained relatively high for much of the year. Only residential construction remained relatively robust, as the housing market continued to adjust to large-scale immigration both from abroad and from east Germany.

Table II-1. West Germany: Main Expenditure Components of GDP

(Percentage changes from a year ago) 1/

	1993				1994
	Q1	Q2	Q3	Q4	Q1
Private consumption	0.1	--	1.0	-1.1	1.3
Government consumption	-1.2	-2.3	-0.5	-1.2	-1.3
Fixed investment	-6.9	-8.3	-5.2	-6.8	-2.2
Machinery and equipment	-14.2	-18.1	-14.7	-13.2	-8.5
Construction	-1.1	-0.3	2.3	-2.1	2.2
Stockbuilding 2/	-1.6	-0.4	-0.1	-0.8	0.5
Domestic demand	-3.5	-2.8	-0.8	-3.3	0.5
Exports	-7.4	-8.3	-7.3	-1.7	4.2
Imports	-9.4	-10.9	-8.0	-10.1	1.1
Foreign balance 2/	0.1	0.2	-0.3	2.3	1.1
GDP	-3.1	-2.5	-1.1	-0.8	1.6
Memorandum item:					
Household saving rate 3/	13.7	13.5	13.2	13.1	12.5

Source: Deutsche Bundesbank.

1/ Data are adjusted for the number of working days in each quarter.

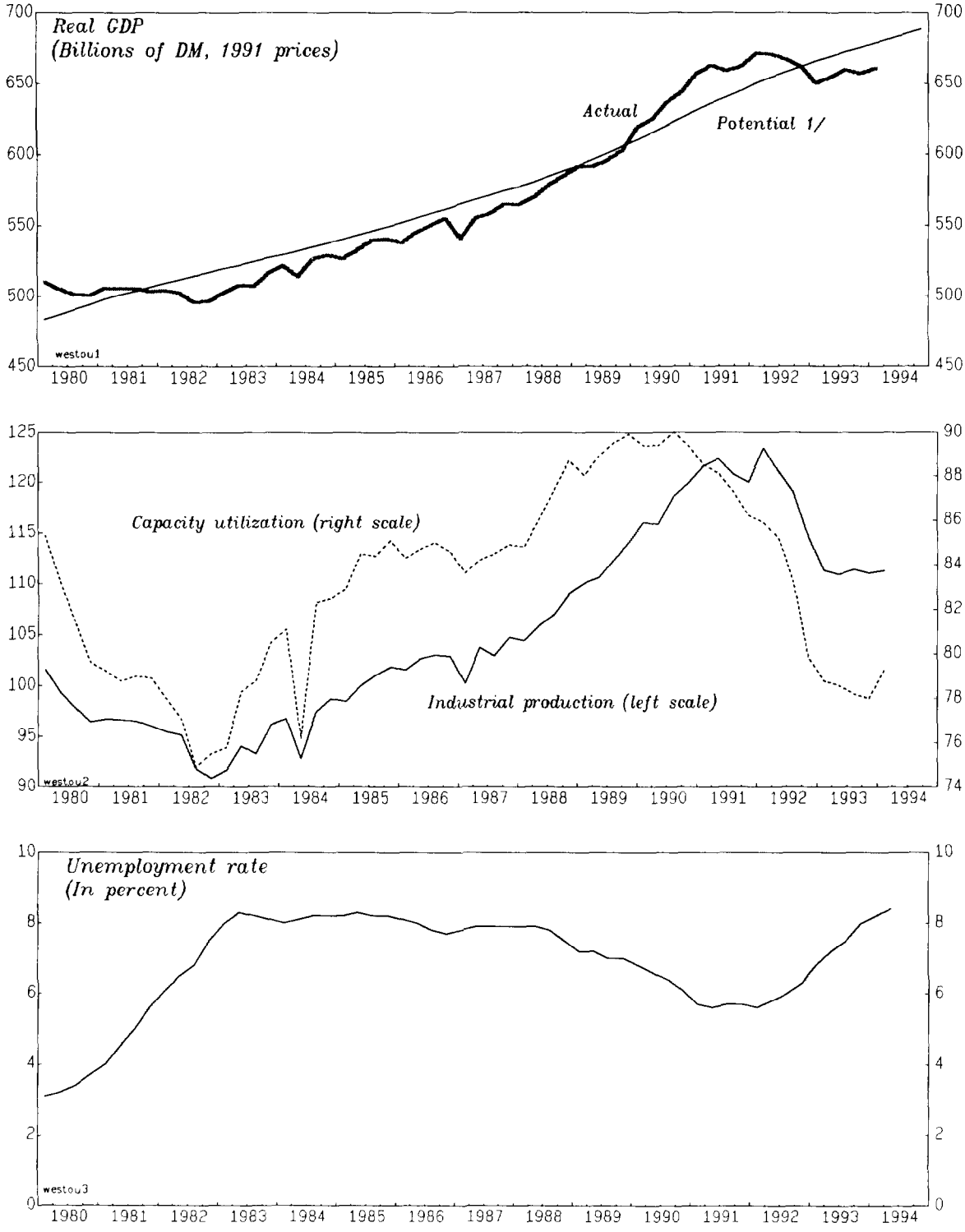
2/ Contribution to the growth of GDP.

3/ In percent, seasonally adjusted.

CHART II-1

West Germany

Output and Unemployment



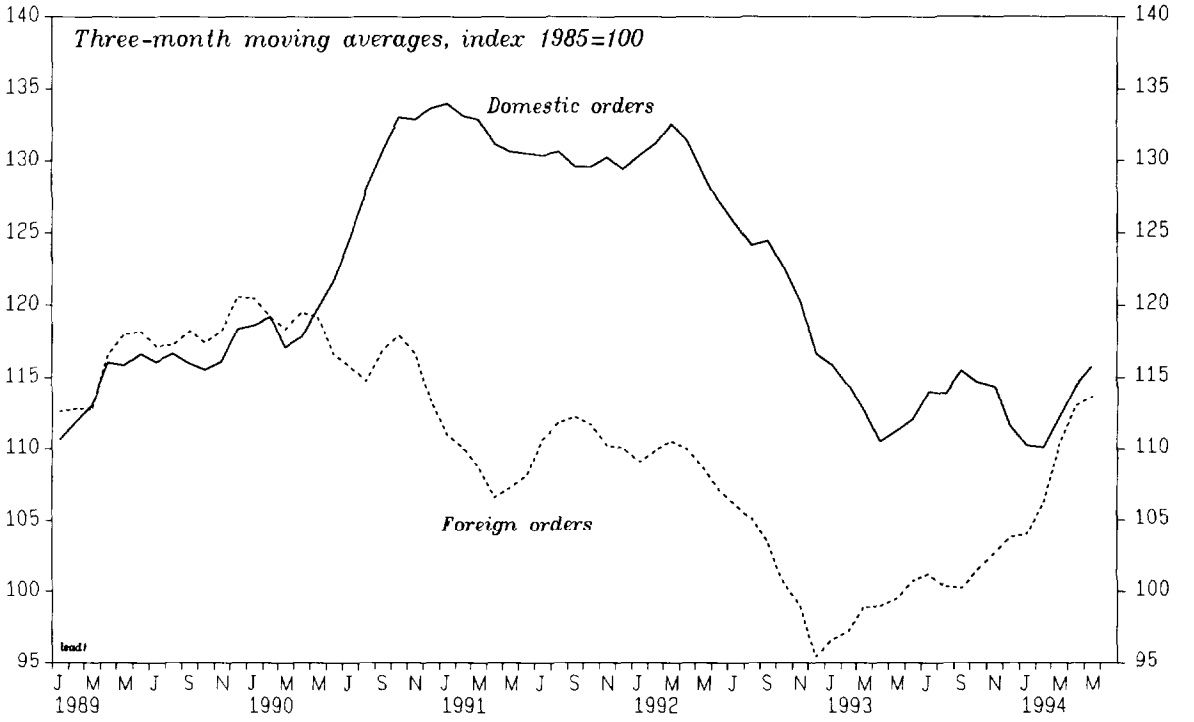
Source: Deutsche Bundesbank; and staff estimates.

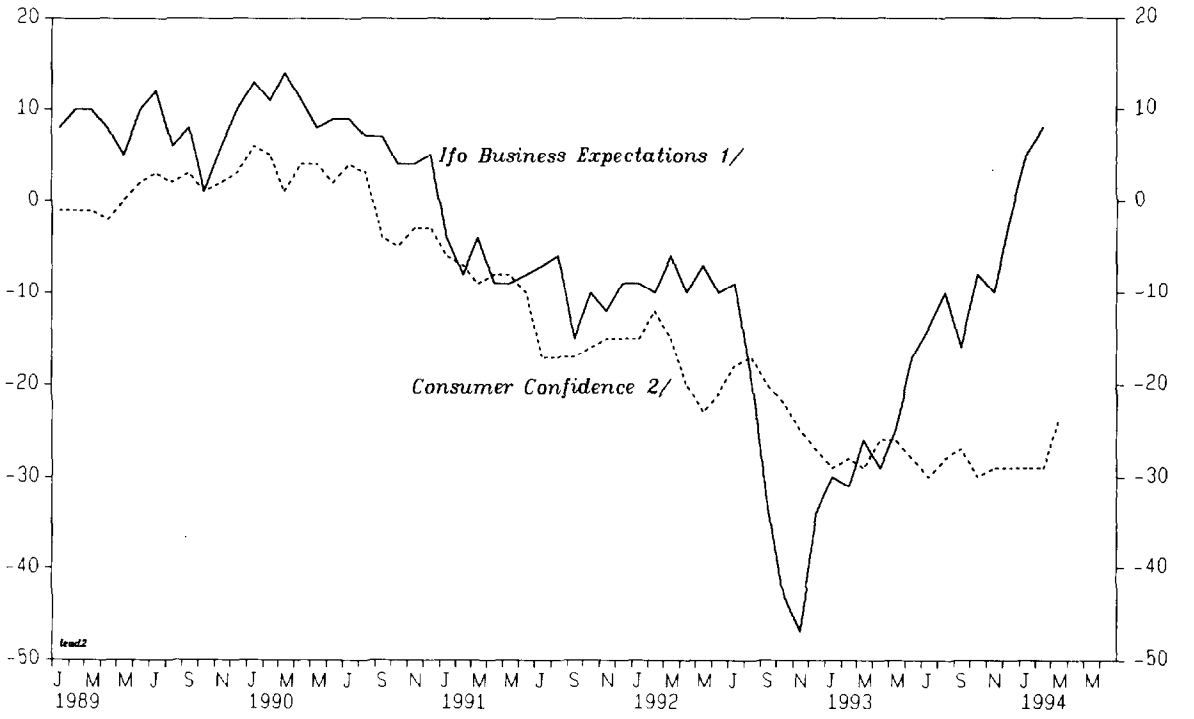
1/ Based on an estimated production function in which factor inputs are set to their assumed full employment levels.

CHART II-2

West Germany

Cyclical Indicators





Source: Deutsche Bundesbank; and European Commision.

1/ Difference between favorable and unfavorable responses to a survey question whether the short-term business outlook would improve or deteriorate.

2/ Percent of respondents expecting an improvement in their situation minus percent of respondents expecting a deterioration.

West German exports registered a contraction of 6 percent in real terms in 1993. "Exports" to east Germany (which are being measured with increasing margins of uncertainty) proved buoyant, and helped to contain the overall decline as recorded exports to the rest of the world fell by 9 1/2 percent. At the same time, recorded imports fell even more sharply, so that official estimates suggest that the foreign sector overall provided a significant net cushion to the steep fall in domestic demand. However, this conclusion is highly tentative, owing to the change to new EU-wide data collection procedures under INTRASTAT. Analyses by the EC Commission and by the German Ministry of Economy suggest that German exports and imports may have been understated in 1993 by some 3 percent and 6 percent respectively. Thus, to the extent that underrecording was more serious in imports than in exports, the improvement in the foreign balance in the west German national accounts is overstated. 1/ But even taking into account the likelihood of underrecording, it remains clear that west German exports fell substantially in 1993, no doubt contributing importantly to the weakening of business confidence but also to the major restructuring efforts that followed.

In previous cyclical upturns, it is a marked strengthening of exports that is leading the emerging west German recovery in 1994. Manufacturing orders from abroad rose steadily during the latter part of 1993 and early 1994, to stand by April-May 1994 some 12 percent above their level of a year earlier (Chart II-2). A strengthening of worldwide growth has played an important part in this development, but so have manufacturers' restructuring efforts (including through labor-shedding) and wage moderation in 1993 and especially 1994, which have helped to restore profitability and competitiveness. Business confidence has improved markedly, largely on the back of improving export prospects as domestic demand has remained rather slack. Nevertheless, the decline in investment in machinery and equipment appears to have bottomed out in the first quarter of 1994, and construction was buoyant, partly because of good weather. Private consumption too proved surprisingly resilient, remaining (in real terms, seasonally adjusted) at its end-1993 level, despite increases in pension contributions and in indirect taxes that cut into real disposable incomes. The saving rate, which declined steadily during the course of 1993, is estimated to have dropped sharply further in the first quarter of 1994, to reach a level close to its trough immediately following the 1982 recession. While declines in retail sales in April-May suggest that some consumer retrenchment may have taken place in the second quarter, consumer confidence has risen somewhat compared with its extremely low level during 1993 (Chart II-2).

1/ Raising exports and imports by 3 percent and 6 percent respectively would reduce the contribution from the foreign sector in 1993 from 0.6 percent of GDP to -0.1 percent of GDP. The counterpart to any overstatement of the contribution from the foreign balance would be an exaggeration of the rundown of inventories in 1993 (recorded at -0.7 percent of GDP), since stockbuilding is a residual in the national accounts.

In east Germany, the collapse of output in 1991 has been followed by a rapid expansion, at first concentrated in the nontradable goods sectors--construction and services--as supply adjusted to the increased demand generated by the transfers from west Germany (Chart II-3). Strong growth in these sectors continued in 1993. But manufacturing too began to show signs of revival in 1992, after massive declines under the pressures of west German and foreign competition. In 1993 net output in manufacturing rose by 9 percent compared with 1992, and year-on-year growth rates reached more than 20 percent in the early months of 1994. 1/

From the demand side, growth in east Germany continues to be led by sharp increases in investment, now mainly in the private sector. In 1993, for the third consecutive year, the rise in fixed investment was well into double digits, although at 16 percent it had clearly slowed down since the 33 percent rise in 1991. Residential construction remains the fastest-growing component of investment, and also the only one which has not so far reached or exceeded, in per capita terms, west German levels; but business investment too continues to grow at double-digit rates. Government and private consumption, for their part, have been growing at a subdued pace, held back by fiscal consolidation and by a slowdown in wage increases from their earlier breakneck pace.

As the growth of east German domestic demand has moderated, so has that of imports. But with imports roughly five times as high as exports, spectacular growth in exports would be needed if the trade deficit were to narrow. Far from this, exports actually declined in 1993, as modest increases in deliveries to west Germany no longer offset the continuing fall in exports to the rest of the world, and to collapsing traditional markets in particular. 2/ As a result, the already enormous deficit in the foreign balance widened further. Total domestic demand in east Germany in 1993 amounted to 177 percent of GDP, with consumption alone (public plus private) equivalent to 127 percent of GDP.

b. Employment

The contrast in developments in output in west and east Germany has not been accompanied by a similar contrast in developments in the labor market. 3/ Employment fell by 1 1/2 percent in west Germany in 1993, following the decline in output but lagging slightly behind it, as would be expected in a recession, and continued to decline through May 1994, albeit at a decelerating pace, despite the nascent recovery. Only a very small

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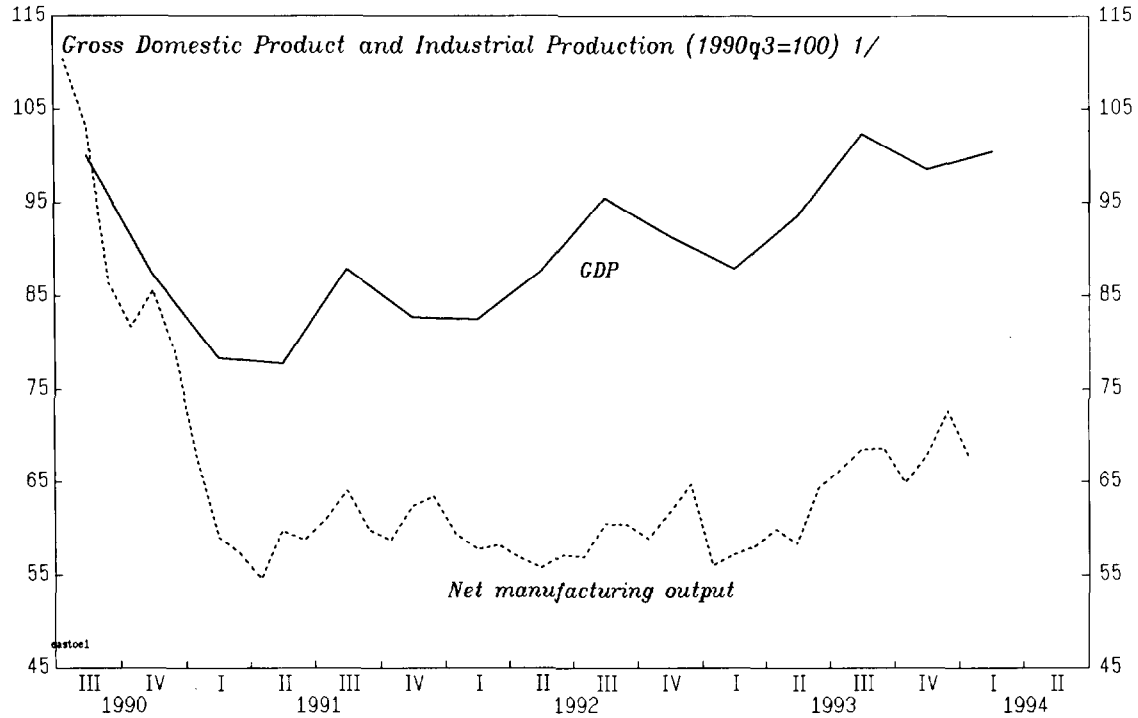
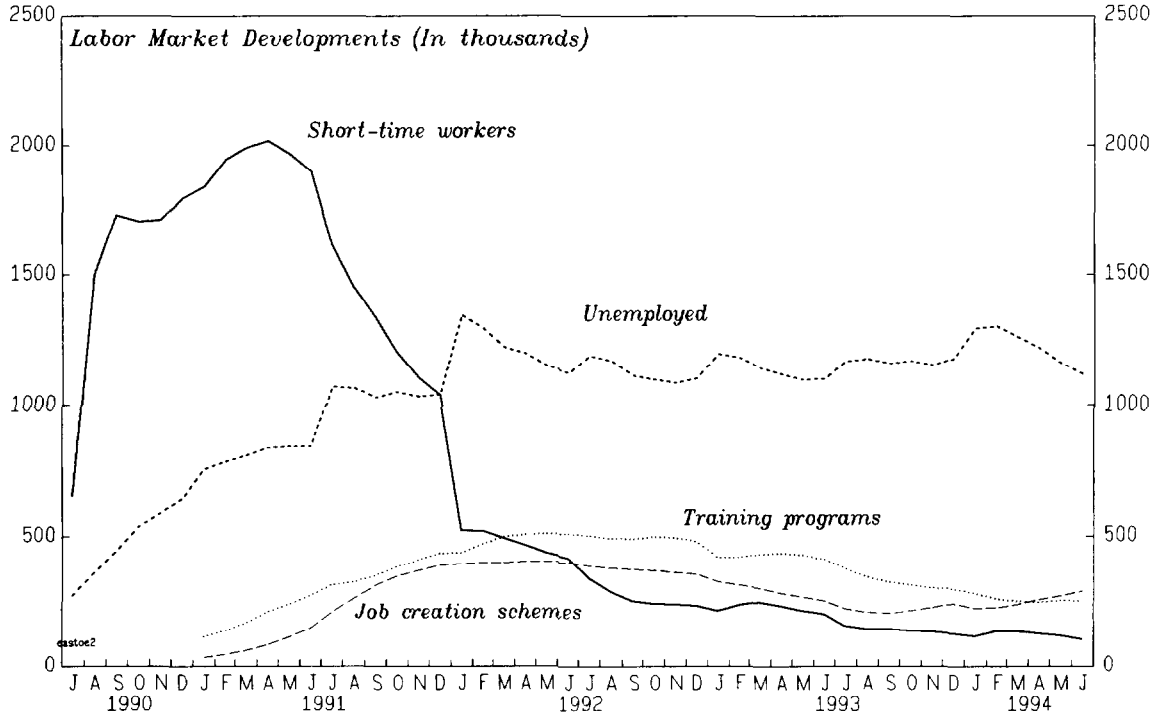
1/ See Chapter VII for a discussion of east German medium-term prospects.

2/ East German statistics are less strongly affected than west German ones by the problems of underrecording of intra-EU trade under INTRASTAT, because two thirds of east German "exports" are to west Germany, and only a small part of the remainder is to EU countries.

3/ See Chapter V for a more detailed discussion of developments in employment and unemployment.

CHART II-3
East Germany
Output and Employment





Sources: Statistisches Bundesamt, Volkswirtschaftliche Gesamtrechnungen; and Deutsche Bundesbank, Monthly Report.
1/ Seasonally adjusted.

part of the drop in employment has been reflected in a cyclical decline of the west German labor force. Unemployment in west Germany (on the national definition, seasonally adjusted) rose from a low point of 5.5 percent of the labor force in early 1992 to an average of 7.3 percent in 1993, and stood at 8.4 percent in June 1994.

In east Germany, however, growth appears to be creating little or no employment. On average in 1993 total employment is estimated to have been 3 1/2 percent lower than in 1992. There are, however, signs that employment may have broadly stabilized as of mid-1993, even though the numbers in short-time work or on job creation programs have been reduced by about a third since end-1992, to account for about 5 percent of the labor force in May 1994 (Chart II-3). Open unemployment in east Germany was some 15 percent of the labor force in 1993, slightly above its level in 1992, and the rate has continued to rise in the early months of 1994, by a further 1 1/2 points compared with its level of a year earlier.

c. Wages and prices

The weakening labor market has helped to slow down wage increases. In west Germany, the rise in negotiated hourly earnings (economy-wide) moderated from 6-7 percent in 1991-92 to just over 4 percent in 1993, and the spring 1994 wage round produced settlements in the range of 0-2 percent (compared with a 12-month inflation rate still above 3 percent), as well as agreements to increase the flexibility of labor utilization (see Chapter V). The shake-out of employment also contributed to rising productivity during the course of 1993: in the first quarter of 1994, economy-wide productivity was 4 percent higher than a year earlier, and unit labor costs were unchanged. Wage increases in east Germany also slowed markedly in 1993, compared with 30 percent annual rises in 1991-92, but at 13 percent (per employee) were still well above those in west Germany, as efforts to achieve wage convergence between east and west continued. Productivity increases of over 10 percent (economy-wide) kept the rise in unit labor costs in east Germany to 2 percent, close to that in west Germany.

The widening gaps on output and labor markets have helped to make inflationary pressures recede. West German producer prices for goods have been broadly stable since early 1992, aided also for much of this period by falling import prices as the deutsche mark appreciated; but consumer price inflation proved surprisingly resilient at first (Chart II-4). On a year-average basis, the west German CPI rose by 4.1 percent in 1993, and 3.5 percent excluding the effect of indirect tax increases--in both cases, roughly the same as in 1992. Increases in the cost of housing, related in part to east-west migration, and rises in the prices of services provided by local authorities played an important part in the stubbornness of CPI inflation: prices of services rose by 6 percent in 1993, while prices of goods rose by only 2 1/2 percent (see tabulation below). Monthly CPI increases began to moderate significantly from mid-1993. From around 4 percent in the early part of 1993, the three-month annualized rate of increase of the CPI (excluding indirect taxes) has fallen to about 2 1/2 percent as of June

1994. In the meantime, CPI inflation in east Germany, which was for several years well above the west German rate, has fallen markedly as the eastern price level has approached that in the west. Thus, while in 1993 east German CPI inflation was close to 9 percent, with 5 percentage points accounted for by increases in rents and energy prices toward western levels, as of June 1994, however, it stands at 3 1/4 percent, close to the west German level.

Components of the West German CPI

(Percentage change from a year ago)

	1993				1994	
	Q1	Q2	Q3	Q4	Q1	Q2
CPI	4.3	4.2	4.2	3.7	3.4	3.0
Excluding indirect taxes 1/	3.7	3.7	3.5	3.0	2.7	2.5
Food	0.3	0.2	0.6	1.3	0.9	1.4
Other goods	3.2	2.8	2.8	2.6	2.1	1.7
Services	6.6	6.8	6.8	5.5	5.1	4.5
Rents	6.3	6.1	5.8	5.3	4.8	4.8

2. The public finances 2/

Fiscal policy over the last two years has continued to emphasize measures to reduce, over the medium term, the deficits incurred to meet the cost of German unification. First, the standard VAT rate was increased from 14 to 15 percent at the beginning of 1993. Second, there was an agreement in March 1993 with the opposition parties and the Länder governments on the "solidarity pact", which included a reform of the laws governing the sharing of revenue and burdens among the federal government and the Länder governments in eastern and western Germany. 3/ Third, a new and substantial multi-year package of consolidation measures for 1994 and beyond was announced in July 1993; the bulk of the proposed measures was passed into

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1/ Based on staff estimates incorporating a tobacco tax increase in early 1992, a VAT rise in January 1993, and a mineral oil tax increase in January 1994.

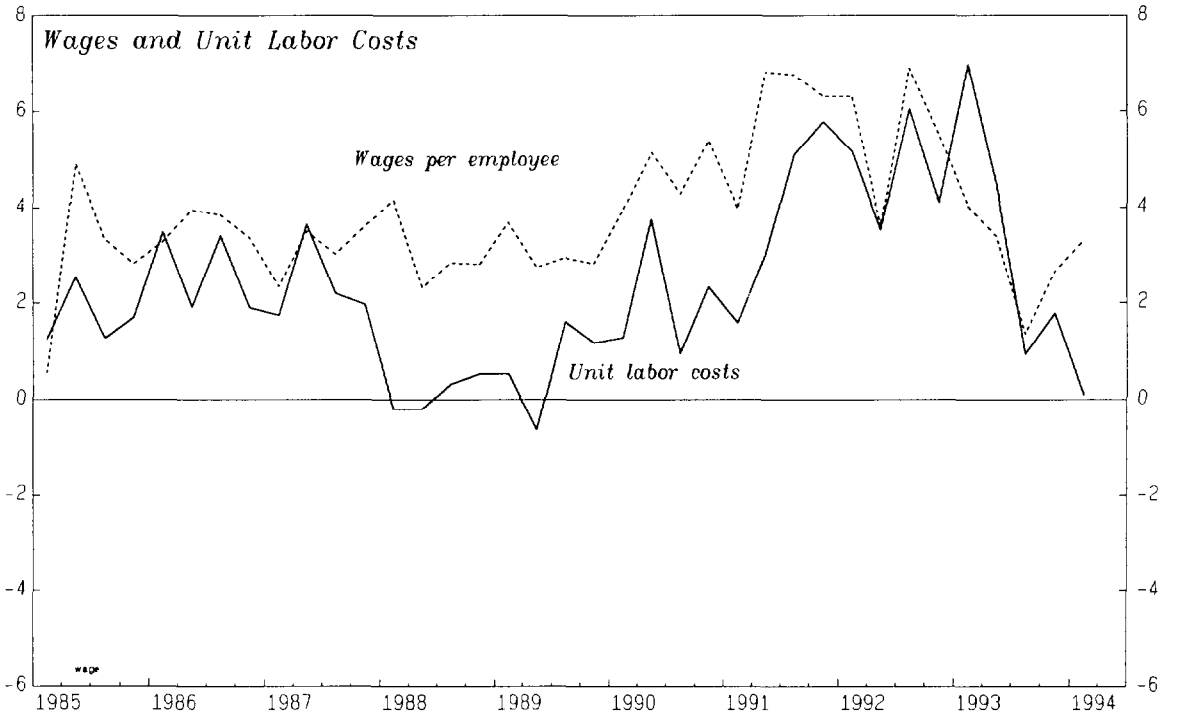
2/ Supporting data are provided in Tables A8-A13.

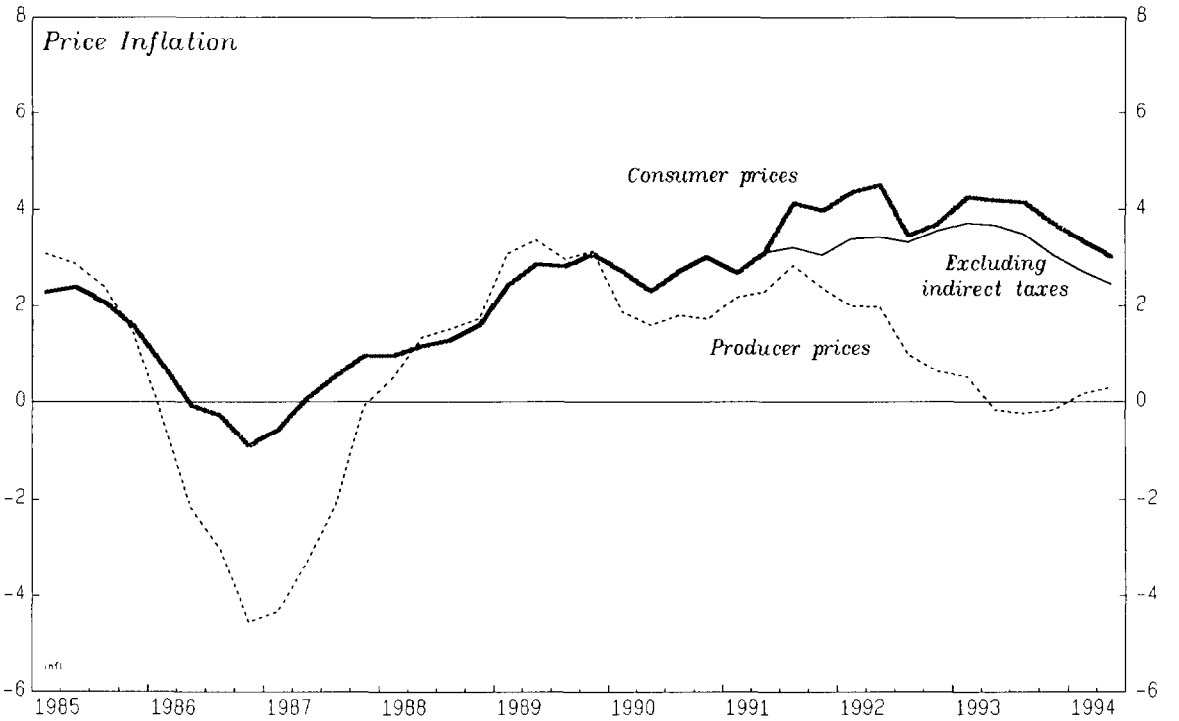
3/ The reform of the revenue sharing system takes effect at the beginning of 1995. It is intended to provide the Länder governments in east Germany with an adequate financial base for discharging their responsibilities, as required by the German constitution. The revenue sharing system replaces the payments provided to the eastern Länder by the German Unity Fund in 1990-94. For further details of the "solidarity pact," see last year's report (SM/93/151).

CHART II-4
West Germany

Wages and Inflation

(Percentage change from a year ago)





Source: Deutsche Bundesbank; and staff estimates.

law in December. 1/ Finally, the government and the opposition parties agreed on the constitutional amendments needed to initiate the restructuring of the federal railways, and the railway reform law took effect in early 1994. In part, the railway reform will be financed by the increase in the fuel tax in January 1994. The authorities expect that on the basis of these measures, Germany should be able to meet the deficit criterion in the Maastricht treaty by 1996. 2/

Although the general government deficit increased somewhat in 1993 after declining in 1992, staff calculations suggest that the automatic stabilizers were not allowed to operate fully during the current recession, and that there was a substantial fiscal withdrawal (Table II-2). This decline in the general government structural deficit reflects the pro-cyclical fiscal policies usually followed by lower levels of government, which tend to reduce expenditure in a downturn, when revenue performance is weak.

Nonetheless, the general government deficit remained at the relatively low level of 3 1/4 percent of GDP in 1993. Overall public sector borrowing, which includes the operations of the Treuhand, the railways, and the post and telecommunications administration, was substantially higher (Table II-3).

a. Developments in 1993

Although the decisions taken in 1993 have laid the groundwork for the consolidation of the structural deficit, developments during the year were dominated by the effects of the deep recession in west Germany, and public sector deficits widened markedly relative to projections. Tax receipts fell short by more than 1/2 percent of GDP compared with projections made in May and November 1992. Furthermore, with unemployment rising sharply, labor

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1/ Details of the package as originally proposed may be found in Supplement 1 of SM/93/136. The package as adopted is described in Annex 1 to this chapter.

2/ This assessment is also shared by the staff, which sees the general government deficit declining to about 2 percent of GDP by 1996 and to 1 percent of GDP by 1999, well below the 3 percent threshold in the Maastricht treaty. Although the general government debt ratio will increase to slightly more than 60 percent of GDP in 1995, and hence exceed the reference value established in the treaty, it is projected to decline quickly in subsequent years. A detailed discussion of the medium-term prospects for the public finances is found in Chapter IV.

Table II-2. Germany: Fiscal Developments 1/

(In percent of GDP)

	1991	1992	1993	1994 Proj.
General government sector:				
Revenue	46.3	47.5	47.9	48.5
Expenditure	49.6	50.1	51.2	51.3
Balance	-3.2	-2.6	-3.3	-2.8
Memorandum items:				
General government structural balance	-5.4	-3.8	-2.0	-0.9
Federal government balance	-1.9	-1.3	-2.2	-2.1

Source: Federal Ministry of Finance; and staff estimates.

1/ Data for general government sector on a national accounts basis. Data for federal government on an administrative basis. Ratios in 1989 are to west German GDP.

Table II-3. Public Sector Borrowing

(In billions of deutsche mark)

	1990	1991	1992	1993	1994 1/
Territorial authorities deficit	94.4	122.7	116.3	137.7	145.3
Federal	47.9	53.2	39.3	66.9	69.1
State and local, west	23.5	22.5	26.3	31.0	37.1
State and local, east	...	10.5	22.6	24.5	24.6
German Unity Fund	20.0	30.6	22.4	13.9	3.3
Other	3.0	6.0	5.5	1.2	11.2
Adjustment 2/	17.8	-15.9	-13.8	20.2	-20.0
Borrowing of territorial authorities 3/	112.2	106.8	102.4	157.7	125.3
Borrowing of major public enterprises and entities	13.5	37.5	54.7	59.5	54.0
Treuhand	4.3	19.9	28.9	39.0	44.0
Railways	4.4	7.3	13.4	12.5	--
Post Office	4.8	10.3	12.4	8.0	10.0
Total borrowing	125.7	144.3	157.1	217.2	179.3
Percent of GDP	4.8	5.1	5.2	7.0	5.5
Public sector deficit 4/	107.9	160.2	170.9	197.0	199.3
Percent of GDP	4.1	5.7	5.6	6.3	6.1

Source: Federal Ministry of Finance; Deutsche Bundesbank.

1/ Staff projections.
2/ Change in liquid reserves (+ = buildup).
3/ Same coverage as total borrowing, but excluding the adjustment for buildup or drawdown of liquid reserves.
4/ Borrowing as estimated by the difference between the deficit and change in liquid reserves.

market expenditure exceeded the budget by about DM 24 billion (3/4 percent of GDP). Overall, the deficit of the territorial authorities reached 4 1/2 percent of GDP, substantially higher than the official target adopted in May 1992. 1/

At the level of the federal government, the draft budget published in mid-1992 assumed that real GDP would increase by 2 percent in west Germany and by almost 3 percent in Germany as a whole. On this basis, revenue was projected to grow by 3 1/2 percent, and expenditure by 2 1/2 percent relative to the outturn in 1992, resulting in a deficit of DM 38 billion (1 1/4 percent of GDP). These projections were rapidly overtaken by events as economic activity weakened and unemployment mounted in late 1992 and early 1993. By January 1993, the government had raised its estimate for the federal deficit to DM 50 billion. By late May, the supplementary budget envisaged a deficit of DM 70 billion (2 1/4 percent of GDP). Preliminary data published in early 1994 showed a deficit of DM 67 billion, somewhat lower than foreseen in mid-year.

For the west German Länder and local governments, 1993 marked the beginning of fiscal retrenchment. Even though tax revenues in the western Länder and local governments fell short of projections by a considerable margin, this was offset by sharp increases in administrative fees and utility charges, especially at the local government level. As a result, revenue increased slightly in relation to nominal GDP. At the same time, the growth of expenditure was held to about 4 percent, far less than in the previous three years, when rapidly rising revenue had provided opportunities for increases in spending. Overall, the deficits of the western Länder and local governments widened only slightly, from 0.9 percent of GDP in 1992 to 1.0 percent of GDP in 1993, implying a withdrawal of fiscal stimulus.

Both the revenue and the expenditure of the lower levels of government in eastern Germany increased by close to 8 percent in 1993, leaving the deficit approximately unchanged from 1992, at about 3/4 percent of GDP. As in 1992, personnel spending rose at the same rate as overall expenditure, leaving its share in total spending unchanged at about 37 percent. Although average earnings in the public sector increased by close to 17 percent,

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1/ The territorial authorities include the federal government, the state and local governments, and a number of special funds. They do not include the social security funds, the Treuhand privatization agency, the railways, and the post and telecommunications agency. From the beginning of 1994, the accumulated debt of the railways and a portion of their personnel expenditure was included in a special account in the territorial authorities. At the beginning of 1995, the debt related to unification, including the accumulated debt of the Treuhand, will be consolidated in a special account of the territorial authorities (the Fund for the Amortization of Inherited Burdens or Erblastentilgungsfonds). The general government includes the territorial authorities (national accounts definition) and the social security funds.

bringing them to 67 percent of the west German level, this was offset by an 8 percent reduction in employment, as local governments began to shift a variety of activities, such as child care services, to the private sector. 1/ At least some of this expenditure remained in place, however, albeit under the rubric of social spending, which increased sharply in 1993. Interest payments tripled, but still account for only 2 percent of overall expenditure. On the revenue side, the increase in tax receipts was broadly in line with the growth of nominal GDP, while transfers from other levels of government declined somewhat, reflecting lower outlays by the federal authorities.

The finances of the social security funds in 1993 remained in broad balance, with the surplus, on a national accounts basis, rising to 0.4 percent of GDP from 0.1 percent of GDP in 1992. 2/ The expenditure of the Federal Labor Office increased by more than 17 percent, reflecting rising unemployment. As indicated above, the resulting deficit was fully covered by a transfer from the federal government. In the public pension funds, expenditure increased by about 11 percent (9 percent in the west and 18 percent in the east), reflecting a large increase in the number of beneficiaries. Revenue grew by only 5 1/2 percent, and a deficit of about 0.3 percent of GDP emerged, with reserves falling to 1 1/2 months of expenditure. Finally, in the health insurance funds, the short-term cost-control measures enacted at the beginning of 1993 were apparently met with some success, allowing these funds to show a small surplus (about 0.3 percent of GDP) without any increase in contribution rates.

b. Prospects for 1994

The public finances in 1994 will begin to show the effect of the consolidation measures decided upon in 1993, and also will reflect the persistence of a substantial output gap, which is expected to result in a further increase in unemployment. The authorities have indicated that no important new consolidation initiatives will be launched in 1994, a major election year. With the economy beginning to recover, there is little risk of a further deterioration attributable to the business cycle. The aversion of the electorate to deficit spending also makes it unlikely that there will be slippages related to the elections.

1/ On July 1, 1994, the tarif structure in the east German public sector was adjusted from 74 percent to 80 percent of the west German level. The average figure cited above is lower because of differences in the structure of the workforce and the absence of certain supplemental payments.

2/ The public social security funds comprise the public pension funds, the Federal Labor Office, the public health and accident insurance funds, and various other funds. These funds may incur a deficit only to the extent that their reserves do not fall below a specified level. At some point, imbalances in these funds must therefore be met by higher contribution rates, increased transfers from other levels of government, or a reduction in expenditure.

The official outlook differs little from the staff projection. For the territorial authorities, both the official projections and the staff foresee a deficit of about 4 1/2 percent of GDP (DM 145 billion). This is achieved despite the new burdens imposed on the territorial authorities by the railway reform, which is expected to give rise to higher interest payments and personnel expenditure. 1/ With unemployment rising, the staff expects the transfer to the Federal Labor Office to remain broadly unchanged in 1994 despite the reduction in unemployment benefits at the beginning of the year. 2/ Offsetting these items are sharp cuts in investment expenditure, virtually stagnant purchases of goods (including spending on military equipment), and higher fuel taxes. The debt ratio is expected to rise sharply, to 52 1/2 percent of GDP after 48 percent in 1993; about half of this increase can be attributed to the transfer of the accumulated debt of the railways to a special fund within the territorial authorities.

Both the staff and the German authorities expect the general government deficit to decline to 2 3/4 percent of GDP. Much of this improvement is accounted for by an increase in the difference between the deficit of the territorial authorities on an adminstrative basis and on a national accounts basis, from 1 percent of GDP in 1993 to 1 1/2 pecent in 1994. 3/ A smaller part reflects a further amelioration in the finances of the social security funds, which are expected to show a surplus of 1/2 percent of GDP in the wake of sharp increases in the contribution rate to the public pension funds at the beginning of 1994 (see below). With growth still below potential, this implies a substantial reduction in the structural budget deficit, from 2 percent of GDP in 1993 to 1 percent in 1994. The structural consolidation is even greater when judged in terms of overall public sector

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1/ The railway reform legislation created the Federal Railway Fund (Bundeseisenbahnvermögen), which has assumed responsibility for servicing accumulated debt (DM 73 billion) of the west and east German railways. The Federal Railway Fund is also providing the railways with an annual personnel subsidy of (about DM 17 billion or 1/2 percent of GDP in 1994). The federal government is providing transfers to finance the expenditure of the Federal Railway Fund. Further details of the railway reform may be found below in section II.5.e.

2/ The official projection sees a reduction in the contribution by 0.2 percent of GDP, to DM 18 billion.

3/ The main conceptual differences between the data on an adminstrative and a national accounts basis concern (i) the treatment of financial transactions, (ii) the accrual of transactions, and (iii) differences in sectoral coverage. Financial transactions are by far the most important in quantitative terms, with loans made to non-government entities counted as expenditure in the administrative accounts, but as lending in the national accounts. The increase in loans made by the ERP Fund in east Germany, and the inclusion of railway investment loans in the expenditure of the territorial authorities on an adminstrative basis account for much of the increase in the "wedge" between the administrative and national accounts definitions of the deficit.

borrowing, as the railway reform is expected to substantially reduce or even eliminate the borrowing of the Federal Railways, which had amounted to about 1/3 percent of GDP in 1992 and 1993.

The deficit of the federal government is likely to remain within the budgeted ceiling of DM 70 billion (2.2 percent of GDP). Both revenue and expenditure are slated to increase by about 5 percent, with sharp increases in spending on interest and transfers to other levels of government driving expenditure, and revenues reflecting the effect of higher fuel taxes, which accrue to the federal government. The financial balances of other levels of government in the territorial authorities are expected to remain virtually unchanged relative to 1993 (-1.1 and -0.8 percent of GDP for state and local governments in western and eastern Germany, and -0.4 percent of GDP in the special funds). The moderate public sector wage settlements reached for 1994, combined with cuts in staffing levels (1/2 percent in western Germany, 10 percent or more in eastern Germany) are expected to make a strong contribution to dampening the growth of expenditure in the Länder and local governments. 1/ The consolidation measures that went into effect at the beginning of 1994 should also help to dampen the growth of social spending by lower levels of government.

As indicated above, the surplus of the social security funds is expected to increase further in 1994, to about 0.5 percent of GDP. In the public pension funds, large pension increases in eastern Germany and the continuing marked growth of the number of pensioners in west Germany (brought on by the aging of the population) were offset by a sharp increase in contribution rates. 2/3/ The cost controls and other reform measures in the health care system continue to be effective, for the time being, in holding down the growth of health care expenditure. It is expected that the surplus in the public health insurance funds will continue to grow in 1994. Some consideration is being given to reducing contribution rates once the reserves of the health insurance funds have been adequately replenished.

1/ The tariff structure in the east German public sector will be adjusted from 80 percent to 82 percent of the west German level on October 1, 1994. As in previous years, differences in the structure of personnel expenditure imply that average compensation per employed person will be lower (74 percent of the west German level).

2/ The rates were raised at the beginning of 1994 from 17.5 percent to 19.2 percent of gross earnings. The ceiling for income subject to contribution was also raised, from DM 7,200 to DM 7,600 per month.

3/ Pensions in western Germany were increased by 4.4 percent on July 1, 1993. In eastern Germany, where adjustments are semi-annual, they were raised by 14.2 percent on July 1, 1993, and by a further 3.6 percent on January 1, 1994.

3. Monetary policy and developments

The objective of monetary policy is to stabilize prices on a lasting basis. To this end, monetary policy in Germany is conducted in a medium-term framework in which annual target ranges for broad money (M3) growth form an important guide. Official short-term interest rates were increased steeply in the early part of the 1990s to counter the inflationary consequences of unification. As the economy moved into recession and inflationary pressures abated, monetary conditions were steadily loosened from September 1992 onward. The loosening continued into the first half of 1994 despite a surge of monetary growth to well beyond the target range. However, since May 1994, there have been no further cuts in the discount rate, which provides the floor for market rates, although slow downward adjustment of the securities repurchase rate has continued.

a. Interest and exchange rates

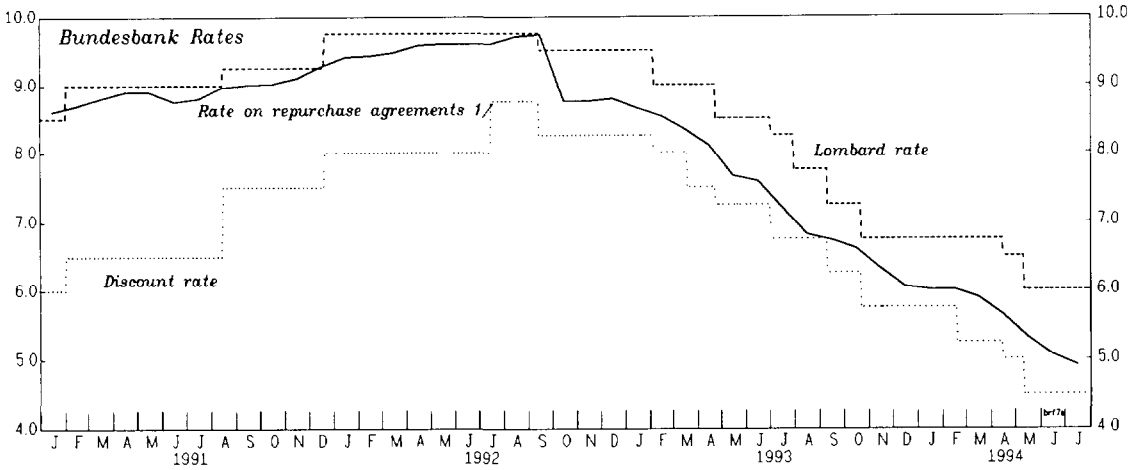
A policy of gradually easing monetary conditions through a series of cuts in official short-term interest rates began in the late summer of 1992. The first cut, on September 15, 1992, took place against a background of strains in European foreign exchange markets that, following the suspension of the pound sterling and Italian lire from the ERM, led to an effective appreciation of the deutsche mark. During the course of 1993, official interest rates were cut in small steps and at fairly regular intervals. By end-October, the discount and Lombard rates had been lowered to 5 3/4 percent and 6 3/4 percent, respectively--some 3 percentage points below their summer 1992 levels. The cuts in official rates were fully reflected in short-term money market rates, although at around 6 1/2 percent in October 1993, three-month rates were about 3 percentage points higher than the rate of inflation (Table A14 and Chart II-5).

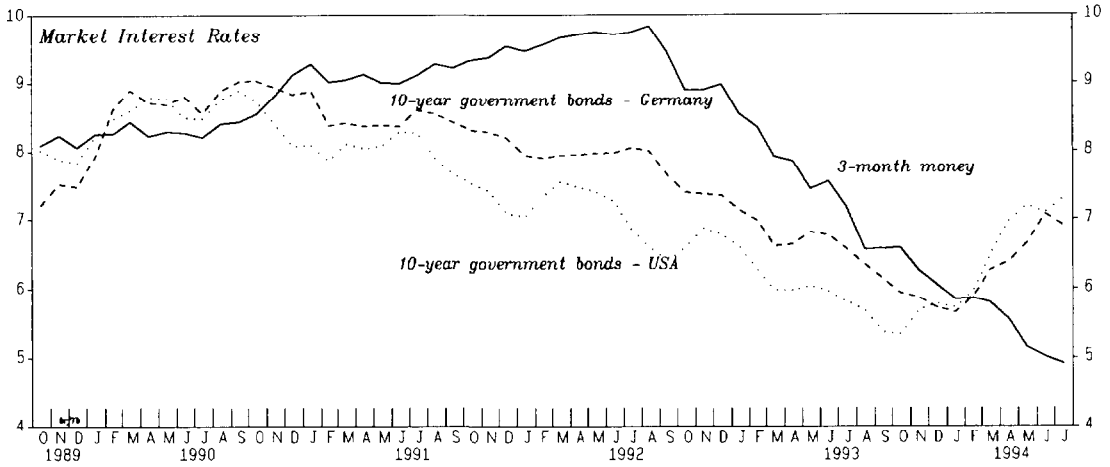
Toward the end of 1993, a number of factors suggested a need for caution in interest rate policy and no further cuts in the discount and Lombard rates were made between end-October 1993 and mid-February 1994 while downward movements in the securities repurchase (repo) rate were limited to 40 basis points. First, monetary growth picked up in the fall of 1993 after it had appeared to be returning to its target range in the summer (monetary growth had been 1/2 to 1 percentage points above the target range since April 1993). Second, the deutsche mark showed a tendency to depreciate, particularly against the U.S. dollar, which raised concerns about the possibility of a flight from DM-denominated assets and the attendant adverse implications for bond yields. Third, a new wage round was beginning, the outcome of which was highly uncertain at the time.

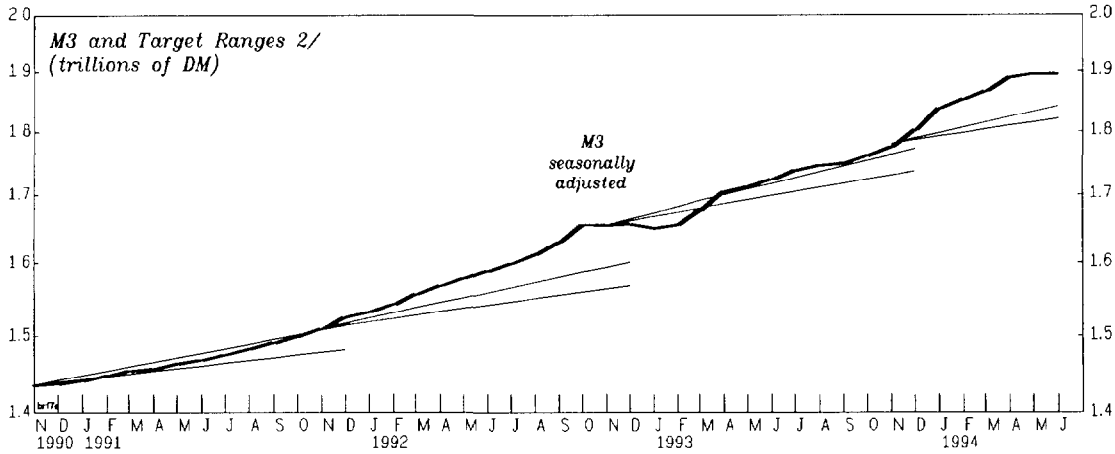
A surge in the December 1993 and January 1994 monetary figures and a less certain environment for liquidity management following the abolition of the requirement of the federal and state governments to maintain their liquid deposits at the Bundesbank (described in more detail in section 5 below) added to the uncertainties in implementing monetary policy at the beginning of 1994. However, at that stage, it was clear to the authorities

CHART II-5
Germany

Interest Rates and Broad Money
(In percent)







Source: IMF Data Fund.
1/ Monthly average data.
2/ Logarithmic scale.

that the monetary aggregates were distorted by special factors (see below) and did not justify delaying the continuation of interest rate cuts. The discount rate was, accordingly, lowered by 50 basis points on February 18. Exchange market reaction to the cut was positive (the deutsche mark appreciated against the dollar, notwithstanding increases in interest rates in the United States) and the outcome of the wage round was favorable (a strike was averted in the metals sector and settlements were in the range 0 to 2 percent). Thus, despite turbulence in bond markets, repo rate cuts were resumed in March and a further quarter point cut in the discount and Lombard rates was made in mid-April.

Although monetary growth continued at a rapid (albeit reduced) pace in February-April, a further 1/2 percentage point cut in the discount and Lombard rates was effected in mid-May. Part of the rationale for the cut was to steepen the yield curve, which at the time was only gently upward sloping, in order to encourage monetary capital formation. 1/ At the same time, the Bundesbank signalled that there would be a pause in the policy of lowering official short-term interest rates. This pause did not apply to the repo rate, which continued to decline gradually and by end-July stood at 4 85 percent, just 35 basis points above the discount rate.

During the course of 1993, declines in long-term bond yields broadly matched the falls in short-term interest rates as foreign capital poured into German bond markets in record amounts. As a consequence, the inverted yield curve that had arisen during the earlier period of monetary tightening persisted. By the end of 1993, the yield on 10-year government bonds was, at around 5 1/2 percent, close to its historical low point. Moreover, the fall of bond yields in 1993 exceeded falls in U.S. bonds and thereby eliminated the sizable yield premium that had persisted since the end of 1990 (Chart II-6).

Most of the fall in bond yields in 1993 was reversed in the first half of 1994. Bond yields began to rise in February along with increases in yields in other global markets. In Germany the rise in yields was significantly less than in U.S. and most other European markets and by early April, 10-year German bond yields were about 50 basis points lower than equivalent yields in the United States. A further surge in bond yields in May-June took German yields back to their end-1992 levels of over 7 percent as the prospects for global economic recovery, and particularly in Germany, strengthened. Bond yields initially rose faster than those in the United States, closing the yield spread. But in late June and the first half of July, German bond yields eased to 6 3/4 percent, about 50 basis points below U.S. yields.

1/ Monetary capital comprises the non-monetary liabilities of the banking system, of which the main components are bank bonds and long-term time deposits.

The lowering of money market rates since September 1992 has only been passed through gradually to bank lending rates and the spread between the two rates widened considerably in 1993 (Chart II-7). Some widening typically occurs during a recession, but has been somewhat more pronounced in the recent period. Part of the explanation lies with the move by banks in recent years to pay more market-related interest rates on deposit and savings accounts. This has raised the average cost of banks' funds and thereby altered the historical relationships between interest rates in reported data. 1/ There has also been some degree of market segmentation whereby rates charged on large-scale loans have moved more closely in tandem with money market rates than in the past, while small-scale loan rates have been unusually sticky.

After appreciating by about 5 percent after the ERM crisis of September 1992, the deutsche mark has since fluctuated about a fairly constant level in nominal effective terms (Table A15). The deutsche mark appreciated sharply against other ERM participating currencies following the move to wider intervention bands in August 1993, but this appreciation was reversed by the end of the year: in the first half of 1994, deutsche mark cross rates in the ERM have remained close to the lower ends of the old 2 1/4 percent intervention ranges. The deutsche mark depreciated by over 20 percent against the yen in the first half of 1993 to a post-war record low level. Against the dollar, the deutsche mark has now fluctuated in a relatively narrow band since 1990. While the deutsche mark appreciated to a high point of DM 1.40 per dollar in the summer of 1992, the range of fluctuation has generally been between DM 1.55 and DM 1.75 per dollar. Despite coordinated foreign exchange market intervention of several central banks to support the dollar in early May and again in early July, the deutsche mark appreciated to the high end (DM 1.55-1.60) of this range in July 1994.

b. Money and credit

Monetary growth has been quite erratic since unification, in part because of the portfolio adjustments of residents in the new Länder, but also because of a number of special factors. The latter would include the effects of the large currency interventions around the time of the September 1992 and July 1993 ERM crises and the effects of successive changes in the taxation of interest income. Other factors, such as a reported increase in the holdings of deutsche mark in the economies in transition to Germany's east and a shift, over time, to the payment of more market-related interest rates on short-term savings and deposit accounts could also have altered the underlying demand for money. However, it is too early to tell whether there

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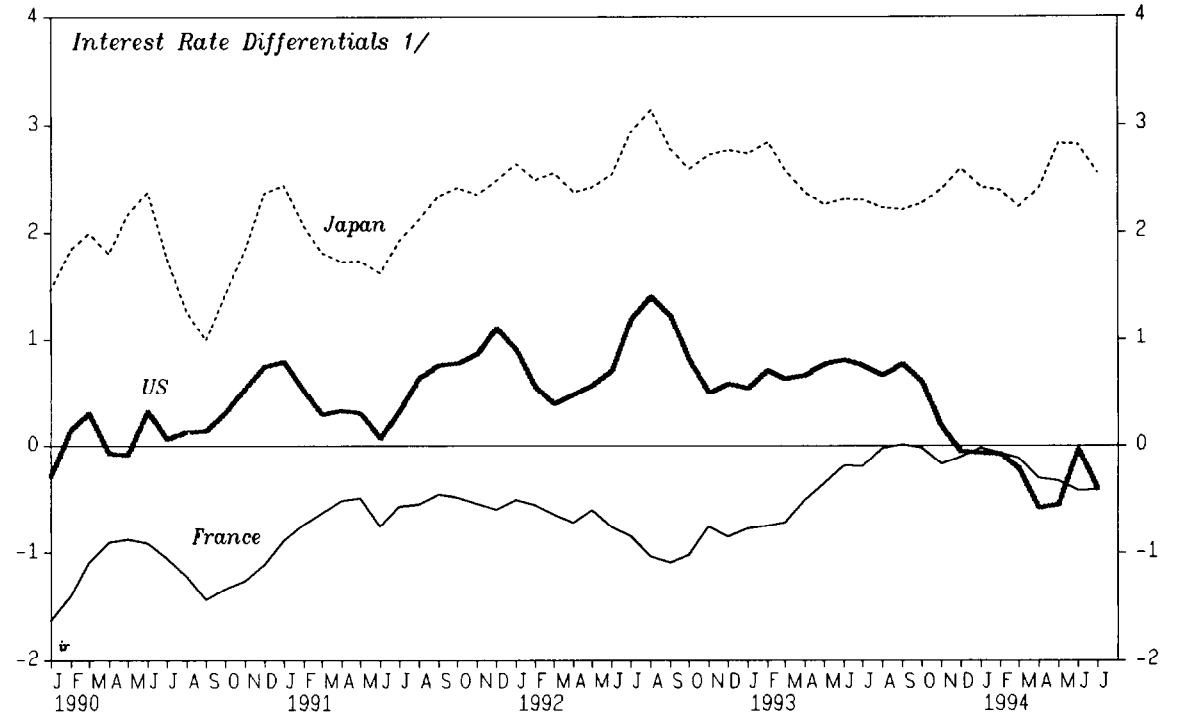
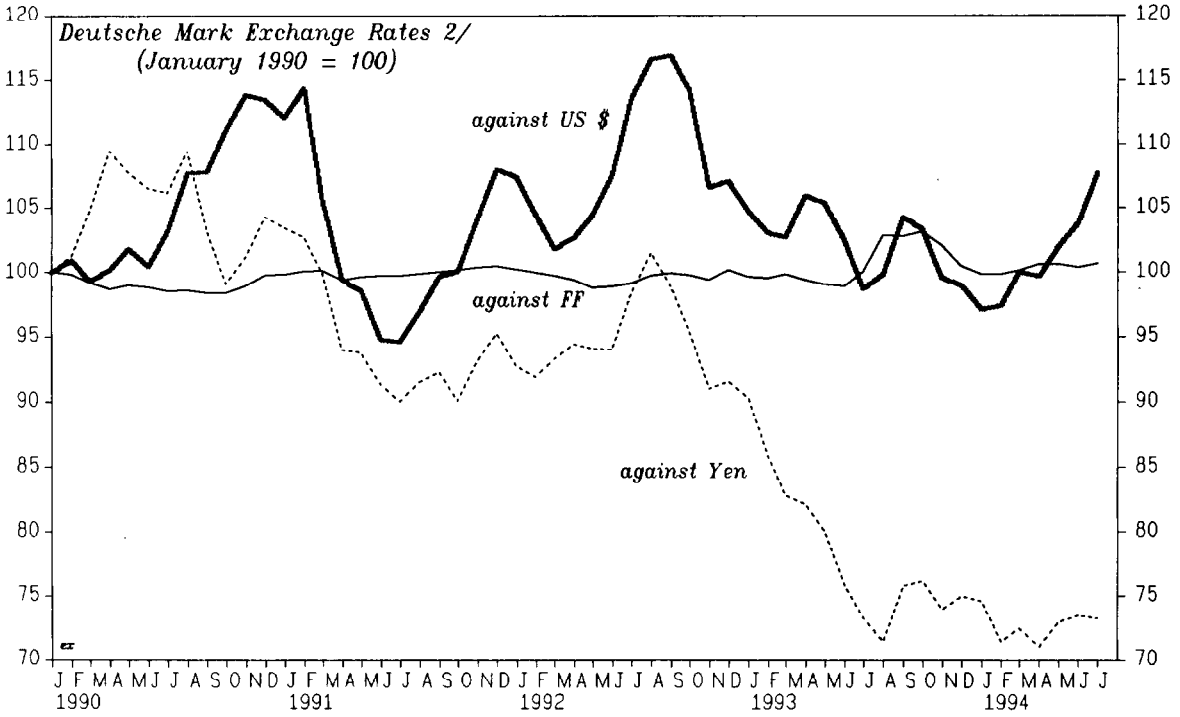
1/ The reported data also show a widening spread between lending and deposit rates. However, the data on deposit rates do not fully reflect the returns on the more representative market-related instruments.

CHART II-6
Germany

Interest Rate Differentials and Exchange Rates



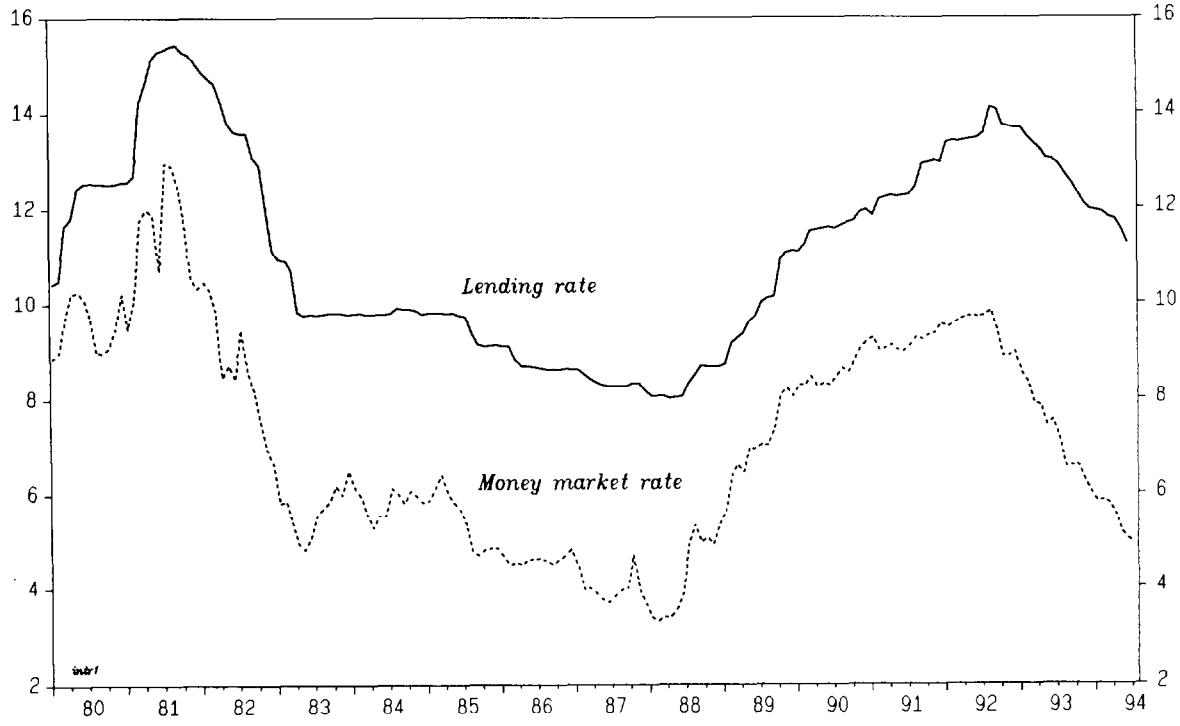


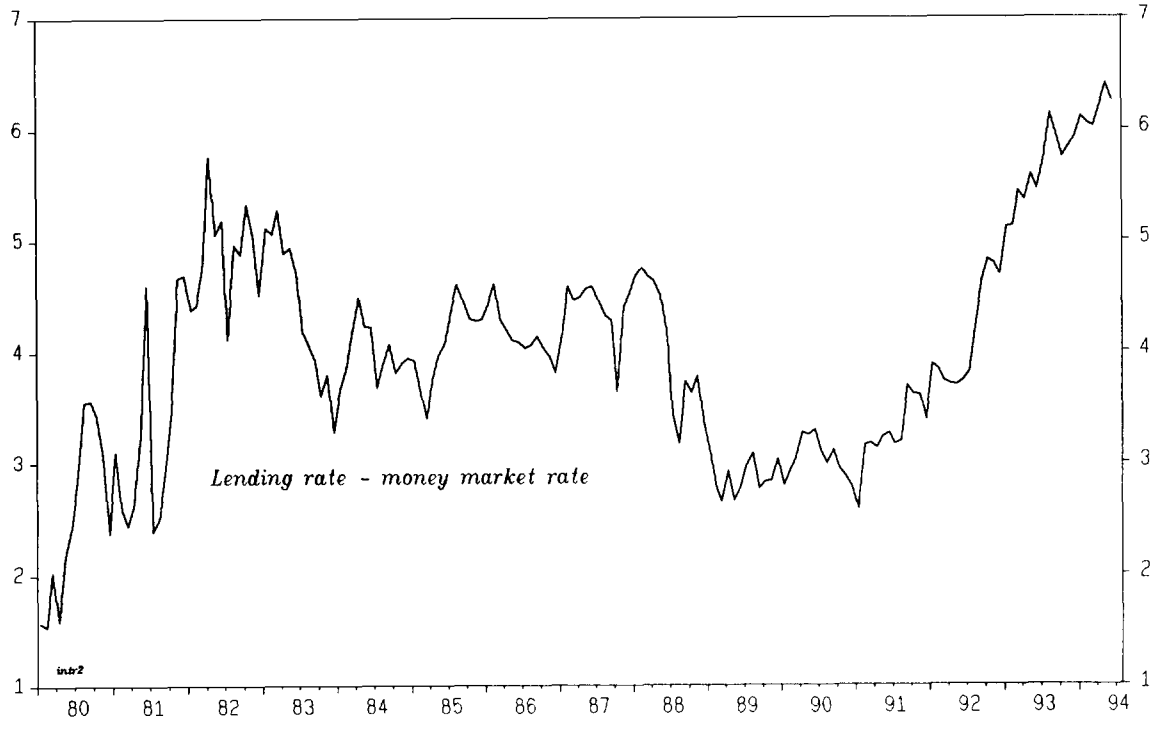
Source: IMF Data Fund.
1/ German minus foreign 10-year government bond yields.
2/ An increase represents an appreciation of the deutsche mark.

CHART II-7
Germany

Bank Lending and Money Market Rates

(In percent)





Source: Deutsche Bundesbank.

has been a permanent or temporary effect on the stability of money demand, nor what form any possible changes in money demand might have taken. 1/

Despite the increased uncertainty, the Bundesbank has continued its policy of announcing annual target ranges for broad money (M3), which at least up until unification had borne a stable relationship with income and interest rates. Monetary growth nudged above the target range at the end of 1991 and overshot the 1992 target range by 3 percentage points. While currency reflows connected with exchange market intervention around the time of the first ERM crisis and the effects of the imposition of a withholding tax on interest income pushed the money stock below its average 1992 fourth quarter level at the beginning of 1993, monetary growth quickly picked up and spent the remainder of the year above the 4 1/2 to 6 1/2 percent target range: growth between the fourth quarters of 1992 and 1993 came to 7 1/2 percent.

The new target for 1994 of 4 to 6 percent was immediately and substantially overshot. 2/ Some of the overshooting reflected special factors of which the most important was a change in the taxation of interest income. Initially, the imposition of a form of withholding tax at the beginning of 1993 had encouraged the recycling of German savings via so-called investment funds, which were mainly available in Luxembourg and whose earnings were exempt from tax. The passage toward the end of 1993 of legislation, effective January 1, 1994, to remove the tax exemption of foreign investment funds led to a reduction in this recycling: instead of German savings finding their way into German capital markets by way of Luxembourg funds, German investors parked their savings directly into short-term savings and deposit accounts, which are part of the money stock. A further special factor helping to inflate the money stock around this time was the elimination, from the beginning of 1994, of tax concessions on the purchase of old buildings for owner-occupation. This led to a surge in mortgage credit demand in December 1993 that spilled over into January 1994.

The influence of special factors waned considerably in the second quarter of 1994 and money growth slowed to a 6 percent annualized rate in the three months to June. At the same time, there was evidence of a pick up in monetary capital formation, whose slow growth in the first quarter had been one of the main counterparts to the monetary surge as investors delayed switching previously-recycled funds into longer-term financial assets owing

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1/ Annex 2 to this chapter contains an econometric analysis of the stability of money demand.

2/ The target was based on a goal of 2 percent price inflation, growth in all-German real production potential of 2 1/2 percent and 1 percent for the trend decline in velocity, implying a central rate of growth of M3 of 5 1/2 percent. The setting of the range takes into account overshooting in previous years. At the July 21, 1994 Bundesbank Council Meeting, it was decided to keep the target range until the end of the year, despite the fact that it then appeared likely that the target range would be overshot.

to the turbulence in bond markets. Nevertheless, in June, M3 growth was still 11 1/4 percent on a target basis and the level of M3 was 10 percent above its June 1993 level.

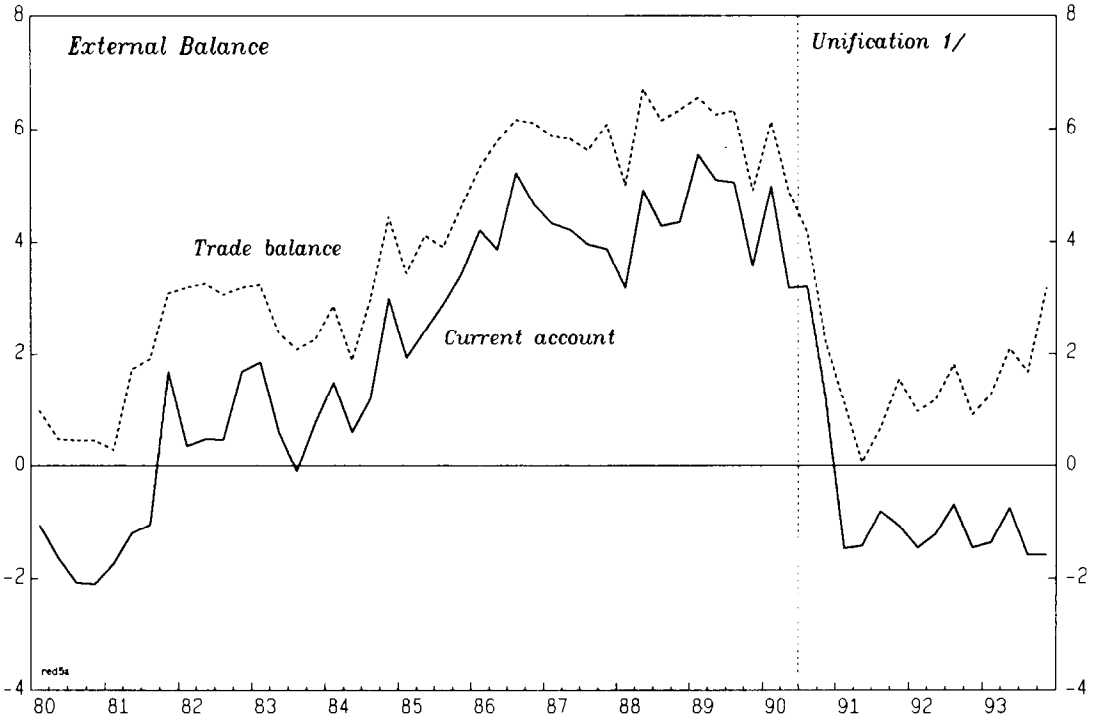
So far in 1994, all components of M3 have contributed to rapid monetary growth. The greatest expansion has taken place in savings deposits at 3-months' notice, both because of the volatility in capital markets, which has deterred the reinvestment of previously recycled investment fund savings into longer-maturity assets, and because of the increased availability of more flexible savings accounts with more attractive rates of interest. There has also been a fairly brisk, ongoing expansion of currency in circulation, which may be in part related to the greater demand for DM banknotes abroad. By contrast--and contrary to the experience of recent years--the rate of growth of M3 extended (M3 plus residents' deposits in overseas subsidiaries and branches as well as Euro-market deposits) has fallen short of that of M3 in 1994. This has partly reflected the decline in deposit rates and enterprises' need for working capital at a time when short-term borrowing cost remain comparatively high. In addition, the lowering of minimum reserve ratios on sight deposit liabilities on March 1, 1994 (see section 5 below), should lead to a narrowing of the spread between Euro- and domestic deposit rates and thereby bring the longer-run growth of M3 extended more into line with that of M3.

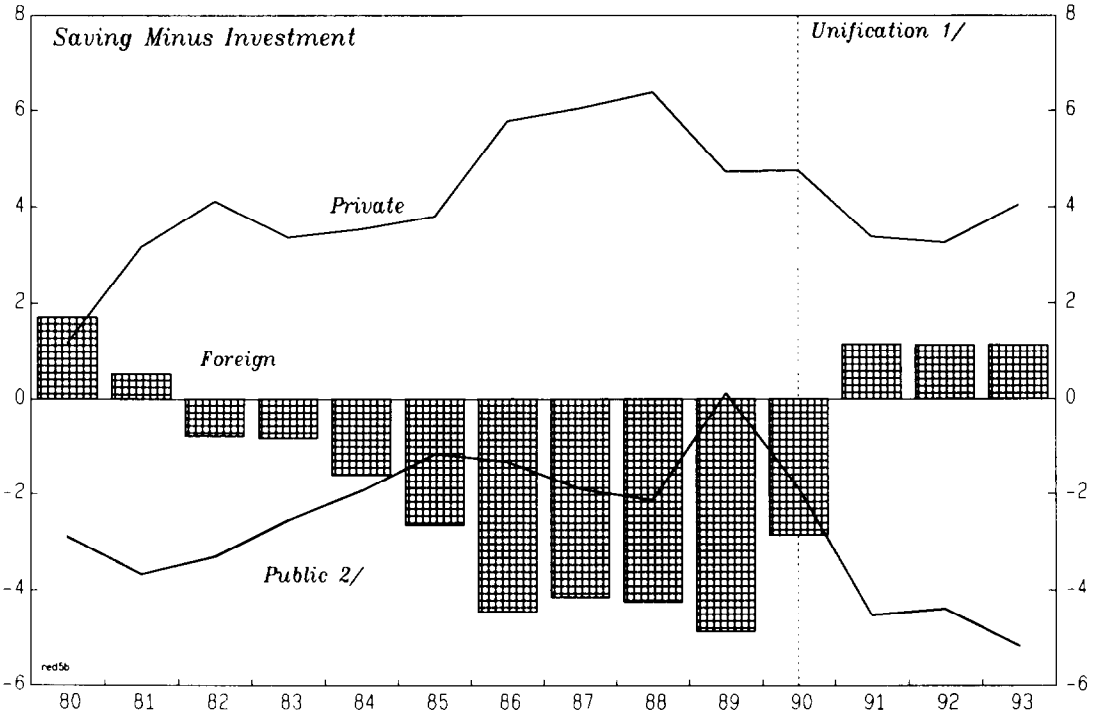
Despite recessionary conditions, a main counterpart to M3 growth has been persistent strong growth of domestic credit to the private sector (Tables II-4 and A16). After growing at about an 8 percent rate for most of 1993, paced by lending in the new Länder, lending to the private sector picked up sharply in the fourth quarter of 1993 largely on account of a 16 1/2 percent annualized rate of growth of loans for housing construction. In addition, the recovery in the manufacturing sector has helped bring about a revival of the sluggish overall pace of lending to the enterprise sector. Growth in private sector credit slowed somewhat in the first half of 1994, but, nevertheless, remained close to a 10 percent pace. Lending to the public sector has also been strong: including the Treuhand, Railways and Post Office, lending to public sector entities accounted for about two fifths of total non-bank lending in the first four months of 1994.

4. Balance of payments

Unification brought about a large shift in the pattern of saving and investment in Germany (Chart II-8). Increased investment demands were more than financed by a shift from a position of sizable external surplus in west Germany to a modest deficit for the united country. The emergence of the deficit reflected the diversion of some of west Germany's exports to within the new border, the collapse of the former GDR's export markets in the east, and an increased demand for imports. On a sectoral basis, the main counterpart to the emergence of the current account deficit was the deterioration in the public finances.

CHART II-8
Germany
External Developments
(Percent of GDP)





Source: Deutsche Bundesbank; and staff estimates.
1/ Data prior to unification refer to west Germany only.
2/ General government balance minus borrowing by other public entities.

Table II-4. Growth in Monetary Aggregates and Main Counterparts 1/

(In percent)

	Monetary aggregates				Selected counterparts	
	M1	M2	M3	M3, extended	Lending to enterprises & individuals 2/	Monetary capital formation
			(Average annual change)			
1992	6.6	11.7	8.1	9.3	11.3	8.0
1993	9.3	8.5	7.8	10.2	8.7	4.0
			(Change over last 6 months at an annual rate)			
1993						
Mar.	8.7	3.7	5.6	9.4	8.8	2.0
Jun.	2.5	9.8	8.3	11.1	7.7	3.3
Sep.	9.7	8.0	8.9	10.0	8.3	5.0
Dec.	13.5	10.3	9.2	14.7	10.1	6.6
1994						
Jan.	15.7	11.1	11.8	14.2	10.1	5.6
Feb.	12.4	10.8	12.6	13.9	9.9	5.9
Mar.	10.9	12.6	13.8	13.9	10.2	5.2
Apr.	12.5	12.9	15.0	13.0	9.5	5.0
May	8.7	10.0	13.9	...	9.9	5.5

Source: Deutsche Bundesbank, Monthly Report and Saisonbereinigte Wirtschaftszahlen.

1/ Growth rates are adjusted to correct for changes in statistical coverage.

2/ Excluding Bundesbank lending. Including lending in the form of securities.

The current account has been in deficit to the tune of DM 30-35 billion (just over 1 percent of GDP) in the past three years (Table II-5). As in 1992, a broadly unchanged deficit in 1993 reflected a strengthening of the trade balance that was fully offset by a rise in the deficit on invisibles. In turn, the trade balance only strengthened in 1993 because a steep decline in exports was more than matched by a collapse in imports. However, as explained in section 1 above, statistical problems connected with the new Intrastat recording system within the EU exaggerate, perhaps to a large extent, the decline in gross trade flows. 1/ The deterioration in the invisibles account mainly reflected a sharp reduction in investment income.

The decline in exports in 1993 took place in the first half of the year when volumes are estimated to have been nearly 8 percent below their levels in the corresponding period in 1992. The decline in exports was broadly based across all categories of goods. However, export volume stabilized in mid-year, picked up sharply in the final quarter and is estimated to have expanded further in the first quarter of 1994. The recovery owes partly to the ending of recession in key partner countries as well as to the effects of industrial restructuring. Exports have also been supported--and this was the case even in the first half of 1993--by continuing high demand from developing countries where recessionary conditions were avoided (Table A17). Growth of exports to Asian markets was particularly strong because German competitiveness was strengthened by a steep depreciation of the deutsche mark against the yen. A recovery in exports to Germany's main markets in other EU countries is only apparent in more recent data. 2/

As with exports, the decline in imports in 1993 was concentrated in the first half of the year when (exaggerated by the shift in recording methods) import volume was nearly 10 percent below its level in the corresponding period of 1992. Again, the decline in imports was broadly based with steep falls in imports of both raw materials and finished goods. In line with the continued weakness in domestic demand, import volumes stagnated in the second half of 1993, although some rebound appears to have occurred in the first quarter of 1994.

The deficit on services doubled to DM 39 billion (1 1/4 percent of GDP) in 1993 (see tabulation below). Much of the deterioration was due to a DM 10 billion decline in net investment income, which reflected in part

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1/ Revised estimates for 1993 show the levels of exports and imports to be each about 4 percent higher than those shown in Table II-5, although there is little net effect on the trade balance. The new data were released too late to be incorporated into the analysis of last year's trade flows.

2/ Note that the 21 percent decline in exports to the EU shown in Table A9 includes the effects of the shift to the introduction of new recording methods. By contrast, the fall in exports to other industrial countries in Europe, where demand and competitiveness conditions were broadly similar, is estimated at only 6 percent.

Table II-5. Germany: Balance of Payments 1/

(In billions of deutsche mark)

	1989	1990	1991	1992	1993
Merchandise trade, net	134.6	105.4	21.9	33.7	59.1
Exports	641.0	662.0	665.8	671.2	604.0
Imports	506.5	556.7	643.9	637.5	544.8
Other items 2/	-1.3	-1.6	1.4	0.7	-4.8
Services, net	8.5	8.4	3.0	-18.8	-38.6
Investment income	22.2	28.2	32.1	24.5	15.0
Nonfactor services	-13.6	-19.7	-29.2	-43.2	-53.6
Transfer payments, net	-33.7	-36.5	-58.5	-50.0	-51.7
Of which:					
Remittances of foreign workers	-7.5	-7.1	-6.4	-6.8	-6.8
Net payments to the EC	-12.8	-11.0	-18.3	-22.3	-23.1
Current account balance	108.1	75.7	-32.2	-34.4	-35.2
(percent of GNP)	4.8	2.8	-1.1	-1.1	-1.1
Long-term capital, net	-22.2	-65.4	-27.3	39.7	186.5
Short-term capital, net	-112.9	-23.9	46.9	60.2	-165.7
Capital account balance	-135.1	-89.3	19.7	99.9	20.8
Errors and omissions	8.0	24.6	12.9	3.3	-21.3
Balancing item with respect to Bundesbank's external position	-2.6	-5.1	0.5	-6.3	1.5
Change in Bundesbank's net external assets (increase +)	-21.6	5.9	0.8	62.4	-34.2

Sources: Statistisches Bundesamt, Volkswirtschaftliche Gesamtrechnungen; Bundesbank, Monthly Bulletin.

1/ Before July 1990, west Germany only.
2/ Trade adjustments and transfer trade.

Germany's declining net overseas assets. There was also a widening of the deficit of travel payments, which has been growing steadily for a number of years and a further decline in receipts from foreign troops stationed in Germany. The deficit on transfers remained at about DM 50 billion in 1993.

Balance on Invisibles

(In billions of deutsche mark)

	1991	1992	1993
Services	3.0	-18.8	-38.6
Investment income	32.1	24.5	15.0
Travel	-34.2	-39.9	-44.6
Transport and insurance	9.9	8.8	9.0
Government transactions	19.2	15.9	12.8
of which: receipts from foreign military agencies	(21.1)	(17.7)	(14.5)
Other	-24.1	-28.0	-30.8
Transfers	-58.5	-50.0	-51.7
Private	-11.7	-13.4	-13.5
Official	-46.8	-36.5	-38.2

Capital account developments in 1993 were dominated by record inflows of foreign investment into domestic bond markets that were sufficient to finance the current account deficit many times over (Table A18). 1/ Foreign demand was sustained by persistent expectations of falling interest rates in Germany and by the yield premium over U.S. bonds that existed for much of the year. The inflows dried up in the first half of 1994 (when there were modest net outflows) amid the global turbulence in bond markets that saw bond yields rise in Germany and other major markets.

A large part of the inflow of long-term capital in 1993 was matched by an increase in the net external asset position of the banking system as well as by a sizable outflow of short-term funds by enterprises and individuals (Table A19). The latter flows, which amounted to DM 60 billion for the whole of 1993, were concentrated in the first quarter and probably reflected attempts to avoid the interest income withholding tax that came into effect on January 1. Tax avoidance also played a major role in two other elements of the capital account in 1993. First, it stimulated ongoing outflows into foreign investment funds in the first half of the year before the

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1/ The gross flows are exaggerated to some extent by the recycling of resident investment through Luxembourg. Thus, some of the DM 226 billion recorded inflow into bond markets attributed to investors represents the re-investment in Germany of residents' purchases of foreign investment funds.

announcement in the fall that such funds would be taxed led to a sizable reflow: for the year as a whole, net outflows to foreign investment funds were DM 11 billion compared with DM 58 billion in 1992. Second, it probably accounted for some of the large negative balancing item (DM 21 billion) in the balance of payments statistics because increased flows into foreign safe-haven accounts (to avoid taxation) would have found their way back into German securities markets without statistical detection. However, some of the balancing item could also reflect sizable recording errors in trade flows due to the introduction of the Intrastat system.

The net external assets of the Bundesbank declined by DM 34 billion in 1993 owing to a continued adjustment down of official foreign reserves from their high end-1992 level and a DM 13 billion increase in liabilities due to foreign investor purchases of Bundesbank liquidity paper ("Bulis"). 1/ The decline in reserves (DM 21 billion for the year as a whole) did not follow a smooth path as foreign exchange market intervention during the summer ERM crisis led to a massive temporary increase in reserves (to close to the peak level seen at the time of the September 1992 ERM crisis) that was unwound toward the end of the year.

5. Structural, trade, and aid policies

a. The "Standort" program

Both the prolonged recession and the challenges of unification have prompted renewed soul-searching by the authorities on structural issues, culminating in the Report by the Federal Government on Securing Germany's Economic Future (Bericht der Bundesregierung zur Zukunftssicherung des Standortes Deutschland, hereafter referred to as the Standort report). 2/ The report covers the entire range of structural issues and makes specific proposals in each of them, addressing the responsibilities not only of the Federal Government but also of Länder, communities, enterprises, and workers, and including both measures to be taken at home and policy stances to be adopted in international fora. Its general thrust is toward more flexibility, less regulation, lower costs and taxes, and generally more room for private investment.

The Standort program includes a host of key recommendations in areas covered elsewhere in this chapter: fiscal and tax policy, health care reform, privatization, reform of the railways and of posts and telecommunications, labor market policies, financial market reform, and trade policy. In addition, it emphasizes several other areas which are examined briefly below.

In line with the thinking of the Deregulation Commission of 1991, a key component of the Standort program is deregulation. The report recommends

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1/ Bulis were issued for the first time in March 1993.
2/ Presse- und Informationsamt der Bundesregierung, September 2, 1993.

simplifying planning and approval procedures for land use decisions and for the construction of buildings, factories, and transport routes, and improving the land registry. In addition, it proposes a relaxation--while maintaining safety standards--of the rules on genetic engineering and the development of new chemicals, and liberalization of restrictive rules surrounding the activities of certified master craftsmen. Last but not least, in retail trade, it proposes that the 1933 law that virtually banned discounts be repealed, the law on shop opening hours be reexamined, and other restrictive regulations (e.g., on permissible forms of advertising) be relaxed. Many of these changes would themselves strengthen competition and promote innovation--two other major planks of the program. The program also seeks to pursue these latter aims, respectively, through stronger anti-cartel legislation and a reform of trademark law, and through an intensified dialogue on research and development (R&D) between business, science, and the government, and possibly tax concessions for R&D activities.

Recognizing the importance of human capital to Germany's attractiveness as a business location, the Standort program also lays out an agenda in the area of education and training, including a shortening of primary/secondary schooling and university training, greater mobility between different parts of the education system, better cooperation between schools and businesses, and greater autonomy for and competition between universities. In the transport and communications sector, in addition to postal and railway reform, the program includes accelerated development of infrastructure, with more private involvement, and freight tariff liberalization. In the energy sector, it advocates more competition, as well as a reexamination of coal subsidies. Finally, the program addresses environmental issues, both in the transport and energy sectors and more generally; in particular, it proposes a CO_2/energy tax, to be implemented at EU level.

The Government has already begun to implement many of the recommendations in the Standort report. Five key laws have been passed so far: the Action Program for More Employment and Growth; the Program for Savings, Consolidation, and Growth (Spar-, Konsolidierungs- und Wachstumsprogram); the Law to Secure Germany's Future as an Investment Location (Standortssicherungsgesetz); the new Working Time Law (Arbeitszeitrechtsgesetz)--which dates from before the Standort report but is very much in line with it; and the Employment Promotion Law (Beschäftigungsförderungsgesetz). In addition, a number of more specific legal changes have already been implemented (e.g. a planning simplification law, and an amendment to the genetic engineering law).

b. Labor markets

High levels of open and disguised unemployment, especially in east Germany, have reopened the debate in Germany about labor market policies and institutions. Chapter V discusses the nature of unemployment in Germany and three key potential areas for reform: the wage bargaining system, income support for the unemployed, and employment protection. This section

summarizes the most important recent policy developments; Annex 3 provides a listing of legal changes in the labor market area in 1993-94.

Government efforts to tackle the problem of unemployment have focused on four major areas: a tightening of unemployment insurance and related benefits; an expansion of employment subsidies; efforts to make working time more flexible; and improvements in the job intermediation process. 1/

First, benefits available to the unemployed and to those in training have been reduced, and eligibility criteria tightened, in order to strengthen incentives to work. Most importantly, replacement ratios for unemployment benefits (Arbeitslosengeld), unemployment assistance (Arbeitslosenhilfe), and most other benefits were reduced by 1-3 percentage points as of January 1994: unemployment benefits, for instance, are now payable at 60-67 percent of previous net wages, depending on family status. In addition, the government has proposed, as part of the draft 1995 budget, that unemployment assistance--the duration of which is currently unlimited--be restricted to a period of two years. In a similar vein, in order to maintain incentives to seek a regular job, conditions were imposed on employment in job creation schemes such that wages on such schemes would remain below normal wages.

Second, employment subsidies were introduced temporarily (until 1997) for work in the areas of environmental sanitation, social services, and youth aid--initially only in east Germany, but as of mid-1994 also in regions of west Germany that are in structural crisis. Such subsidies are payable for previously unemployed persons up to the level of the corresponding savings in unemployment insurance payments.

Third, a new law on working time was introduced in mid-1994. In addition to strengthening health protection for workers on night shifts and lifting virtually all prohibitions on the employment of women, the law relaxed restrictions on working time, mainly with a view to lowering labor costs. In particular, it considerably lengthened the averaging period over which normal working hours may not exceed eight hours a day, and rationalized the criteria under which exemptions from the prohibition against work on Sundays and holidays can be granted. Such exemptions can now be granted if technological progress makes it necessary that the production process be uninterrupted, or, for firms subject to intense international competition, if exemption is necessary to prevent job losses.

1/ In addition, increased efforts are being made to combat illegal employment, and to promote part-time work (by guaranteeing unemployment insurance payments at full-time-equivalent levels for a time); and the validity of the Employment Promotion Law of 1985, which liberalized the regulations surrounding fixed-term contracts and was to expire in 1995, has been extended to the year 2000.

Fourth, in order to increase the efficiency of job intermediation, the monopoly of the Federal Labor Office in this area was abolished in mid-1994, and private placement services are now permitted.

Finally, a new law on notice periods was approved in late 1993, not so much with a view to promoting employment but rather in response to a ruling by the Constitutional Court, which had declared the existing different legal notice periods for blue- and white-collar workers unconstitutional. The new notice periods are the same for all workers, and are close to the average of the previous notice periods. The opportunity of the new law was, however, taken to increase the power of the collective bargaining partners and of individual signatories to employment contracts to reduce notice periods, by mutual agreement, below the legally stipulated periods.

The crucial area of wage bargaining is largely outside the control of the government, but the social partners have also begun to take some steps toward greater flexibility in wage agreements. These steps include the incorporation of "opt-out" clauses which permit employers in financial difficulties--with the agreement of the union--to pay below-tariff wages; increased devolution to the firm level of decisions on working time; and--albeit only in one agreement--provisions permitting new recruits, and in particular persons hired out of long-term unemployment, to be paid below-tariff wages for a time. In addition, increasing numbers of employers in east Germany are paying below-tariff wages to their regular workforces, either because they do not belong to an employers' association and hence are not bound by the collective agreements, or simply by tacit agreement with the workforce. Each of these steps is discussed in more detail in Chapter V.

c. Health care

The provision of health care and health insurance in Germany is highly regulated. Insurance coverage is mandatory, but there is a limited choice among public and private health insurance funds. The public funds cover 90 percent of the population, and are typically financed by contributions linked to gross earnings (with a cap). Contribution rates differ substantially among local funds, but have averaged around 15 percent in 1992 and 1993.

Health care expenditure amounted to DM 379 billion (or 13.5 percent of GDP) in 1991, the latest year for which comprehensive data are available. Of this total, about 70 percent was incurred in the public sector. The share of health expenditure in GDP rose rapidly in the early 1970s, when public sector benefits were sharply expanded, from about 9 percent to 13 percent in 1975. The share has remained roughly constant since then, partly as a result of repeated efforts at reform and cost control during the 1980s.

The most recent cost control law became effective at the beginning of 1993. It limits the rate of increase in the expenditure of the public

health insurance funds to the rate of increase in income subject to contribution. This objective is achieved by strict global budgeting and limits on hospital charges and physicians' fees. These measures have succeeded in dampening the growth of health care expenditure. As a result, the public health insurance funds showed a surplus of about DM 10 billion (0.3 percent of GDP) in 1993, following a deficit of a similar size in 1992.

Further reform of a more structural nature will be needed to consolidate and maintain this short-term improvement. The Council of Health Care Experts delivered a preliminary report in early 1994 that outlined the principal options. 1/ A second report, which will make specific recommendations for change, will be issued at the beginning of 1995, following the elections.

Legislation creating a new long-term nursing care program was adopted in 1994. All persons covered by the public health insurance funds will be eligible to participate. 2/ From April 1995 on, the program will cover long-term nursing care administed at home; coverage for institutionalized nursing care will become effective in July 1996.

The program will be financed by contributions linked to gross earnings. 3/ The contribution rate, which will be divided equally between employers and employees, will be 1 percent from the beginning of 1995 and will rise to 1.7 percent in July 1996. 4/ This should be offset by a slight decrease in contribution rates to the health insurance funds, which have until now

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1/ The report distinguishes between basic coverage, which would be mandatory (whether organized privately or by the public sector, and whether financed by income-linked contributions or premia) and supplemental coverage (to be financed by premia). Within this framework, four options are developed. Under Option I, basic coverage would include all health services that have not been explicitly excluded. Grounds for exclusion would include the uninsurability in private markets (e.g. because of moral hazard). Similar legal exclusions would also apply to supplemental insurance coverage. Option II would provide only a clearly circumscribed package of basic benefits and allow individuals to purchase supplemental insurance. Option III would provide a comprehensive package of basic benefits, but offer individuals limited room to purchase less coverage. Option IV would provide a basic benefits package, while giving individuals some scope both for adding to this package (as in Option II), and for subtracting from it (as in Option III).

2/ Persons not eligible for public nursing care coverage are required to seek private coverage.

3/ The amount of earnings subject to contribution will be capped at the same levels as in the public health insurance funds.

4/ The burden placed on employers is to be offset by the abolition of one public holiday, thereby extending annual working time without additional cost to employers. Should a Land government opt not to eliminate a holiday, the entire contribution rate will be carried by employees.

provided some coverage for nursing care. Further, and possibly sharp, increases in contribution rates are likely in the future as the population ages and usage of the program grows.

d. Privatization

In eastern Germany, privatization of the services sector was essentially concluded in 1991. 1/ Over 20,000 retail outlets and restaurants were sold. There has also been substantial progress in privatizing the industrial sector. By the end of May 1994, over 14,000 enterprises had been placed in the private sector, and the Treuhand had received commitments from buyers to invest DM 198 billion and maintain 1.46 million jobs (equivalent to about 40 percent of industrial employment before unification). Only 649 enterprises remained on the books of the Treuhand, with an overall employment of 132,000. The privatization of the Treuhand's holdings of real estate, including agricultural and forest land, will take a number of years more to complete.

The Treuhand will cease active operations at the end of 1994. It will be replaced by six successor organizations under the supervision of the Ministry of Finance. 2/ These organizations will, among other things, police the fulfillment of privatization contracts (especially employment and investment commitments) and manage the remaining real estate holdings. One unit will supervise the industrial enterprises that have not been privatized or closed by the end of 1994. The government plans to consolidate these enterprises in so-called "management companies," which will undertake to restore them to economic viability. 3/

The activities of the Treuhand have been costly. In addition to new borrowing totaling DM 130 billion between 1990 and the end of 1994, the Treuhand has also taken on DM 100 billion in old enterprise debt, equalization claims, and interest payments for the Debt Processing Fund (KAF), for a total indebtedness of about DM 230 billion (about 7 percent of 1994 GDP). The operations of the successor agencies are projected by the authorities to give rise to a further borrowing requirement of perhaps DM 45 billion, spread over the better part of a decade.

In western Germany, the federal government is committed to further and accelerated privatization. In the 1980s, much or all of the federal share in enterprises such as Volkswagen AG (motor vehicles), VEBA AG, VIAG AG, and Salzgitter AG (all heavy industry) were sold. Total privatization receipts

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1/ For a detailed discussion of privatization in eastern Germany, see Chapter VI of SM/92/199.

2/ The Treuhand staff, which peaked at 5,800 at the end of 1993, is projected to decline to 3,800 in 1994 and further to 2,000 in 1998. Nonetheless, the figure is viewed by many as surprisingly large.

3/ For now, the intention appears to be to provide a one-time injection of funds to finance the restructuring of these enterprises.

since 1984 amounted to about DM 11 1/2 billion. In the near future, the federal government intends to reduce its holdings in a number of major business enterprises, including the Deutsche Lufthansa AG (airline), the Rhein-Main-Donau AG and Neckar AG (canals), and the Autobahn Tank & Rast AG (motorway rest stops), and more than a dozen others. In the longer term, the government also hopes to dispose of substantial shares in the three postal enterprises, and in airports, harbors, and media enterprises. The Länder and local governments are also beginning to embark on a more ambitious privatization program.

e. Railways

The railway reform, which went into effect at the beginning of 1994, converted the west German and east German railways (Deutsche Bundesbahn and Deutsche Reichsbahn) from public administrations into a stock corporation (Deutsche Bahn AG). 1/ The primary objectives of the reform were to improve the competitiveness and increase the market share of the railways, to reduce the financial burden of the railways on the federal government, and to implement EU directives. 2/ The EU had prescribed entrepreneurial independence for the railways, the separation of infrastructure and operations, and the admission of third parties to the rail network.

As an independent stock corporation, the Deutsche Bahn AG has almost complete autonomy in setting tariffs and standards of service. It is also responsible for implementing infrastructure construction. The newly created Federal Railway Office (under the aegis of the Ministry of Transport) will be responsible only for general regulatory oversight, the management of the residual civil service staff, the old debt, and the financing of the rail infrastructure.

These organizational measures were paralleled by a fundamental financial restructuring. The objective was to circumscribe and reduce the burden placed by the railways on the public sector. 3/ Thus, the federal government assumed responsibility for the accumulated debt of the railways (about DM 70 billion or 2 1/4 percent of GDP). The government also made arrangements to relieve the new Deutsche Bahn AG of the additional burdens resulting from the fact that many employees of the former state railway

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1/ The reorganzation of the railways required a constitutional amendment. A new article (87 e) defines the regulatory role of the state, which is strictly separated from the business tasks of the railways.

2/ EC Directive 91/440/EC (Development of the Railway Companies of the Community).

3/ The government projected that in the absence of a reform, the debt of the railways would have risen from DM 70 billion in 1993 to DM 380 billion in the course of a decade.

agencies were civil servants with lifetime tenure. 1/ In east Germany, the government will pay for the cleanup of inherited environmental burdens and the reconstruction of the railway infrastructure. Furthermore, the government will compensate the Deutsche Bahn AG for the cost of providing mandated "social" services and tariffs and short-distance rail transport (DM 7.7 billion have been included in the 1995 federal budget for these purposes). 2/ The size of the contribution of the federal government to infrastructure maintenance and enhancement remains to be decided.

An important feature of the railway reform is that it liberalizes access to the German railroads. Third-party providers of rail transport services are now permitted to load and run trains; a fee is levied for the use of the rail infrastructure. The fee structure and the regulations governing access to the rail network are designed not to discriminate between the DB subsidiaries offering passenger and freight services and other providers. These changes exceed what was required by EU directives. In particular, all providers, including those from other EU member states, are free to offer rail services within Germany (not just in cross-border traffic, as mandated by the EU).

Eventually, the Deutsche Bahn AG will be further subdivided into separate stock corporations for infrastructure, freight, long-distance passenger service, and short-distance passenger service. It is also intended that shares in these corporations will be sold to the public. The precise timing of these steps has not yet been determined.

The railway reform is an important step towards restoring the viability of the railways and improving rail service in Germany. However, it remains to be seen how the measures to liberalize access, tariffs, and standards of service will be implemented, and whether regulators can withstand the temptation to interfere in ways that distort the efficient allocation of resources. Experience will show whether further reform is necessary.

1/ These civil servants will formally remain employed by the federal government, which will make them available to the railways. Despite some measures to increase flexibility in working conditions and salary scales, the Deutsche Bahn AG will still be subject to many of the constraints that impeded efficient personnel management in the public agencies which preceded it.

2/ Despite the payments made by the federal government, ultimate responsibility for short-distance rail transport (urban and regional services) has been transferred from the federal government to the Länder from the beginning of 1996. The Länder (and the local governments) are already responsible for the organization of other urban and regional public transportation services.

f. Post and telecommunications

A package of measures to restructure the postal enterprises was passed into law in July 1994. 1/ The principal objectives of this reform are to improve the international competitiveness of the postal enterprises, especially the Telekom, in particular by improving the quality and scope of their services, to set the stage for their eventual privatization, and to lay the groundwork for a farther-reaching liberalization of the market for telecommunications services in line with EU directives. As with the railway reform, the postal reform required a constitutional amendment, and involved protracted negotiations with the postal employees union, which mounted fierce opposition to changes in the status quo.

A key element of the reform is the transformation of the postal enterprises from administrative agencies into stock corporations, combined in a public authority which acts as a holding. 2/ Regulatory authority remains with the Ministry for Post and Telecommunications and a newly created Regulatory Council (consisting of representatives of the Länder and members of the federal parliament). These regulatory bodies are obliged to ensure that the postal enterprises, and their eventual private competitors, provide adequate and universal service. Managerial control of the employees of the former Deutsche Bundespost, many of whom are tenured civil servants, will be transferred to the stock corporations. However, the individual postal enterprises will have only limited autonomy in setting career and salary structures, which is likely to limit the scope for productivity improvements.

The timetable for privatization envisages the sale of a first tranche of shares in the Telekom (20 to 25 percent) in 1996. No decisions have yet been taken on further placements of shares, nor had it been decided at the

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1/ The postal enterprises, which are public agencies under the supervision of the Ministry of Post and Telecommunications, are active in the areas of letter and parcel delivery (Postdienst), telecommunication (Telekom), and financial services (Postbank). These three business units were created from the unitary postal agency (Deutsche Bundespost) following the adoption of the first postal reform package in 1989.

2/ The holding is called Bundesanstalt für Post und Telekommunikation - Deutsche Bundespost. Its most important tasks are to vote the federal government's shares, to supervise the privatization of the individual postal enterprises, and to engage in collective bargaining on working conditions.

time of this writing whether the federal government will surrender a majority participation in the Telekom or the other postal enterprises. 1/

A cause for concern is also that the postal reform has not eliminated or substantially weakened certain legal monopolies that have impeded the efficient provision of telecommunications services. Specifically, control of the electromagnetic spectrum, voice and data networks, and telephone service remains firmly in the hands of the Telekom. While the network monopoly is scheduled to be eliminated at the beginning of 1998 in accordance with an EU directive, a delay of at least two years appears likely.

g. Financial markets

In the past year, the main institutional changes in financial markets have come about through implementing regulations related to the transitional stage ("stage 2") of the Maastricht Treaty on European Monetary Union (EMU), which came into effect on January 1, 1994, and the passage of the Second Financial Market Promotion Law in July 1994.

The main institutional effects for Germany of stage 2 of the Maastricht Treaty concern the outlawing of direct central bank financing of government operations. 2/ This necessitated the abolition, from January 1, 1994, of so-called cash advances by the Bundesbank to central and regional authorities that were used to bridge temporary payment needs. 3/ It is not expected that the measure will pose significant problems for the short-term cash management of the public authorities who have access to a well developed, efficient money market.

1/ Privatization decisions will also be influenced by the financial position of the three postal enterprises. While the Telekom has been profitable, thanks in large part to its position as a legal monopolist, the Postdienst (letter and parcel delivery) has historically incurred large losses. Even so, the net worth of the Telekom has fallen sharply in recent years, as a result of the massive infrastructure investment undertaken in east Germany, to less than 20 percent of the balance sheet total. Moreover, all three postal enterprises are heavily burdened by pension liabilities, which amount to more than DM 100 billion.

2/ For more details, see Bundesbank Monthly Report, January 1994. Another key requirement, that monetary policy be in the hands of an independent central bank, was clearly already satisfied in the case of Germany. Germany has decided not to take up the (voluntary) option of transferring management of its foreign exchange reserves to the newly established European Monetary Institute (EMI).

3/ Such advances, which were subject to ceilings, had not in the past been used ultimately for financing public expenditure but rather as a technical tool to facilitate the settlement of payments.

In a related measure--although legally distinct from stage 2 obligations--the authorities also terminated, with effect from the beginning of 1994, the requirement for government entities to maintain deposits at the Bundesbank. Hitherto, the shifting of these deposits to the money market had provided a flexible instrument for managing liquidity, particularly for fine-tuning away day-to-day frictions in the money market. The abolition of the government deposit requirement is estimated to have provided an injection of liquidity into the money market of about DM 6 billion in January. 1/ Concerns about potential transitional uncertainties for money market participants was one factor behind the cautious interest rate policy at the beginning of 1994.

Also in the area of monetary control, the Bundesbank lowered minimum reserve requirement ratios for sight deposits to 5 percent, from a progressive scale of 6.6 to 12.1 percent, on March 1, 1994. The lowering was made with the intention of lessening incentives to circumvent the reserve requirement regulations: there has in the past been rapid growth in Euro-deposits on which reserve requirements do not apply and which can therefore offer more attractive returns. With minimum reserve requirements on time and savings deposits having been lowered to 2 percent a year earlier, minimum reserve requirements are now at low levels. 2/ However, the Bundesbank has stressed that it still regards reserve requirements as an important instrument of monetary control.

As part of the ongoing efforts to increase the attractiveness of Germany as an international financial center, a Second Financial Promotion Law was passed in July 1994. The main provisions of the Law are the introduction of strong measures to counter insider trading, greater stock exchange supervision, and the launch of genuine money market funds. The latter provision, effective August 1, 1994, allows investment funds to hold 100 percent of their assets in short-term money market paper or bank deposits: the previous limit had been 49 percent. To the extent that the public authorities continue to eschew the issuance of Treasury Bills, the scope for development of money market funds might be limited.

h. Trade policy

Most aspects of German trade policy now fall within the competence of the European Union. The majority of the Uruguay Round proposals, in particular, need to be ratified at that level; the European Commission expects to submit a proposal for ratification to the European Parliament in autumn, before proceeding to formal approval by the Council. National

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1/ Government deposits at the Bundesbank had been excluded from the definition of M3. This practice is to be extended to government deposits at commercial banks in order to avoid discontinuities in the M3 series.

2/ The liquidity released by the lowering of minimum reserves requirements in March 1993 was partly absorbed by the Bundesbank issuing its own liquidity paper for the first time.

ratification procedures for the remaining proposals were begun in Germany in April.

Moving on from the Uruguay Round, Germany advocates in particular a continuation of efforts toward multilateral liberalization of trade in services, including financial services, maritime transport, and audio-visual services; in civil aircraft; and in steel. Germany has also encouraged multilateral attention, within the context of the World Trade Organization, to the interface between trade and, respectively, the environment and domestic competition. The interface between trade and social standards is also seen as requiring discussion, though not in the first instance within the WTO.

Germany has supported increased market access to the EU for the transition countries of Central and Eastern Europe (CEECs), especially through Association Agreements. However, together with France and Italy, it also requested in 1992 that the safeguard clause under these agreements (which permits protection in case imports threaten domestic producers) be used against steel imports from the then Czech and Slovak Federal Republic. Antidumping procedures were started against these steel imports, but were superceded by a negotiated agreement on tariff quotas with the Czech and Slovak Republics. Germany is not considering invoking the safeguard clause on any other products.

i. ODA and aid to transition economies

Official development assistance totaled DM 11.2 billion in 1993 (Table II-6). This represents a decrease of approximately 5 1/2 percent relative to 1992. Since the mid 1980s, the ratio of ODA to GDP has gradually decreased, from 0.47 percent in 1985 to 0.36 percent in 1993. From the beginning of 1990s, the decline of the ODA ratio can be attributed to budgetary pressures related to unification and the need to provide substantial assistance to economies in transition, especially Russia.

German ODA policy has begun to place greater emphasis on providing incentives to improve the conditions for development. Developing countries are being encouraged to implement policy in the areas of poverty alleviation, environmental and resource protection, and the promotion of education.

Germany continues to provide generous assistance to economies in transition. On a cash basis, these payments were of approximately the same order of magnitude as the ODA budget in 1993 (Table II-7). From 1990 to 1993, the overall accrued value of financial support provided to transition economies has totaled DM 135 billion, of which one-third was furnished to countries in central and eastern Europe. Of the overall amount, DM 30 billion was provided in the form of grants; approximately half was in the form of debt rescheduling and guaranteed credit.

Table II-6. German Aid and Other Resource Flows to Developing Countries and Multilateral Agencies 1/
(Net disbursements in DM millions)

	1980	1985	1990	1991	1992	1993
Official Development Assistance 2/	6,476.1	8,656.7	10.213.3	11,446.6	11,825.8	11,186.9
Bilateral	4,219.0	5,826.1	7,238.3	7,601.3	8,174.9	7,221.7
Grants	4,098.3	4,197.7	7,312.7	6,518.3	6,938.7	5,937.0
Technical Cooperation 3/	1,798.9	2,576.3	2,917.3	2,879.7	3,103.2	3,203.8
Other grants 4/	2,299.4	1,621.4	4,395.4	3,638.6	3,835.5	2,733.3
Loans/other capital aid/debt relief	120.7	1,628.4	-74.4	1,083.0	1,236.3	1,284.6
Multilateral	2,257.1	2,830.6	2,975.0	3,845.3	3,650.9	3,965.3
Grants	1,164.0	1,608.0	1,796.1	2,703.2	2,460.2	...
Shares/subscriptions	1,079.7	1,235.3	1,196.9	1,160.8	1,210.0	...
Loans	13.4	-12.7	-18.0	-18.7	-19.3	...
Other Official Flows	1,144.1	1,985.0	3,410.0	3,103.6	722.3	...
Bilateral	1,149.5	2,017.1	3,412.8	3,100.6	717.4	...
Export credits	344.0	798.5	137.9	628.6	312.8	...
Rescheduling (refinancing)	760.4	1,179.3	3,243.9	2,327.8	145.8	...
Other credits	45.1	39.3	30.9	144.2	258.9	...
Multilateral	-5.4	-32.1	-2.8	3.0	4.8	...
Private Flows at Market Terms	10,923.9	4,314.0	7,073.0	5,939.5	28.7	...
Bilateral	8,461.9	3,194.2	5,939.2	8,163.3	3,262.6	...
Investments and other capital transactions	5,939.6	2,504.0	3,396.7	5,348.8	153.2	...
Export credits	2,522.3	690.2	2,542.5	2,814.5	3,109.4	...
Multilateral	2,462.0	1,119.8	1,133.8	-2,223.8	-3,234.0	...
Net Grants by Private Voluntary Organizations 5/	763.9	1,246.9	1,222.7	1,266.9	1,335.0	...
Total Net Disbursements	19,308.0	16,202.6	21.918.9	21.756.6	13,911.7	...
ODA as a percentage of GNP	0.44	0.47	0.42	0.40	0.39	0.36
Gross National Product (GNP) in DM billions	1,477.4	1,834.5	2,425.5	2,826.6	3,021.8	3,106.8

Source: OECD Development Assistance Committee; Federal Ministry of Finance.

1/ Figures from 1991 onwards refer to the territory of the Federal Republic of Germany since 3/10/1990.

2/ ODA=Bi-and multilateral grants, credits and other flows on concessionary terms.

3/ From 1989 onwards DAC figures, excluding grants to churches and private agencies.

4/ Primarily grants from financial cooperation, food aid and humanitarian aid.

5/ Grants given by non-governmental organizations from their own funds or donations, e.g. churches, societies.

Table II-7. Support for Economies in Transition 1/

(Billions of deutsche mark)

	1992 Actual	1993 Budget	1994 Budget
Central and eastern Europe	0.92	0.83	0.54
Russia and other transition economies	5.57	10.78	8.21
Not attributable	0.18	0.39	0.65
Total	6.67	12.00	9.40
(percent of GDP)	(0.22)	(0.39)	(0.29)

Source: Federal Ministry of Finance.
1/ Cash basis.

Fiscal Consolidation Measures

This annex summarizes the package of fiscal consolidation measures that were announced in July 1993 and passed into law at the end of the year. 1/ The financial effect of these measures (not including the increase in the fuel tax) is summarized in following tabulation:

Effect of Fiscal Consolidation Packages 1/
(In percent of GDP)

	1994	1995	1996
Federal government 2/	-20.9	-23.3	-24.8
Länder	-3.7	-6.0	-6.6
Municipalities	-1.1	-2.3	-2.7
Total	-25.7	-31.6	-35.1
(Percent of GDP)	-0.8	-0.9	-1.0

1/ Relative to baseline.
2/ Including Federal Labor Office.

On the expenditure side, several important steps were taken to contain the growth of social spending, especially in the fields of unemployment compensation and public assistance.

1. The replacement ratios for unemployment benefits (Arbeitslosengeld) were reduced from 63 to 60 percent of last wages for insured persons without children and from 68 to 67 percent for insured persons with children.

2. Although the duration of unemployment assistance (Arbeitslosenhilfe) remains unlimited, recipients who have not worked long enough prior to be eligible for unemployment benefit prior to becoming unemployed, or who were not insured, will receive assistance for only one year.

3. The increase in public assistance (Sozialhilfe) rates will in future be limited to the lesser of 2 percent and the rate of increase of the economy-wide net wage bill. Moreover, local governments will have the option of requiring recipients of public assistance to work.

In addition, numerous small, but cumulatively important steps were also taken to streamline family assistance programs. The rule that families are ineligible to receive child allowances (Kindergeld) if the gross income of

1/ Principally the so-called Law on Saving, Consolidation and Growth and the Law on Abusive Tax Avoidance. This Annex does not discuss the measures in the Federal Consolidation Program, which was adopted as part of the Solidarity Pact; this package was described last year's report (SM/93/151).

the child exceeds DM 750 per month will be interpreted more narrowly. Citizens of non-EC countries who have not been granted a resident visa will no longer be eligible for child allowances. These allowances are also substantially reduced for third and further children in families with an annual gross income above DM 140,000.

Finally, many changes were made in the tax code to restrict or eliminate tax shelters and loopholes. The financial impact of these measures is likely to be relatively small (about 1/8 percent of GDP in 1994, rising to less than 1/4 percent of GDP by 1996).

The Stability of the Demand for M3 ANNEX 2

This annex provides an analysis of the stability of broad money (M3) demand. The results are qualitatively similar to those presented in last year's Article IV staff papers. 1/ Long-run money demand only appears to be stable if a large shift in velocity is allowed for around the time of unification, while the quarterly movements in M3 have been very unpredictable since the second half of 1992.

The analysis uses the two stage estimation procedure of Engle and Granger (1987). This procedure tests first for the existence of a stable, long-run statistical relationship between money, income and interest rates. Such tests confirm that money was cointegrated with money and income in the pre-unification era. Moreover, adding a time trend to the relationship suggests that the income elasticity of real money demand was unity or, put another way, that money velocity fluctuated about a stable trend (Table II-8). The trend was downward at an estimated rate of about 1 1/2 percent a year, or a little more than the amount the Bundesbank usually factors into its calculation of the monetary target range. Either short- or long-term interest rates, with correctly-signed coefficients, can also be legitimately included in the cointegrating relationship.

If the sample period is extended beyond unification, the cointegration results underpinning the existence of long-run stability in money demand break down unless a sizable one-off increase in velocity is allowed for. The shift in velocity, which is estimated to have occurred in 1990, could reflect a combination of unusual portfolio shifts around the time of unification as well as data measurement errors. 2/

1/ SM/93/151, July 1993, Chapter VI.

2/ The size and permanence of the velocity shift is sensitive to data splicing assumptions and the specification of dummy variables in the regression analysis. For example, analysis in the forthcoming 1994 OECD Economic Survey for Germany assumes that a shift in money demand occurs after 1990 and, partly as a result, the analysis comes to more sanguine conclusions about the underlying stability of money demand. However, developments in velocity suggest that unusual portfolio shifts probably began ahead of unification, which occurred in the middle of 1990. The OECD analysis also does not incorporate data from the first quarter of 1994 when the behavior of money was particularly erratic.

Nevertheless, it should be stressed that it is too early to conclude whether there has been a permanent break in trend velocity or whether the recent rapid monetary growth is in the process of reversing an earlier portfolio shift (Chart II-9, top panel). This issue has, of course, important implications for the interpretation of recent monetary growth. If the velocity shift is permanent, velocity would by now be well below trend and a sizable monetary overhang would exist. But if a reversal of an earlier portfolio shift is taking place (or a new portfolio shift is occurring), the recent rapid monetary growth would probably pose little concern for medium-term inflation.

The second stage of the estimation procedure produces an error correction equation for money demand that exhibits parameter instability in the post-unification period, even if a shift in trend velocity is factored into the long-run properties of the equation (see below). The equation begins to break down in the second half of 1992 (Chart II-9, lower panel). This could, in part, reflect the increased variance of monetary growth due to the large bouts of currency intervention during the two ERM crises. The equation breaks down completely in the first quarter of 1994 as it fails to predict the surge in M3 growth--although special factors, notably changes in the taxation of interest income, may again provide part of the explanation.

In summary, it is difficult to avoid the conclusion that money demand has exhibited instability since unification. However, the nature of the instability, and the implications for the interpretation of monetary growth, are unlikely to become clear for some time yet.

Money Demand Equation 1/

$$\Delta\log(M) = \underset{(8.3)}{0.659}\,\Delta\log(M_{-1}) - \underset{(2.3)}{0.132}\,R + \underset{(2.6)}{0.141}\,\Delta\log(Y)$$

$$+ \underset{(2.4)}{0.112}\,\log(V_{-1}/V^*_{-1}) + \underset{(3.5)}{0.006}$$

where:

$V = P.Y/M$

and:

$V^* = -\,0.015\,TT + 0.200\,R + 29.897 + 0.066\,DUM$

OLS: 1971:Q2-89:Q4; RBARSQ = 0.508; DW = 1.96;
DH = -0.109; AUTO = 16.46 (11.1); FORE(17) = 79.79 (27.6).

1/ The mnemonics stand for: M, money stock (M3); P, GDP deflator; Y, real GDP; V, velocity; R, 3-month money market rates; TT a time trend; and DUM a shift dummy taking the value 1 from 1990:Q1 onward. The symbol Δ represents a fourth difference ($\Delta X = X - X$). The reported test statistics are: DH, Durbin's H-statistic; AUTO, test for serial correlation of up to lag five; and FORE(17), out of sample parameter stability test for the period 1990:Q1-94:Q1.

Table II-8. Cointegration Tests--Money, Income and Interest Rates 1/

	Test statistics DF	ADF
1. Pre-unification data (1970:Q1-1989:Q4)		
Model:		
M-P = 1.69Y - 0.32R - 8.07	5.32**	3.02
M-P = 1.06Y - 0.16R + 0.013TT - 30.92	4.30**	3.38*
V = -0.015TT + 0.14R + 30.00	3.97*	3.35*
V = -0.015TT + 30.42	3.75**	3.67**
2. Full data set (1970:Q1-1994:Q4)		
V = -0.012TT + 25.32	2.22	3.09*
V = -0.012TT + 0.47R + 25.05	2.62	2.93
V = -0.015TT + 30.50 +.073DUM	3.68*	4.22**
V = -0.015TT + 0.20R + 29.90 +.066DUM	3.89*	3.84**

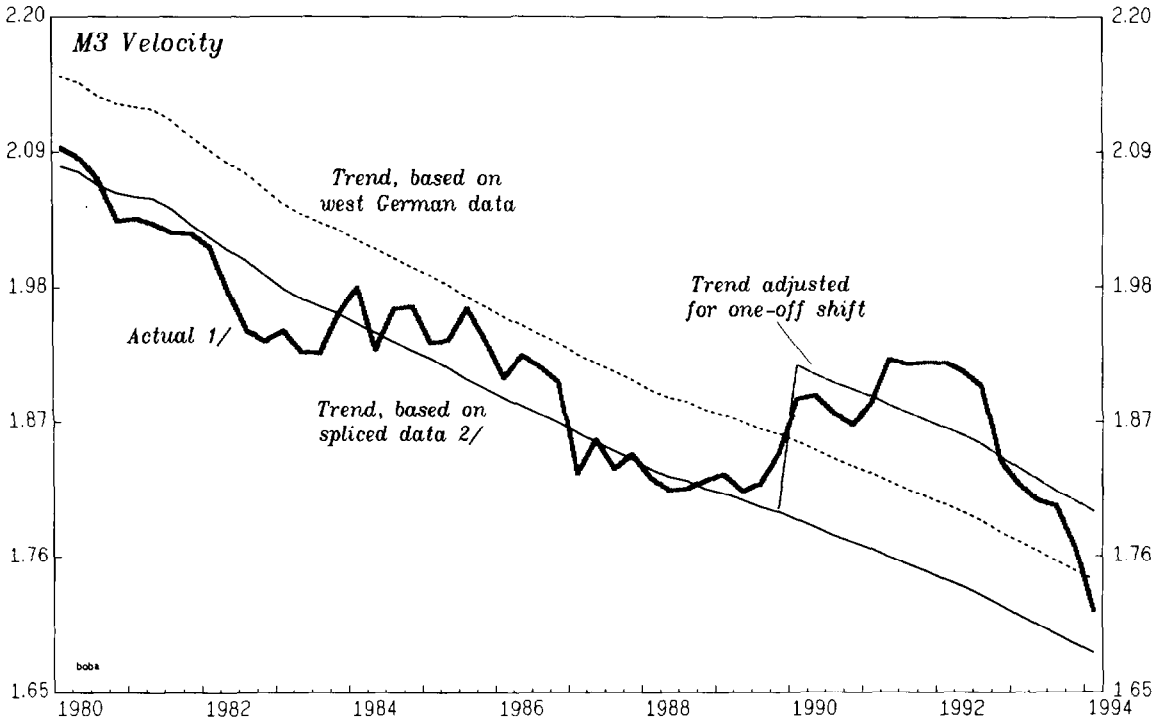
Source: Staff estimates.

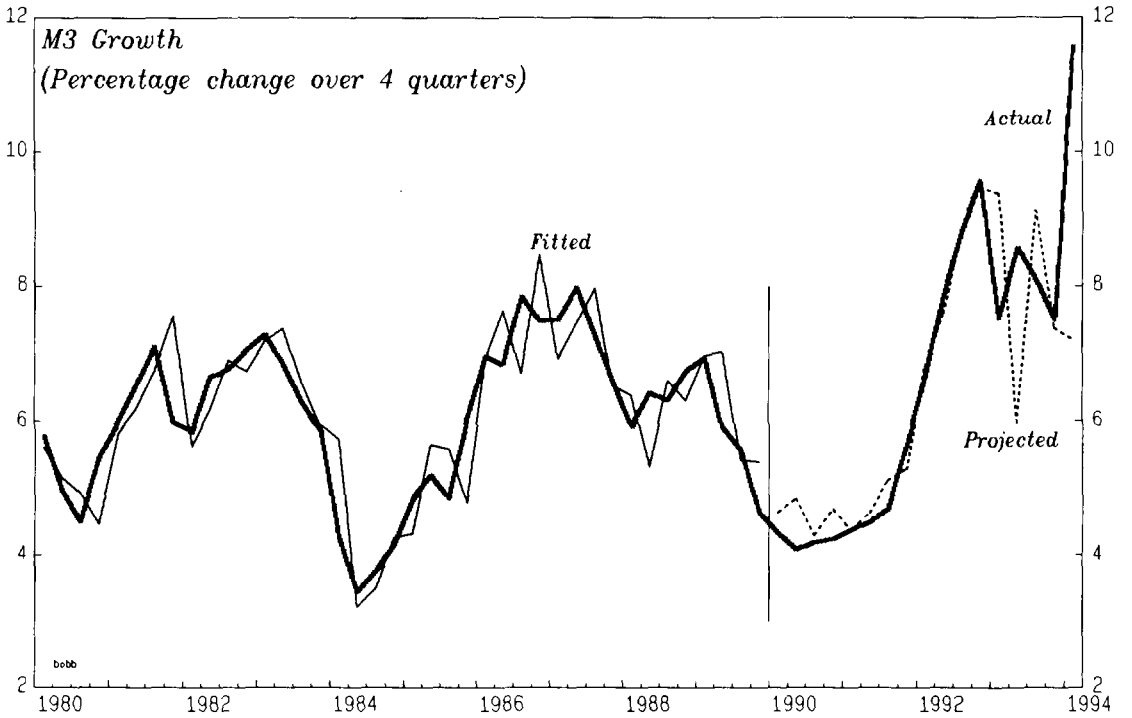
1/ The mnemonics are as follows: M, broad money (M3); P, the GDP deflator; Y, real GDP; V, money velocity; TT, a time trend; and R, 3-month money market rates. Variables other than interest rates are in logarithms and, for the period up to unification, refer to west Germany only. Data on velocity (V) refer to united Germany, with estimates before unification based on west German data: see Annex I to Chapter VI for splicing assumptions. DF stands for the Dickey-Fuller statistic and ADF its augmented version with four lags. A single asterisk denotes significance (i.e., likely cointegration) at the 10 percent level and a double asterisk denotes significance at the 5 percent level.

CHART II-9

Germany

Broad Money





Source: IMF estimates.

1/ Based on spliced data; level equal to united Germany velocity after 1990 quarter 2.

2/ All trends adjusted for interest rates.

Labor Market Policy Measures, 1993-94

1. 10th Amendment to the Labor Promotion Law (Arbeitsförderungsgesetz), effective January 1, 1993

a. Unemployment insurance

- The duration of unemployment benefits was reduced for older people who voluntarily give up work.

- The amount of unemployment benefit was reduced for older people who receive a golden handshake if they gave up employment without due cause.

- A requirement was introduced that employers must reimburse any unemployment benefits found to have been paid unduly to older people.

b. Training programs and benefits

- Training programs were made subject to vetting for quality by the Labor Offices before they begin.

- Persons wishing to participate in a training program were required to attend a counselling session with the Labor Office.

- Opportunities for repeated retraining were restricted.

- Short training courses for purposes of "orientation" in the labor market were replaced by expanded counselling by the Labor Office for recipients of unemployment insurance payments.

- In east Germany, special support was made available for retraining programs at institutions for tertiary education until end-1995 (rather than end-1992 as originally foreseen).

- Also in east Germany until end-1995, retraining programs were made available to employees threatened with dismissal, even before the actual dismissal takes place.

- Higher benefits for handicapped persons engaged in professional rehabilitation were made payable only if the training is made necessary by the handicap; normal training benefits would be payable otherwise.

- The funding of courses for remedial general schooling was discontinued.

c. Immigrant benefits

- Payments by the Federal Labor Office to immigrant ethnic Germans (Aussiedler) were replaced by payments financed by the federal budget, and these were made dependent on the person's need.

d. Job creation schemes

- In job creation schemes (Arbeitsbeschaffungsmassnahmen, or ABM) in east Germany, wage subsidies of 100 percent were restricted to cases where working time does not exceed 80 percent of normal working time, or when wages do not exceed 90 percent of wages for comparable non-ABM work.

e. Employment subsidies

- Employment subsidies for unemployed persons who are difficult to place, previously payable at various rates and for various periods of time, were limited to 30 percent of the wage (50 percent in exceptional cases) and to a maximum period of six months.

- In east Germany, the requirement that employers provide training to employees for whom they receive employment subsidies was abolished.

- Employers were required to reimburse employment subsidies received in respect of any employee whom they do not employ for at least twice the duration for which employment subsidies were received.

- Until 1997, under the new paragraph 249h of the Arbeitsförderungsgesetz, the Labor Offices in east Germany were enabled to pay employment subsidies for previously unemployed persons up to the amount of the corresponding savings in unemployment insurance payments, in the areas of environmental sanitation, social services, or youth aid. Working time must not exceed 80 percent of normal working time, or wages 90 percent of comparable wages. Subsidies are payable for up to three years (four in exceptional cases).

f. Illegal employment

- The Labor Office was authorized to inspect firms that employ foreigners even if it has no specific reason for suspicion.

- Contract workers were obliged to carry their work permit with them in their place of employment.

- The Labor Office was empowered to impose fees on the issuing of work permits for contract workers.

2. Law on Notice Periods (Kundigungsfristengesetz)
effective October 15, 1993

- The basic notice period, previously two weeks for blue-collar workers and for white-collar workers in east Germany (hereafter just "blue-collar workers"), and six weeks to the end of a quarter for white-collar workers in west Germany (hereafter just "white-collar workers"), was standardized at four weeks to the 15th of a month or the end of a month.

- The notice period during a probationary period (of up to six months), previously two weeks for blue-collar workers and one month to the end of a month for white-collar workers, was standardized at two weeks.

- Notice periods for employees with longer tenure in the firm, previously varying from one month to the end of a month (for blue-collar workers with 5-10 years' tenure) to six months to the end of a quarter (for white-collar workers with 12 or more years' tenure), were standardized at lengths between one month to the end of a month (for workers with 2-5 years' tenure) and seven months to the end of a month (for workers with 20 or more years' tenure). These longer notice periods were also made applicable to white-collar workers in west German firms with no more than two white-collar workers, who were previously exempt.

- The social partners were empowered to reduce any of these notice periods by agreement (previously the notice periods for probationary and basic notice periods in east Germany and for white-collar workers with longer tenure could not be reduced).

- In individual employment contracts for permanent employees in firms with no more than 20 employees, the signatories were empowered to reduce notice periods, though not to less than four weeks (previously notice periods for blue-collar workers could not be reduced in individual contracts; those for white-collar workers could be reduced, though not to less than one month to the end of a month).

- In individual employment contracts for temporary employees (employed for up to three months), the signatories were empowered to reduce notice periods in east Germany as well as in west Germany, where this provision already existed.

3. Program for Savings, Consolidation, and Growth (Spar-, Konsolidierungs- und Wachstumsprogram)
effective January 1, 1994

a. Unemployment insurance

- Replacement ratios for unemployment benefit (Arbeitslosengeld) were reduced, for people with children, from 68 percent to 67 percent, and for people without children, from 63 percent to 60 percent.

- Replacement ratios for unemployment assistance (Arbeitslosenhilfe) were reduced, for people with children, from 58 percent to 57 percent, and for people without children, from 56 percent to 53 percent.

- Replacement ratios for payments in case of short-time work (Kurzarbeitergeld) and of weather-related interruptions in construction work (Schlechtwettergeld) were reduced, for people with children, from 68 percent to 67 percent, and for people without children, from 63 percent to 60 percent.

- The reference period for the calculation of unemployment insurance payments, training benefits, and other benefits was extended to the six (previously three) months immediately preceding unemployment.

- Indexation of benefits to wage developments in east Germany was made annual (previously bi-annual), as in west Germany.

- The period of interruption of benefits (Sperrzeit) for unemployed persons who turn down a job or a place in a training program was lengthened from 8 to 12 weeks.

- A two-week interruption of benefits was introduced for unemployed persons who do not comply with a request by the Labor Office to undergo a medical or psychological examination.

- Unemployment assistance payable to those who have only had a short period of employment or whose employment (e.g. as civil servant, judge, or soldier) does not entitle them to unemployment benefit (originäre Arbeitslosenhilfe) was made payable for only one year (previously for an unlimited period).

- Full responsibility for social security contributions in case of short-time work was shifted to employers (previously part had been paid by the Labor Office).

- Payments for weather-related interruptions in construction work (Schlechtwettergeld) were made payable only for the period December-February (previously November-March), and no longer for the first hour of the interruption. Schlechtwettergeld was scheduled for abolition in 1996.

b. Training benefits

- Replacement ratios for benefits payable during retraining (Unterhaltsgeld) were reduced, for people with children, from 73 percent to 67 percent (68 percent for ongoing cases), and for people without children, from 65 percent to 60 percent (63 percent for ongoing cases).

- Replacement ratios for benefits payable during rehabilitation (Übergangsgeld) were reduced, for people with children, from 80 percent to 75 percent, and for people without children, from 70 percent to 68 percent.

- Benefits payable for so-called training for advancement (Aufstiegsfortbildung) were abolished.

- Unterhaltsgeld was made a discretionary measure, to be adapted more strongly to labor market needs.

- Handicapped persons who are not eligible for benefits specifically related to their handicap have a claim on training benefits.

c. Immigrant benefits

- Replacement ratios for benefits payable to ethnic German immigrants who arrived before the end of 1992 (Eingliederungsgeld) were reduced from 63 percent to 60 percent.

- Replacement ratios for benefits payable to ethnic German immigrants who arrived after the end of 1992 (Eingliederungshilfe) were reduced, for people with children, from 58 percent to 57 percent, and for people without children, from 56 percent to 53 percent. The duration of Eingliederungshilfe was limited to six months.

d. Job creation schemes

- It was made permissible to leave a job creation scheme (ABM) for a fixed-term employment contract.

- A period of interruption of unemployment insurance payments was introduced for ABM participants who turn down a job offer, if they become unemployed following completion of the ABM.

4. Law on Working Time (Arbeitszeitrechtsgesetz)
effective July 1, 1994

- The averaging period (over which normal working hours may not exceed eight hours a day) was lengthened from two weeks to six months.

- The prohibition on night work by blue-collar women was lifted.

- Protection for night workers was strengthened: regular medical examinations were made obligatory, and night workers were guaranteed the right to a daytime job, within the employer's possibilities, if their health is threatened or if they are responsible for children under 12 or for other dependents in need of a high level of care.

- All prohibitions against the employment of women were lifted, with the exception of the prohibition on underground work in mining.

- The criteria under which exemptions from the prohibition against work on Sundays and holidays can be granted were rationalized. In the industrial sector, work on Sundays and holidays is now permitted if technological

progress makes necessary uninterrupted production, or, for firms subject to intense international competition, if it is necessary to prevent job losses.

- Additional regulations were instituted for work on Sundays and holidays: similar regulations on working time now apply as to work on other days; for every Sunday or holiday worked the worker must receive a substitute day off; at least 15 Sundays per year must remain free; both the Sunday/holiday rest period and, if relevant, the substitute rest period must be observed contiguously with an 11-hour rest period (mandatory following a day's work), guaranteeing an uniterrupted rest period of 35 hours.

5. Employment Promotion Law of 1994 (Beschäftigungsförderungsgesetz 1994) effective August 1, 1994

a. Unemployment insurance

- Unemployment assistance was made available if a person takes on volunteer work that requires regular attendance (and hence might be interpreted as making the person unavailable for work).

b. Job creation schemes

- The base for subsidies paid for workers involved in ABM was changed from tariff or customary wages to "allowable" wages, calculated as 80 percent of normal wages for comparable work.

c. Employment subsidies

- The employment subsidies authorized in east Germany by paragraph 249h of the Arbeitsförderungsgesetz (see above) were introduced in regions of west Germany that are in structural crisis. Subsidies are payable for up to two years. As in east Germany, the measure will expire at end-1997.

d. Support for self-employment

- The duration of transfers paid by the Federal Labor Office to support self-employment of previously unemployed persons (Überbrückungsgeld) was set at 26 weeks (previously up to 26 weeks), and their level at the level of the unemployment benefits/assistance previously drawn (previously up to the level of previous unemployment benefits/assistance).

e. Regulation of temporary work

- The prohibition against temporary employment agencies employing workers only for the period of one assignment was lifted in cases where the worker will be taken over by the firm to which he or she is hired out immediately upon completion of the temporary assignment.

f. Intermediation

- Private employment agencies were permitted to operate.

g. Fixed-term contracts

- The validity of the Employment Promotion Law (Arbeitsförderungsgesetz) of 1985, which allows fixed-term contracts under any circumstances and allows such contracts to be renewed once, was extended from the end of 1995 to the end of 2000.

h. Part-time work

- Full-time workers who shift to part-time work were guaranteed their right to unemployment benefits at the full-time level (though not exceeding the wage earned when working part-time) for three years.

i. Illegal employment

- Contractors who use subcontractors employing illegal aliens became subject to fines.

- The duty to report the start of an employment relationship was extended to recipients of sick or injury pay and social assistance (previously only recipients of unemployment insurance payments).

- Illegal offers of work became subject to fines of up to DM10,000.

- Employers who employ illegal aliens or otherwise do not comply with labor law were excluded from public contracts.

III. External Competitiveness

This chapter provides an assessment of Germany's external competitive position. This issue is particularly interesting in light of the substantial real appreciation of the deutsche mark in recent years suggested by several conventional indicators of the real exchange rate and the key role that exports have played in past economic recoveries. It is worth noting at the outset that the concept of external competitiveness is a multi-dimensional one, which, at the macroeconomic level, cannot be adequately captured in a single measure. Whereas indices of the real exchange rate provide a useful guide, an array of other factors that do not lend themselves to direct quantification also affect competitiveness, including reliability, quality, after-sales service, delivery times, financing arrangements, technological innovation, and the like.

It is also worth emphasizing that an observed change in an index of the real exchange rate may simply represent an equilibrium response to changed economic circumstances, in which case any resulting deterioration in net exports would not be a cause for concern. As a relevant and recent German example, some real appreciation of the deutsche mark in the wake of unification was to be expected as an endogenous equilibrating response to the capital needs and demands of the former East Germany. This response served to divert West German exports from foreign markets to a buoyant east German market and to encourage higher imports in order to meet increased domestic demand, and thus by itself did not represent a competitiveness problem. 1/

A key conclusion of the analysis is that the size of the recent real appreciation of the deutsche mark is almost certainly exaggerated by the most commonly used indicators of competitiveness, such as relative unit labor costs in manufacturing. By implication, the concern sometimes expressed that Germany's ability to compete internationally may have been impaired to such an extent as to undermine prospects for sustainable recovery can be viewed as largely unfounded.

The assessment of competitiveness is carried out from several angles. The next section discusses movements in several real effective exchange rate indices for Germany and reviews briefly their relationship to observed changes in trade flows. With this as background, Section 2 attempts to assess developments in competitiveness using the so-called constant market share approach. This approach essentially entails a decomposition of German export gorwth into four components: a global market growth effect; a commodity composition effect; a market distribution effect; and a residual "competitiveness" effect. The latter can be interpreted as an indication of Germany's ability, for any number of reasons, to compete effectively with other sources of supply. Section 2 also investigates the extent to which

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1/ See, Masson and Meredith (1990) Adams and others (1992). It might be noted that the analysis in both of these papers suggested that some real depreciation of the deutsche mark would later be prompted by the withdrawal of stimulus related to the earlier unification shock.

international competition may have narrowed German profit margins in tradable goods industries. Section 3 provides an assessment of trade prospects based in part on recent developments in export order statistics. Concluding remarks are contained in Section 4.

1. Developments in real exchange rate indices

In this section, various conventional measures of Germany's real exchange rate based on data for the manufacturing sector are first presented and discussed. They point, on balance, to a sizable loss of external competitiveness in the 1980s and early 1990s. More broadly-based measures are then reviewed. These suggest that Germany's external competitiveness has indeed been stronger than the manufacturing-based indices alone would indicate.

a. The manufacturing sector

Chart III-1 plots various real effective exchange rate indices for the manufacturing sector, all of which point to a significant loss of competitiveness in the period from 1985 to mid-1990, i.e., the eve of unification (July 1990). Part of this loss of competitiveness must be viewed as the counterpart of the correction of the exchange rate of the U.S. dollar which, as is widely recognized was significantly overvalued in the mid-1980s. However, even if the period surrounding the dollar's overvaluation is taken to be somewhat abnormal, the indicators still show a sizable deterioration in German competitiveness and this is true whether one compares exchange rate indices in mid-1990 with the late 1970s and 1980, or with 1987.

Developments in the various indicators in the later part of the 1980s suggest at first sight that exporters may have responded to the appreciating deutsche mark and rising unit labor costs by reducing their profit margins (at least relative to those in competitor countries) in an effort to hold on to market share. The indices shown in Chart III-2 do indeed start to diverge considerably in 1987 and show significant cumulative differences by mid-1990. By then, the relative unit labor costs index was roughly 10 percent higher than the nominal effective exchange rate index. By contrast, the relative export price index actually declined from its end-1986 level, after having broadly kept pace with the other indices. 1/2/ However, it would be erroneous to interpret the apparent decline in Germany's

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1/ Lipschitz and McDonald (1991) offer evidence that profit margins in the ERM countries increased relative to those in Germany up to 1988.

2/ It is important to note that the second half of the 1980s witnessed a large fall in the price of oil. While this would have been of benefit to both domestic and foreign exporters' profit margins, the benefit to Germany was probably more pronounced because of greater reliance on imported oil than many other industrial countries. Nevertheless, comparing the index based on unit labor costs to one based on value-added deflators in manufacturing instead of export unit values still indicates declining relative profit margins, particularly later in the 1980s (Chart III-2).

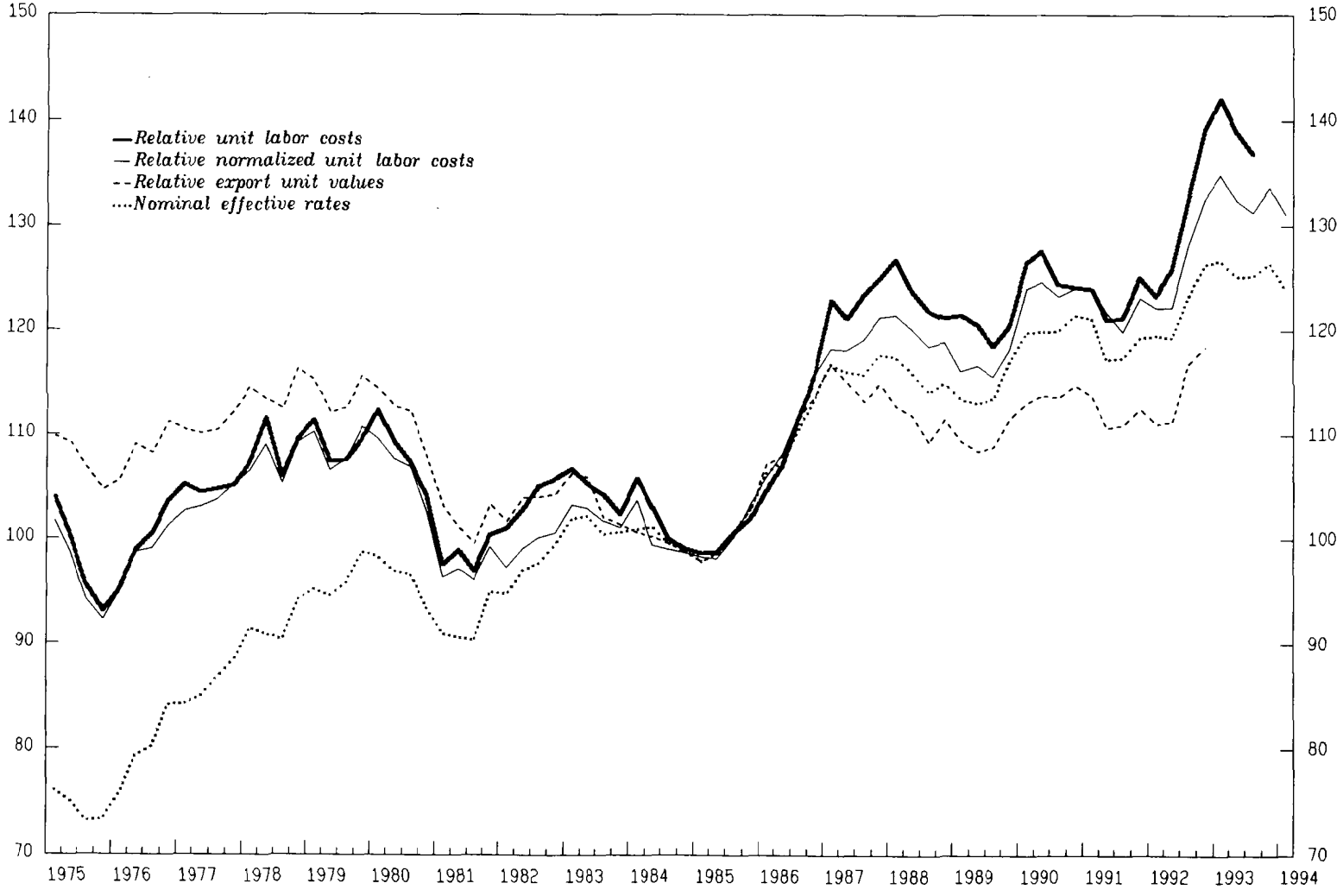
relative export profit margins as indicative of a genuine profit squeeze. As noted in the background documentation for the previous consultation with Germany, during most of the period preceding unification there was a tendency in many industrial countries, particularly in Europe, for income distribution to shift from labor remuneration to profits. Data on the rate of return on capital and the capital income share in the business sector indicate that both were at an historically high level at the beginning of the 1990s in Germany, after rising steadily during the 1980s. Data on profit margins for the German enterprise sector, particularly for the manufacturing sector, indicate that profits fell perceptibly in 1991 for the first time since the beginning of the upswing at the end of 1982. 1/

Since unification, there has been a further real appreciation of the deutsche mark in terms of relative unit labor costs of around 8 percent by mid-1993, with all of this appreciation taking place in the last year of this period (Table III-1). An appreciation of the nominal effective exchange rate was important, but more rapid growth of unit labor costs in Germany than in her competitor countries also contributed. The nominal effective exchange rate has appreciated further since mid-1993, although developments in actual unit labor costs have had an offsetting positive effect on competitiveness.

Bilateral estimates of real exchange rates show that the deutsche mark has appreciated against most industrial countries in the last half of the 1980s (Table III-2 and Chart III-3). Within Europe, against those countries currently participating in the Exchange Rate Mechanism of the European Monetary System (ERM), there had been a trend real appreciation in terms of relative unit labor costs, a trend that appears to have accelerated somewhat since unification. Considerably less variation has been shown by relative export unit value indices. Relatively stronger wage growth in Germany and weaker growth in productivity since unification have been reflected in unit labor costs that have risen more rapidly in Germany than in the other ERM countries, although Germany did gain some ground (before adjusting for exchange rate changes) in the most recent (but short) period shown in Table III-2. 2/ Against Italy and the United Kingdom, there has also been a sizable real appreciation since unification in terms of relative unit labor costs, which offset by a significant margin the earlier, steadycompetitive gains made from 1987 to 1992. This appreciation was particularly striking after these countries suspended their ERM membership in September 1992.

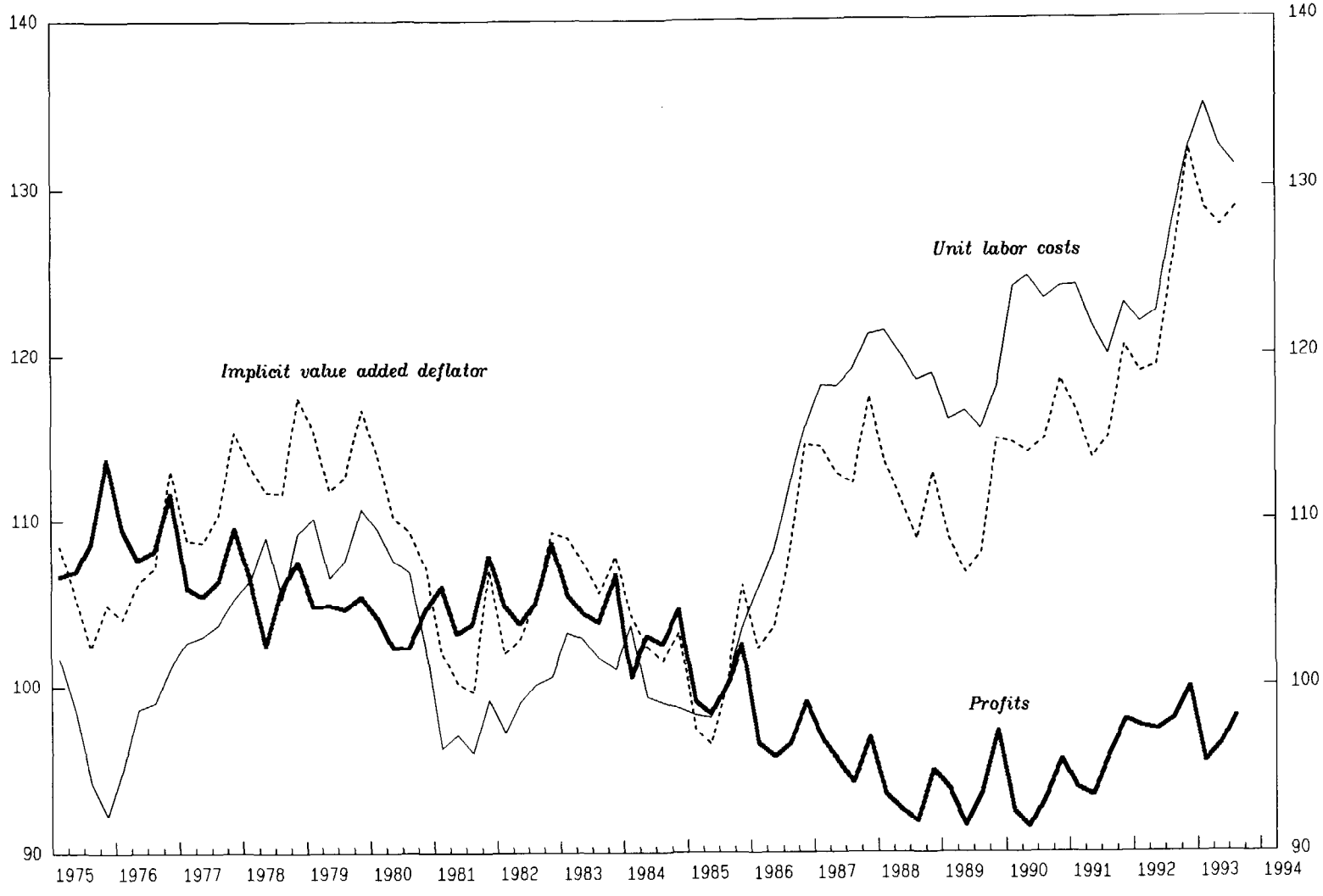
1/ Section 2 contains more discussion of profit margins in Germany.
2/ Developments in compensation and productivity are reviewed in the annex to this chapter.

CHART III-1
Germany
Real Effective Exchange Rates for Manufacturing
(1985=100)



Source: IMF, Research Department.

CHART III-2
Germany
Effective Exchange Rates and Relative Profits 1/
(1985=100)



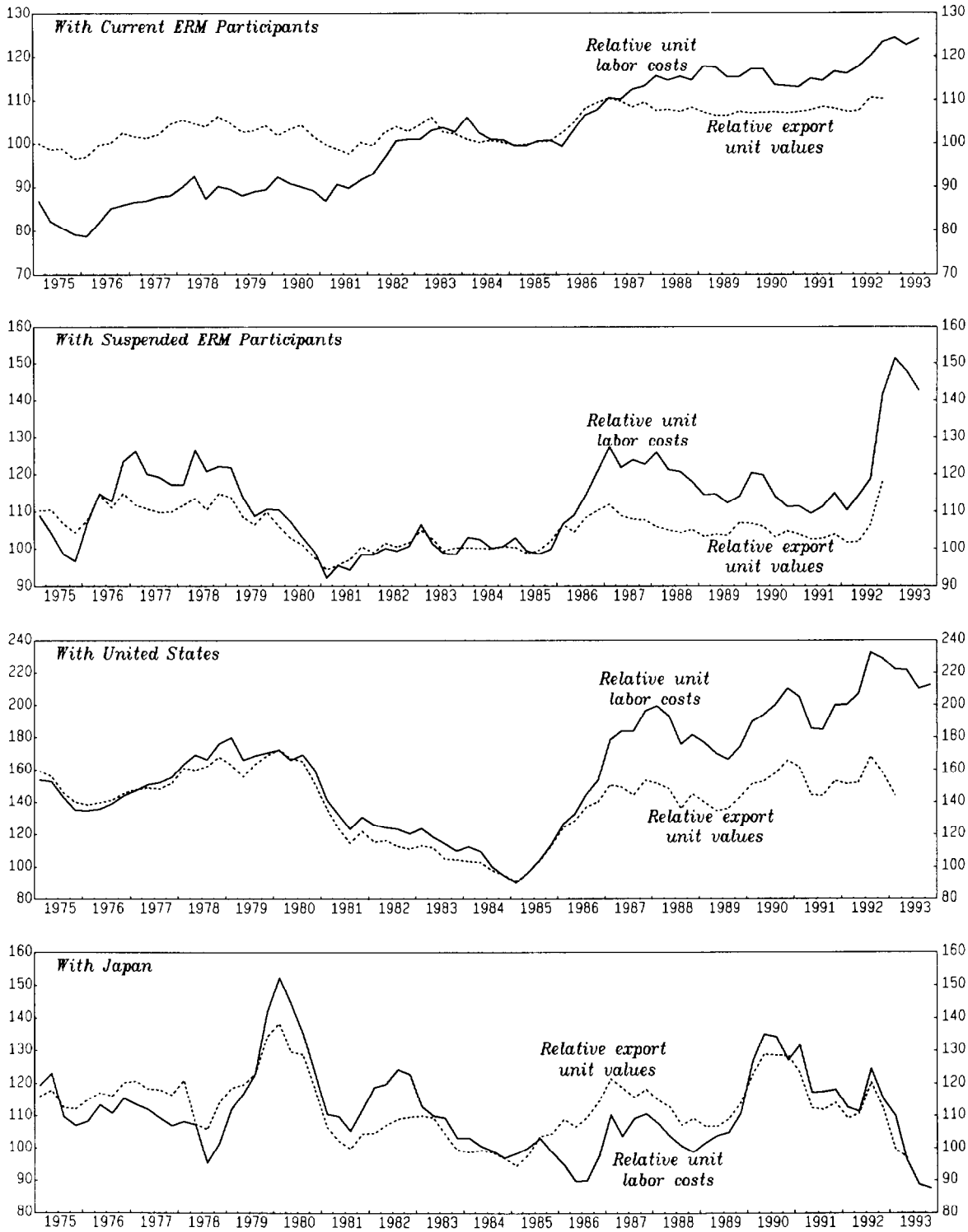
Source: IMF, Research Department.
1/ In manufacturing. Profits defined as ratio of implicit value added deflator and unit labor costs.

CHART III-3

Germany

Competitiveness Against Selected Countries and Groups 1/

(1985=100)



Source: IMF, Research Department.

1/ In manufacturing.

Table III-1. Germany: Developments in Competitiveness Since the First Half of 1990 1/

(Percentage change, + indicates appreciation)

	End 1990	End 1991	Mid 1992	End 1992	Mid 1993	End 1993	March 1994	June 1994
Nominal effective exchange rate	+2.6	+1.3	+0.5	+6.2	+3.8	+5.1	+4.6	+5.7
Real effective exchange rate using normalized unit labor costs 2/	+1.2	+0.5	-1.6	+6.6	+4.7	+7.3	+7.1	+8.6
Real effective exchange rate using actual unit labor costs 2/	-2.6	-1.8	-1.3	+9.2	+8.3	+6.6 3/	...	...
Real effective exchange rate using export unit values 2/	+0.8	-1.2	-2.3	+4.0	...	...	...	...

1/ Comparisons are to June 1990 for monthly data and to Q2 1990 for quarterly data. Rows 1 and 2 use monthly data; rows 3 and 4 use quarterly data.
2/ In manufacturing.
3/ Comparison is with Q3 1993.

Table III-2. German Competitiveness

(In percent)

	1984-1990	1990Q3-1992Q3	1992Q3-1993Q2	1993Q2-1993Q4 1/
Against all industrial countries				
Relative remuneration	-3.1	0.8	1.9	0.6
Relative productivity	-5.6	-2.9	-0.8	1.7
Relative unit labor costs (own currency)	2.6	3.7	2.7	-1.1
Exchange rate changes	20.2	2.8	1.6	1.0
Relative unit labor costs (common currency)	23.3	6.6	4.3	-0.1
Against ERM members				
Relative remuneration	3.5	3.6	2.5	1.0
Relative productivity	-2.4	-1.3	0.9	2.0
Relative unit labor costs (own currency)	6.1	5.0	1.6	-1.0
Exchange rate changes	5.9	0.9	0.6	2.8
Relative unit labor costs (common currency)	12.4	5.9	2.2	1.8
Against suspended ERM members				
Relative remuneration	-15.2	-6.4	0.4	-1.2
Relative productivity	-7.0	-5.2	-3.9	1.6
Relative unit labor costs (own currency)	-8.8	-1.3	4.5	-2.8
Exchange rate changes	25.5	5.6	16.2	3.0
Relative unit labor costs (common currency)	14.5	4.3	21.4	0.1
Against France				
Relative remuneration	1.1	5.6	3.0	0.6
Relative productivity	-5.7	-0.8	2.6	3.1
Relative unit labor costs (own currency)	7.2	6.4	0.4	-2.4
Exchange rate changes	9.7	1.1	-0.5	2.8
Relative unit labor costs (common currency)	17.7	7.6	-0.1	0.3
Against United States				
Relative remuneration	5.8	3.6	3.3	0.7
Relative productivity	-2.6	-2.9	-2.0	0.8
Relative unit labor costs (own currency)	8.6	6.7	5.4	-0.1
Exchange rate changes	76.1	8.9	-9.6	-6.2
Relative unit labor costs (common currency)	91.1	16.2	-4.7	-6.3
Against Japan				
Relative remuneration	2.9	2.9	-0.2	2.6
Relative productivity	-15.5	3.9	3.1	5.4
Relative unit labor costs (own currency)	21.8	-1.0	-3.3	-2.6
Exchange rate changes	7.2	-6.3	-20.3	-8.2
Relative unit labor costs (common currency)	30.6	-7.3	-22.9	-10.7

1/ For the United States and Japan through 1994Q1.

Outside of Europe, the United States gained competitiveness against Germany on account of both exchange rate changes and faster rising unit labor costs in Germany. However, in terms of unit labor costs, over half of the real appreciation of the deutsche mark that took place in the two years following unification was offset by end-1993. Germany's gains in competitiveness against Japan largely reflected a considerable depreciation of the deutsche mark against the yen, particularly since the fall of 1992.

b. Broader-based indices 1/

While measures of unit labor costs in manufacturing reveal important information on a significant component of production costs for a sector whose products account for a large proportion of merchandise exports and imports (for example, manufactured goods accounted for almost 97 percent of West German exports and almost 88 percent of its imports in 1992), caution needs to be exercised when interpreting unit labor costs as a measure of competitiveness. In particular, labor costs in manufacturing account directly for only a fraction of total production costs. Moreover, there are significant problems with available data on unit labor costs as outlined in last year's Board document on economic developments and selected background issues for Germany. 2/ Unit labor costs in manufacturing only encompass the costs of labor services that are incurred directly in manufacturing, and therefore exclude the costs of other important labor inputs that are used in producing manufactured goods. These excluded costs may be in the form of labor from the services sector--for example, legal or marketing services, if these are not performed in house--as well as other indirect labor costs embodied in the intermediate inputs needed for producing manufactures. Such labor costs can have an important effect on the cost of manufactured goods produced in Germany relative to competitor countries, and therefore need to be recognized in the analysis. 3/ In addition, there may be problems of international comparability in the definitions of the manufacturing sector which lead to differences in the extent to which certain suppliers and service areas are included in the manufacturing sector across countries. Such comparability problems may be reflected in measured unit labor costs in German manufacturing having recorded larger increases than unit labor costs in other areas of the business sector, whereas in most other competitor

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1/ Much of this section draws on Bundesbank, Monthly Report,(May 1994, pp. 45-57).

2/ See SM/93/51, pp. 77-82; Lipschitz and McDonald (1991), Turner and Van't dack (1993), Wickham (1993), and Marsh and Tokarick (1994).

3/ To emphasize this point, the Bundesbank notes: "Although labor costs--in terms of the value added--constitute by far the most significant cost factor in the manufacturing sector, with a share of 70 percent, in relation to the total value of the finished product (in other words, including the intermediate work undertaken by other domestic sectors and by sectors abroad) the labor costs incurred directly in manufacturing account for only about one-quarter of the total." See Bundesbank, Monthly Report, (May 1994), page 50.

countries sectoral differences in the evolution of unit labor costs have been the reverse.

In light of the above discussion, it seems sensible to examine relative unit labor costs from the broader perspective of the overall business sector instead of manufacturing alone. This does not of course solve all problems: as with unit labor costs in manufacturing, the costs of other important inputs that affect relative cost competitiveness, such as the costs of various capital inputs, are not taken into account. Moreover, the business sector covers not only the tradables sector but also parts of the economy which are sheltered from foreign competition. Nevertheless, the broader indicators add another dimension to the analysis by trying to account for the fact that competitiveness in German manufacturing also depends on labor inputs provided by other parts of the German economy. Moreover, the above-mentioned definitional problems for the manufacturing sector should not be as important.

As with indicators based on the manufacturing sector alone, more broadly-based indicators show an appreciation of the real effective exchange rate (Chart III-4). The various indices peak in 1993 and then reverse to some degree in the more recent quarters, reflecting increases in labor productivity, moderate wage settlements, and some modest depreciation of the deutsche mark. The levels of the broader-based indicators, however, suggest a much smaller cumulative real appreciation of the deutsche mark since the mid-1980s than those for the manufacturing sector alone. In fact, relative unit labor costs for the business sector as a whole are estimated to have recently been a bit below their 1987 peak, in sharp contrast to the continued steep rise during this period suggested by the index of relative unit labor costs in manufacturing alone. This implies that the growth in relative unit labor costs in the non-manufacturing sectors has been much more subdued than in manufacturing itself; and to the extent that inputs from the former are used in producing manufactured goods, German competitiveness would be stronger than suggested by relative unit labor costs in the manufacturing sector alone.

There is, furthermore, evidence that relative unit labor costs for the business sector as a whole are more closely correlated empirically with the observed behavior of exports. For example, in their study, the Bundesbank uses a simple regression framework and obtains an estimated elasticity (absolute value) of exports with respect to unit labor costs in the business sector of 0.22 in the short run and 0.36 in the long run; both are statistically significant. By contrast, similar elasticities for unit labor costs in manufacturing are not significant (and equal 0.14 and 0.21 in the short and long runs, respectively).

The other indicators based, respectively, on total expenditure deflators and consumer prices have tended to move fairly closely over the last 20 years or so with relative unit labor costs for the business sector and thus, also stand well below the manufacturing indices. However, while these variables are also statistically significant in export equations, they

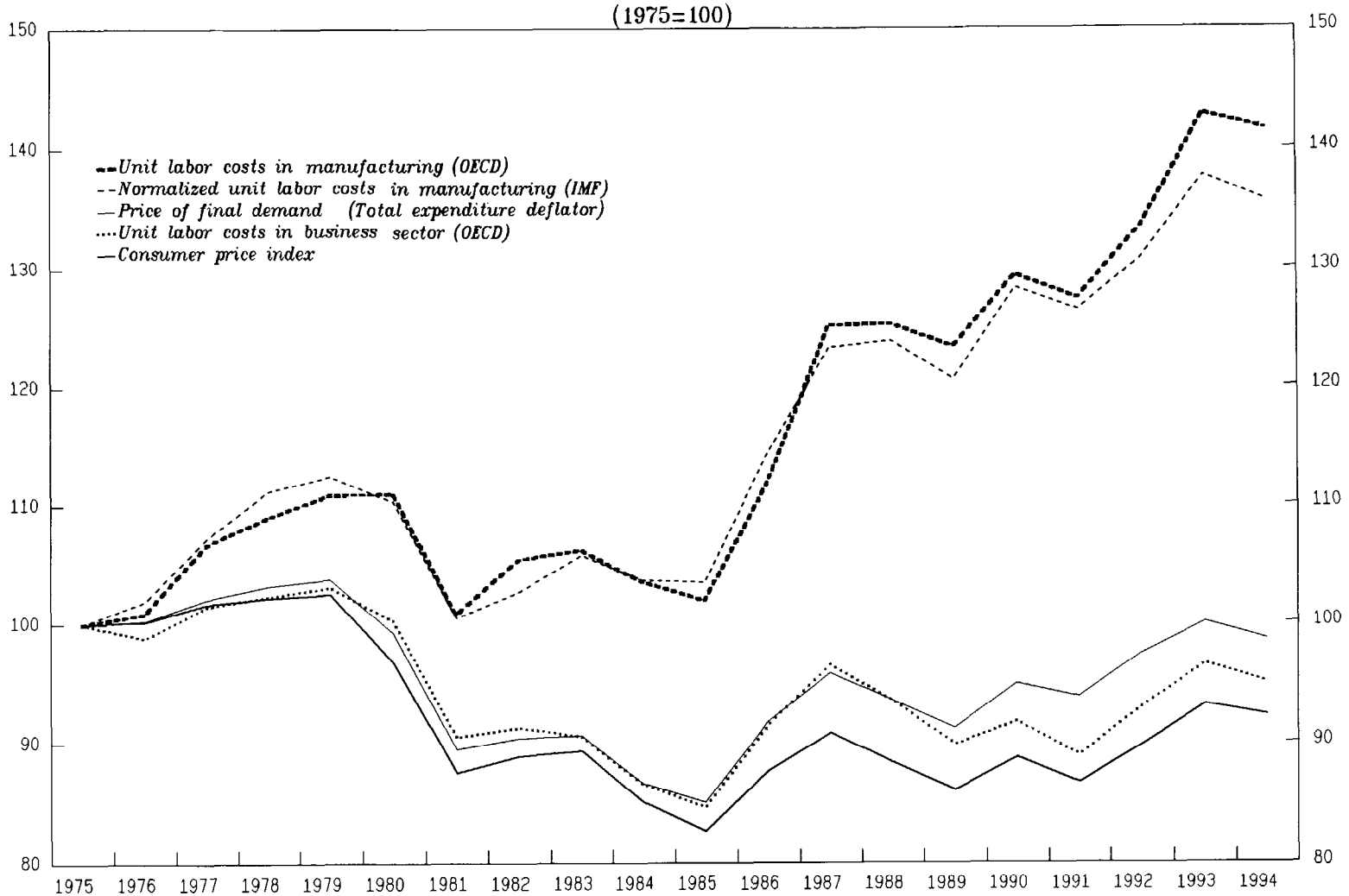
CHART III-4

Germany

Comparing Real Effective Exchange Rate

Indices for Manufacturing with Broader-based Indices 1/

(1975=100)



Source: Deutsche Bundesbank, Monthly Report; and IMF, Research Department.

1/ Weighted real external value of the Deutsche Mark against currencies of 18 industrial countries (external value of the basis of unit labor cost in the manufacturing sector without Greece and Ireland). For 1994, data for the first quarter is shown.

do not explain exports as well as relative unit labor costs. 1/ Like unit labor costs, the index based on expenditure deflators can be interpreted as an indicator of costs per unit of output; but in this case it covers total costs which include the prices of all factors of production and therefore supplement and extend the information based on unit labor costs. Such broad-based indices can also be seen as reflecting the ratio of the relative prices of nontradable goods to tradable goods at home and abroad: an increase in this index would reflect either a loss of competitiveness in the traded goods market, or a greater incentive to allocate resources to the nontradable goods sector at home than abroad. 2/

To extend the analysis, it is instructive to consider directly the relative price of nontradables to tradables, another measure of international competitiveness which is often referred to in the literature as "the" real (or internal real) exchange rate. It also recognizes the important fact that a country's international performance depends on developments in the nontradable sector. If the real exchange rate appreciates--that is the price of nontradables rises relative to the price of tradables--resources will tend to be reallocated away from the tradable goods sector with the trade balance deteriorating accordingly and in this sense competitiveness is said to worsen. 3/ However, one problem is that this measure may not entail a loss of competitiveness (or may overstate such a loss), even when rising over time, if the growth in labor (or total factor) productivity differs across sectors of the economy.

The internal real exchange rate shows much less of an appreciation than the indices based on the manufacturing sector (Chart III-5). And even here, the internal real exchange rate overstates the deterioration in actual competitiveness insofar as labor productivity (and total factor productivity) in the tradable goods sector has been rising more rapidly than in

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1/ See Marsh and Tokarick (1994) who suggest that export volume equations using competitiveness indicators based on unit labor costs (normalized) can explain trade flows for exports of goods overall, and for manufactured goods alone, somewhat better than indicators based on consumer prices, as well as export unit values.

2/ If prices of traded goods in different countries are closely related through international competition, then a real appreciation of the currency as measured by aggregate price indices would suggest that developments in the internal terms of trade are more favorable to nontraded goods in the appreciating country.

3/ Underlying this adjustment is the idea that the internal real exchange rate represents the domestic cost of consuming and producing tradable goods and is a summary measure of the incentives guiding resource allocation between the two major sectors of the economy.

the nontradable goods sector (Chart III-5). 1/ In addition, the effects of an appreciation of the internal real exchange rate on the trade balance would be lessened if similar trends occur in competitor countries. 2/

2. Trade performance and related developments

This section begins with an analysis of export market shares to see if further light can be shed on the German competitiveness issue. This analysis suggests that a competitiveness problem has not been particularly evident in the actual performance of German exports through 1992. The section goes on to review the available data on developments in sectoral profits, as another channel through which competitive pressures may have had an impact.

a. Constant market share analysis

Constant market share analysis has the advantage of taking into account the composition of a country's exports both in terms of the types of goods it exports and the markets to which it exports in analyzing export performance. 3/ Applying this approach basically entails decomposing the change in German exports between any two periods into four effects: the effect from the expansion of overall trade by competitor countries (the global market growth effect); the effect from Germany exporting goods for which demand is growing at a different pace than the overall average (the commodity composition effect); the effect from Germany exporting to markets for which demand is growing at a different pace than the overall average (the market distribution effect); and a "competitiveness" residual.

More formally, the change in German exports (ΔX) between any two periods can be written as:

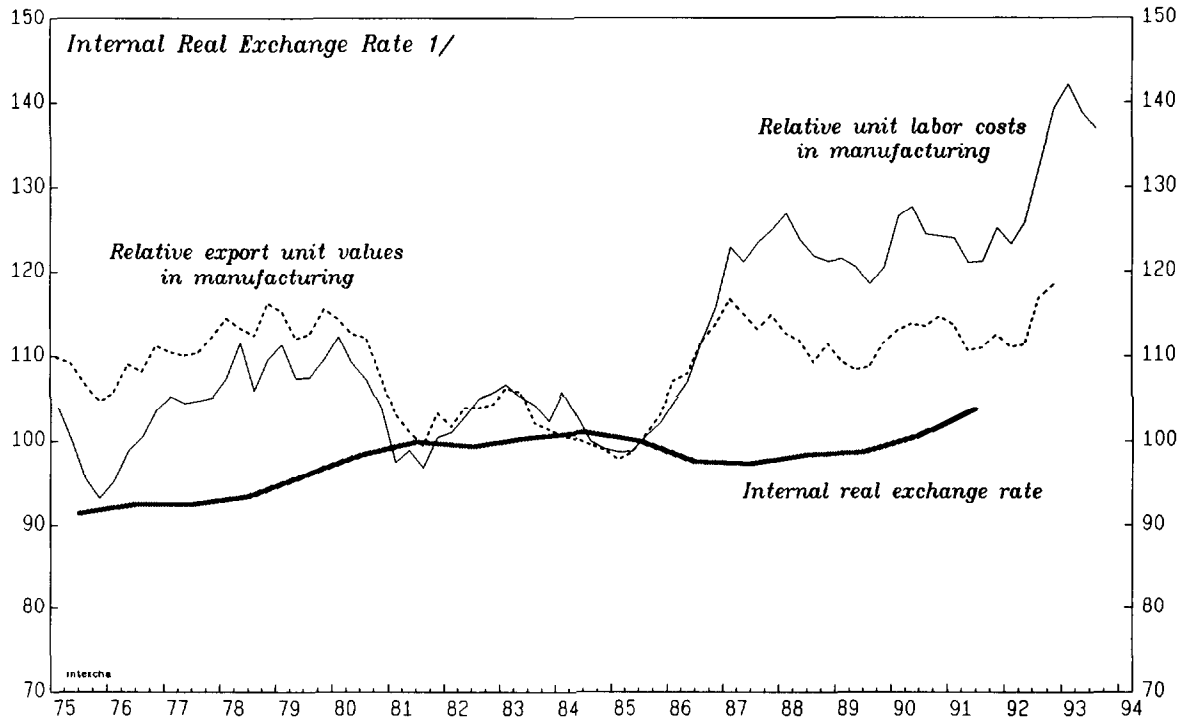
$$\Delta X = \sum_i r X_i \qquad (1)$$

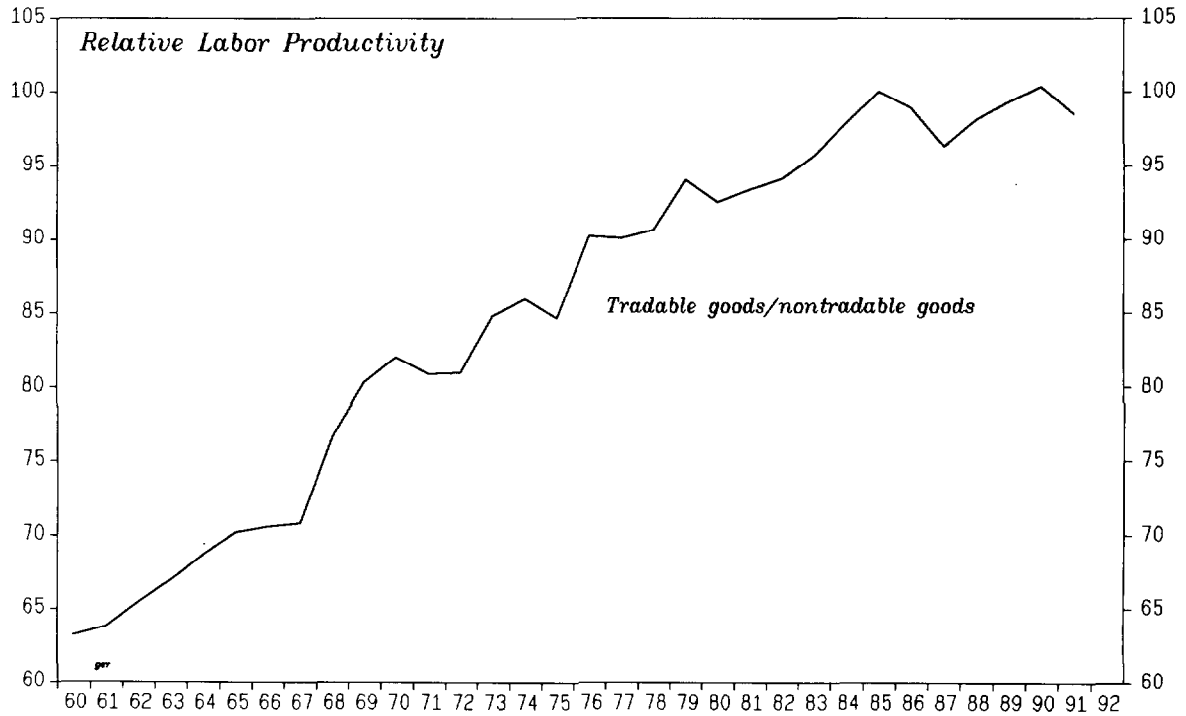
1/ The data used to construct these variables are available through 1991 and are from the OECD international sectoral database, comprising 14 countries and 20 sectors. Tradables are defined to include those sectors in which more than 10 percent of total production is exported, for all fourteen countries combined. For details on this database and classification see De Gregorio and others, WP/94/33, (March 1994). The data used here updates their calculations for 1970-85 up to 1991.

2/ De Gregorio et al. (1994) provide evidence of the relative price of nontradables increasing for 14 OECD countries, using the OECD international sectoral database.

3/ More discussion of constant market share analysis is contained in Leamer and Stern, (1970, pp. 171-183), and Richardson, (1971, pp. 227-239).

CHART III-5
Germany
Internal Terms of Trade
(1985 = 100)





Source: IMF, Research Department.
1/ Relative price of nontradables over tradables.

$$+ \sum_i r_i X_i - \sum_i r X_i \tag{2}$$

$$+ \sum_i \sum_j r_{ij} X_{ij} - \sum_i r_i X_i \tag{3}$$

$$+ \Delta X - \sum_i \sum_j r_{ij} X_{ij} \tag{4}$$

where:

- r = the proportional change in the overall exports of competitor countries
- r_i = the proportional change in competitors' exports of good i
- r_{ij} = the proportional change in competitors' exports of good i in market j
- X_i = German exports of good i
- X_{ij} = German exports of good i to market j

The expression (1) of the decomposition is the "market growth effect"; (2) is the "commodity composition effect"; (3) is the "market distribution effect"; and (4) is the residual "competitiveness effect". Expressions (2) and (3) take into account whether exports are concentrated in commodities and markets that can be considered to be slowly or rapidly expanding relative to the average for competitors. 1/

The competitor group--that is, the standard with which to judge export performance--is taken to be the OECD as a group (excluding Germany). 2/ This facilitates meeting the large data requirements, since detailed data are available on the value of exports across the 10, broad one-digit SITC categories and across various country markets that are aggregated up to the OECD total (OECD series C foreign trade statistics); the analysis considers

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1/ Reversing the order of calculating effects (2) and (3) would give a somewhat different decomposition, but not change the calculations of their combined effects.

2/ A considerable bias might have been introduced in the interpretation of the competitiveness residual had the German economy been growing at a significantly different rate than the OECD average. In fact, real growth in west Germany and for the OECD overall averaged around 2 1/2 percent from 1980 to 1992.

11 market groupings. 1/ Similar data are also available for Germany alone. Thus, "r", the "r_i"s, and the "r_{ij}"s are derived from data on OECD exports (excluding Germany) by SITC category and by market.

The results of this exercise are reported in Table III-3; they run up to 1992, but do not go further because of data limitations. Also, starting in 1991, the data are for unified Germany. As a result, the data for that year and 1992 are not strictly comparable with earlier data, and for this reason such comparisons are generally not made; however, the table does include for reference calculations that compare 1992 to 1990. Table III-4 summarizes results for those goods and markets that are responsible for most of the observed change in overall market shares.

Looking over the whole sweep from 1984 to 1990, a negative competitiveness effect might have been expected on the basis of the deterioration in competitiveness suggested by several of the indicators discussed earlier. In actual fact, the calculations yield a small, but positive effect--that is, German exports increased by a somewhat greater amount than would have been expected if they had grown by the same proportion as did competitors' exports in each good and each market (this is expression (4) in the earlier-explained decomposition). It can be seen from Table III-3 that about 5 percent of the increase in exports over the entire period was attributable to competitiveness effects, which resulted in an annual average boost to export growth of 1 percent. Table III-4 indicates that machinery and transportation equipment, which in 1990 accounted for about one-half of Germany's exports, was the sector driving the positive competitiveness calculations, particularly in regard to exports to Japan, North America, and Asia; the competitiveness effect was negative for exports to other European countries. The category of manufactured goods (classified chiefly by material) was also important, with the calculated gains in this sector not concentrated in particular markets.

It is tempting to conclude that exporters were able to hold on to, and even increase somewhat, market share but at some cost to profit margins. It is also plausible, given the results, that some of the non-quantifiable elements of competitiveness had a significant positive impact on exports, offsetting (or even resulting in) real exchange rate appreciation. An

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1/ The 11 market groupings are: North America; Japan; Australia, New Zealand, and South Africa; the 12 EU countries; EFTA; Asia; Africa; Latin America and the Caribbean; the Middle East; the economies in transition; and others not classified elsewhere, or a residual market. The one-digit SITC classification is: section 0 for food and live animals; section 1 for beverages and tobacco; section 2 for crude materials, inedible, except fuels; section 3 for mineral fuels, lubricants and related materials; section 4 for animal and vegetable oils, fats and waxes; section 5 for chemicals and related products; section 6 for manufactured goods classified chiefly by material; section 7 for machinery and transport equipment; section 8 for miscellaneous manufactured articles; and section 9 for commodities and transactions not classified elsewhere.

Table III-3. Constant Market Share
Decomposition of Export Growth 1/

(In percent)

	1984-1990	1984-1987	1987-1988	1987-1990	1991-1992	Memorandum item 1990-1992
Proportion of change due to:						
Market growth effect	71.4	51.8	156.4	118.1	89.5	116.3
Commodity composition effect	7.5	8.0	8.7	3.4	6.9	11.3
Market distribution effect	16.4	16.2	-9.3	8.2	-59.9	-58.6
Competitiveness effect	4.7	23.9	-55.7	-29.8	63.5	31.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum items:						
Yearly average growth in exports (percent per year)	15.1	19.7	9.8	10.6	6.9	3.9
Yearly average growth in exports due to competitiveness effects (percent per year)	1.0	5.4	-5.5	-3.6	4.4	1.2

1/ Data for Germany are on a unified basis starting in 1991. Thus, calculations are generally not made that use data from 1991 on, against data for 1990 or earlier as a base; the calculations for 1990-92 are an exception and only for reference.

Table III-4. Main Forces Behind Decomposition of Export Growth

(In U.S. dollars)	1984-90	1984-87	1987-88	1987-90	1991-92
Commodity Composition Effect	Total = 17.0 of which: Mach & Trans = 14.5 Misc Manu = 7.6 Min Fuels = -4.9 Food = -2.2 Crude Mat = -1.6	Total = 9.8 of which: Mach & Trans = 7.9 Misc Manu = 4.1 Chemicals = 2.1 Min Fuels = -3.3 Food = -1.1	Total = 2.5	Total = 3.5 of which: Mach & Trans = 1.2 Misc Manu = 2.2 Chemicals = -1.7 Min Fuels = -1.1	Total = 1.9 of which: Mach & Trans = 1.5 Misc Manu = 1.3 Chemicals = 1.5 Manu Goods = -2.0
Market Distribution Effect	Total = 37.2 of which: EEC (Mach & Trans) = 33.3 EEC (Manu Goods) = 10.2 EEC (Chemicals) = 3.6 EEC (Misc Manu) = 3.4 NAm (Mach & Trans) = -5.5 ME (Mach & Trans) = -5.3	Total = 19.9 of which: EEC (Mach & Trans) = 15.0 EEC (Manu Goods) = 5.1 EFTA (Mach & Trans) = 4.1 EEC (Misc Manu) = 2.0 EEC (Chemicals) = 2.1 EEC (Food) = 1.9 ME (Mach & Trans) = -3.1 AFR (Mach & Trans) = -1.6 NAm (Mach & Trans) = -1.5 ANSA (Mach & Trans) = -1.0	Total = -2.7	Total = 8.5 of which: EEC (Mach & Trans) = 12.2 Japan(" " ") = 1.9 Asia (" " ") = 1.2 NAm. (" " ") = -4.7 EFTA (" " ") = -2.3 EEC (Manu Goods) = 3.1 Transition Economies (Manu Goods) = -1.7	Total = -16.6 of which: Transition Economies Mach & Trans = -6.1 Manu Goods = -2.2 Misc Manu = -1.0 Chemicals = -1.7 Food = -1.6 EEC (Mach & Trans) = -3.4 EFTA(" " ") = -2.1
Competitiveness Effect	Total = 10.6 of which: Mach & Trans = 8.6 (Japan) = (3.6) (NAm) = (2.6) (Asia) = (3.1) (EFTA) = (2.3) (Res) = (1.1) (EEC) =(-5.6) Manu Goods = 4.2	Total = 29.3 of which: Mach & Trans = 17.6 (NAm) = (6.3) (EEC) = (3.6) (EFTA) = (2.4) (Asia) = (2.0) (Japan) = (1.6) Manu Goods = 4.9 Misc. Manu = 3.5 Chemicals = 2.8	Total = -16.1 of which: Mach & Trans = -11.8 (NAm) = (-4.8) (EEC) = (-3.2) (EFTA) = (-1.1) (Asia) = (-1.0) (RES) = (-1.0) NIE = -4.0	Total = -31.0 of which: Mach & Trans = -17.0 (EEC) = (-11.4) (NAm) = (-5.2) NIE = -7.2 (EEC) = (-2.8) (EFTA) = (-1.7) Chemicals = -3.0 (EEC) = (-1.7) Manu Goods = -2.4 (EEC) = (-3.1)	Total = 17.6 of which: Mach & Trans = 12.0 (EEC) = (5.7) (EFTA) = (1.2) (ME) = (1.1) (Res) = (4.9) Transition Economies =(-1.0) Manu Goods = 2.7 Misc Goods = 1.4

Food = Food and Live Animals
Crude Mat = Crude Materials, inedible, except fuels
Min Fuels = Mineral Fuels, Lubricants, and Related Materials
Chemicals = Chemicals and Related Products
Manu Goods = Manufactured Goods Classifed Chiefly by Material
Mach. & Trans = Machinery and Transport Equipment
Misc Manu = Miscellaneous Manufacturered Articles

Res = Residual market
ME = Middle East
ANSA = Australia, New Zealand, and South Africa
NIE = Goods not included elsewhere
EEC see text
EFTA see text

alternative explanation is that German exports are mainly price-inelastic, income-elastic goods. 1/

It is worth emphasizing that the commodity composition and market distribution effects were also positive and larger than the competitiveness residual. This was the case over the 1984-90 period as a whole, and also in the two sub-periods of 1984-87 and 1987-90. 2/ This result provides some evidence consistent with the notion that Germany has benefitted from a "favorable" composition of exports. Especially strong effects were calculated for machinery and transportation equipment, with strong effects also calculated for other categories of manufacturing; the European market figured in prominently.

The gains from a positive competitiveness effect over the 1984-1990 period did not take place in a steady fashion, as demonstrated by performing separate calculations for the first and second halves of the period. The first half of the period, 1984-87, experienced significant, and broadly-based positive competitiveness effects, attributable most strongly to the machinery and transportation equipment sector, but also to two categories of manufactured goods and to the chemicals sector. The calculations indicate that competitiveness effects added about 5 1/2 percent per year to export growth. By comparison, negative competitiveness effects retarded export growth in the second half of the period by some 3 1/2 percent per year; these negative effects were concentrated mainly in the machinery and transport equipment sector and were particularly strong in 1987-88. Negative competitiveness effects were also calculated for the categories of chemicals and manufactured goods (classified chiefly by sector), but their size was relatively small compared to the positive gains recorded in the first half of the period.

Because the calculations can be sensitive to the choice of base year, different combinations of base and comparator years were tried within the 1984-90 period, but the results did not change in a substantive way. Germany's share in world trade peaked at the beginning of the 1980s. Calculations using 1980 as a base--which is also a year that precedes the beginning of the U.S. dollar's sharp upward move--show positive competitiveness effects for the periods 1980-1987 and 1980-1990.

1/ The elasticities estimated by the Bundesbank (May 1994) for various measures of the real exchange rate are all (in absolute value) at 0.3 or lower in the short-run, and below 0.5 in the long-run. Golub (1994)--discussed in the annex--finds comparatively little responsiveness of German exports to changes in relative unit labor costs.

2/ The combined effect for the 1987-88 period alone was virtually zero.

While the effects of an appreciating real exchange rate operate only with a lag, 1/ it is striking that the calculations for more recent periods, such as 1991-92, again show positive competitiveness effects, concentrated once more around the machinery and transportation equipment sector. Interestingly, the market distribution effect was substantially negative, which reflects Germany having exported goods to particular markets for which demand was comparatively weak. As shown in Table III-4, this was especially the case because of exports to the economies in transition, across a range of goods (machinery and transport equipment, manufactured goods, chemicals, and food).

On balance, from the above analysis, a competitiveness problem has not been particularly evident in the export flows, despite the deterioration in competitiveness suggested by several conventional cost indicators.

b. Sectoral pressures on profits

While not a sustainable strategy in the long-run, exporters may have tried to defend their market share by "pricing to market" and squeezing profits in the short-run. Empirical work by Knetter (1989) provides supporting evidence of this kind of behavior. He finds that German export prices in deutsche mark are sensitive to exchange rate changes and that adjustments in these prices have tended to stabilize the local currency prices in the destination market. 2/ Amid the appreciation of the deutsche mark, this would imply a squeeze on profit margins. Unfortunately, because of data problems, it is difficult to garner other direct evidence on the extent to which profits may have been squeezed in firms--or the various sectors that comprise tradable goods--as a result of their export activities or their efforts to compete with imported goods. The sectoral data that are available encompass both domestic and foreign sales and therefore need to be interpreted with a great caution; also many difficulties are encountered in trying to discern which of these sectors faced import competition more intensively, by constructing, say, import penetration ratios. That being said, the available data tend to lend only limited support to the notion that profits in the tradables goods sector (or more precisely in manufacturing) were squeezed in 1991 in some subsectors of manufacturing, but no

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1/ Estimates from MULTIMOD would suggest that most of the effects take place in one year. But even allowing for longer lags, say up to 3 years, would fail to explain the positive competitiveness residuals that the calculations suggest for the 1991-92 period.

2/ Knetter, (March 1989, pp. 198-210).

clear pattern emerges in earlier years. 1/ These data are reported in Table III-5. 2/

3. Prospects for export growth

Judgments about external competitiveness can be based not only on past performance but also an assessment of the prospects for international trade. In addition to recent evidence pointing to a favorable performance (and prospects) of German exports in some regional markets, 3/ concerns over external competitiveness have also been mitigated by recent labor market adjustments to competitive pressures. The Bundesbank has noted that the efforts of German producers to export have been assisted by accelerated measures to reduce costs which were widely introduced in industry in the light of sluggish sales trends and which also improved international competitiveness. 4/ In this regard, it is expected that labor shedding in 1994 may be on the order of 5 percent, contributing to large gains in labor productivity. With recent wage settlements implying moderate wage growth, unit labor costs should actually decline, perhaps by as much as 3 percent. 5/ Moreover, the ongoing restructuring effort of the business sector should also be helped by the increased flexibility in the hiring and usage of labor inputs, which in turn contributes to improving the financial position and external competitiveness of enterprises.

It is also noteworthy that the recent deterioration in several indicators of external competitiveness did not prevent a strong pickup in export orders. Relevant data on these orders are shown in Chart III-6, along with survey data on export expectations by enterprises and actual export performance. Following the upward trend in 1993, export orders in the first quarter of 1994 were 6 percent higher than in the preceding quarter and nearly 12 percent higher than a year earlier. Survey data have also been very positive on potential export growth. In view of these indicators and their past relationship with actual export performance, it

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1/ To be clear, this analysis focuses only on profits in Germany whereas the discussion in section 2 was in terms of German profits relative to competitor countries. It would appear from the data in Table III-5 that the apparent decline in Germany's relative profit margins up to 1990 did not reflect extensive pressure on absolute profits margins at home.

2/ While detailed data are available only through 1991, the Bundesbank in its Monthly Review (November 1993) reports a loss of profitability in 1992.

3/ As described in Chapter II, German exporters have recently recorded rapid growth in their trade with developing countries, particularly in the Latin America and Asia regions. It appears that Germany has gained a stronger foothold in the Asia region and is increasing its export marketing efforts there, helped by improved competitiveness against Japanese producers because of the strength of the Japanese yen.

4/ Deutsche Bundesbank Monthly Report, February 1994, page 66.

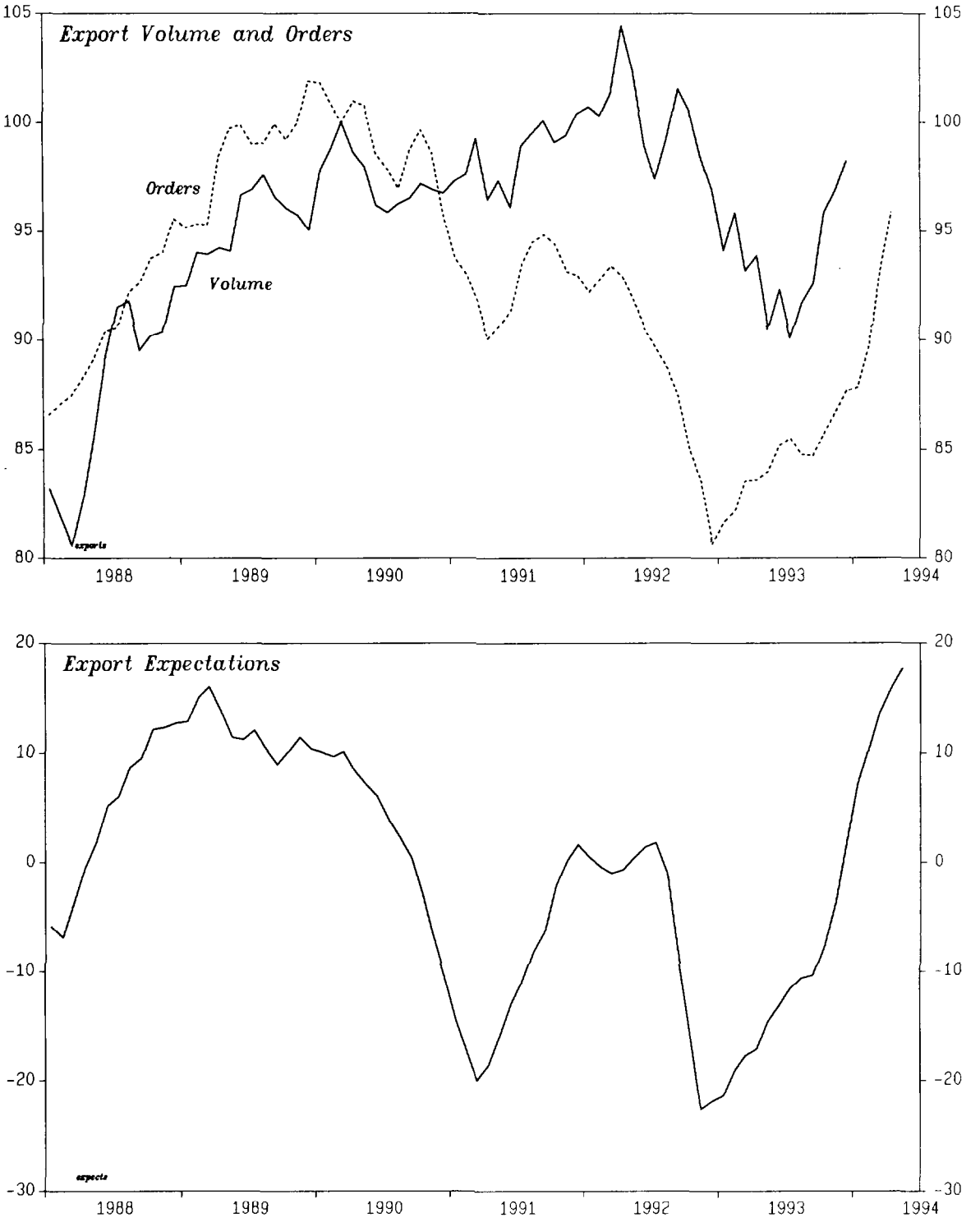
5/ The spring wage round produced settlements typically in the 0-2 percent range.

Table III-5. Profit Margins

(In percent)

Sector	1985	1986	1987	1988	1989	1990	1991	1992
				(After-tax profits) 1/				
All enterprises	1.9	2.1	2.1	2.2	2.1	2.2	2.0	1.5
Manufacturing sector	2.3	2.5	2.3	2.6	2.4	2.5	2.1	...
Of which:								
Chemical industry	3.1	3.3	3.6	4.1	3.9	3.4	3.1	...
Manufacture of plastic products	2.7	3.1	2.9	2.7	2.6	2.6	2.6	...
Quarrying, extraction and working-up of stones and earths	1.9	3.7	3.6	4.0	4.5	4.3	4.8	...
Iron and steel industry	2.2	1.7	0.5	2.0	2.3	2.2	1.6	
Non-ferrous metal industry	1.2	1.3	1.5	2.3	1.5	1.7	1.2	...
Manufacture of structural metal products	1.9	2.3	2.2	2.3	2.9	3.8	3.0	...
Mechanical engineering	3.0	2.8	2.1	2.7	2.7	2.6	1.5	...
Manufacture of road vehicles	1.7	2.1	2.4	2.3	2.1	1.9	1.4	...
Electrical engineering	3.0	3.1	2.7	2.4	2.1	2.5	2.3	...
Manufacture of tools and finished metal goods	3.5	3.5	3.3	3.9	3.3	3.6	3.2	...
Woodworking	1.2	1.9	1.9	1.8	1.5	2.2	1.5	...
Manufacture of wood products	1.3	1.9	2.6	3.1	2.7	2.9	2.7	...
Processing paper and board	3.3	4.0	3.1	2.6	3.2	3.4	2.4	...
Textile industry	2.2	2.2	2.5	2.5	2.2	2.3	2.0	...
Clothing industry	2.5	2.7	2.9	2.6	2.1	2.2	2.6	...
Food and drink industry	1.3	1.7	2.1	2.1	1.5	2.6	2.2	...

CHART III-6
Germany
Export Indicators
(March 1990 = 100)



Source: Deutsche Bundesbank; and Ministry of Economics.

Table III-5 (concluded). Profit Margins

(In percent)

Sector	1985	1986	1987	1988	1989	1990	1991	1992
			(Profits before income taxes) 1/					
All enterprises			3.3	3.5	3.4	3.5	3.2	2.5
Manufacturing sector			4.0	4.4	4.3	4.3	3.6	...
Of which:								
Chemical industry			7.1	8.4	7.7	6.6	5.5	...
Manufacture of plastic products			4.3	4.3	4.1	4.1	4.2	...
Quarrying, extraction and working-up of stones and earths			5.5	6.2	6.8	6.6	6.9	...
Iron and steel industry			1.3	3.3	4.2	4.0	2.8	...
Non-ferrous metal industry			2.5	3.6	3.1	3.2	2.0	...
Manufacture of structural metal products			3.4	3.5	4.3	5.4	4.8	...
Mechanical engineering			3.7	4.2	4.6	4.3	3.1	...
Manufacture of road vehicles			4.6	4.6	4.8	4.2	3.1	...
Electrical engineering			4.6	4.4	4.1	4.2	4.0	...
Manufacture of tools and finished metal goods			4.7	5.4	4.7	5.1	4.7	...
Woodworking			2.4	2.4	2.3	3.1	2.2	...
Manufacture of wood products			3.4	4.0	3.7	3.9	3.8	...
Processing paper and board			4.4	4.0	4.2	4.8	3.8	...
Textile industry			3.9	3.7	3.5	3.4	3.1	...
Clothing industry			4.1	3.8	3.2	3.3	3.8	...
Food and drink industry			2.9	3.0	2.3	3.6	3.1	...

Source: Deutsche Bundesbank.

1/ As a percent of turnover.

seems reasonable to expect that exports will perform well for the rest of 1994.

Nevertheless, the export outlook for later years remains uncertain. First, other European industrial countries are also likely to experience wage moderation and productivity-enhancing restructuring in their tradables sectors; therefore the ultimate effect of recent adjustments in Germany on Germany's external competitiveness position is not yet clear. Second, recent indicators of stronger export performance may be related to some extent to the weak domestic demand that firms experienced in Germany. In this light, there is a risk that a pick up in domestic demand might dampen future export performance by reducing incentives for firms to penetrate new markets. Furthermore, while it may be reasonable to expect subdued wage growth in the period immediately ahead when Germany would still be emerging from recession, it is unlikely to be possible to hold real wage increses below productivity growth in the medium-term, particularly for those labor skills in short supply. In the absence of greater wage differentiation with respect to skill levels, pressures on wages overall could develop that would adversely affect competitiveness in international markets.

4. Concluding remarks

The analysis in this chapter has shown the differing picture of Germany's external competitiveness painted by the various indicators examined. A number of them have shown a deterioration in Germany's external competitiveness, some by sizable margins, but it also appears likely that the standard measures based on the manufacturing sector alone have overstated the weakness of Germany's external competitiveness position. In this regard, the analysis of developments in the broader-based real exchange rate indices, and in the internal real exchange rate, support this conclusion. Moreover, the results of constant market share analysis are revealing and actually suggest positive competitiveness effects. These results are particularly significant for the period up to 1990 insofar as an absolute squeeze on profits at home was not readily apparent.

Developments in the more recent past raised understandable concerns over Germany's competitiveness position. Notwithstanding the positive competitiveness effects calculated from the constant market share analysis for 1991-1992, actual export performance, especially during 1993, worsened significantly on the heels of various other indicators of a worsened competitiveness position. Looking ahead, however, there is good cause for optimism that economic recovery will not be thwarted by inadequate competitiveness and a poor export performance. Quite the contrary, recent evidence on sustained growth in export orders and expectations through 1993 and into 1994, as well as actual export performance, are consistent with a solid rebound in exports this year, albeit from a low base. Recent developments in certain regional markets are also encouraging. And probably most important, significant adjustments have and are taking place in labor markets while enterprise restructuring efforts continue, all of which are enhancing external competitiveness and export prospects. While the outlook for 1995 is considerably less certain than the prospects for this year,

sustaining a strong export performance into 1995 and later years will clearly be helped by a continuation of such restructuring efforts and of continued labor market reforms and adjustments.

Unit Labor Costs in Manufacturing ANNEX

This annex reviews developments in unit labor costs in manufacturing and its components, in Germany alone and relative to competitor countries. It focuses in particular on changes in productivity and compensation since the mid-1980s, incorporating when available estimates of the absolute levels of these variables across countries to supplement the more usual presentation of relative rates of growth over a given time period.

1. Labor productivity

Looking at the period from end-1982 through mid-1992 in Table III-6, productivity in German manufacturing--measured in terms of output per man hour--fell only briefly during 1986-87; otherwise it increased at an average annual rate of 3.6 percent (calculated from but not shown in Table III-6). During this period, labor inputs (measured in manhours) showed little growth, while manufacturing output increased fairly steadily with only a brief drop in 1986 and early 1987. More recently, labor productivity has continued to grow, although the gains have been at a slower pace than during most of the previous 10 years or so. Labor shedding would seem to have contributed to at least part of the recent productivity gains during the period since mid-1992, with labor inputs being reduced even faster than output.

Chart III-7 compares similar measures of labor productivity for Germany and several of her competitors. The chart indicates that since the mid-1980s, and indeed from the beginning of the decade, productivity growth in Germany has been slower than elsewhere in Europe (top panel). This is also the case when comparing Germany with Japan and the United States (bottom panel).

Table III-7 attempts to put these relative changes in productivity in better perspective by looking at available estimates of absolute levels of productivity that try to value output on an internationally consistent basis. 1/ Within Europe, the level of productivity in 1990 varies widely; productivity in Germany is higher than in Italy and the United Kingdom, broadly similar to Belgium, France, and Sweden, and well below the Netherlands. Europe in general tends to be below the United States and

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1/ The respective studies use various levels of detail in attempting to value output at internationally consistent prices. The approach taken in the column labeled "National accounts" was to take a weighted average of the PPPs of those categories of expenditure that largely contain manufacturing goods. For specific details, see Turner and Van't dack (1993. pp. 81-84).

Table III-6. Germany: Growth of Productivity and Compensation During Output Cycles 1/

(Average annual percentage changes)

Time Period	1979 Q1-1982 Q4	1982 Q4-1986 Q2	1986 Q2-1987 Q1	1987 Q1-1992 Q2	1992 Q2-1993 Q4
Productivity 2/	0.6	4.0	-4.9	3.3	2.7
Hours worked	-2.3	-0.1	-0.4	0.1	-8.7
Output	-1.8	3.8	-5.3	3.4	-6.3
Compensation	6.2	5.0	4.9	5.5	5.4
Memorandum item:					
CPI inflation	5.6	1.7	-0.3	2.7	3.7
Combined growth in productivity and CPI inflation	6.2	5.8	-5.2	6.1	6.5

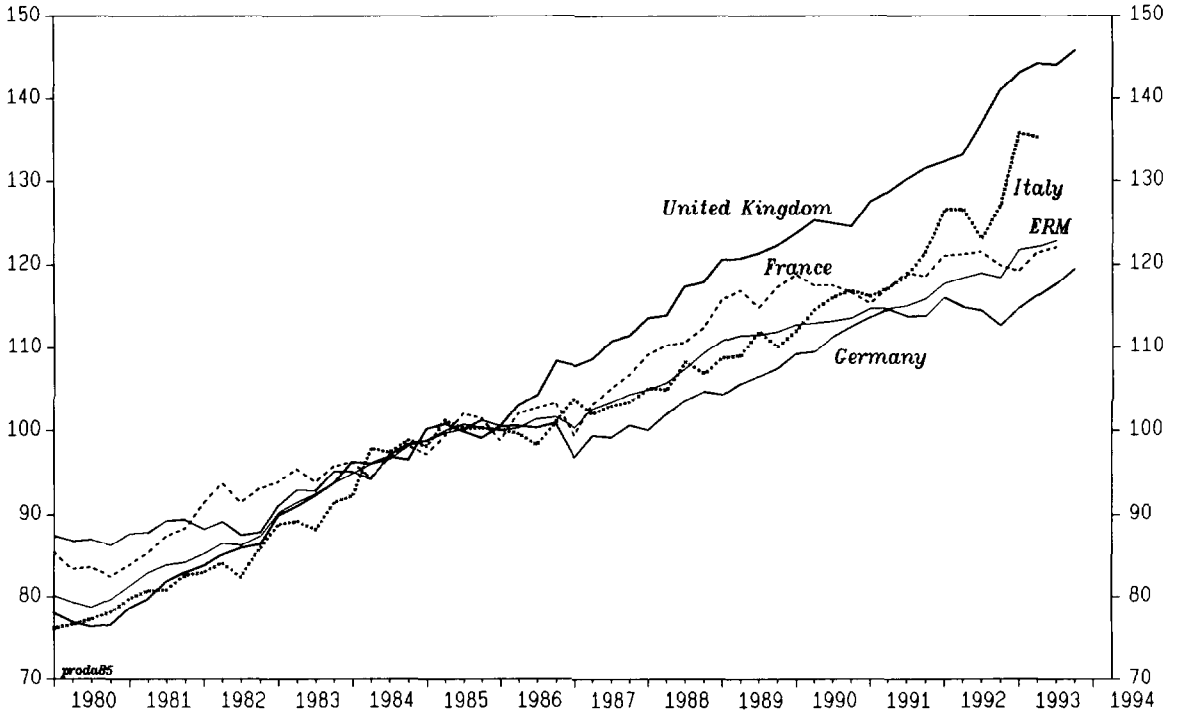
1/ Manufacturing only.
2/ Output per man hour.

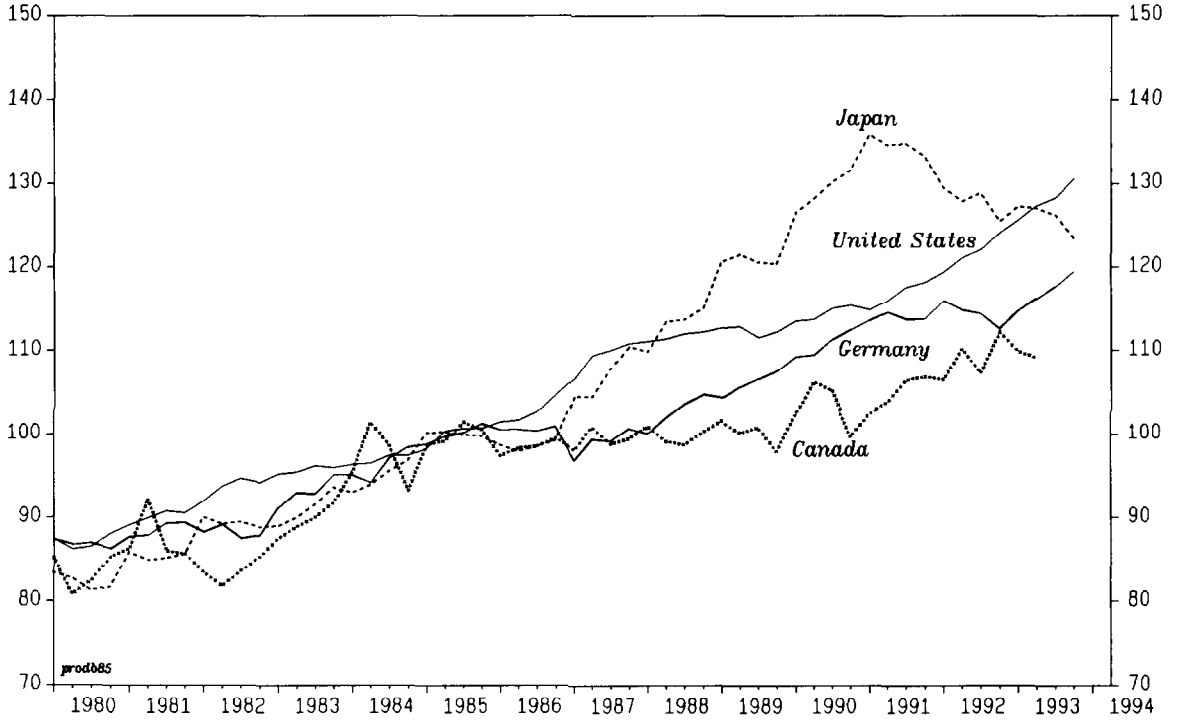
CHART III-7

Major Industrial Countries

Productivity 1/

(1985 = 100)





Source: IMF, Research Department.

1/ In manufacturing, measured by average labor productivity expressed in terms of output per man hour.

Table III-7. Comparative Estimates of Relative Labor Productivity in Manufacturing in 1990

(Output per hour valued at PPPs, in dollars; U.S. output per hour = 100)

Study	Szirmai and Pilat (1990)	Daly (1988)	ICOP/ NIESR 1/	National accounts	Geometric mean
Base year of original estimates 2/	1985	1986	1984 and 1987	1990	1990
United States	100.0	100.0	100.0	100.0	100.0
Japan	86.6	93.0	87.8	78.1	86.2
Canada	--	64.9	--	78.6	71.4
Australia	--	--	--	57.2	57.2
Europe 3/	--	--	--	--	72.0
France	--	71.2	78.0	83.1	77.3
Germany	--	86.5	83.4	81.8	83.9
Italy	--	65.3	--	62.0	63.6
United Kingdom	--	42.5	62.4	50.4	51.1
Belgium	--	83.6	--	87.3	85.4
Netherlands	--	--	91.0	95.8	93.4
Sweden		71.3	--	83.0	76.9
South Korea	--	--	--	29.2	22.0
Taiwan, Prov. of China	--	--	--	31.7	31.7

Source: Turner and Van't dack (1993).

1/ Based on a series of articles in the National Institute Economic Review and the international comparison of productivity project at the University of Groningen.
2/ All estimates have been re-based to 1990, using the changes in output per hour calculated by the U.S. Bureau of Labor Statistics.
3/ Weighted average using PPP-valued GDP weights in 1990.

Japan. Table III-7 also indicates broadly similar relative positions with respect to productivity, even though the exact method of calculation differs across studies.

2. Compensation

The growth in compensation in Germany has been running well ahead of productivity growth and roughly in line with the combined growth in productivity and consumer price inflation since the mid-1980s (Table III-6). Compared with European competitors, the growth in compensation in Germany has been higher than in France, and somewhat higher than for the ERM countries taken as a group; by comparison, compensation in Germany has grown more slowly than in Italy or the United Kingdom (Chart III-8). Outside of Europe, German compensation since 1985 has outpaced that in the United States and Japan, and grown at nearly the same rate as in Canada. Faster growth in compensation than in productivity has tended to be more prominent in Germany than in the other countries, as indicated in the next section by the relatively faster-paced rise in German unit labor costs.

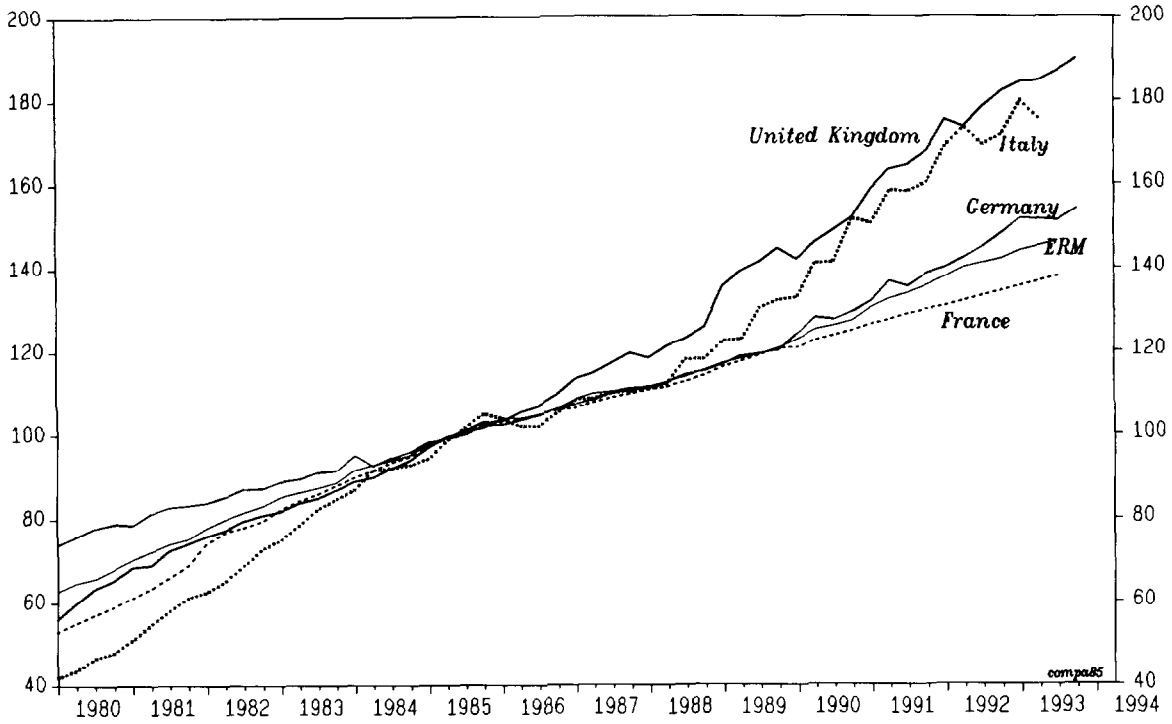
Table III-8 provides more details on hourly labor costs internationally, divided into direct pay (including holiday pay and seasonal bonuses) and social insurance and other non-wage costs. European labor costs tend to be higher than in other countries, and within Europe hourly labor costs in Germany were among the highest, both in terms of direct pay and non-wage costs. Chart III-9 provides some further comparative details on employers' contributions for social security insurance and pensions, and minimum weeks of annual leave and paid holidays (economy wide); it also shows relatively high costs in Germany.

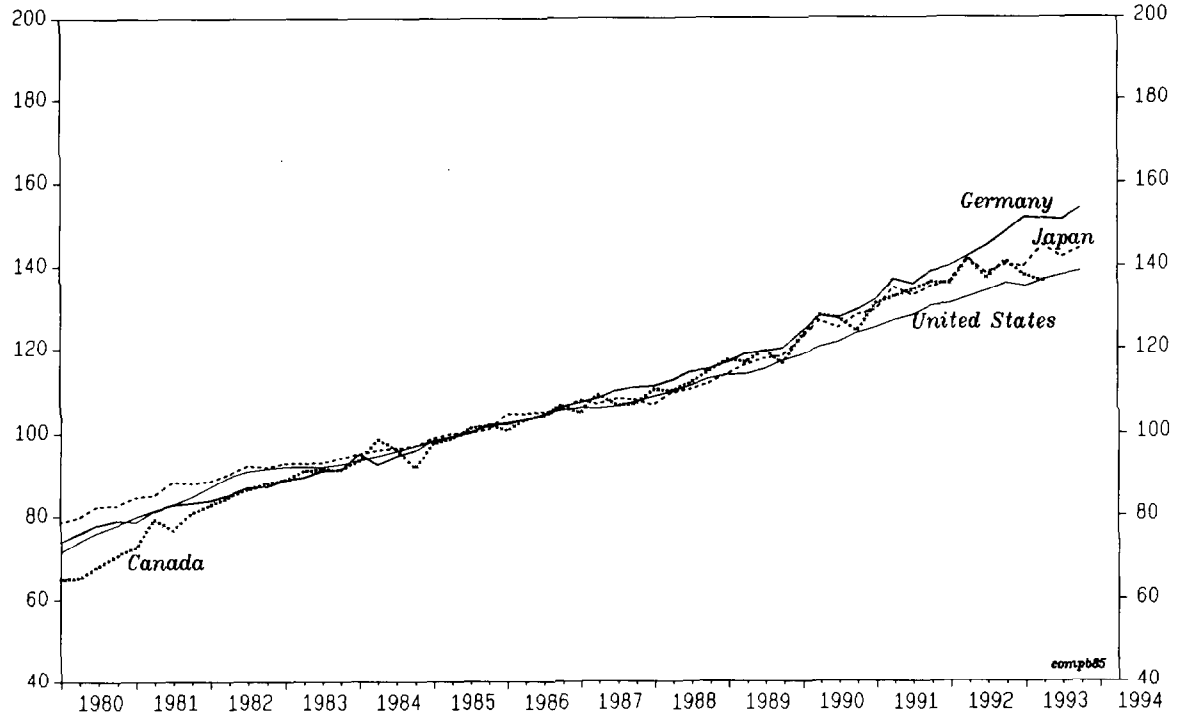
3. Unit labor costs

Combining compensation and productivity, Chart III-10 illustrates that the growth in unit labor costs in Germany has outpaced their growth in North America and Japan since 1985. The same is also true in comparing Germany to France and to the ERM overall. Unit labor cost growth in the United Kingdom and Italy was, however, higher.

Recent estimates by Turner and Van't dack (1993), reported in Table III-9, help draw out the implications of these changes in unit labor costs by comparing actual levels on a comparable basis across countries in 1990. Their estimates can be viewed as estimates of the U.S. dollar cost of producing one unit of internationally-comparable output in manufacturing. It is striking from their estimates that the level of unit labor costs in Germany in 1990 was the highest in Europe, and some 40 to 50 percent higher than in Japan and the United States, respectively. Recently, the OECD has also made some preliminary calculations of the absolute level of unit labor costs in manufacturing which are broadly similar in showing unit labor costs in Germany 25 percent higher than in Japan and about 45 percent higher than

CHART III-8
Major Industrial Countries
Compensation per Man Hour 1/
(1985 = 100)



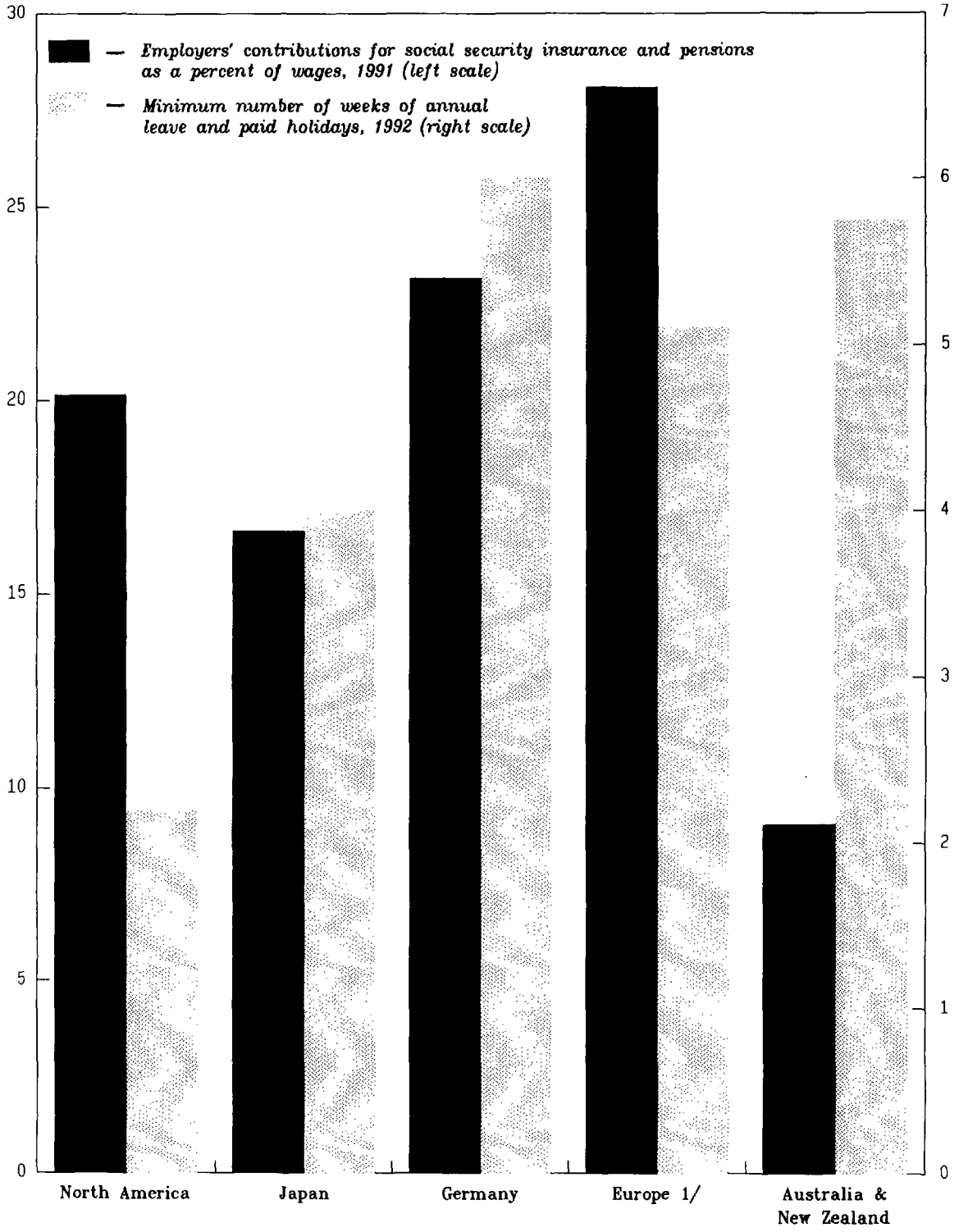


Source: IMF, Research Department.
1/ In manufacturing; in home country.

CHART III-9

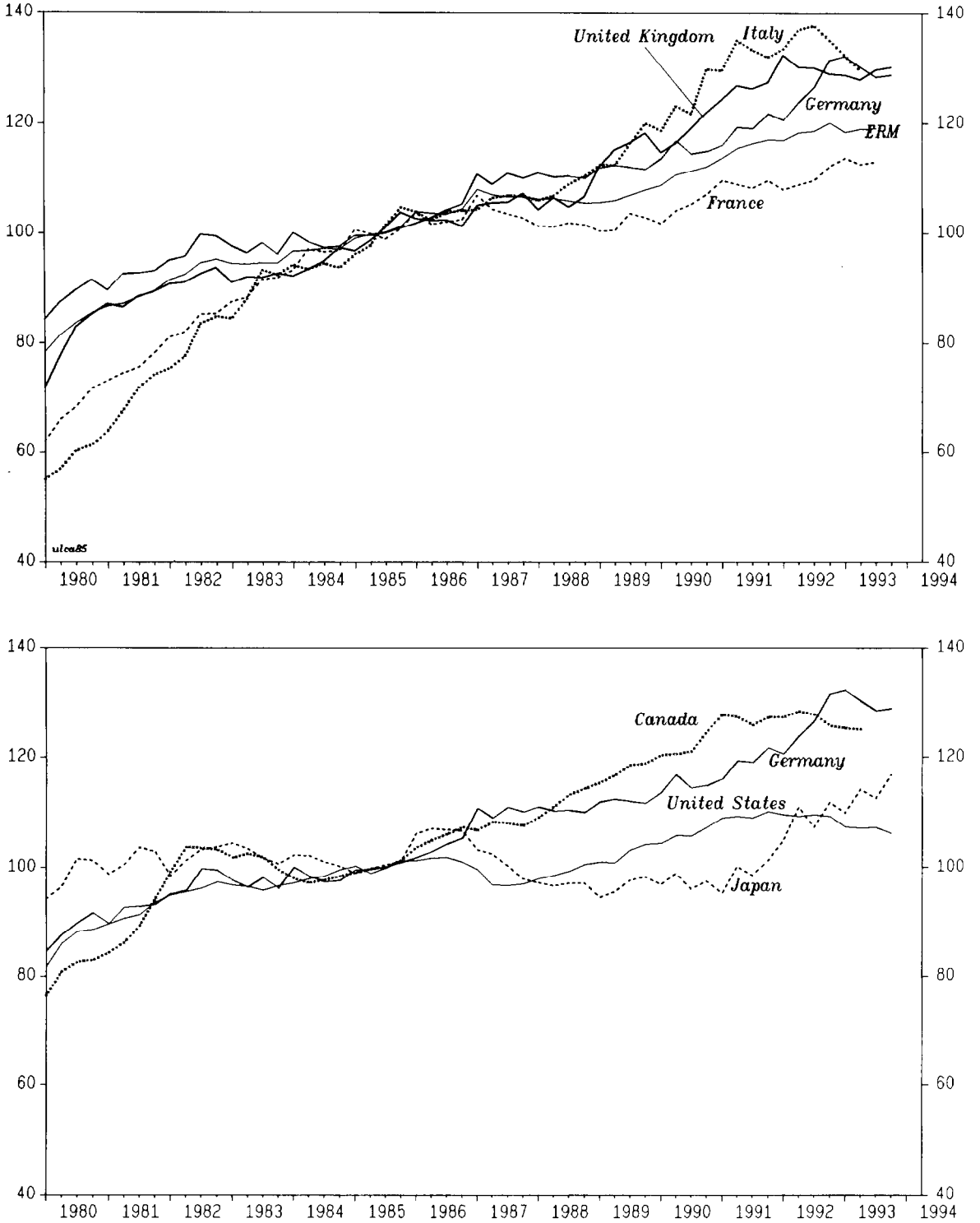
Selected Countries and Regions

Nonwage Labor Costs



Source: OECD, Employment Outlook; and OECD estimates.
1/ Comprised of Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland, and the United Kingdom.

CHART III-10
Major Industrial Countries
Unit Labor Costs 1/
(1985 = 100)



Source: IMF, Research Department.
1/ In manufacturing.

Table III-8. Hourly Wage and Labor Costs in Manufacturing 1/

(In U.S. Dollars)

	Direct pay 2/	Social insurance and other non-wage costs 1992	Total hourly compensation	Memo item: Hourly compensation relative to U.S. levels 1975	1992
United States	12.52	3.65	16.17	100.0	100.0
Japan	14.04	2.12	16.16	47.2	99.9
Canada	14.47	2.55	17.02	94.0	105.3
European G-10 countries 3/	15.10	4.90	20.00	79.9	123.7
France	12.07	4.81	16.88	71.1	104.4
Germany	20.03	5.91	25.94	99.8	160.4
Italy	13.47	5.94	19.41	73.4	120.0
United Kingdom	12.27	2.42	14.69	53.0	90.8
Belgium	16.07	5.94	22.01	100.8	136.1
Netherlands	16.04	4.68	20.72	103.5	128.1
Sweden	16.65	7.58	24.23	112.9	149.8
Switzerland	19.45	3.81	23.26	95.8	143.8
Other European countries 3/	8.74	2.74	11.47	36.2	71.0
Greece	5.59 4/	1.34 4/	6.93 4/	26.6	42.9 4/
Spain	10.10	3.29	13.39	39.8	82.8
Portugal	3.81	1.20	5.01	24.8	31.0
Australia	10.96	1.98	12.94	87.7	80.0
Asian NIEs 5/	..	..	4.84	7.9	29.9
Hong Kong	3.77	0.12	3.89	11.9	24.1
Singapore	4.24	0.77	5.00	13.2	30.9
South Korea	4.38	0.55	4.93	5.2	30.5
Taiwan, Prov. of China	4.81	0.38	5.19	6.3	32.1
Mexico	..	..	2.35	22.6	14.5

Source: Turner and Van't dack (1993).

1/ Production workers in manufacturing.
2/ Includes holiday pay and seasonal bonuses.
3/ Weighted average using PPP-valued GDP weights in 1990.
4/ Estimated.
5/ Trade-weighted figures as published by the U.S. Bureau of Labor Statistics.

Table III-9. Average Hourly Compensation, Productivity and Unit Labor Costs in Manufacturing

(In U.S. dollars, in 1990)

	Average hourly compensation (1)	Output per hour valued at PPPs (US=100) 1/ (2)	Unit labor costs 2/ (1)/(2)
United States	17.81	100.0	100.0
Japan	15.38	78.1	110.6
Canada	16.88	78.6	120.6
Australia	11.49	57.2	112.9
Europe 3/	18.52	72.7	143.1
France	21.26	83.1	143.6
Germany	22.37	81.8	153.5
Italy	14.81	62.0	134.1
United Kingdom	13.03	50.4	145.2
Belgium	20.77	87.3	133.6
Netherlands	20.58	95.8	120.6
Sweden	21.66	83.0	146.5
South Korea	2.40	29.2	46.2
Taiwan, Prov. of China	4.43	31.7	78.6

Source: Turner and Van't dack (1993).

1/ BIS calculations based on national accounts and purchasing power parity calculations.
2/ Rebased so that United States = 100.
3/ Weighted average using PPP-valued GDP weights in 1990.

in the United States. Within Europe, there are considerable divergences among countries, but with German costs very high. 1/

4. Sectoral indicators

Sectoral data on unit labor costs reported in Golub (1994) tend to be broadly consistent with the observations made above, in the sense that Germany appears to have lost some competitive ground in the 1980s. 2/ Table III-10, constructed from the information contained in Golub's paper, reports on labor cost components across sectors, expressed as a ratio of the average for the group of seven major industrial countries. Productivity is calculated as real value added in dollars evaluated at the PPP exchange rate divided by total employment; the PPP exchange rate is an aggregate for the entire economy. In contrast to the aggregate figures above, no adjustment is made to employment for hours worked because of lack of sectoral data.

In terms of labor productivity, levels in Germany have tended to remain slightly below the G-7 average since 1980. In manufacturing, Germany had been above or near the average in several sectors in 1970 and 1980, but the figures indicate that by 1989 labor productivity had fallen to below the G-7 average for all sectors except textiles. There is otherwise not much dispersion in manufacturing productivity in 1989. It is interesting that the largest declines in relative position were recorded by two of the more important sectors in terms of exports: in the machinery sector, where productivity fell from above the G-7 average to well below it; and in the chemicals sector, where productivity had been about average but fell well below it. At the same time, high sectoral wages within Germany in these two sectors were particularly pronounced in 1989. 3/ It is important to note from Table III-10 that total factor productivities show similar patterns to that for labor.

1/ However, the former study places German unit labor costs about 6 percent above costs in France and the United Kingdom; the OECD calculations put German unit labor costs about 8 percent, on average, below those in France and the United Kingdom.

2/ Golub, Stephen S., WP/94/5, (January 1994).

3/ Figures contained in Golub (1994) indicate that wages in the machinery sector were 20 percent higher and in the chemicals sector 34 percent higher than total economy wages in 1989. Similar figures for 1980 were 12 percent and 25 percent, respectively.

Table III-10. Sectoral Comparisons of Productivity and Unit Labor Costs, Selected Years 1/

	Labor Productivity 2/			Total Factor Productivity			Unit Labor Costs		
	1970	1980	1989	1970	1980	1989	1970	1980	1989
Total economy	0.89	0.96	0.94	0.92	0.96	0.91	--	--	--
Manufacturing	1.04	1.01	0.82	1.13	1.08	0.88	0.78	1.13	1.11
Agriculture	0.69	0.90	1.02	0.59	0.80	0.86	1.77	1.58	1.07
Mining	0.51	0.49	0.34	0.73	0.69	0.52	1.72	2.30	2.35
Manufacturing sectors									
Machinery	1.12	1.06	0.76	1.20	1.12	0.81	0.71	1.08	1.25
Textiles	1.10	0.98	1.02	1.09	0.94	0.90	0.76	1.20	1.06
Nonmetallic, minerals	0.95	1.07	0.90	1.00	1.08	0.87	0.96	1.11	1.06
Paper	0.76	0.80	0.76	0.84	0.85	0.80	0.88	1.28	1.12
Basic metals	0.74	0.72	0.68	0.90	0.87	0.83	1.06	1.40	1.26
Chemicals	1.02	0.99	0.76	1.10	1.08	0.82	0.78	1.12	1.26
Food	0.90	0.84	0.77	0.91	0.85	0.76	0.86	1.19	1.05

Source: Golub (1994) who calculated the figures from the OECD International Sectoral Database.

1/ Expressed as a ratio of the average for G-7 major industrial countries, evaluated at the PPP exchange rate for the entire economy, as calculated by the OECD.

2/ No adjustment is made for hours worked because of lack of sectoral data.

Turning to unit labor costs, Germany tended to record consistently high unit labor costs in mining and relatively high but declining costs in agriculture. Unit labor costs were relatively low in manufacturing in 1970, but were above the G-7 average in 1980 and 1989. 1/ The sectors in Germany which recorded particularly high unit labor costs--some 25 percent above the G-7 average in 1989--were machinery, basic metals, and chemicals.

It is interesting that in assessing empirically the effect of relative unit labor costs on trade flows (both imports and exports), Golub finds comparatively little responsiveness for Germany. It would be expected on the basis of his model that, a priori, rising relative unit labor costs would tend to move the trade balance toward deficit, controlling for economic activity and allowing for a time trend. In looking at agriculture and the seven manufacturing sectors, the number of statistically significant negative coefficients was two for Germany (the machinery and food sectors). The United States and Japan had the highest responsiveness, with six for both countries. This compares with four for France, two for Italy, one for the United Kingdom, and zero for Canada.

1/ As discussed in Golub (1994), the critical value of relative unit labor costs in the context of Ricardian models of trade is, in theory, unity, but in practice quality differences as well as measurement errors may cloud the picture.

IV. Medium-Term Fiscal Prospects

1. The official medium-term outlook

An official medium-term projection for the finances of the territorial authorities is published annually. 1/ The most recent scenario, released in June 1994, shows a picture that is almost unchanged, in broad qualitative terms, from the previous year's projection. The deficit of the territorial authorities peaks in 1993-94 at about 4 1/2 percent of GDP (somewhat lower than the 5 percent of GDP previously projected) and declines sharply in subsequent years, to less than 1 percent of GDP in 1998 (Table IV-1).

As in past years, the official scenario sets out the government's targets for the public finances. It is not a current services projection, and includes prospective consolidation measures in addition to those that have already been decided upon. However, with the introduction of a new and substantial package of measures in the second half of 1993, the gap between these projections and the staff's baseline projection (discussed in Section 2 of this chapter) has narrowed in comparison with last year.

On the revenue side, there is a sharp increase in tax receipts in 1995, reflecting the introduction of the 7 1/2 percent solidarity surcharge on wage and income taxes (Table IV-2). The ratio of non-tax revenue to GDP, on the other hand, is expected to decline somewhat in the medium-term, partly reflecting cautious budgeting and partly the loss of transfers from enterprises that are being privatized.

The official outlook also envisages broad-based and substantial expenditure restraint. Overall, the ratio of expenditure to GDP falls by 4 percentage points between 1994 and 1998, with expenditure on personnel declining by 1 percentage point, on goods by 1/2 percentage point, and on investment by 1/3 percentage point. "Other" expenditure is reduced by 2 percentage points; about half of this is accounted for by lower transfers to the Federal Labor Office. Only interest payments increase, reflecting the transfer of the accumulated debt of the Treuhand to the accounts of the territorial authorities at the beginning of 1995.

The authorities have indicated that their outlook for the finances of the territorial authorities would be consistent with the achievement, by 1998, of near balance in the general government finances. The ratio of the

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1/ These projections are submitted to the Financial Planning Council, which has the task of coordinating fiscal policy among the different levels of government. In addition, interim projections for the current and following year are published in November. The government does not publish detailed medium-term projections for the finances of the general government on a national accounts basis. The projection for the general government deficit that is published in connection with the convergence programs submitted to the European Union has so far provided ranges rather than point estimates.

public debt to GDP, which would in 1995 increase beyond the reference value of 60 percent provided in the Maastricht treaty, would fall quickly in subsequent years. Thus, the authorities see some scope for reducing the burden of taxation in the medium term, while still meeting the fiscal criteria contained in the Maastricht treaty.

2. Staff scenario

The staff scenario endeavors to approximate a current services projection (Table IV-3). It takes into account only those consolidation measures already adopted by the government, and assumes that aside from this, revenue and expenditure will continue to develop in a manner consistent with the macroeconomic assumptions of the scenario, current institutional arrangements, and historical experience.

As discussed in Chapter II, there are no important differences between the staff and official projections for 1994, and the staff believes that the official deficit targets are likely to be met (Table IV-3). Indeed, with the economic recovery beginning to gather strength, the risks to the projections are mainly on the upside.

Table IV-1. Official Medium-Term Outlook for the Public Finances 1/

(In percent of GDP)

	1993	1994	1995	1996	1997	1998
Territorial authorities						
Expenditure	35.9	36.5	36.3	34.9	33.7	32.8
Revenue	31.5	31.9	32.5	32.1	32.2	32.1
Financial balance	-4.4	-4.5	-3.9	-2.8	-1.5	-0.6
Debt	48.1	52.3	62.2	61.8	60.4	57.3
Federal Government						
Expenditure	14.7	14.8	14.4	13.5	12.9	12.4
Revenue	12.6	12.7	12.3	11.8	11.8	11.7
Financial balance	-2.2	-2.2	-2.1	-1.7	-1.1	-0.6
Debt	22.1	22.5	23.6	24.0	23.9	23.2
General Government 2/						
Financial balance	-3.3	-2.8	-2.9	...	...	--
Nominal GDP 3/	2.6	4.0	4.4	5.5	5.5	5.5

Source: Data provided by the authorities; and staff calculations.
1/ Administrative basis, unless otherwise noted.
2/ National accounts basis.
3/ percent changes.

Table IV-2. Official Medium-Term Outlook for the Finances of the Territorial Authorities

(In percent of GDP)

	1993	1994	1995	1996	1997	1998
Expenditure	35.9	36.5	36.3	34.9	33.7	32.8
Personnel	10.7	10.9	10.7	10.4	10.1	9.8
Goods	5.1	5.0	4.8	4.6	4.5	4.4
Interest	3.3	3.8	4.3	4.3	4.2	4.2
Investment	3.2	2.9	2.8	2.7	2.7	2.6
Other	13.6	13.8	13.7	12.8	12.2	11.8
Revenue	31.5	31.9	32.5	32.1	32.2	32.1
Taxes	24.1	24.3	25.0	25.3	25.5	25.6
Other	7.3	7.7	7.5	6.9	6.8	6.5
Financial balance	-4.4	-4.5	-3.9	-2.8	-1.5	-0.6
Federal Government	-2.2	-2.2	-2.1	-1.7	-1.1	-0.6
Länder and local governments	-1.8	-2.0	-1.4	-1.0	-0.6	-0.2
East	-0.8	-0.8	-0.3	-0.2	-0.1	-0.1
West	-1.0	-1.1	-1.1	-0.8	-0.5	-0.1
Special funds 1/	-0.5	-0.4	-0.3	-0.1	0.1	0.2

Source: Data provided by the authorities; and staff calculations.

1/ German Unity Fund, Debt Processing Fund (KAF), Inherited Debt Amortization Fund, ERP Fund, Federal Railway Fund, Burden Sharing Fund (LAF), EU Financing Fund.

Table IV-3. Staff Projections for the Public Finances

	1993	1994	1995	1996	1997	1998	1999
Germany: Baseline Scenario 1/							
A. Territorial authorities 2/							
Revenue	31.5	31.9	32.5	32.3	32.4	32.3	32.4
Expenditure	35.9	36.4	36.6	35.6	34.8	34.3	33.8
Financial balance	-4.4	-4.5	-4.1	-3.2	-2.4	-1.9	-1.4
Federal government	-2.2	-2.1	-2.2	-2.1	-1.7	-1.5	-1.3
State and local governments	-1.8	-1.9	-1.5	-1.0	-0.8	-0.7	-0.3
West Germany	-1.0	-1.1	-1.1	-0.7	-0.4	-0.3	--
East Germany	-0.8	-0.8	-0.4	-0.3	-0.4	-0.4	-0.3
Debt	48.1	52.5	62.6	62.6	61.9	60.7	59.1
B General government 2/							
Revenue	47.9	48.5	49.3	49.6	49.6	49.6	49.6
Expenditure	51.2	51.3	52.0	51.7	51.4	50.9	50.5
Financial balance	-3.3	-2.8	-2.7	-2.2	-1.7	-1.3	-0.9
Excluding social security	-3.7	-3.1	-3.1	-2.3	-1.7	-1.2	-0.9
Structural balance 3/	-2.0	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9
Fiscal impulse	-1.4	-0.7	--	--	--	--	--
C. Assumptions							
Nominal GDP 4/	2.6	4.4	4.9	5.4	5.3	5.3	5.3
Real GDP 4/	-1.2	1.7	2.6	3.3	3.1	3.2	3.2
West Germany	-1.9	1.2	2.1	2.9	2.8	2.8	2.8
East Germany	7.1	8.0	8.0	7.0	7.0	7.0	7.0
Unemployment rate 5/	8.9	9.9	9.9	9.5	9.0	8.6	8.2
Interest rate on public debt	7.3	6.9	6.5	6.3	6.1	6.0	6.0

Source: Federal Ministry of Finance; and staff calculations.

1/ Incorporates measures agreed in connections with the Solidarity Pact, the scheduled increases in petroleum and social security taxes, and the Savings, Consolidation, and Growth measures adopted in 1993.
2/ percent of GDP.
3/ In percent of potential GDP.
4/ percentage changes.
5/ In percent of labor force.

For 1995, some additional measures will be needed to achieve the official target for the deficit of the federal government, which has been set at DM 69 billion (2.1 percent of GDP). The staff projects that the transfer to the Federal Labor Office will be higher (by perhaps 1/4 percent of GDP) than envisaged by the authorities, resulting in a federal deficit of 2.3 percent of GDP, slightly above the official target. It also expects that, on current policies, the deficit of the east German state and local governments will be slightly larger than foreseen in the official outlook, reflecting higher personnel expenditure. Overall, the deficit of the territorial authorities could be 1/4 percent of GDP higher than foreseen by the authorities. The 1995 draft budget, which was announced in July, proposes some measures that would help to close this gap. These measures, which include further cuts in unemployment assistance, will be incorporated into the staff projections once the budget has been approved by parliament.

Over the medium term, both the staff and the official projections assume that nominal GDP will increase by approximately 5 1/2 percent per annum. By contrast, the official projections assume that nominal wages per capita increase by only 2 1/2 percent a year, while the staff expects that the growth of wages will accelerate to about 4 1/2 percent as the economy fully emerges from the recession. As a result, the staff foresees stronger growth of the public sector wage bill than does the official projection. With both revenue and expenditure in the social security funds, as well as the transfers from the territorial authorities to those funds, linked to the development of wages, the ratios of expenditure and, to a lesser extent, revenue, remain higher in the staff scenario. Partly as a result, the gap between the staff and official projections for the deficit of the territorial authorities widens considerably, to reach more than 1 percent of GDP by 1998. This is also reflected in the deficit of the general government, on a national accounts basis, which remains somewhat above 1 percent of GDP in 1998.

Thus, on the basis of present policies and given the prospects for a resumption of more robust wage increases, the staff scenario does not envisage a substantial reduction in the share of revenue in GDP over the medium term. Under the staff scenario, further and substantial cuts in expenditure, including in particular major changes in entitlement programs, will be needed to create scope for a reduction in taxes and social security contributions. In this context, it is worth noting that there is ample room for economies, for example, in the pension system, where benefits could be linked to an index such as the CPI that usually increases more slowly than wages. This change, by itself, could yield savings equivalent to almost 1 percent of GDP over the course of half a decade. There is also room for cuts to the generous subsidies provided in west Germany, which, despite the retrenchment since unification in support payments for the areas near the former inner-German border, still amount to between 3 and 4 percent of GDP. Coal mining, agriculture, and housing are among the largest recipients; industrial subsidies, for example in the shipbuilding sector, are also important.

Nonetheless, as far as financial balances are concerned, the differences between the official and the staff projections are small, both in absolute terms and compared with the divergences that emerged in the last few years. Overall, fiscal consolidation is on track, with a large number of important measures already in place. The full achievement of the official deficit targets is within striking distance, all the more so as the authorities have expressed their intention to take whatever action is needed to reach the federal government's objective for 1995.

3. Macroeconomic effects of fiscal restructuring

Following German unification, the ratios of public revenue and expenditure to GDP increased sharply. Further increases are expected in 1994-96 as the federal government takes on the task of servicing the accumulated burden of debt related to the currency conversion and privatization in east Germany, and social security contributions are increased to finance the rising burden of expenditure on pensions and long-term care for the disabled (Chart IV-1).

Concern has been expressed by public and private analysts in Germany, as well as by the Fund staff, that this sharp increase in the revenue ratio could adversely affect incentives for saving and investment, and hence dampen economic growth. 1/ The authorities have recognized the need for changes in the structure of the public finances to enhance the prospects for growth and employment. As currently enunciated, the government's strategy in this area emphasizes strict expenditure restraint accompanied by reductions in taxes, as well as measures to reduce disincentives connected with the structure of the tax system.

The effects of fiscal restructuring on macroeconomic performance are assessed using simulations performed with the Fund's multi-country macroeconomic model (MULTIMOD). 2/ Following a brief exposition of the channels through which fiscal policy operates in MULTIMOD, the consequences of an equal reduction in the ratios of both public revenue and public expenditure to GDP are considered. There is also a comparison of the macroeconomic effects of reducing taxes.

1/ See, in particular, Chapter IV of "Germany - Economic Developments and Selected Background Issues" (SM/93/151). This study presented some empirical evidence for Germany and other industrial countries suggesting that increases in revenue and expenditure ratios have been associated with slower economic growth.

2/ Recent work by Bartolini, Razin, and Symansky (1994) has extended MULTIMOD to capture the incentive effects of changes in tax and expenditure policy.

a. Incorporating distortionary taxes and spending into MULTIMOD 1/

This section outlines the effects of tax and expenditure policies on consumption, labor and capital income, and on the government budget constraint, the main channels through which taxes and spending affect economic behavior. Based on these considerations, several new equations were added to MULTIMOD and a number of others modified. 2/

The labor market segment of MULTIMOD consists of three behavioral equations governing price-setting, wage-setting, and unemployment. The equations describe cyclical fluctuations of unemployment around its natural level, which is taken as largely exogenous and is regarded as the long-run outcome of a search/bargain framework, such as that of Pissarides (1985). Although the framework is not specified as a full-fledged bargaining model, it preserves the intuition that there is a positive link between equilibrium unemployment and a broadly defined labor income tax, a result that is also well-supported empirically. 3/ The model, however, does not incorporate the effect of unemployment benefits on equilibrium unemployment.

The wage-setting equation fixes the long-run growth of real consumption wages as a function of average productivity growth and of other structural factors (such as relative bargaining power and the target real wage) which are absorbed into the constant term. Taxes on goods and services, such as the VAT, enter this equation through their effect on the consumer price level. The unemployment equation combines labor demand and labor supply elements, which in turn reflect the effects of taxes on labor income and consumption, with an element that captures the effect of taxation on the natural rate of unemployment. Finally, the price-setting equation is of a standard form, and assumes that prices are a mark-up on unit labor costs.

In addition to affecting the supply side of the economy through their effect on real wages and unemployment, taxes and government expenditure also influence consumption and investment decisions, the dynamics of government debt, and various national income and price deflator identities. The effect of VAT on the consumer price index has already been mentioned. The intertemporal budget constraints of private households, business enterprises, and government were each modified to reflect the effects of the three categories of taxes that are distinguished in the model.

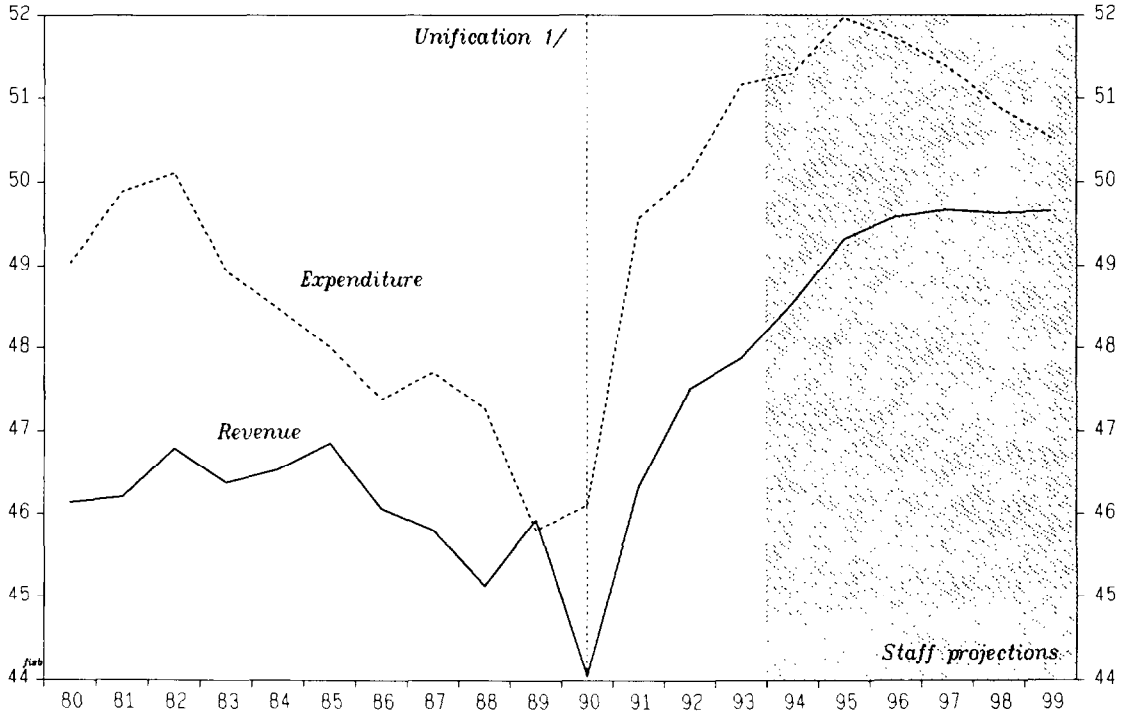
1/ This section draws heavily on Bartolini, Razin, and Symansky (1994).

2/ A complete description of MULTIMOD may be found in Masson, Symansky, and Meredith (1990).

3/ See, for instance, Adams and Coe (1990), Coe and Krueger (1990), and Lockwood and Manning (1993).

CHART IV-1
Germany

General Government Finances 1/
(In percent of GDP)



Sources: Federal Ministry of Finance; and staff projections.
1/ Data prior to unification refer to west Germany only.

b. Balanced reduction in revenue and expenditure

The modified model was used to examine the macroeconomic effects of equal reductions in the ratios of revenue and expenditure to GDP. It was assumed that the revenue ratio would be reduced by 1 percentage point each year over a four-year period beginning in 1996, with the reductions equally divided between wage and consumption taxes. This change was matched by an equivalent cut in expenditure, also spread over four years. Not taking into account the feedback effect of these changes on macroeconomic variables, these actions would imply an unchanged general government deficit.

The principal results are summarized in Table IV-4, which gives deviations from the baseline projection. All in all, the medium-term effects of a balanced reduction in revenue and expenditure are highly favorable, with real GDP some 1 1/4 percent above the baseline level in the fifth year, the GNP deflator about 1 percent lower, and the unemployment rate 1 percentage point lower.

Much of the positive impact of this restructuring on GDP can be attributed to the stimulation of domestic demand, particularly consumption and investment. Nonetheless, the beneficial spillover effects on other countries and the real depreciation of the deutsche mark, partly induced by lower domestic interest rates, contribute to an increase in net exports and an improvement in the current account balance by about 1 percent of GDP.

c. Tax restructuring

This section examines the macroeconomic effects of a revenue-neutral change in the tax system in which a reduction in one category of taxation is offset by an increase of equivalent size in another category of taxation. This type of policy change, which may also be called tax substitution, is of interest because it allows efficiency gains to be captured without increasing the budget deficit.

Table IV-5 illustrates the effect, in MULTIMOD, of reducing taxes on labor income by the equivalent of 2 percent of GDP, compensated by an increase in taxes on goods and services. The initial impact of this policy change on real GDP is negative, but small. In the longer run, the effect is positive. This reflects the negative influence of higher taxes on goods and services on consumption; in conjunction with the dampening influence of lower taxes on labor income on wages, this enhances the incentives for investment. The higher level of GDP, and the lower level of wage taxes, is also reflected in a lower unemployment rate. As expected, the impact effect on prices is positive, but this is later reversed by the reduction in wages relative to the baseline.

Table IV-4. Macroeconomic Effects of Balanced Revenue and Expenditure Reduction

(Percentage deviation from baseline levels, unless otherwise noted)

	1996	1997	1998	1999	2000	Long term
Real GDP	0.9	1.4	1.6	1.3	1.3	0.8
Unemployment rate 1/	-0.3	-0.7	-1.0	-1.1	-1.1	-0.6
GNP deflator	-0.7	-1.2	-1.6	-1.5	-1.1	-0.1
Wages	-0.7	-1.2	-1.2	-0.7	-0.2	1.0
Real short-term rate 1/	0.4	0.1	-0.8	-1.1	-0.9	--
Real long-term rate 1/	0.1	-0.2	-0.5	-0.5	-0.3	--
Exchange rate (effective)	-4.5	-4.7	-4.8	-4.7	-4.2	-2.6
Current account balance 2/	7.1	21.0	33.9	46.9	46.8	...

1/ Percentage point deviation from baseline level.
2/ Billions of deutsche mark.

For the purposes of illustrating the effects in MULTIMOD of changes in tax policy, simulations were run in which each of the three categories of taxes in the model was reduced, ceteris paribus, by the equivalent of 2 percent of GDP. The results of this experiment need to be interpreted with caution as the simulations are invariant to the level of the deficit in the baseline. In reality, it is likely that the effect of a tax reduction depends not only on the size of the cut itself but on the credibility and sustainability of fiscal policy prior to the cut. With this caveat, the conclusion is that reductions in tax rates lead to increases in real GDP and lower the unemployment rate. Interestingly, an alleviation of capital taxation produces the largest positive effect on real GDP in the long run, possibly suggesting that further efforts to streamline and reduce taxes on business capital may be desirable.

Table IV-5. Macroeconomic Effects of Tax Restructuring 1/

(Percentage deviation from baseline levels; unless otherwise noted)

	1997	1998	1999	2000	Long term
A. Tax substitution 1/					
Taxes on goods and services for taxes on labor income					
Real GDP	-0.2	-0.1	0.2	0.4	0.7
GDP deflator	0.5	-0.1	-0.5	-0.8	-0.9
Wages	-0.7	-1.3	-1.8	-2.1	-2.0
Unemployment rate 2/	0.1	--	-0.1	-0.2	-0.6
B. Tax reduction 3/					
Taxes on labor income					
Real GDP	0.5	0.7	0.8	0.8	0.3
Unemployment rate 2/	-0.1	-0.3	-0.5	-0.6	-0.5
Taxes on capital					
Real GDP	0.4	0.5	0.4	0.4	1.3
Unemployment rate 2/	-0.1	-0.2	-0.2	-0.2	-0.1
Taxes on goods and services					
Real GDP	0.7	0.9	0.7	0.4	--
Unemployment rate 2/	-0.2	-0.4	-0.5	-0.5	--

Source: Staff calculations.

1/ Reduction in one category of taxation (by 2 percent of GDP in 1997) offset by an equivalent increase in another category of taxation.

2/ percentage point deviation from baseline level.

3/ By the equivalent of 2 percent of GDP in 1997.

V. Unemployment, Wages, and the Wage Structure in Germany

Unemployment is perhaps the most pressing economic problem in Germany. Measured unemployment has reached a post-war high of about 3 3/4 million people--close to 10 percent of the labor force. Nor does this figure include about 1 million people who have been kept off the unemployment rolls through special labor market programs (job creation schemes, training programs, and early retirements). Unemployment, and, to a lesser extent, the hidden unemployment embodied in active labor market programs bring a huge social cost. Both also bring large economic costs--the loss of the productive potential of people who would rather be working, as well as fiscal costs.

High unemployment in east Germany was to a large extent inevitable, as an obsolete industrial structure adjusts to new patterns of competition, and as previously hidden unemployment emerges into the open. But west German unemployment has been high and persistent since the early 1980s, except for a brief period around the time of the unification boom (Chart V-1). West German developments are worrisome both in their own right, but also because of what they augur for east Germany: with western labor market institutions extended to east Germany, will a similar rate of unemployment prevail there in the medium-to-long term, or, worse, to the extent that unemployment displays persistence, will the rate in east Germany be lastingly higher? Thus, although the most pressing part of the German unemployment problem is in east Germany, the clues to eastern as well as western prospects can probably be more readily found in the west German experience, and it is on the latter that the present chapter concentrates. 1/

The chapter is structured as follows. Section 1 provides an overview of developments in west and east German labor markets. Section 2 examines the nature of unemployment in west Germany, distinguishing between cyclical and structural unemployment, and between different types of structural unemployment. It suggests that the German labor market has become increasingly segmented between high- and low-productivity workers, with the latter suffering from particularly high unemployment, and thus that developments in wages at the bottom of the scale deserve special attention. Section 3 therefore describes the wage bargaining system, and outlines its advantages and disadvantages from a theoretical point of view. With this background, section 4 examines developments in wages to see if the expected disadvantages are in evidence and if they can explain the unemployment problem. Section 5 examines a select set of policies that may contribute importantly to segmentation in the labor market: the wage bargaining system, income support for the unemployed, and employment protection. Section 6 concludes. An annex provides a review of empirical studies on wage relativities in west Germany.

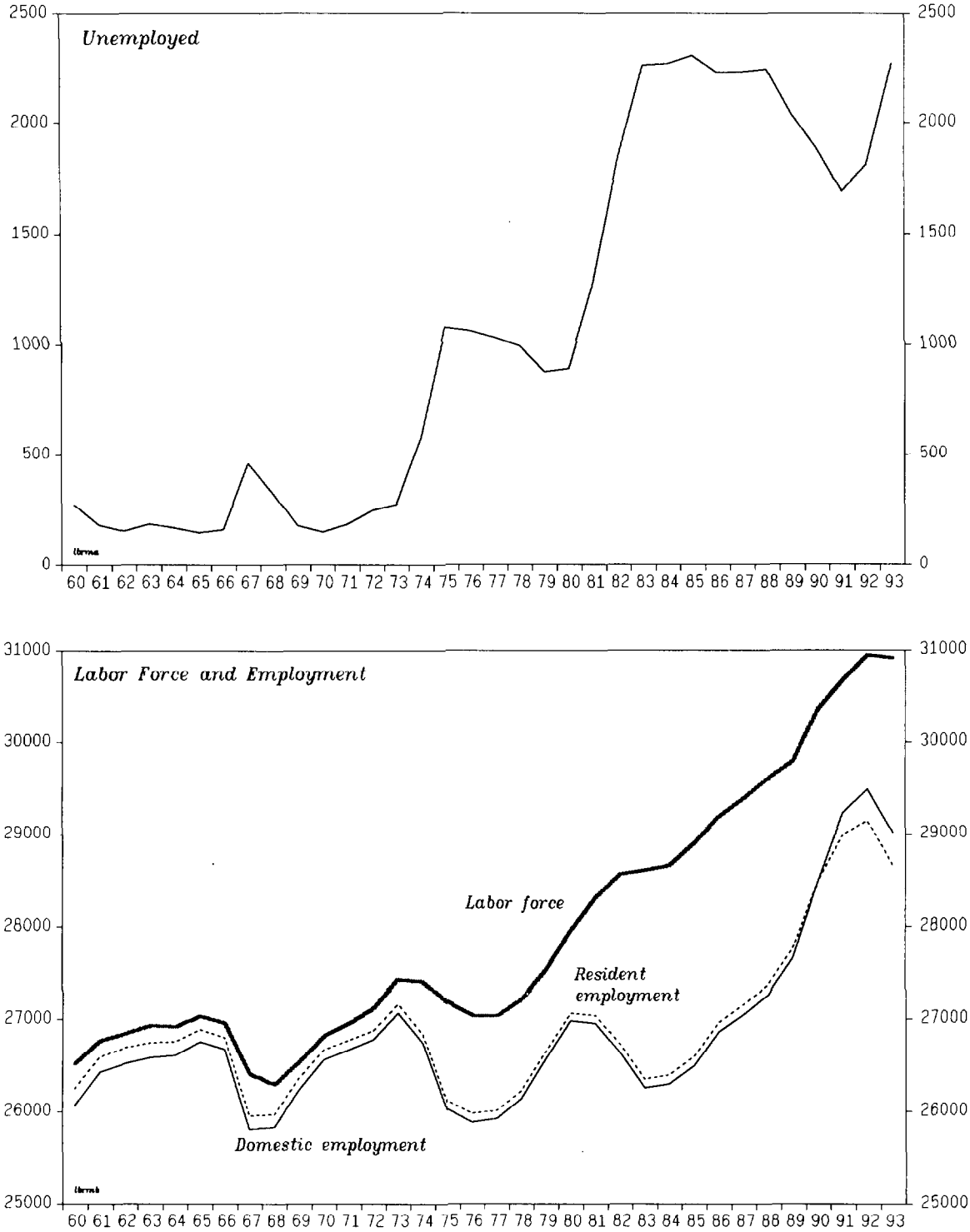
1/ A more detailed examination of east German developments and prospects can be found in Chapter VII.

CHART V-1

West Germany

Unemployment and Employment

(Thousands)



Source: Statistisches Bundesamt, Volkswirtschaftliche Gesamtrechnungen; and Bundesbank.

1. Labor market developments

a. Measurement issues

The commonly reported unemployment rate in Germany consists of the ratio of unemployed job-seekers to the civilian labor force; this is the rate used throughout this chapter, unless otherwise noted. 1/ Unemployed job-seekers are defined as those who register as such with the Federal Labor Office, are available to take up a job, and work less than 18 hours a week. As is usual with definitions of unemployment rates, both the numerator and the denominator are open to question. The denominator can be taken to include the military. In addition, the numerator does not exactly capture the number of those who--according to the ILO definition of unemployment--are available for work and actively seeking employment for pay or profit. Some of the registered unemployed may be neither of these; and some of the genuinely unemployed may not register. By way of example, the OECD standardized unemployment rate for west Germany, which is based on an annual labor force survey (and also includes the military in the denominator), was 5.8 percent on average in 1993, when the national definition showed unemployment at 7.3 percent.

b. West German employment and unemployment

Unemployment in west Germany has registered three sharp rises since 1960 (Chart V-1), only the first of which was reversed. Most worrisome was the third, which happened in the early 1980s: the long, albeit somewhat subdued, economic expansion of 1983-89 hardly lowered unemployment, which hovered around 8 percent--not far below its recent level. The unification boom produced a short-lived reduction in unemployment, but with the 1992-93 recession unemployment rose again, to record levels.

The picture for employment, however, is very different. Paradoxically, employment grew little in the 1960s and 1970s (allowing for cyclical variations), and then rose rapidly during the 1980s and early 1990s, before turning down again since 1992 (Chart V-1). A total of 2 1/2 million jobs were created between the peak employment years 1980 and 1992, primarily in private services, as manufacturing employment stagnated and employment declined substantially in agriculture (Table V-1).

1/ A second commonly reported rate uses only the dependent civilian labor force (excluding the self-employed); indeed this is the most frequently quoted rate for east Germany. This rate is not used in this chapter.

Table V-1. West Germany: Employment, 1980-92

	1980	1992	Change	
	(in thousands)		(in thousands)	(in percent per year)
Manufacturing	9,094	8,932	-162	-0.1
Agriculture	1,403	924	-479	-3.4
Energy and mining	493	451	-42	-0.7
Tradables sector	10,990	10,307	-683	-0.5
Construction	2,134	1,971	-163	-0.7
Transport	1,520	1,663	143	0.8
Finance	755	941	186	1.9
Trade	3,512	3,983	471	1.1
Households and nonprofit org.	925	1,380	455	3.4
Other services	3,215	4,902	1,687	3.6
Private services	9,927	12,869	2,942	2.2
Government	3,929	4,340	411	0.8
Total	26,980	29,487	2,507	0.7

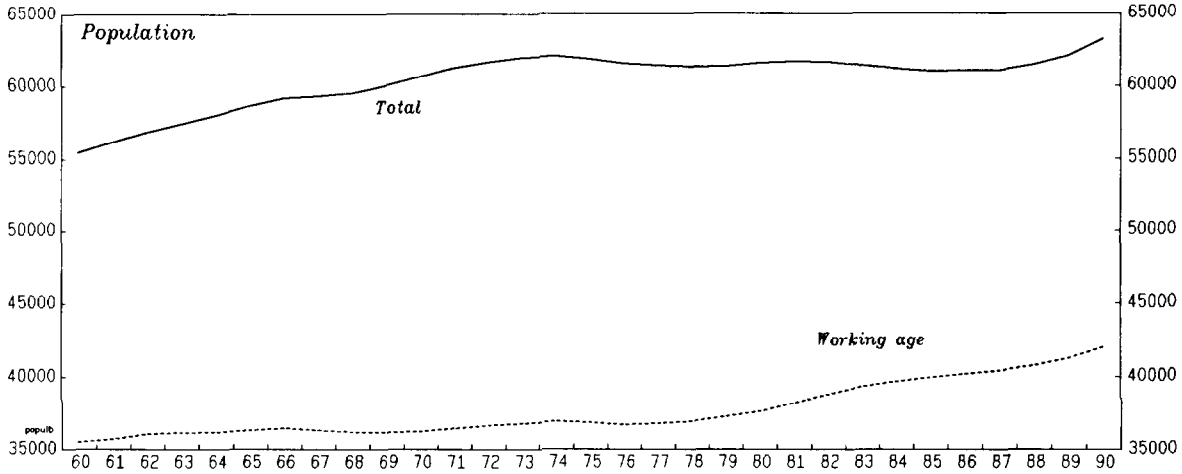
Source: Statistisches Bundesamt, Volkswirtschaftliche Gesamtrechnungen; and staff estimates.

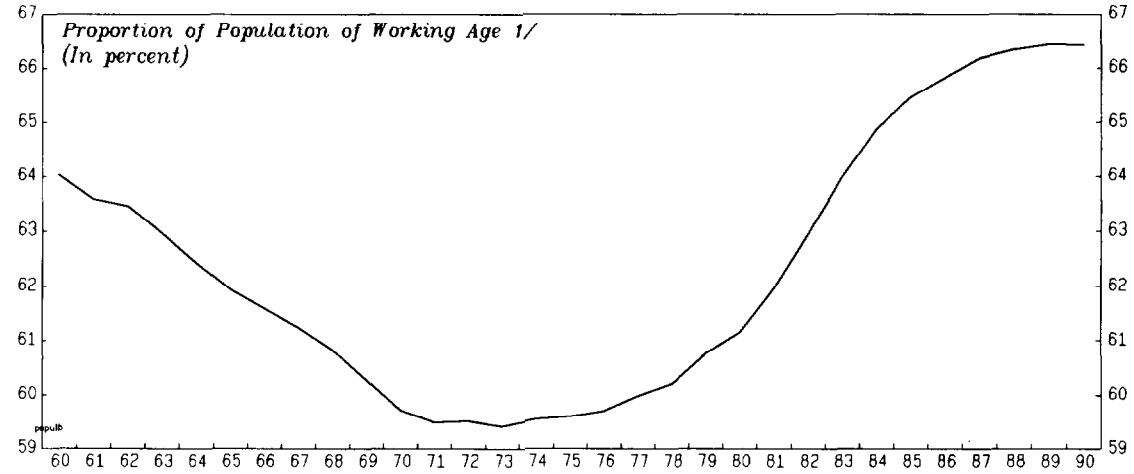
At the same time, the labor force, which had hardly grown in the 1960s and 1970s (by less than 1 1/2 million in 20 years), increased by 3 million people between 1980 and 1992. Even as the total population stagnated between 1980 and 1988, the coming of age of the German baby boom (which peaked in the mid-1960s), contributed to a sharp increase in the working age population (Chart V-2). Age-adjusted participation rates for the total population have tended to remain rather stable. Female participation rates have risen, but male rates have fallen, reflecting longer schooling and later entry into the job market. But just as the effect on the labor force of the changing age structure of the population levelled off, a sharp acceleration in net immigration, to well over 1/2 million people a year, boosted the overall population, which increased by close to 3 1/2 million during 1988-92. Finally, though not part of the (resident) labor force, a large net inflow of commuters--including from east Germany--from 1989 onwards dampened the growth of resident employment: the turnaround in the net number of commuters between 1989 and 1992 was close to 1/2 million.

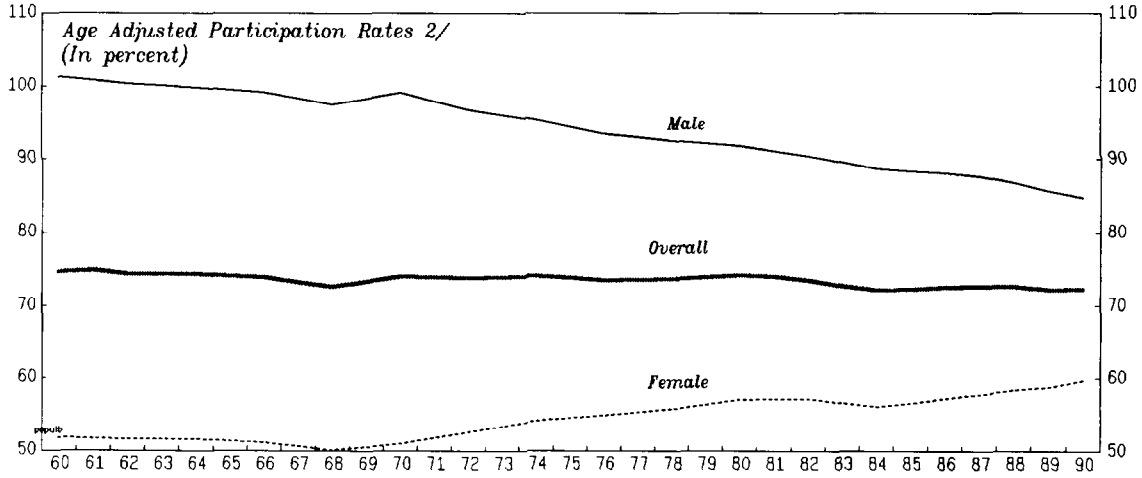
CHART V-2

West Germany

Population and Participation Rates







Source: Statistisches Bundesamt.

1/ Defined as aged 18-65.

2/ Labor force (resp., male or female) as proportion of total population (resp., male or female) aged 18-65.

c. East German employment and unemployment

As in other planned economies, open unemployment was essentially unknown in the German Democratic Republic: enterprises simply employed the entire available labor force, whether it was productive or not. With the opening of the east German economy to market forces, this previously hidden unemployment emerged into the open in 1990. Employment was initially supported by liberal provisions for short-time work (subsidized by the Federal Labor Office), but these expired at end-1991, and despite increases in the numbers involved in other active labor market programs unemployment rose sharply (Chart V-3). The number of unemployed, however, has risen only slightly further since the end of 1991, and employment appears to have stabilized during 1993.

2. The nature of unemployment in west Germany

The standardized unemployment rate in west Germany is low compared with most other industrial countries: at 5.8 percent in 1993, it compares very favorably with an EU average of 10.7 percent, and ranks as the third lowest among the seventeen industrial countries regularly monitored by the OECD (OECD, 1994a). Also on the positive side, the economy succeeded in creating a large number of jobs during the 1980s, and labor force growth is expected to be slower in the future (according to OECD (1994b), between -0.4 percent and 0.8 percent annually between 1995 and 2005, compared with an annual average of over 3 percent in the 1980s). Nevertheless, west Germany has not been an exception to the European-wide trend of rising unemployment over the last three decades, nor is its level of unemployment--much less the level in east Germany--one that is considered acceptable. And the puzzle of why the west German economy did not create sufficient jobs to accommodate the growing labor force in the 1980s remains, and casts an especially long shadow on prospects for east Germany.

a. Cyclical unemployment versus the NAIRU

In principle, unemployment can be decomposed into a cyclical and a "structural" component (although there are interactions between these two components, which will be considered below). The structural component can be defined as that rate of unemployment that is consistent with stable wage-price inflation (the non-accelerating inflation rate of unemployment, or NAIRU), and can be viewed as an "equilibrium" rate of unemployment: given a relation between unemployment and changes in inflation, only at the NAIRU is inflation stable and, other things being equal, does unemployment remain

unchanged. 1/ The significance of the distinction lies in the fact that, by definition, unemployment can be reduced--for instance, by expansionary demand management policies--to the NAIRU, but not beyond it, without putting upward pressure on inflation.

There is little doubt that some of the current level of unemployment in west Germany is cyclical. The recession that began in mid-1992 was accompanied by a rise in the unemployment rate from the 5.5-5.7 percent observed in west Germany throughout 1991 and the early months of 1992, to the current level of 8.4 percent (May 1994). Even with the pick-up of growth in 1994, given the typical cyclical rebound in productivity, west German unemployment is expected to rise further during the remainder of 1994, albeit at a much slower pace than during 1993.

However, the levels of unemployment observed around 1991 were exceptionally low. The persistence of unemployment rates well above 7 percent from the end of 1982 to the end of 1989, during seven years when GDP was growing at an average of 2 1/2 percent a year, is prima facie evidence that a good deal of this unemployment, at least, was not related to cyclical weakness. Indeed, all measures of inflation began to rise between 1987 and 1989, when unemployment was still above 7 percent, and, contrary to what many had hoped, 2/ the further declines in unemployment around the time of unification were accompanied by rising inflationary pressures (Chart V-4). Casual observation would thus suggest rather strongly that by the end of the 1980s the west German NAIRU was not much below 7 percent. Indeed, a number of studies that have addressed this issue formally (Coe (1985), Franz and König (1986), Burda and Sachs (1987), Elmeskov (1993)) conclude that the NAIRU displayed a clear upward trend from 1970 onward, and that it had reached 6-9 percent by the mid-1980s/early 1990s.

The Beveridge curve (Chart V-5) also suggests that the NAIRU has risen. The curve relates the level of vacancies to the level of unemployment: since a cyclical increase in unemployment is normally accompanied by a fall in the vacancy rate, movements along the curve can be interpreted as cyclical movements, while shifts of the curve are indicative of a rise in structural unemployment. Chart V-5 is strongly suggestive of a shift in the German Beveridge curve around 1983. Various studies have investigated this issue formally, and have concluded that the curve has indeed shifted (Budd, Levine and Smith (1987), Börsch-Supan (1991), Franz (1991)).

1/ The NAIRU concept is useful as long as there is a relation between unemployment and changes in inflation, regardless of its theoretical underpinnings--be they new classical, where deviations in unemployment from the equilibrium rate are associated with errors in expectations (e.g., Lucas (1976)), or derived from models of monopolistic competition, where changes in inflation result from inconsistent claims by wage-setters and price-setters (Layard, Nickell, and Jackman (1991)).

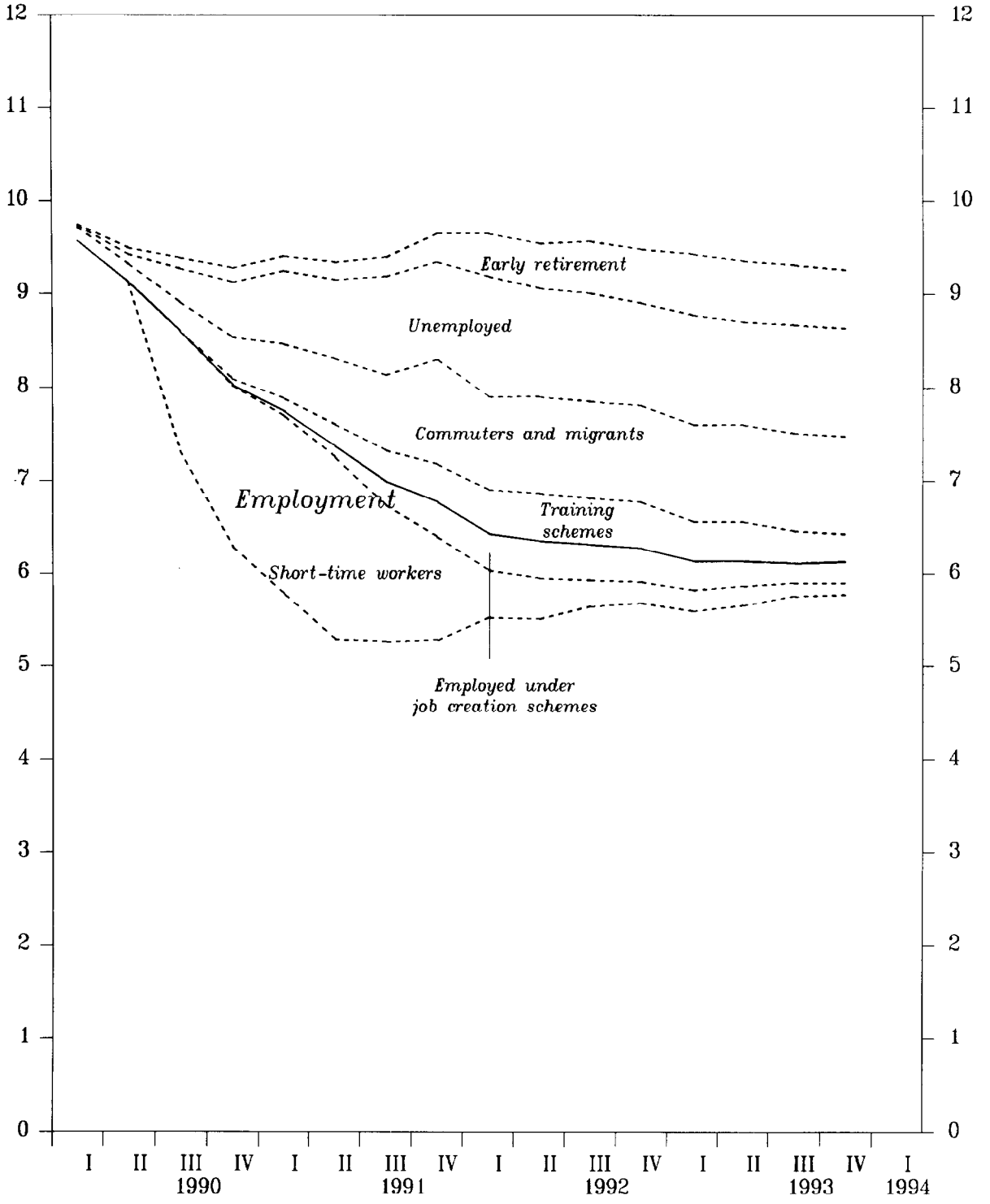
2/ See, for instance, SM/92/199, Germany--Economic Developments and Issues, November 10, 1992.

CHART V-3

East Germany

Labor Market Developments

(In millions)

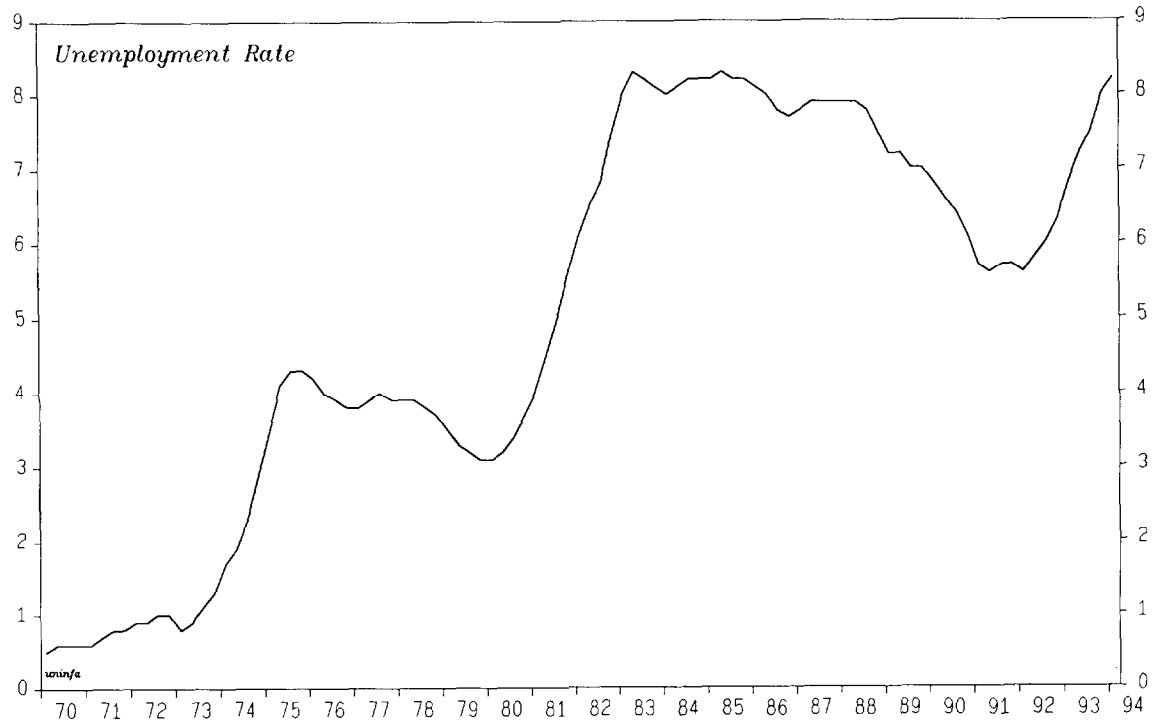


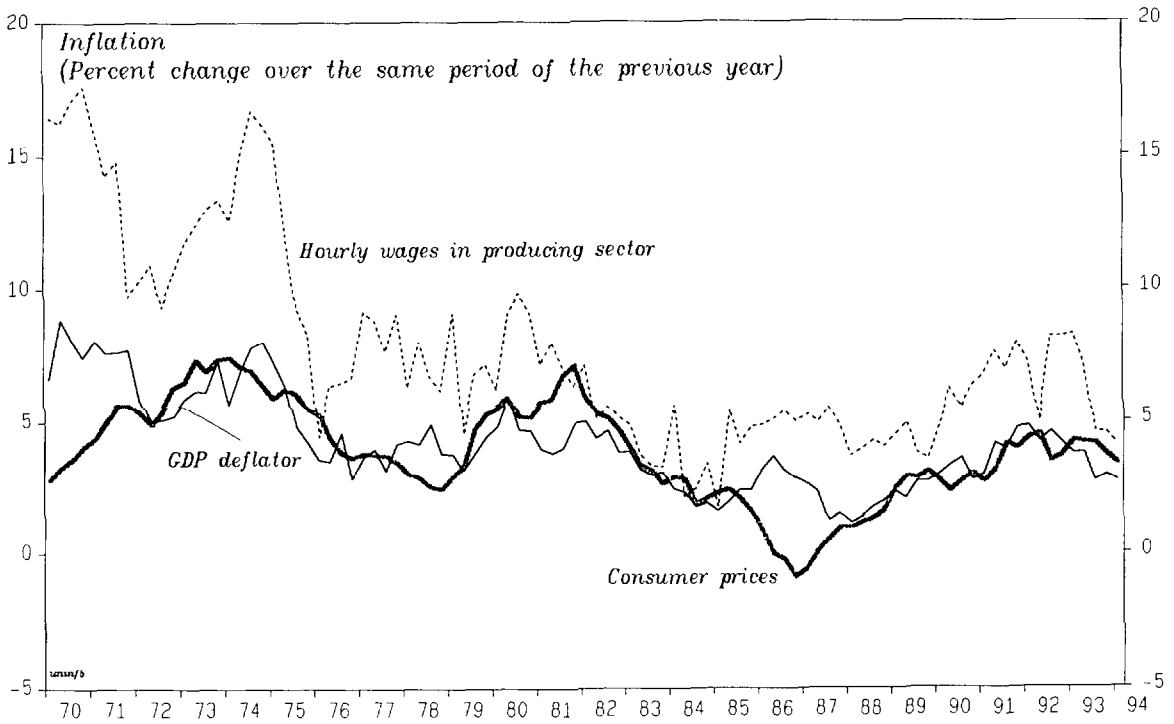
Sources: Deutsche Bundesbank, Monthly Report; and DIW, Sozialprodukt und Einkommenskreislauf I/1989 bis IV/1993.

CHART V-4

West Germany

Unemployment and Inflation



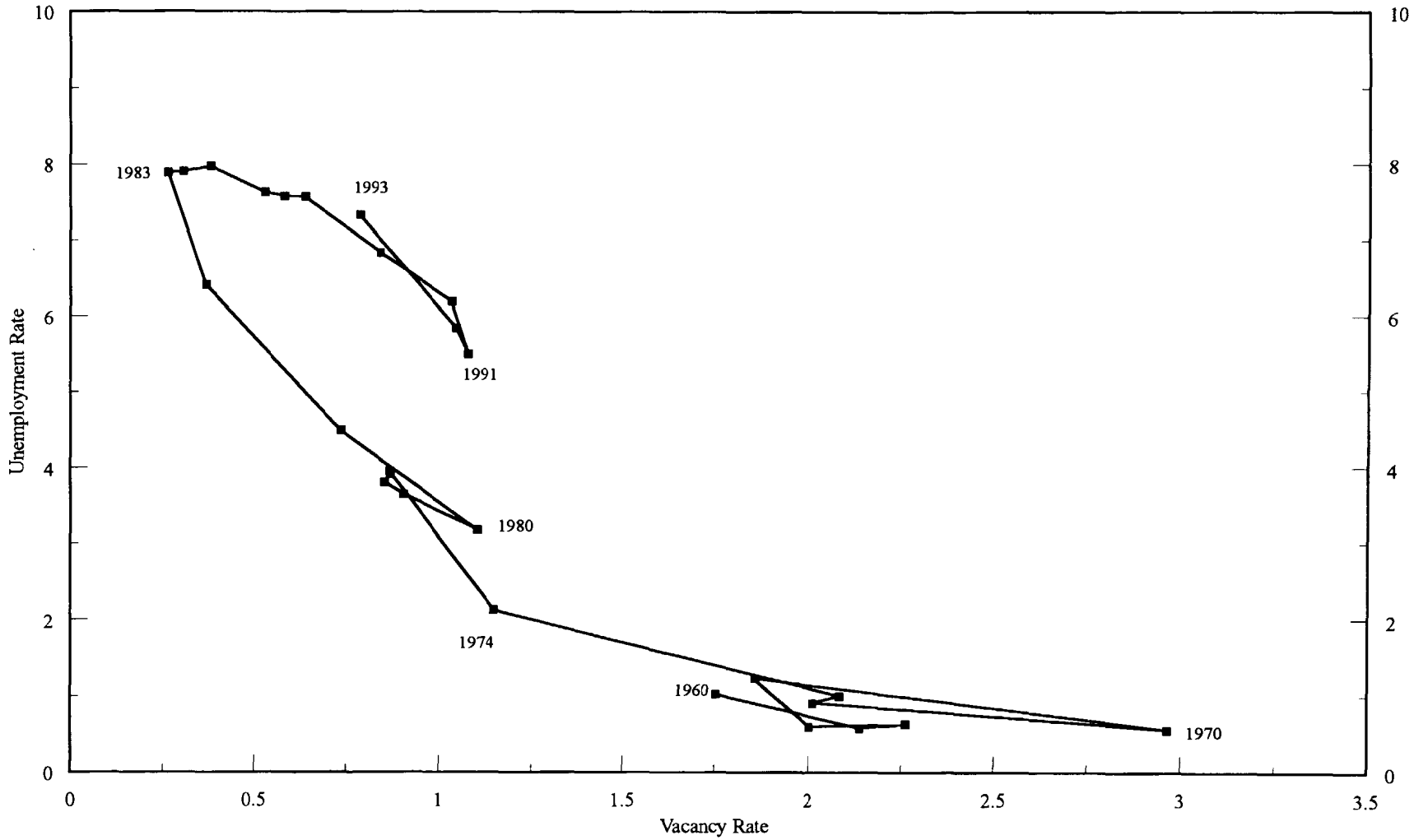


Source: Deutsche Bundesbank.

CHART V-5

West Germany

Beveridge Curve



Source: Bundesanstalt fur Arbeit, Statistisches Bundesamt,

A further indicator of cyclical unemployment, the Okun curve, relates the level of unemployment to measures of capacity utilization. To the extent that unemployment is accompanied by underutilization of capacity, it can fairly be called cyclical. Chart V-6 shows the relation between unemployment and capacity utilization in manufacturing. The chart is again strongly suggestive of a non-cyclical rise in unemployment between the recovery periods 1975-79 and 1982-90. Studies by Schultze (1987) and Jaeger and Parkinson (1990) formalize this conclusion, by using the relation between cyclical unemployment and measures of capacity utilization to estimate the structural unemployment rate, which is found to be near 8 percent in the late 1980s. 1/

b. The NAIRU: friction, market failure, or hysteresis

Thus while it is difficult to quantify the exact extent of cyclical unemployment, it seems unlikely to account for more than a small portion (perhaps 1-2 percentage points) of current west German unemployment of about 8 1/2 percent of the labor force. At the same time, simply knowing that the NAIRU is high is of little help from a policy perspective, since the concept is compatible with a variety of models of equilibrium unemployment. It is useful to distinguish between three different types of equilibrium unemployment, any or all of which may underlie the NAIRU.

In a market-clearing framework, equilibrium unemployment is frictional: the unemployed are engaged in job search, or are choosing leisure over work, and unemployment is essentially voluntary. The equilibrium level of unemployment will depend on factors influencing the effectiveness of job search (e.g., skill or regional mismatch, or the efficiency of intermediation), and on factors influencing the choice between leisure and work (notably the level of unemployment benefits).

In a non-market-clearing framework, equilibrium unemployment can be involuntary, as long as some market failure stops wages from falling to market-clearing levels. For want of a better term this chapter will refer to such unemployment as market failure unemployment. The most prominent contenders for the source of this market failure are efficiency wage theories and union power theories. In this framework, the equilibrium level of unemployment will depend in particular on the degree of unionization.

The difficulty with these concepts of equilibrium unemployment in west Germany is that of the factors identified as affecting the NAIRU, none displayed the marked changes in the 1980s that would be required to explain the apparent rise in the NAIRU. Burda and Sachs (1987) conclude that frictional unemployment did not rise in the 1980s, because there was no increase in the generosity of benefits and only a slight increase in regional mismatch. Coe and Krueger (1990) allow for market failure unemployment as well as for frictional effects, and include in their

---

1/ Schultze (1987) uses the OECD-standardized unemployment rate and on this (lower) basis estimates the NAIRU in 1983-87 at 6 1/2 percent.

estimation of equilibrium unemployment the age and sex composition of the labor force (the higher the proportion of the labor force that is prime age and male, the lower frictional unemployment), the prevalence of apprenticeship programs (which again can be assumed to lower frictional unemployment), nonwage labor costs (which raise equilibrium unemployment in a context where wages do not necessarily clear markets), the unionization rate, and unemployment insurance replacement ratios. They find that none of these factors explain the rise in unemployment in the 1980s, and that if the NAIRU were predicted on this basis alone it would hover around 3 1/2 percent from 1973 to 1988.

If the structural determinants of equilibrium (frictional and market failure) unemployment have not changed, and yet the estimated NAIRU has followed actual unemployment up, a third, history-dependent type of equilibrium unemployment, hysteretic unemployment, must be allowed for. In the (unlikely) case of pure hysteresis, the NAIRU is simply the actual level of unemployment: any reduction in unemployment will put upward pressure on inflation. In the less extreme case of persistence, a unique NAIRU exists, but the speed of adjustment toward it may be very slow. In both cases unemployment will appear to be a simple autoregressive process--a hypothesis which a number of studies for west Germany (Jaeger and Parkinson (1990), Carruth and Schnabel (1990)) are unable to reject. The presence of hysteresis is of particular importance to the assessment of the current level of unemployment: since hysteresis turns cyclical into structural unemployment, the economy may well emerge from the current recession with a NAIRU even higher than was estimated in the late 1980s.

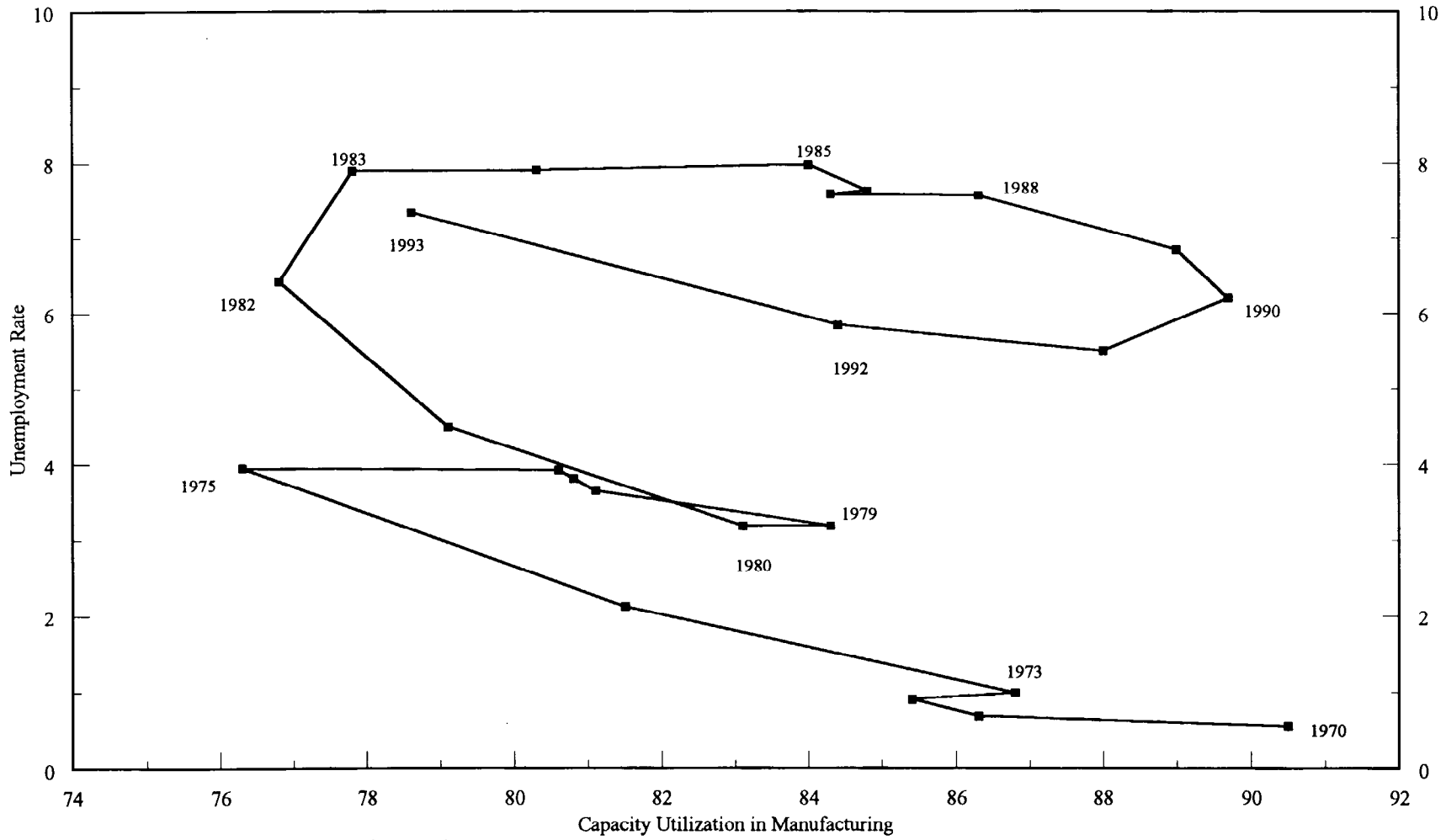
Two main theories have been put forward to explain hysteretic unemployment. The human capital theory of hysteresis stresses that it is especially difficult for the long-term unemployed to reenter the labor market, both because their human capital has depreciated during the spell of unemployment, and because employers view long-term unemployment as a signal of low productivity. By contrast, the insider-outsider theory of hysteresis stresses that the employed, as insiders, have power over wages--be it because of institutional arrangements such as unions or because of transaction costs--and that an increase in the numbers of unemployed outsiders may do little to moderate insiders' wage claims.

Under both theories, the defining feature of hysteretic unemployment is a segmentation of the labor market, between the "haves" and the "have-nots", so that long-term unemployment comes to constitute a rising share of total unemployment, and that the average duration of an uncompleted spell of unemployment lengthens. The west German experience of the 1980s exemplifies these developments. Long-term unemployment (defined as more than one year) rose, peak-to-peak, from 15 percent of total unemployment in 1979 to 28 percent in 1991 (Chart V-7). The share of unemployment of more than two years' duration rose even more steeply, from 6 percent to 15 percent. The average duration of an uncompleted spell of unemployment rose from 7 months to 13 1/2 months over the same period.

CHART V-6

West Germany

Okun Curve



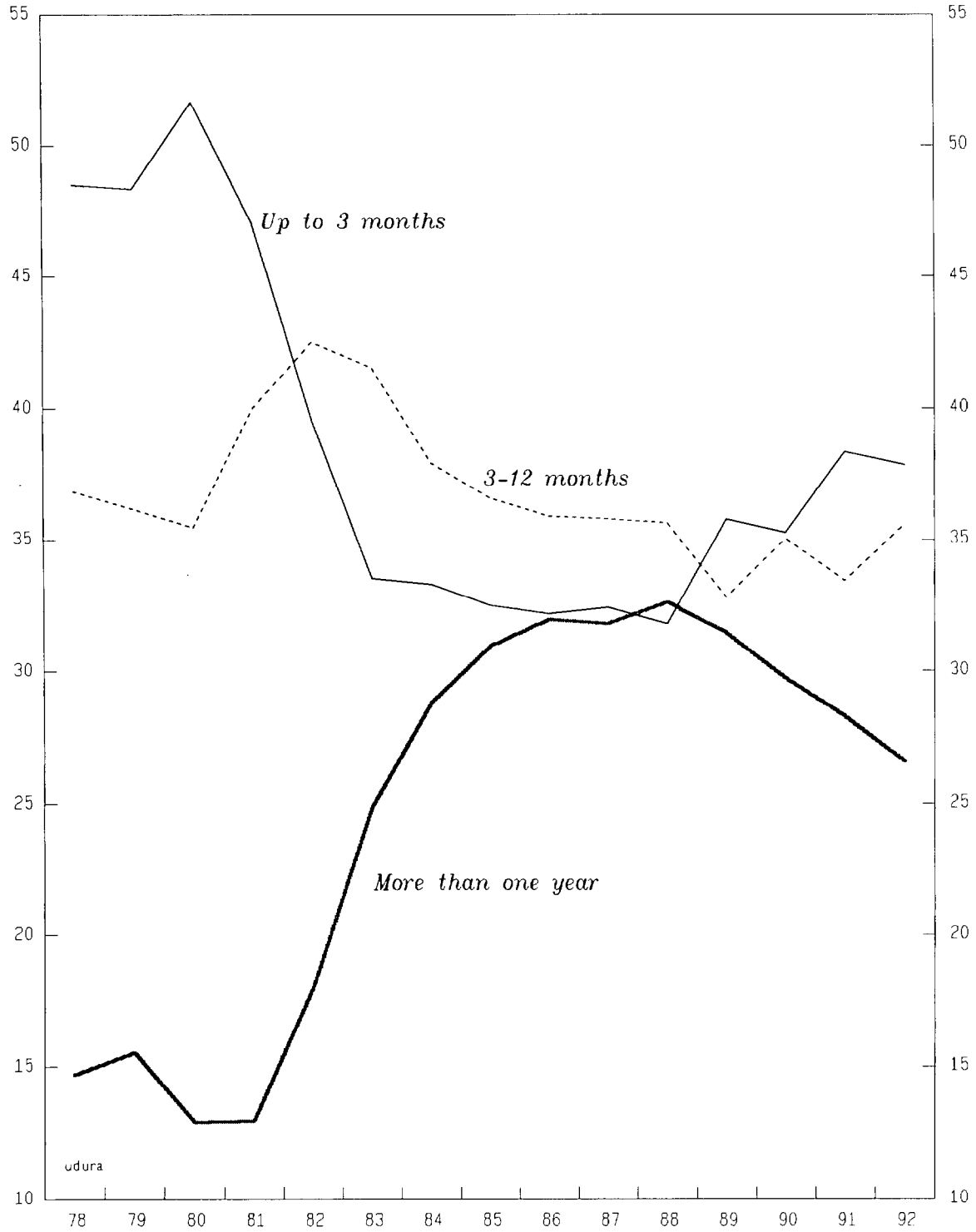
Source: Bundesanstalt fur Arbeit, Statistisches Bundesamt, and ifo Institut fur Wirtschaftsforschung.

CHART V-7

West Germany

Unemployment by Duration

(In percent of total)



Source: Bundesanstalt fur Arbeit.

Segmentation of the labor market is also evident from the fact that rising proportions of the unemployed, and high proportions of the long-term unemployed, display one or several of three characteristics: they are unskilled, live in the north of Germany, or are older.

The unskilled constitute a disproportionate share of the total number of unemployed. The unemployment rates for specific skill groups are shown in Table V-2. Even though the reported unemployment rate for the unskilled is probably an underestimate (see footnote 2 to Table V-2), it is much higher than for those with qualifications. It is true that, as is commonly observed in times of robust growth, the unskilled unemployment rate dropped substantially during the 1990-91 boom; but the fact that inflationary pressures mounted even as the unskilled unemployment rate was still above 8 percent supports the view that the west German labor market is strongly dualistic. The share of the long-term unemployed among the unskilled is also disproportionately high. In 1988, 37 percent of the unskilled unemployed had been unemployed for more than a year, compared with 28 percent of the unemployed with some qualification.

Table V-2. West Germany: Unemployment Rates by Skill Level 1/

(In percent)

	No qualifications 2/	Vocational training	Technical school	Technical college	University
1987	13.2	5.3	2.6	3.6	4.7
1989	12.1	4.7	2.4	3.4	4.3
1991	8.3	4.2	2.0	2.7	3.9
Memorandum item:					
Share in population in 1991	41.2	45.8	5.6	2.7	4.7

Source: Bundesanstalt für Arbeit, Arbeitsstatistik; Mikrozensus (household survey) data as reported by the Statistisches Bundesamt; and staff estimates.

1/ Skill levels are defined as follows: vocational training includes betrieblicher Ausbildung and Berufsfachschule; technical school is Fachschule; technical college is Fachhochschule; and university is Hochschule/Universität. "No qualification" is a residual and includes persons who did not report their qualifications. Mikrozensus data on the labor force are not available prior to 1987.

2/ As the residual in unemployment, labor force, and population data, the group with no qualification is likely to be an overestimate; but the degree of overestimation is probably greater in the labor force data (because the question on qualifications is optional in the Mikrozensus survey) than in the unemployment data, which are taken from Labor Office records. The unemployment rate shown here is thus likely to be an underestimate.

In the same way as it is split by skill levels, the west German labor market also shows a pronounced north-south split. In 1991, the unemployment rates of the Länder spanned a range of almost 6 percentage points, with every one of the northern Länder registering a higher unemployment rate than any one of the southern Länder (Table V-3). 1/ Equally striking is the evolution of these unemployment rates over time (Chart V-8). While all the southern unemployment rates peaked in 1983, the northern unemployment rates peaked between 1985 and 1988. Clearly the recovery took much longer to have an impact in the north than in the south, and country-wide inflationary pressures began to mount (depending on the measure used, at the latest by 1989) even as northern unemployment rates were almost all still at or above 10 percent (Table V-3).

The wide dispersion of unemployment rates (as measured by their variance) and the north-south divide existed already in the late 1970s. However, mismatch indices that take account of both unemployment and vacancy rates indicate a strengthening of the regional dimension of unemployment over the 1980s. 2/ Following Jackman and Roper (1987), Table V-3 presents two measures of mismatch: with U and V referring to numbers of unemployed and vacancies respectively, and the subscript i referring to regions, $M1 = 1/2\ \Sigma\ |\ U_i/U - V_i/V\ |$ (which can be interpreted as the share of the unemployed who would have to move to achieve regional balance), and $M2 = 1 - \Sigma\ (U_i/U)^{1/2}\ (V_i/V)^{1/2}$ (which can be viewed as the potential employment gain from such movement). Both measures show a sharp increase between 1979 and 1991.

Regional mismatch is sometimes taken as evidence that unemployment is frictional, since it makes job search less effective. This view, however, is easier to defend when pockets of high unemployment are geographically dispersed. Paqué (1989) points out that findings of increased mismatch at the Land level in west Germany are at variance with the results of studies of mismatch at a more disaggregated level (consisting of the 142 labor districts), which show much less of an increase. He concludes that unemployment has turned from a "spot" issue into a "cluster" issue; and the

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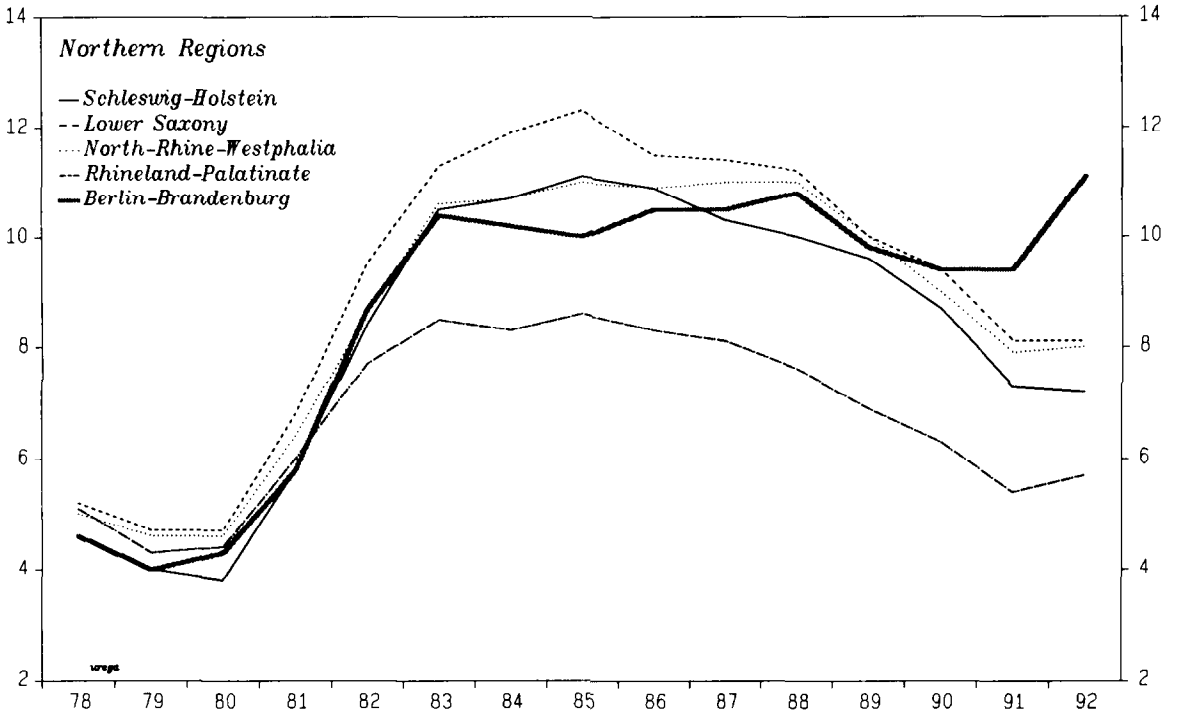
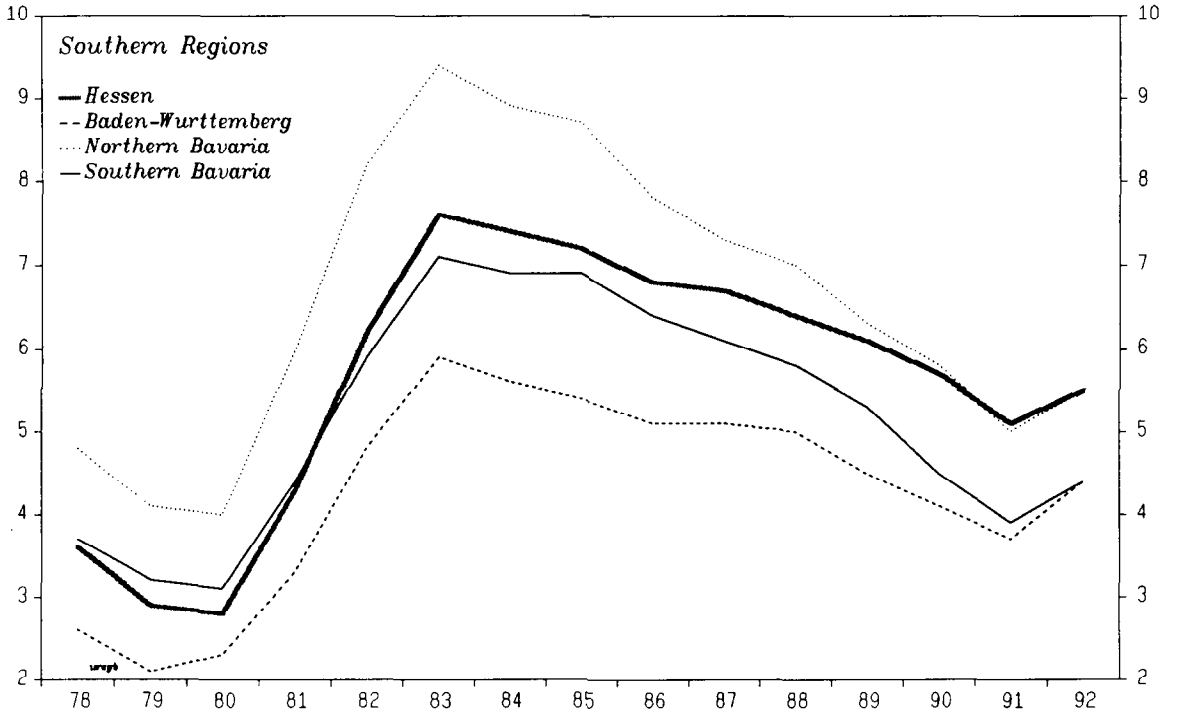
1/ For purposes of most regional comparisons in this chapter, the very smallest Länder are grouped with neighboring Länder, and Bavaria is divided into northern and southern Bavaria. Thus the "northern" (really north-western) Länder comprise: Schleswig-Holstein (including Hamburg), Lower Saxony (including Bremen), North-Rhine-Westphalia, Rhineland-Palatinate (including Saarland), and Berlin-Brandenburg; and the "southern" (really south-eastern) Länder comprise Hessen, Baden-Württemberg, northern Bavaria, and southern Bavaria. The "central" states of Rhineland-Palatinate and Hessen are allocated according to structural features: Rhineland-Palatinate shares an important concentration on heavy industry with the northern states.

2/ Vacancy rates need to enter into measures of mismatch because there is no regional imbalance--merely differences in the efficiency of job search and intermediation--if high unemployment and vacancy rates coincide.

CHART V-8
West Germany
Regional Unemployment Rates





Source: Bundesanstalt fur Arbeit.

latter is more troublesome as both trickle-down effects and labor mobility are likely to be more limited between "clusters" than between "spots". The clear north-south split evident in Table V-3 suggests that clustering is a problem not only within Länder but also between groups of Länder. Overall, the picture that emerges is of a regional divide most probably brought about by structural change (the north being strongly dependent on heavy industry such as mining, steel, and shipbuilding), and indicative not of increased length of job search, but of a marginalization of segments of the labor force.

Table V-3. West Germany: Regional Unemployment Rates and Mismatch Indices 1/

(In percent)

	1979	1989	1991
Unemployment rates:			
Northern Länder			
Schleswig-Holstein	4.0	10.4	7.8
Lower Saxony	4.7	10.4	8.3
North-Rhine-Westphalia	4.6	10.0	7.9
Rhineland-Palatinate	4.3	7.8	6.1
Berlin-Brandenburg	4.0	9.8	9.4
Southern Länder			
Hessen	2.9	6.1	5.1
Baden-Württemberg	2.1	4.5	3.7
Northern Bavaria	4.1	6.3	5.0
Southern Bavaria	3.2	5.3	3.9
Mismatch indices:			
Variance of unemployment rates	0.68	0.74	0.70
M1	13.8	21.1	22.6
M2	2.0	3.7	4.3

Source: Bundesanstalt für Arbeit, Arbeitsstatistik; and staff estimates.
1/ For explanation of geographical coverage and definitions of mismatch indices, see text.

A third dimension along which the west German labor market has become increasingly segmented is age. In contrast to many other countries where unemployment is concentrated among the young (a problem that is avoided in Germany thanks largely to the famous apprenticeship system), west German unemployment is increasingly concentrated among older groups. As shown in Chart V-9, the unemployment rate for those aged over 50 rose sharply between

the cyclical peak of 1979 and the trough of 1983, and then continued to rise through 1989. From 3.5 percent in 1979, the unemployment rate for this group had reached 7.5 percent, well above the rates for other age groups, in 1990.

In summary, there is evidence of a segmented, and increasingly so, labor market in west Germany, which has probably been a major factor behind the rise in structural unemployment. The unskilled, those in the north of Germany (most probably those with skills that have been devalued by structural change), and older groups of workers constitute a marginal labor market with far worse prospects than in the primary labor market. Whether these groups have become marginalized as a result of their unemployment, as the human capital theory of hysteresis would have it, is debatable: in the words of Paqué (1990), "the incidence of long-term unemployment is so strongly related to identifiable structural characteristics that it would be far-fetched to place much explanatory weight on processes of endogenous dequalification or demotivation". Instead, those who are marginalized in the labor market would appear to be those who started out with low human capital, at least as viewed from the perspective of a changing production structure; even the high rate of unemployment of older workers may reflect the devaluation of skills in the course of structural change, as well as the need for worker flexibility and adaptability in the growing service sector. Either way, it would seem that groups of low-productivity workers have been priced out of the labor market. Accordingly, the next section describes the wage bargaining system and examines whether it might be expected to lead to this outcome.

3. The wage bargaining system

a. Key institutional features

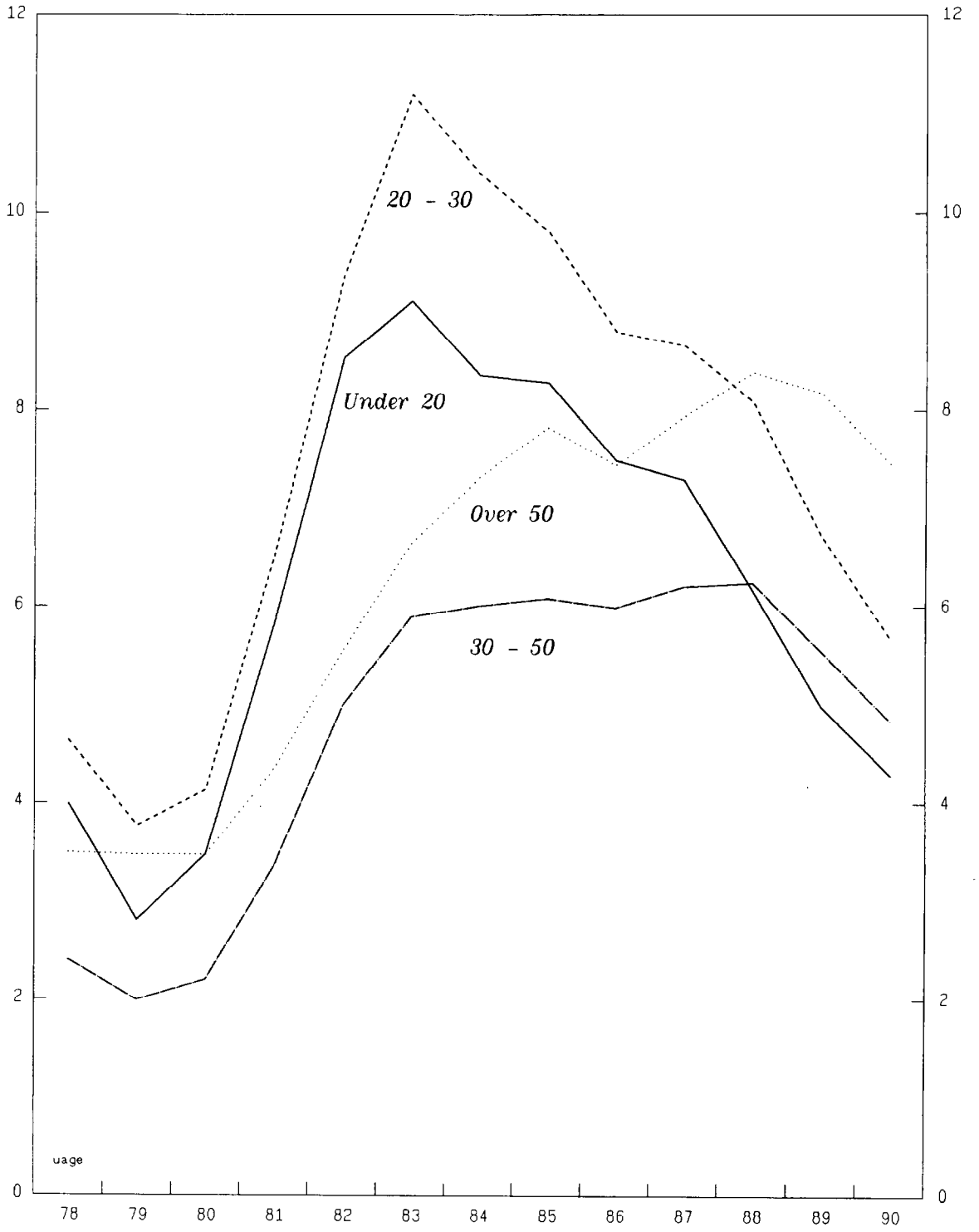
Collective bargaining is enshrined in the German Constitution and in the wage contract law (Tarifvertragsgesetz) of 1949. According to the principle of Tarifautonomie, it takes place without the intervention of Government. The partners to the negotiations are 19 national unions organized along sectoral lines and without occupational distinctions, 16 of which are members of the umbrella organization, the Deutscher Gewerkschaftsbund (DGB), and 1000 employers' associations, which together form the Bundesvereinigung Deutscher Arbeitgeberverbände (BDA). On the employees' side, only unions can enter into collective agreements; employers can negotiate as associations or individually.

The outcomes of the wage negotiations are a set of "tariff wages" (minimum basic wages) by job grade, and (typically in separate multi-year agreements, called Manteltarifverträge) provisions on working time, holidays, employment protection, training and retraining, etc. The wage contract law specifies that deviations from tariff wages are permitted only "in favor of the worker" (this provision is known as the "favorability principle" (Günstigkeitsprinzip)). Thus, although there are no further formal negotiations at the firm level, employers are free to set wages above tariff wages, and most employers actually pay wages some 10-20 percent above

CHART V-9

West Germany

Age-specific Unemployment Rates



Source: Bundesanstalt fur Arbeit.

tariff wages. A second, informal round of wage negotiations does take place at the firm level, between management and the legally-mandated Workers' Councils (Betriebsräte); the Works Constitution Act (Betriebsverfassungsgesetz) of 1972 prohibits industrial action during this second round. However, in the great majority of cases wage structures are simply adjusted by the percentage increase in tariff wages. Profit-sharing is little used in Germany. A few wage agreements provide for payment of bonuses at the employer's discretion, but in practice these bonuses have tended to become set amounts unrelated to profits.

Wage negotiations take place at the regional level, but national demands are publicized by the unions in advance of the wage round, and wage contracts are typically identical nation-wide within a sector. 1/ In addition, wage agreements in different sectors typically turn out to be very similar: the metal-working industry in particular (represented on the workers' side by IG-Metall with its 3 1/2 million members, amounting to one quarter of all union members in Germany), the public sector, and construction are the leading sectors, and the behavior of the other sectors has sometimes been characterized as "convoy behavior" (Geleitzugverfahren).

Union membership (the proportion of employees who are unionized) and union coverage (the proportion of firms covered by collective bargaining agreements) in Germany are quite different. Overall, about 40 percent of employees are union members--a proportion which, in contrast to many other countries, has remained rather stable since the late 1970s. But the applicability of the collective wage agreements is much wider than data on union membership might indicate. All employers who are members of an employers' federation are bound to pay at least the union-negotiated wage: they cannot hire union members below tariff wages, and morale considerations typically dictate that union and non-union members be paid the same; even if this were not the case, non-union-members can claim tariff wages through the courts on the basis of the "equal treatment" provisions of the labor law. It has been estimated that traditionally in west Germany, in the manufacturing and financial sectors, no less than 80 percent of employers, employing 90 percent of workers in these sectors, are members of employers' associations (Soltwedel, 1988).

Even if a firm and its workforce are agreed that wages should fall below tariff wages, perhaps to safeguard employment or the firm's very existence, the "favorability principle" has been interpreted by the courts to mean that this agreement can only be made as a formal exception to the collective agreement. Thus, unless the collective agreement explicitly states otherwise, the firm must ask its employers' federation to negotiate

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1/ Streeck (1988) suggests that wage negotiations are formally conducted at the regional level largely so that (costly) strikes can be limited to "pilot areas". To obtain uniform conditions across the country, the union relies on the incentives for the employers' association to eliminate wage-based competition and thus to make all its regional affiliates sign similar agreements.

its individual case with the union. Soltwedel (1988) suggests that such requests meet with little sympathy because "the intramarginal members of the (employers' and/or employees') cartel would prefer endangered firms to go bankrupt".

In addition, even employers who are not members of employers' federations may become subject to the collective bargaining agreements, as a result of "declarations of general validity" (Allgemeinverbindlichkeits-erklärungen). According to the wage contract law, in a sector in which more than half the employees are employed by firms that are party to the collective agreements, either bargaining party may request that the Minister of Labor declare the collective agreement to be binding on all employers in the sector, regardless of whether or not they are members of an employers' association. The only--ill-defined--condition such a declaration must satisfy is that it be "in the public interest". Recently these declarations have been little used (about 2 percent of all contracts in 1993, estimated a similar or marginally higher proportion of the workforce), and when they have been, it has typically been for contracts relating to working conditions rather than to wages.

b. Aggregate real wages in the German system

The extent of centralization of wage bargaining affects the degree of wage moderation, with important effects on overall employment (Calmfors and Driffill (1988)). The relation between centralization and average real wages is thought to be hump-shaped: both decentralized and centralized systems may be compatible with wage moderation, while intermediate systems--industry-level bargaining in particular--may be less so. 1/

The theoretical basis for this relation between centralization and real wages is that increasing union power at higher levels of centralization is offset by the fact that a number of externalities become internalized, as unions take into account the effect of their demands on greater portions of the economy. Key among these externalities are price externalities (wage increases raise prices for other people), fiscal externalities (if wage increases give rise to unemployment, the corresponding unemployment benefits are partly funded by other people), unemployment externalities (higher unemployment makes it more difficult for other people to find jobs), and envy externalities (wage increases reduce other people's welfare to the extent that they care about relativities). In addition, centralization may improve coordination, and prevent the excessive wage increases that may ensue under imperfect information if a prime objective of each union is to prevent its own wage increase from falling short of the national average, so that each has an incentive to err on the side of excess (Bhaskar, 1990).

1/ However, as discussed in the next section, in centralized systems wage moderation is usually accompanied by inadequate wage dispersion. For this reason, their benefits in terms of maintaining employment at a high level have often been questioned.

The German system, while an example of industry-level bargaining, appears to reap many of the benefits of centralization, and is generally ranked just behind Austria and the Nordic countries in terms of the degree of centralization. Two factors justify this view of the German system. First, it can be characterized as "pattern bargaining" (Flanagan, Soskice, and Ulmann, 1983), in which leading sectors (and indeed, within sectors, leading regions) set the standard for wage increases throughout the economy. In itself, pattern bargaining is by no means identical to centralization, because the leading sector may take only its own interests into account. But compared with pure industry-level bargaining, some externalities are internalized, since the interests of the leading sector are affected by the wage increases which it knows will follow elsewhere in the economy. Second, cooperation between employers and unions in the different sectors, institutionalized in Germany under the umbrellas of the DGB and the BDA, also helps to internalize externalities, and to overcome the informational problems that might otherwise lead to each union erring on the side of excess in its wage demands.

c. Wage relativities in the German system

Although centralization appears to be conducive to overall real wage moderation, it also reduces the ability of wages to respond to specific conditions in different parts of the labor market. The literature has recently paid considerable attention to wage dispersion, although it has often not distinguished clearly between dispersion across firms (including across groups of firms, e.g. by sector or by region) and differentiation across categories of workers (e.g., by skill level, or by age). This chapter will refer to the former as "wage dispersion", and to the latter as "wage differentials".

There is evidence that the centralized systems that tend to produce real wage moderation also tend to produce low wage dispersion across firms (Freeman, 1988; Rowthorn, 1992), as might be expected since uniform wage contracts leave less scope for "tailoring" to the conditions of individual firms. Although the correlation between centralization and wage dispersion makes it difficult to separate the effects of each of these on employment, the same studies suggest a weak link across countries between higher wage dispersion and higher employment.

In a truly centralized system, low wage dispersion arises both because low-productivity firms pay relatively high wages, and because high-productivity firms pay relatively low wages (both compared with the outcome under a decentralized system, at least in the short run). If these firms are thought of as comprising two separate labor markets, in the first instance excess supply of labor will arise in the low-productivity labor market, while excess demand for labor will arise in the high-productivity market. If labor can move freely between the two markets (e.g., if the only difference between the two markets is the technology firms use), the result for total employment is ambiguous: it may be higher or lower than with decentralized wage-setting. However, if labor mobility between the two markets is limited (e.g., because the two markets require different skills

or because they are geographically separated), total employment will be lower than if both markets cleared.

In an intertemporal setting, such wage equalization has a further effect, one that has formed the explicit basis for the solidaristic wage policies of unions in Nordic countries (see, e.g., Flanagan, Soskice, and Ulmann, 1983). The exclusion from the market of low-productivity firms and the high profits earned by high-productivity firms will strengthen incentives for productivity enhancements and structural change. But as Calmfors (1993) points out, even if the capital stock is on average younger with wage equalization, it may also be smaller: incentives to invest will be dampened by the fact that wages are foreseen to grow at the economy-wide rate of productivity growth, even though the productivity of a particular vintage of capital will remain unchanged. Overall, it is not clear that even the intertemporal effects of wage equalization among firms are by themselves beneficial.

Moreover, the German wage bargaining system does not generate true wage equalization because of the presence of wage drift at the firm level: firms are free to pay wages higher, but not lower, than those agreed centrally. Thus when excess demand arises in the high-productivity labor market, wages will rise there, eliminating the (anyway limited) opportunities for labor to move to this market and thereby the outside chance that total employment might be higher than under flexible wages. The intertemporal benefits of wage equalization too will be muted in the presence of wage drift, since the high profits high-productivity firms make under a policy of wage equalization will be eroded. Thus on balance, there is considerable doubt as to the beneficial effects of wage equalization among firms even in fully centralized systems, and more still in centralized systems with wage drift such as the German one.

At the same time, it seems plausible--as suggested, for instance, by casual observation of the US and European wage structures--that centralization will be accompanied by low <u>wage differentials between workers</u>. Such a result would not necessarily follow from the institutional set-up (since a fully centralized system can still set widely different wages for different categories of workers), but from the unions' objectives. There is much evidence that unions tend to be averse to income inequality, perhaps because the distribution of union members--and of workers in general--is skewed toward the lower end of the productivity distribution (Freeman, 1980). Because of the limited or nonexistent mobility of workers between categories (e.g. of skill or age), the potential employment-increasing effects of wage equalization across firms do not arise in this case: squeezing wage differentials must have unambiguously negative effects on employment.

4. <u>Wage developments</u>

The theoretical considerations outlined above suggest that the level of <u>real wages in aggregate</u> should be less of a concern in Germany than under true industry-level bargaining systems. Nonetheless, a number of studies in

the 1980s (Artus (1984), Burda and Sachs (1987)) concluded that unemployment in west Germany in the early to mid-1980s, in the aftermath of the oil shock, was at least partly traceable to excessively high labor costs, especially in manufacturing: actual wages were estimated to exceed warranted wages by up to 25 percent. However, since then, this aggregate "wage gap" diagnosis has lost much of its appeal in the wake of subsequent wage moderation. Labor cost growth lagged productivity growth significantly from about 1984 onwards (Chart V-10)--despite the fact that the wedge between total labor costs and take-home pay rose from 78 percent (of net wages) in 1984 to 86 percent in 1993. While the endogeneity of productivity means that the development of unit labor costs can only be suggestive of a declining wage gap, Landmann and Jerger (1993) estimate, on the basis of trend rather than actual productivity growth, that the wage gap had disappeared by 1987-91. 1/

However, even if real wages are not excessively high in aggregate, wage dispersion or wage differentials--in the terminology of the previous section--may still be insufficient to allow full employment. The former would explain in particular the concentration of unemployment in structurally similar regions (given less-than-perfect mobility of workers between regions or sectors), and the latter the concentration of unemployment among the low-skilled. Because it is impossible to establish empirically how much wage differentiation is "adequate", an investigation of this proposition must rely on comparisons with other countries or with Germany itself in other periods, and the conclusions can be only suggestive. 2/ The annex gives a more detailed review of the relevant empirical studies for Germany.

Cross-country studies have found that west Germany has a moderate degree of wage dispersion across sectors, one that is much lower than that of the US, but generally rather higher than that of the Nordic countries, for instance. To the extent that the US, with its famously flexible labor markets, can be taken as a reference for what constitutes "sufficient" wage

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1/ The use of trend productivity growth circumvents the problems associated with the effect of wages on productivity through short-run fluctuations in employment, but not the effect through capital accumulation, and indeed Landmann and Jerger favor a capital shortage explanation of unemployment.

2/ A further complication is that the structure of earnings is sensitive to the eocnomic cycle. Monthly earnings especially are more cyclically sensitive for the lower-paid than for the higher-paid. But recessions are also normally associated with a relative lowering of hourly earnings at the bottom of the scale, both because of slacker competition between firms on the labor market and because low-skilled workers are more likely to be laid off in a recession. For these reasons, comparisons highlighted in this chapter are peak-to-peak (1979-91) wherever possible.

dispersion, these results suggest that German wage dispersion may be insufficient. 1/

During the 1980s, dispersion in west Germany rose across sectors (Chart V-11), though much more weakly within manufacturing than economy-wide. Comparing changes in dispersion across countries in the 1980s, most studies find that wage dispersion rose more slowly in west Germany than in other countries, particularly the US. To the extent that advanced economies were subjected to similar forces of structural change in the 1980s--technological change and increasing competition from developing countries in labor-intensive sectors--this comparison suggests that German wages reacted less flexibly to external shocks than did those of many other countries.

West German wage dispersion across regions fell between the 1979 and 1991 peaks in the economic cycle (Chart V-12), despite the growing differences in regional labor market conditions, and even though there was a small rise in the second half of this period. Indeed, the annual growth of wages (1979-91) spanned a range of only 0.6 percentage point, with wages in the northern Länder rising by 4.1-4.6 percent a year, and those in the southern Länder by 4.6-4.7 percent a year. 2/ These observations are again suggestive of insufficient wage flexibility, though some improvement in this respect is apparent in the latter part of the 1980s.

The issue of wage differentials between workers is perhaps even more important in Germany, given the concentration of unemployment among the low-skilled. Definitional problems complicate cross-country comparisons of the levels of wage differentials to the point of irrelevance. However, two main studies have examined trends in wage differentials in west Germany, by focusing on the relations between the 90th, 50th, and 10th percentile of the earnings distribution. OECD (1993) finds that earnings at the 90th percentile of the wage distribution rose slightly (1 percentage point) relative to median earnings between 1981 and 1990, but that earnings at the 10th percentile rose substantially (4 percentage points) relative to the median over the same period (Table V-4). Abraham and Houseman (1993) also conclude that wage differentials in west Germany narrowed during the 1980s.

Narrowing wage differentials at the bottom of the pay scale appear to be related primarily to a reduction in education/skill differentials. Table V-5 below suggests that between 1979 and 1991, while most subsectors of manufacturing (22 out of 32) saw a widening of wage differentials between high-skill and medium-skill workers, the majority (23 out of 32) also saw a

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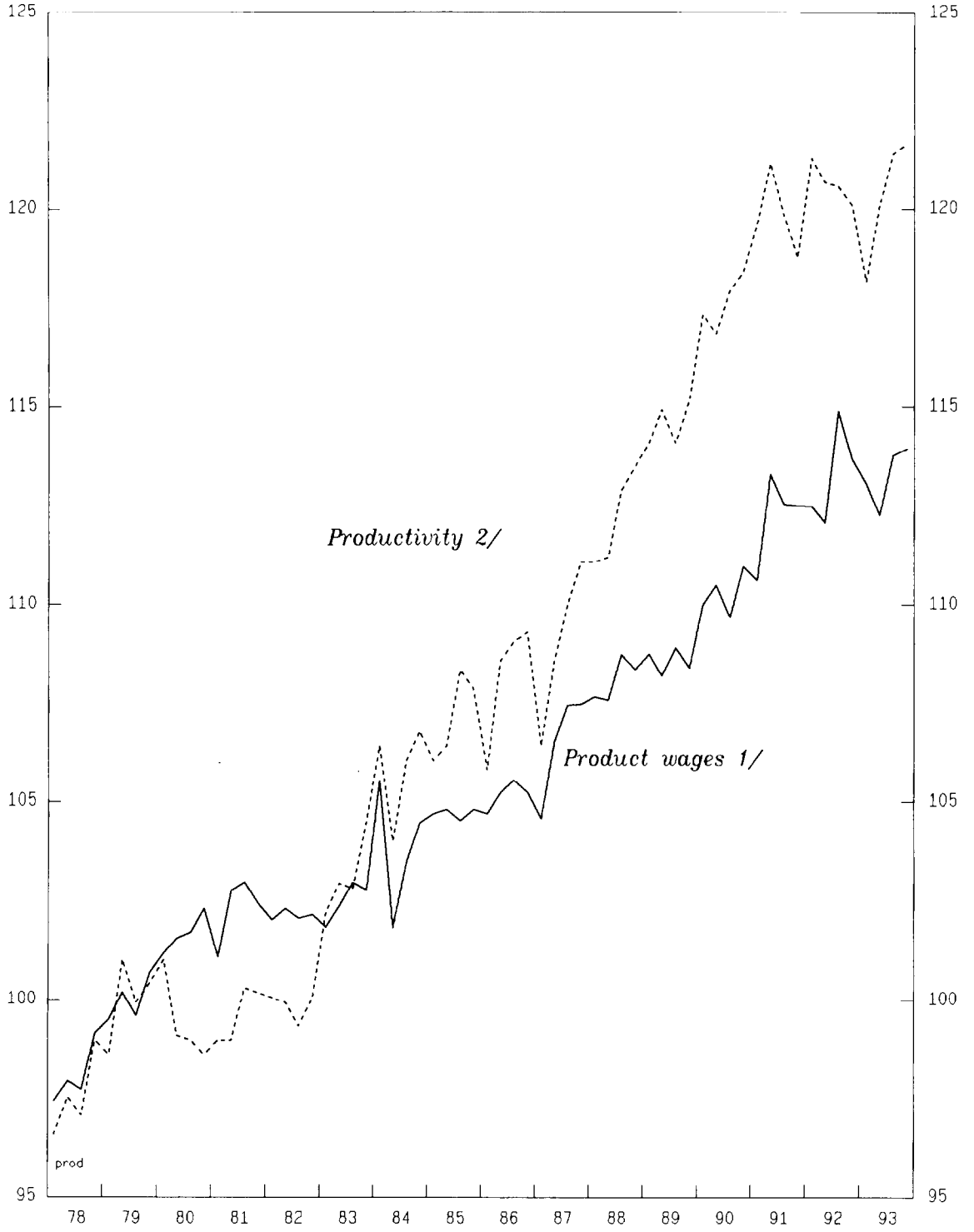
1/ Many authors (most notably Bell and Freeman, 1985) rightly urge caution in interpreting the US results as a benchmark; nor are US labor markets completely free of rigidities. Nevertheless, the argument in section 3 suggests that the US would come closer to market-clearing wage dispersion than Germany.

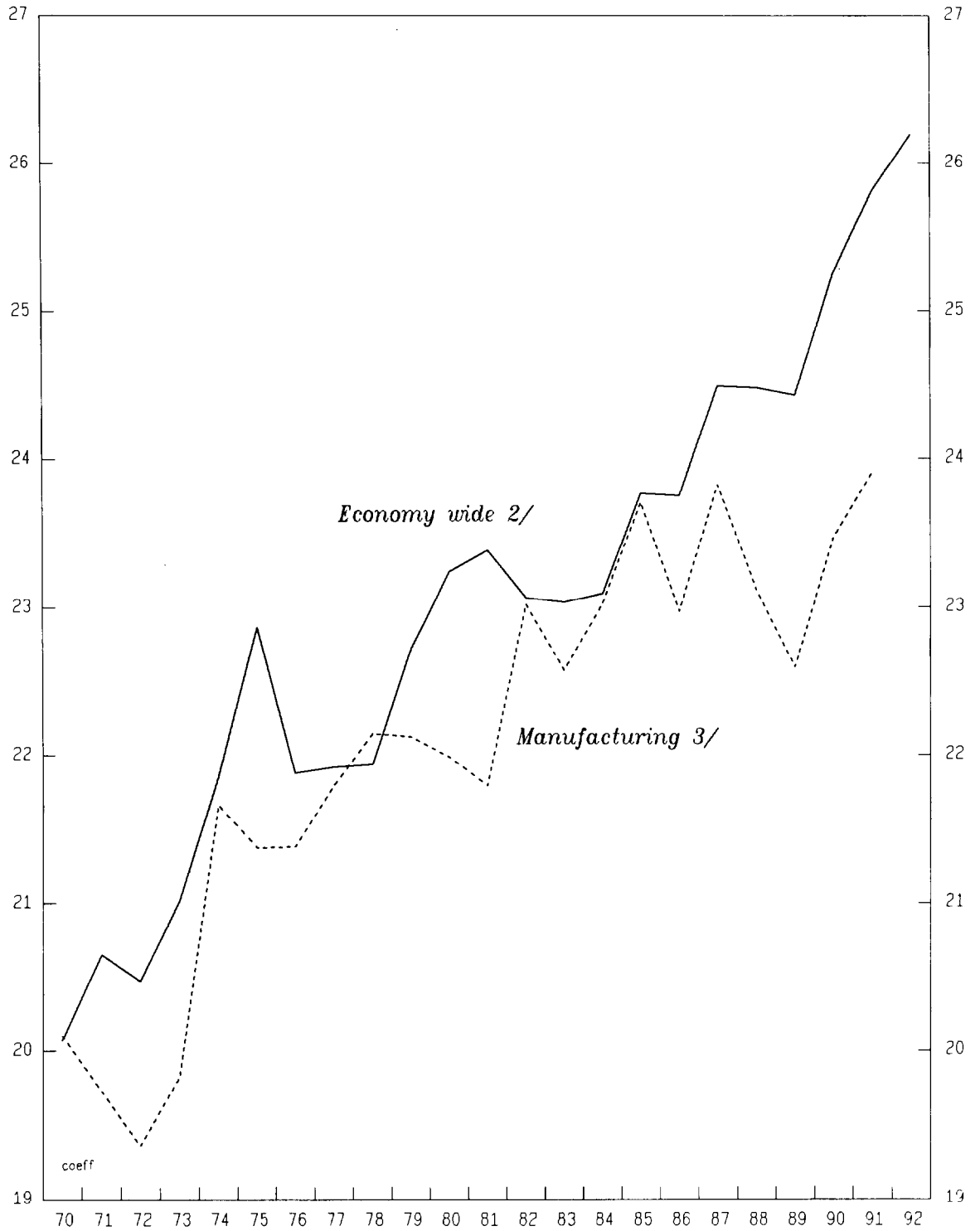
2/ All the Länder are considered separately in this comparison; the range quoted excludes Bremen, a northern city-state where wage growth reached 4.9 percent.

CHART V-10
West Germany
Wages and Productivity
(1979 = 100)



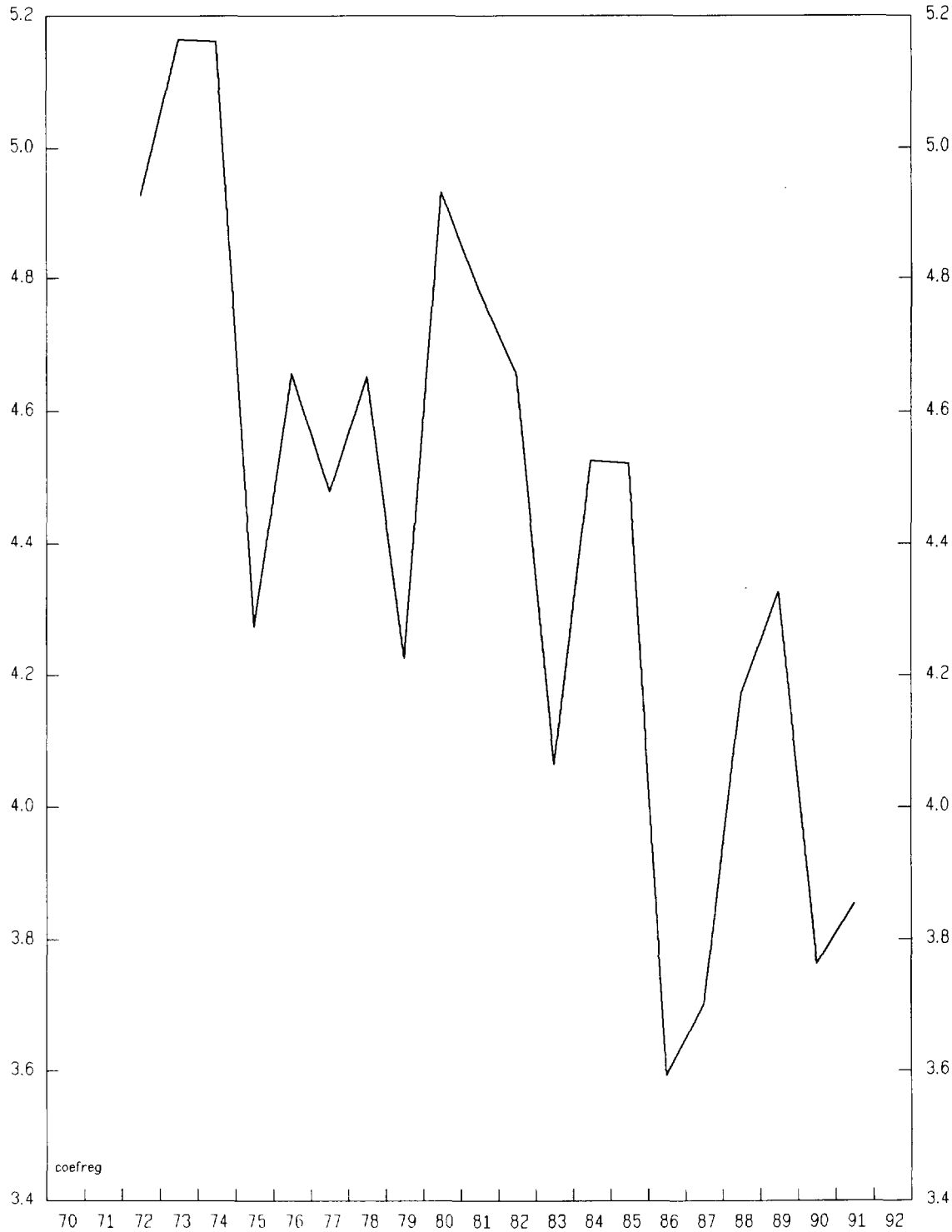
Source: Deutsche Bundesbank.
1/ Gross income from dependent employment per employee, divided by GDP deflator.
2/ GDP per employed person, in 1991 prices.

CHART V-11
West Germany
Coefficients of Variation of Wages 1/



Source: Statistiches Bundesamt.
1/ Wages are measured as gross income from dependent employment divided by number of employees.
2/ 10 sectors.
3/ 32 subsectors.

CHART V-12
West Germany
Coefficients of Variation of Regional Wages 1/



Source: Statistiches Bundesamt.
1/ Average hourly earnings of blue-collar workers in industry, 11 Länder.

reduction in differentials between medium-skill and low-skill workers. Several studies that have estimated standard earnings functions on panel data also suggest some narrowing of education and training differentials in the second half of the 1980s, with the major change a decline in the premium for holding a vocational qualification (typically a completed apprenticeship).

Table V-4. West Germany: Ratios of Percentiles of the Earnings Distribution 1/

	1979	1980	1981	1985	1986	1987	1988	1989	1990
Both sexes, GSOEP									
90/50	...	...	1.63	1.65	1.64	1.64	1.62	1.64	1.64
10/50	...	...	0.61	0.63	0.63	0.65	0.65	0.67	0.65
Men, Soc. Sec.									
90/50	1.47	1.47	1.47	...	...	...	...	...	...
10/50	0.67	0.67	0.68	...	...	...	...	...	...
Men, GSOEP									
90/50	...	...	1.63	1.66	1.66	1.63	1.65	1.65	1.65
10/50	...	...	0.68	0.70	0.70	0.71	0.71	0.72	0.71
Women, GSOEP									
90/50	...	...	1.56	1.58	1.62	1.58	1.58	1.59	1.58
10/50	...	...	0.59	0.63	0.64	0.65	0.67	0.66	0.66

Source: OECD (1993).

1/ Earnings are gross monthly earnings plus benefits (calculated as 1/12th of 13th and 14th month pay, holiday allowances, and Christmas allowances) of full-time, full-year workers. Data are taken from social security records (Soc. Sec.) or from the GSOEP, Waves 1-8. 90/50 indicates the ratio of the 90th percentile to the median, 10/50 the ratio of the 10th percentile to the median.

The narrowing of wage differentials at the bottom of the scale is of particular concern in light of high unemployment among unskilled workers. Industrial countries have in recent years seen a shift in the demand for labor toward high-skilled workers, which has tended to widen wage differentials in most of them (see, e.g., Katz and Murphy (1992) and Davis (1992)). Tellingly, the OECD (1993) study finds that among 17 OECD countries examined, west Germany is the only one that shows a pronounced narrowing of wage differentials at the bottom of the distribution during the 1980s. Although the unique German system of vocational training may have played an important part in limiting the supply of the unskilled, high and persistent unemployment among the unskilled suggests that the narrowing of wage differentials was not purely an equilibrating response, and that a lowering of wages at the bottom of the scale would benefit employment.

Table V-5. West Germany: Ratios of Earnings of Different Skill Groups in Manufacturing Industry 1/

	High-skill/ low-skill		Low-skill/ unskilled	
	1979	1991	1979	1991
Stones and clay	1.05	1.06	1.09	1.07
Iron and steel	1.06	1.09	1.06	1.06
Noniron metals	1.07	1.08	1.06	1.04
Mineral oil	1.16	1.19	1.12	1.23
Chemicals	1.10	1.12	1.19	1.20
Chemical fibres	1.00	1.02	1.11	1.03
Lumber	1.06	1.11	1.13	1.09
Pulp	1.08	1.08	1.07	1.09
Rubber	1.09	1.07	1.15	1.03
Steel implements	1.13	1.14	1.15	1.07
Machinery	1.12	1.13	1.09	1.07
Vehicles	1.11	1.10	1.11	1.12
Ships	1.19	1.21	1.11	1.13
Airplanes	1.22	1.22	1.13	1.12
Electrotechnical	1.14	1.14	1.04	1.04
Optics, watches etc.	1.14	1.13	1.09	1.06
Metal finishing	1.10	1.11	1.10	1.09
Office machines	1.15	1.16	1.09	1.10
Ceramics	1.04	1.07	1.11	1.09
Glass	1.10	1.13	1.14	1.02
Wood products	1.12	1.10	1.12	1.09
Musical instruments	1.16	1.22	1.12	1.07
Paper	1.14	1.15	1.11	1.09
Printing	1.16	1.17	1.16	1.06
Synthetics	1.11	1.13	1.09	1.05
Leather manufacture	1.06	1.08	1.10	1.09
Leather products	1.12	1.11	1.18	1.09
Shoes	1.14	1.10	1.25	1.12
Textiles	1.10	1.10	1.10	1.09
Clothing	1.12	1.11	1.06	1.11
Food	1.10	1.12	1.09	1.11

Source: Statistisches Bundesamt; and staff estimates.

1/ Ratios of hourly earnings. Skill levels are the groupings defined in collective bargaining agreements, high-skill, low-skill and unskilled corresponding to Leistungsgruppe 1, 2, and 3 (master craftsman, completed apprenticeship, and unskilled) respectively.

5. Key labor market policies

The segmented nature of the labor market, and the compression of wages at the lower end of the scale, point to three policy areas that are likely to be of particular importance: the wage bargaining system and income support for the unemployed (through their effect on the lower part of the wage scale), and employment protection (which erects barriers between those with jobs and those without). This section reviews policies in these areas. 1/

a. Recent and potential innovations in collective bargaining

Both the extension of west German labor market institutions to east Germany, and the recession in west Germany, have thrown into sharp focus the biases of the German collective bargaining system against low-productivity firms and workers. A measure of decentralization, within the framework of collective bargaining, was already achieved in the 1980s with increased devolution of authority over industrial relations to the firm-level Works Councils (Streeck, 1988). But the debate over how to make the system more flexible, while preserving its essence, has now come to center stage. Although Tarifautonomie places the responsibility for the bargaining system squarely with the social partners, the government retains a special responsibility to influence the debate both by rhetoric and example.

The process of rapid convergence of eastern wages to western levels is an extreme example of the way a centralized bargaining system tends to equalize wages between different firms, and was rationalized in part by the intertemporal arguments outlined above: higher wages in east Germany would generate pressures for productivity growth and speed the process of "creative destruction" of the inefficient inherited production structure. However, the very high levels of unemployment generated as a result have brought a search for ways in which the wage bargaining system can accommodate less productive firms. Four main ways of doing this have emerged so far, although only two are consistent with the essential collective nature of the German system.

The method that has perhaps attracted most attention has been the introduction of "opt-out" clauses (Härteklausel) in wage contracts in east Germany. These clauses allow below-tariff wages to be paid if a firm and its workforce agree that there is a financial crisis. Such clauses allow the individual employer seeking an exemption to bypass the employers' federation. However, the regional/national union continued to be responsible for negotiating the exemption on behalf of the workforce. These clauses have been very little used, probably in part because the unions would be reluctant to allow the setting of low-wage precedents, especially when other avenues of survival (such as the seeking of subsidies or government guarantees) are still open to the firm. Placing the authority to

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1/ Chapter II.5.b and Annex 3 to Chapter 2 provide a more general review of recent policy changes in the labor market area.

negotiate exemptions at the level of the firm's Works Council might make such clauses more useful.

However, two other methods of paying below-tariff wages have emerged in east Germany. Employers have been pulling out of, or not joining, employers' federations: it is estimated that a quarter of employment in east Germany is in firms that are not members of employers' federations. In addition, even some firms that are members of employers' federations have been paying below-tariff wages, by tacit agreement with their workforce, thus avoiding the need to seek union agreement to the use of an opt-out clause. Overall, it is estimated that 36 percent of east German firms pay below-tariff wages (as of early 1994). Of course, both these developments, if sustained, would represent a major departure from the collective bargaining system. But both the government and the social partners have tolerated them as an appropriate response to a temporary and highly unusual situation in east Germany.

Finally, there have been moves, in both west and east Germany, toward greater flexibility at the firm level in elements of the collective agreements other than wages, and in particular in working time. In the 1994 wage round, the metal-working and chemical sectors incorporated in their collective agreements provision for working hour "corridors". In the chemical industry, for instance, the uniform 37 1/2 hour workweek has been replaced by a "corridor" of 35-40 hours: workers who work less than 37 1/2 hours receive commensurately less pay, and workers who put in more time receive standard, rather than overtime, pay for the additional hours. In addition, in a number of sectors firms were given greater freedom to compensate overtime with additional free time rather than with extra pay. Both these developments provide firms with better opportunities to minimize their labor costs while continuing to pay tariff wages. 1/ Further devolution of responsibility to the firm level for non-wage elements of collective agreements holds promise for a better reconciliation of flexibility at the firm level with the principle of collectively set wages.

Two further potential methods of injecting greater flexibility at the firm level within the confines of collective wage bargaining might be considered. The first is greater reliance on wage drift. Indeed, greater wage drift may well arise if the real wage moderation demonstrated in the 1994 wage round persists into the economic recovery. However, centralized unions will always have strong incentives to legitimize themselves by seeking substantial nominal wage increases. And these incentives become all the more problematic in the German environment of low inflation, where zero or negative nominal wage increases might well be called for if wage drift were to be substantial (Calmfors (1993)).

1/ Greater freedom to reduce working hours according to the firm's needs also reduces the fixed costs of employment, and thus should help to reduce employers' reluctance to hire.

A second potential avenue for greater flexibility is profit-sharing, which has been much discussed in Germany but little implemented. A base wage lower than current wages would both allow the survival of lower-productivity firms and reduce the marginal cost of labor more generally. However, as with recourse to wage drift, the benefits of profit-sharing depend on unions moderating their wage demands on account of it: otherwise profit-sharing becomes merely an additional claim on existing profits. Thus although both wage drift and profit-sharing appear to hold promise for greater firm-level flexibility, it is clear that this promise cannot be fulfilled without a public debate and a whole-hearted commitment of the unions and their members to the notion of holding back tariff wages.

The search for ways to accommodate productivity differentials across firms within a collective bargaining framework has been accompanied by a similar search for ways in which more allowance can be made for differences in the productivity of different workers. Structural change in east Germany, which has rapidly devalued the human capital that existed there, and the persistence of low-skilled unemployment in west Germany have added urgency to this search. Although some have argued that employing a willing worker who would otherwise be unemployed at a below-tariff wage is by definition a development "favorable to the worker", the "favorability principle" (see above) has been interpreted to mean that such arrangements are illegal unless explicitly provided for in the collective agreements. However, in 1994 for the first time, the collective agreement in the chemical industry incorporates a provision that allows new recruits to be paid (for one year) wages 5-7 1/2 percent below tariff wages, and 10 percent below tariff wages if they were recruited out of long-term unemployment. Whether this example will be followed elsewhere remains to be seen. Equally important would be a greater differentiation of tariff wage increases between skill levels. In both cases, the government as employer could set particularly potent precedents.

b. Income support for the unemployed

Regardless of the form of the wage bargaining system, the income level available to the unemployed plays an important role in determining net reservation wages and hence--once account is taken of the wedge between net wages and labor costs--in setting a lower bound on the productivity of those in employment. The unemployed in Germany have recourse to three different kinds of assistance: unemployment benefit (Arbeitslosengeld), unemployment assistance (Arbeitslosenhilfe), and--together with others whose income is inadequate--social assistance (Sozialhilfe).

Unemployment insurance is compulsory for all employees except civil servants and soldiers. Unemployment benefit and unemployment assistance are paid to those who have contributed to the unemployment insurance scheme for at least one year out of the three years preceding unemployment, who have involuntarily lost their jobs, and who are seeking work. Those who voluntarily quit their jobs must wait 12 weeks before drawing benefits. Those who turn down one job offer that the Labor Office considers acceptable

(zumutbar) have their benefits interrupted for up to 12 weeks, and those who turn down two such offers generally have their benefits terminated.

Both unemployment benefit and unemployment assistance are exempt from tax, and are calculated as ratios of the worker's previous net earnings, excluding the typical 13th month wage. (Thus the replacement ratios typically quoted, and given below, are somewhat overstated: the official replacement ratio of 67 percent, for instance, translates into about 62 percent of total annual earnings.) The maximum net earnings to which the replacement ratios are applied are (for married persons with two children) about DM 5,070 per month in west Germany, and DM 4,130 per month in east Germany, or close to twice average net earnings. The reference period for the calculation of the wage that serves as the base for unemployment benefits was three months until recently, but to combat collusion between employer and employee it was lengthened to six months with effect from January 1994.

Unemployment benefit is generally payable for one year; for workers over the age of 42, the period of eligibility rises with increasing period of employment and increasing age, up to a maximum of 2 years and 8 months at age 54 or over. Until recently unemployment benefit was payable at the rate of 68 percent of previous net earnings for a claimant with children, and 63 percent for a claimant without children; from January 1994, these replacement ratios have been lowered to 67 percent and 60 percent respectively. These ratios are not out line with those in other OECD countries, though it might be noted that they are still above those prevailing in Germany through the early 1970s (63 percent for a person with children, compared with the current 67 percent).

Unemployment assistance is currently available without time limit to those in need who qualified for unemployment benefit, after their unemployment benefits have expired. It is also payable to most people in need who have lost their jobs and are not entitled to unemployment benefit, but for them the period of eligibility, which until recently was also unlimited, was reduced to one year with effect from January 1994. Unemployment assistance was until recently payable at the rate of 58 percent of previous net earnings for a claimant with children, and 56 percent for a claimant without children; from January 1994, these ratios have been lowered to 57 percent and 53 percent respectively. In principle the wage to which these replacement ratios are applied is the potential wage rather than the actual previous wage, and as the spell of unemployment lengthens and it becomes evident that no jobs with similar wages are available, the Labor Office is supposed to reduce the basis for the replacement ratio in line with their perception of the wage the unemployed person could potentially earn. Recipients must have no other means of support; if the recipient has other income or her spouse has income above about DM 800 per month, the amount of unemployment assistance is reduced one-for-one.

The unlimited duration of unemployment assistance is a peculiarly generous feature of the unemployment insurance system. In 1989, the German replacement ratio for a single person in his third or subsequent year of

unemployment was by far the highest in the OECD, exceeding the ratio in its closest competitor, the Netherlands, by 12 percentage points (OECD, 1991). It is thus particularly important that proposals to put a time limit of two years on unemployment assistance (first considered and rejected in late 1993) were recently put forward again as part of the draft 1995 budget. This measure would appear to hold considerable promise to reintegrate the long-term unemployed into the job market, both directly by raising incentives to work, and indirectly by reducing insider power over wages through an increase in the search intensity of the unemployed.

Finally, social assistance (Sozialhilfe) is available for an unlimited period to anyone living in Germany whose income is inadequate, although social assistance recipients who are able to work are required to register with the Labor Office and to accept appropriate job offers. The payments consist of cash allowances, contributions to housing and heating costs, and special one-off payments for necessary purchases, and the amounts paid depend on family size and structure and on the ages of children. Table V-6 shows some typical amounts of social assistance and their relation to average earned incomes of the lowest-paid group of blue-collar workers, in west and east Germany, for varying household structures. The difference is quite large only for childless people in west Germany and for single childless people in east Germany. For all others, the ratio of social assistance to average earnings is above 70 percent, and in east Germany the ratio is at 87 percent or above for anyone with two or more dependents. Moreover, for many social assistance recipients, actual potential earnings would be lower than the average for the lowest-paid group of workers, and the implicit replacement ratio for social assistance correspondingly higher than shown in Table V-6. Social assistance is indexed not to prices but to wages, suggesting that the poverty line is defined in relative rather than absolute terms.

Decisions on the poverty line and on the respective importance of absolute and relative poverty are ones on which different nations can have very different views. However, in making these decisions it is important to bear in mind their consequences on the labor market. Table V-6 suggests that social assistance may provide very high replacement ratios for many low-skill workers, as a result of which work may not be worthwhile. Conversely, since the level of social assistance is one factor affecting wage-setting, Table V-6 can be interpreted as confirming that social assistance effectively sets a floor on wages economy-wide. Using the figure in Table V-6 for social assistance for a west German with two dependents (approximately DM 2,150 per month) as the reservation net wage, and adding social security contributions of about 50 percent of net wages, suggests that the effective minimum labor cost in Germany may be of the order of

DM 3,200 (about US$2,000) per month, or over DM 20 (about US$13) per hour. 1/ It seems likely that these minimum costs exclude significant numbers of the unskilled or low-skilled from (legal) employment, and prevent much of the potential growth in sectors dependent on low-skilled labor, such as personal services.

Table V-6. Germany: Social Assistance and Average Earnings 1/

(DM per month)

	West Germany			East Germany		
	Average earnings	Social assistance	Ratio 2/	Average earnings	Social assistance	Ratio 2/
Single man	2,349	1,032	44	1,669	819	49
Single woman	1,985	1,032	52	1,287	819	64
Married, no children 3/	2,630	1,673	64	1,824	1,371	75
Married, 1 child 3/	2,782	2,159	78	2,019	1,764	87
Married, 2 children 3/	3,064	2,618	85	2,305	2,198	95
Married, 3 children 3/	3,426	3,066	89	2,668	2,652	99
Single person, 1 child	2,273	1,635	72	1,629	1,335	82
Single person, 2 children	2,571	2,122	83	1,876	1,730	92

Source: Presse- und Informationsamt der Bundesregierung, Sozialpolitische Umschau, Nr. 11/1994 (January 1994); and staff estimates.

1/ As of July 1992. Earnings are for blue-collar workers of group (Leistungsgruppe) 3, and include child and rent allowances.

2/ Ratio of social assistance to average earnings, in percent.

3/ Assumes non-earning spouse.

1/ Social security contributions add up to about 40 percent of gross wages, of which half is paid by the employee and half by the employer, so that the wedge between net wages and total labor costs is about 50 percent. This figure abstracts from any income tax currently payable on gross wages equivalent to the amount of social assistance, which is to be abolished by order of the Constitutional Court.

c. Employment protection

Segmentation of the labor market between the employed and the unemployed is often supported by employment protection for those with jobs, which both increases insiders' power by raising transaction costs, and reduces firms' willingness to hire by raising the fixed costs of employment. That there are serious obstacles to hiring in Germany is suggested both by employer surveys and by the fact that the German economy operates with considerable amounts of overtime even in periods of recession (Franz and König, 1986). Indeed, employment protection legislation in Germany is both relatively severe and ill-defined, and both the direct costs of dismissals and the uncertainties surrounding the courts' interpretation of the relevant legislation have probably contributed to a reluctance to hire: a hiring mistake, whether in assessing an individual recruit or the appropriate level of employment overall, can be very costly.

Employment contracts in Germany are typically of indefinite duration. Dismissal protection applies to all permanent employees in firms with six or more workers (excluding apprentices), after a probationary period of six months. Following small changes in 1993 (see Chapter 2, Annex 3), a notification period between four weeks and seven months is required, depending on the worker's seniority and age.

Individual dismissals have to be "fair", but criteria for fairness are only partly laid down in legislation. An employee may be dismissed for personal reasons, in particular ineptitude; but for instance persistent illness is not recognized as an acceptable reason for dismissal if the employer could fill the gap by other means, such as temporary reorganization or an increased workload for the remaining staff. Employees may be dismissed for redundancy only as a last resort, if the alternatives are "intolerable", and the employer must use "social" criteria in choosing the redundant workers; it has been up to the courts to define both the "tolerable alternatives" to dismissals and the social criteria to be used in redundancies. In the latter case criteria that have been adduced include period of employment, age, health, family responsibilities, spouse's income, and wealth. The burden of proof regarding the fairness of a dismissal rests with the employer, and employees who contest a dismissal must be allowed to continue in employment until the case is decided. If a dismissal is found to be unfair the employee either remains in the job, or is paid compensation equivalent to at least 12 months' pay (15-18 months' pay for older workers with longer tenure in the firm).

Overall, for strictness of protection against individual dismissals, Grubb and Wells (1993) rank Germany fifth among 11 OECD countries, behind four southern European countries (Portugal, Spain, Italy, and Greece). But perhaps even more important than the rules laid down in law is the discretion of the courts in the area of employment protection, which has created considerable uncertainty for employers. The Deregulation Commission recommended in 1991 that the definition of the social criteria to be used in selecting employees for dismissal, in particular, should not be left to the courts, but this recommendation has not been implemented.

Collective dismissals at firms employing more than 20 employees are subject to even more stringent rules. If more than five employees are to be dismissed within 30 days, the dismissal must be notified to the Labor Office, which can delay it by up to two months. More importantly, under the Works Constitution Act, if more than 20 percent of the workforce or more than 60 employees are to be dismissed, management and the Works Council must agree on a "social plan" that stipulates compensation for workers who lose their jobs. If the parties cannot agree on a social plan, the case goes to binding arbitration. Since 1985, new firms have been exempt from the social plan requirement for the first four years of their existence. It has been estimated that pay-outs under social plans average 4-6 months' wages for a worker with average blue-collar industrial earnings. The Deregulation Commission had recommended that compensation under social plans be limited to damages directly related to the dismissal, but this proposal was not implemented.

The restrictions on dismissals also apply to workers on fixed-term contracts during the term of their contract, but the expiration of such a contract provides the employer an opportunity to reassess the employment decision. Fixed term contracts are normally permitted in German law only under specified circumstances (e.g., for seasonal work in agriculture), and are not normally renewable. The Employment Promotion Act of 1985 made fixed-term contracts possible in any sector and under any circumstances, extended the maximum duration of fixed term contracts from six months to 18 months (and 24 months for new small businesses), and made it possible to renew such contracts once. This law was due to expire in 1995, but its validity has recently been extended to the year 2000.

6. Summary and conclusion

This chapter has suggested that only a small part of the German unemployment problem is cyclical in origin. More importantly, the west German labor market has become increasingly dualistic, with a sharp division between the primary labor market and a marginal, high-unemployment labor market consisting of the low-skilled, those (especially in the north) whose skills have been devalued by structural change, and older people. Economic recovery holds out little hope for this secondary labor market, where a large segment of unemployment is likely to remain even when the primary labor market has tightened sufficiently to raise fears of rising inflation. The marginalization of people in the secondary labor market is worrisome in itself, but also augurs ill for east Germany.

Both theoretical considerations and empirical studies of wage differentiation suggest that the German system of collective bargaining, which has served the country well in terms of overall wage moderation, has also resulted in wages that make it difficult for low-productivity firms and workers to participate in the labor market. The challenge now is to find, within the framework of centralized bargaining, ways in which relatively low-productivity firms can be assured better chances of survival (a challenge made especially pressing by the situation in east Germany), and ways in which wages at the bottom of the scale can react to the excess

supply of low-productivity workers. Some progress has already been made in these respects, but much more is needed. Reform of the system of unemployment insurance (especially the recently proposed limit on the duration of unemployment assistance), a reexamination of social assistance, and some relaxation of employment protection together with a reduction of the discretion of the courts in this area, would support such efforts by reducing reservation wages and lowering barriers between the two labor markets.

Wage Relativities in West Germany: A Review of Empirical Studies

ANNEX

An examination of whether wage relativities are "adequate" in Germany is complicated by the fact that there is no clear standard for what constitutes "adequate" differentiation. Two approaches to this problem have been taken in the literature, one based on cross-country studies, and the other on time series analysis. Because both require something of a leap of faith in their use of a particular country or time as a benchmark for what constitutes "adequate" differentiation, their results can only be suggestive.

Cross-country studies (Bell, 1986; Freeman, 1988; Rowthorn, 1992) have compared levels of wage dispersion across sectors, and concluded that Germany has a moderate degree of wage dispersion, one that is much lower than that of the US, but generally rather higher than that of the Nordic countries. Bellmann and Möller (1993) and Zweimüller and Barth (1994), in recent studies that control for human capital factors in an attempt to isolate sectoral effects, come to a similar conclusion comparing Germany, respectively, with Sweden and the US, and with Austria, Norway, and the US. 1/ To the extent that the US, with its famously flexible labor markets, can be taken as a reference for what constitutes "sufficient" wage dispersion, these results suggest that German wage dispersion is insufficient. 2/

Studies tracing changes in dispersion over time have generally found that west German wage dispersion between sectors was stable or slightly

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1/ Human capital factors can bias aggregate comparisons of wage dispersion. For instance, a country where highly-paid workers (e.g., more educated workers, or men) are distributed more unevenly between sectors will show a lower degree of wage dispersion than one with a more even distribution across sectors, even if in each sector the two countries' pay scales are really identical. The most careful studies of dispersion therefore look not at average earnings in different industries, but at the coefficients on industry dummies in standard earnings functions.

2/ Many authors (most notably Bell and Freeman, 1985) rightly urge caution in interpreting the US results as a benchmark. Nevertheless, the argument in section 3 of this chapter suggests that the US would come closer to adequate wage dispersion than Germany.

increasing over the first half of the 1980s (Bell, 1986; Gundlach, 1986; Freeman, 1988; Rowthorn, 1992; see also Chart V-11 of this chapter). Bellmann and Möller (1993), in a study controlling for human capital factors, also conclude that wage dispersion across sectors rose in the 1980s).

However, west German wage dispersion, even though rising in the 1980s, may still not have risen enough from the point of view of employment creation. Again, cross-country studies have been adduced to explore how much increase in dispersion is enough. Bell (1986), Freeman (1988), and Rowthorn (1992) all provide comparable estimates for the rise in wage dispersion in west Germany and in the US, and all find wage dispersion rising considerably less fast in west Germany than in the US and other countries. Of course, using the US as a benchmark in this case requires not only a belief in the employment benefits of the US system, but also an assumption that the changes in the structure of advanced economies in the 1980s were very similar. Because the main forces that induced structural change in these economies were probably similar--technological change and increasing competition from developing countries in labor-intensive sectors--this assumption may perhaps serve as a first approximation. 1/

One further clue as to whether wages have been sufficiently flexible across firms comes from the dispersion of wages between regions. Gundlach (1986) found that within most sectors, the dispersion of wages across regions narrowed between 1973 and 1985 (see also Chart V-12 of this chapter, which show a gentle rise thereafter).

Definitional problems complicate cross-country comparisons of the levels of wage differentials to the point of irrelevance. However, both OECD (1993) and Abraham and Houseman (1993) have examined trends in wage differentials in west Germany, by focusing on the relations between the 90th, 50th, and 10th percentile of the earnings distribution, using social security data and data from the German Socio-Economic Panel (GSOEP). Both find a significant narrowing of wage differentials, particularly at the bottom of the scale (see Table V-4 of this chapter).

Both the Abraham and Houseman (1993) study and, to a lesser extent, the OECD (1993) study are open to the criticism that they do not take sufficient account of cyclical considerations as possible explanations for the changes in German wage differentials. The structure of earnings--especially monthly earnings such as those investigated in these studies--is not unrelated to the phase of the economic cycle. First, the monthly hours and hence monthly earnings of the low-paid are more cyclically sensitive than those of the

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1/ A few studies (Bell and Freeman, 1986; Gundlach, 1986) have looked at the relations between (levels and/or growth of) wages and productivity, hypothesizing that these relations would be weak if wages are insufficiently responsive to sectoral and firm-level conditions. However, even with wage growth set exogenously, a similar relation would be expected to arise through the adjustment of employment.

higher-paid, and narrowing differentials of monthly earnings would therefore be expected in a rising phase of the economic cycle for this reason alone. Second, recessions are normally associated with a relative lowering of earnings at the bottom of the scale, both because of slacker competition between firms on the labor market and because low-skilled workers are more likely to be laid off in a recession; a recovery would narrow wage differentials also on this count.

While the period 1983-90 in Germany can be characterized as a long, slow recovery, two factors mitigate against a cyclical explanation of the narrowing of wage differentials at the bottom of the scale in the 1980s. First, the fragmentary data available for 1979-81, years when output is estimated to have been above potential, suggest that wage differentials narrowed during the 1980s even when comparing two cyclical peaks (around 1980 and around 1990). (This interpretation is strengthened by a comparison of working hours: economy-wide working hours were slightly above trend in both 1979 and 1990, although they were below trend in 1981.) Second, there was a clear though momentary cyclical slowdown in 1987; yet the trend toward narrowing wage differentials continued unabated.

In many industrial countries, the 1980s saw increases in wage differentials by age. The evidence on this is mixed in west Germany. Based on aggregate data, Abraham and Houseman (1993) document a tendency for age-related earnings differentials to narrow slightly between the mid-1970s and 1988, with workers aged 15-19 gaining on those aged 20-29 throughout this period, and workers aged 20-29 gaining on all older groups at least from 1983 onward. Similarly, they find a falling coefficient on age in their earnings functions between 1983 and 1988, but Bellmann and Möller (1993) find instead a rising coefficient on experience between 1979, 1984, and 1989. 1/

1/ Nor is it clear how one should interpret trends in age differentials in Germany. Because the labor market situation is worse for older than younger people, the declining age differentials found by Abraham and Houseman might signal an appropriate responsiveness of wages to labor market conditions. However, more experienced people are also those most likely to be paid above-tariff wages, so that responsiveness in this area would not necessarily indicate a similar responsiveness in labor markets where tariff wages are binding.

With age differentials playing at most a minor role, the narrowing of wage differentials at the bottom of the pay scale appears to be related primarily to a reduction in education/skill differentials (see also Table V-5 of this chapter). Abraham and Houseman (1993), using social security and GSOEP data classified by occupational qualification, conclude that there was a slight narrowing of the differentials between more or less educated workers between the mid-1970s and 1988. Both Abraham and Houseman (1993) and Bellmann and Möller (1993) also estimate standard earnings functions on panel data, using education and training dummies as well as age and other data. Both sets of results suggest some narrowing of education and training differentials in the second half of the 1980s, with the major change a decline in the premium for holding a vocational qualification (typically a completed apprenticeship).

Should the narrowing of west German wage differentials by skill in the 1980s be a source of concern from the point of view of employment, or was it an equilibrating response to changes in the supply and demand of different categories of workers? The study by Abraham and Houseman (1993) is the only one to address the issue of relative supply and demand for different categories of workers, but it finds declines both in the relative demand for low-skilled labor (using a shift-share analysis of the structure of output, and thus ignoring another powerful source of the same effect, skill-biased technical change) and in the relative supply of low-skilled labor, and it is not clear which of these declines was larger. It is striking, however, that among 17 OECD countries examined in OECD (1993), west Germany is the only one that shows a pronounced narrowing of wage differentials at the bottom of the distribution during the 1980s. Moreover, the high rates of unemployment for low-skilled workers suggest strongly that the narrowing of wage differentials was not merely an equilibrating response.

VI. Indicators of Monetary Conditions

The sharp increase in money growth in early 1994, coming on top of three years of target overshooting, begs the question as to whether there is a serious risk of a pick up in inflation down the road or whether the monetary targeting framework has become less reliable. This chapter tries to shed some light on this issue by providing an empirical analysis of different monetary indicators. Evidence is found that, while money has in the past provided a useful early warning signal for inflation, a monetary conditions index (MCI), constructed as a weighted average of real short-term interest rates, and the real effective exchange rate has also performed a similar task. During 1992-93, when money growth increased significantly, the MCI indicated that monetary conditions remained fairly tight. An assessment of inflation prospects and risks tends to confirm the appropriateness of recent official interest rate cuts, despite the surge in monetary growth around the turn of this year. Furthermore, assuming a marked deceleration in M3 growth, room for a further modest easing may emerge in the months ahead.

1. Background

The conduct of monetary policy in Germany is predicated on the view that there is a long-run relationship between money growth and inflation. An explanation for this relationship, which underpins the calculation of the Bundesbank's annual monetary target, begins with the Quantity Theory identity:

$$M.V = P.Y \qquad (1)$$

where M is the money stock (M3 in the target definition), V money velocity, P the average price level, and Y real income. On the assumption that velocity follows a predictable path and that real income growth is constrained to that of supply potential in the long run, it is then possible to translate a specific inflation goal (price stability) into an annual target for monetary growth. 1/ By adhering to the monetary target, monetary conditions would tighten (in the sense that the quantity of money would be lower than normally warranted by the nominal value of transactions in the economy) if actual inflation were higher than the objective or actual output growth were above potential. In this way, while the objective of monetary policy would be price stability, the framework would in principle allow monetary conditions to vary in a counter-cyclical manner.

1/ For 1994, the target is based on an objective of 2 percent inflation, a trend velocity decline of 1 percent per annum and potential growth of 2 1/2 percent a year, giving an indicative monetary growth of 5 1/2 percent. The actual target is expressed as a range (4-6 percent) with adjustments added for target over-shooting in previous years. See Bundesbank Monthly Report, January 1994, p. 17-21.

From an empirical perspective, this framework assumes that causality runs from money to inflation--although the route of causality may not be direct but rather through other variables such as incomes, exchange rates or asset prices--and that velocity movements are predictable (money demand is stable). 1/ Studies tend to confirm the existence of a positive causal link between developments in money and future prices for Germany. In addition, there is evidence--although the consensus is not unchallenged in the literature--that money demand was stable, at least in the period up to unification in mid-1990. 2/ However, the continuation of this stability in recent years is more contentious with some studies suggesting that, at the very least, there has been a once-off break around unification in the hitherto stable path of velocity. 3/

More generally, even if money demand is stable, practical use of the target framework requires that the starting point for basing the money target can be assessed properly. In effect, a judgement has to be made as to what extent the target growth rate of money should allow for any earlier monetary overhang. As a case in point, the added measurement uncertainties caused by unification make it unclear whether recent rapid monetary growth reflects overly loose monetary conditions or a return of velocity to trend.

The monetary framework assumes nothing specific about the transmission channels from money to prices. In principle, several channels are possible. From the domestic side, the effect might be via interest rates and their impact on output, as in the conventional IS-LM framework. Where a broad money aggregate is considered, more direct wealth effects might also come into play and, in some cases, the impact might be felt first in asset markets. 4/ From the external side, there might be a link between monetary growth and the exchange rate, which has a direct impact on domestic prices via import costs and prices, and an indirect effect through changes in trade volumes.

Thus, an alternative to basing the monetary framework on a particular money aggregate would be to gauge monetary conditions from developments in other financial indicators such as interest rates, exchange rates and asset prices, which may play more direct roles in determining output and

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1/ Note that equation (1) always holds true by identity and can be consistent with an entirely different causal ordering: inflation could originate from a completely separate process and money adjust subsequently to accommodate a higher price level.

2/ See, for example, the discussions in von Hagen (1993) and Cassard, Lane and Masson (1994).

3/ See Germany - Economic Developments and Selected Background Issues, SM/93/151 (July, 1993), Chapter VI and references therein; and Annex 2 to Chapter II of this paper.

4/ See, for example, Schinasi (1994), who notes that this phenomenon appeared to play a major role in the latest business cycle in a number of countries. Mayer (1993) expresses concerns that a similar phenomenon is in the making in Germany at present.

inflation. If money demand and other behavioral relationships in the economy are stable, such indicators would convey similar information about monetary conditions as the monetary aggregates. It is even conceivable that if money demand is behaving less predictably, alternative financial indicators could provide more reliable information.

In a number of countries, including Canada, New Zealand and Sweden, where developments in domestic monetary aggregates have been difficult to interpret, increasing reliance has been placed on financial indicator variables. In the case of Canada, a monetary conditions index (MCI) consisting of a weighted average of interest rates and the effective exchange rate, has proved to be a helpful indicator of inflationary prospects over a two year horizon. 1/ The weighting in the index reflects the relative partial impacts on inflation or output over a period of time (say, 2-3 years) of each financial indicator. The rationale for combining the two elements rests upon the fact that the domestic indicator of monetary conditions (interest rates) and the external indicator (exchange rate) can, in practice, convey independent information about monetary conditions: for example, an increase in interest rates that was accompanied by exchange rate appreciation might have a greater effect on output and prices than an interest rate rise alone.

In what follows, a monetary indicator is constructed for Germany on the basis of econometric evidence on the main determinants of inflation. This index is compared with M3 as a predictor of future inflation and the analysis used to provide an assessment of current monetary conditions. Section 2 begins with an inspection of some key data series. Section 3 provides an assessment of the main determinants of inflation using unstructured vector autoregressive models. Section 4 details a more structured model of output and inflation and utilizes its properties to construct an MCI for Germany. Section 5 discusses the implications for monetary policy at present in the context of the risks to the medium-term inflation outlook. Conclusions are presented in Section 6.

2. A first look at the data

By international standards, German inflation has been low in the past few decades. Annual increases in the GDP deflator (one of the broadest inflation measures) did reach as high as 8 percent in the early 1970s, but then declined to around 4 percent in the second half of that decade (Chart VI-1). After picking up briefly at the turn of the decade, inflation slowed again and for most of the 1980s was contained in a 1 to 3 percent band. More recently, inflation in west Germany showed a persistent rise from its low point in 1987-88 of around 1 percent to a peak of nearly 4 1/2 percent in 1991-92--a period that spanned either side of unification in 1990. Inflation has since abated and at end-1993 had eased to about 3 percent.

1/ See Freedman (1994).

From inspection of Chart VI-1, it is clear that several of the turning points in the pattern of inflation were preceded by changes in the growth of broad money (M3) in the same direction. The lag appears to be of the order of a couple of years. Thus, the slowdowns in inflation in the mid-1970s and in the early 1980s were both preceded by sharp decelerations in money growth, while the pick up in inflation in the late 1980s was preceded by a pick up in money growth in the mid-1980s. The most recent inflation rise--and its continued climb during the early 1990s in particular--is less obviously related to earlier money growth developments. Indeed, money growth was on a declining path from 1987 to around 1991. However, this period is more difficult to interpret because of the disruptions to the data caused by unification.

Two other potential factors related to the historical movements in inflation are also included in Chart VI-1. The first, denoted the output gap, measures the percentage deviation of real GDP in west Germany from its trend level. 1/ These deviations appear broadly correlated with inflation. In particular, the climb down from the peak inflation in 1980 to the low levels in the rest of that decade corresponds to a period in which output generally persisted at a level below normal capacity. The more recent increase in inflation took place against a shift to above normal capacity utilization--particularly as the west German economy boomed in the immediate post-unification period. As the recession bit in 1992-93, inflation slowed.

The second factor, changes in import prices, also appears to bear some loose correlation with the historical movements in inflation--although the visual evidence in the chart is not as strong as it is for some other countries. In particular, it can be seen that inflation picked up temporarily around the times of the oil price hikes of 1973-74 and 1979-80, while the fall in inflation to its low of around 1 percent in 1987 appears to have been helped by the collapse in oil prices in the middle of the 1980s.

3. The determinants of inflation: evidence from VARs

This section describes the evidence from a number of vector autoregressive (VAR) models that have been used to provide information on the main determinants of inflation in Germany and the predictive role of various monetary indicators. VAR models are based on regressions of each variable on lagged values of itself and the other variables in the system. They have the advantage of permitting an evaluation of the properties of the data without imposing prior restrictions suggested by economic theory or stated policy reaction rules. However, the analysis is subject to practical

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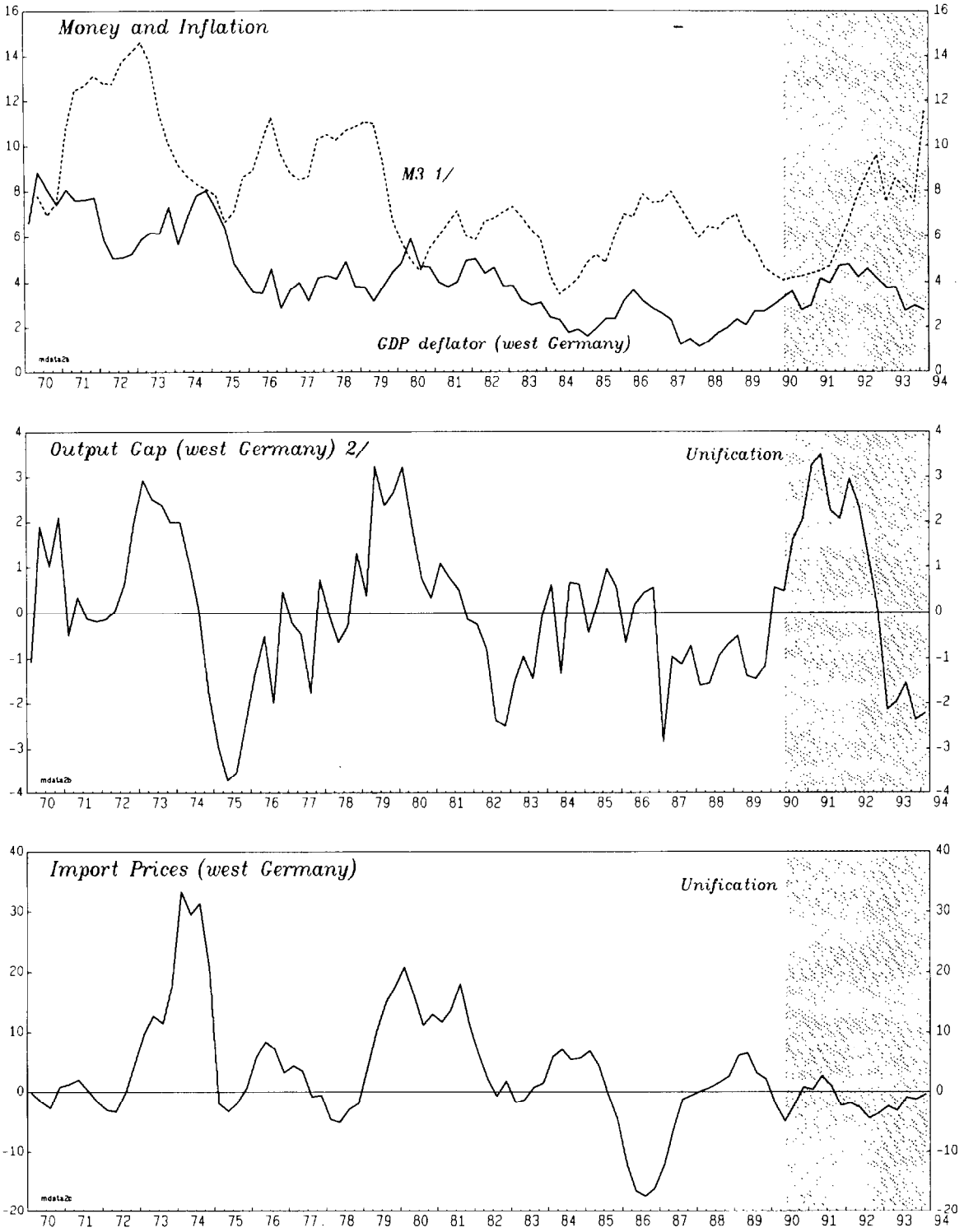
1/ The trend is defined by means of a Hodrick-Prescott filter of the actual GDP series (see Hodrick and Prescott, 1980). It produces results similar to those for an annual series used by the staff in the World Economic Outlook, May 1994, IMF May 1990, which are based on an estimated production function.

CHART VI-1
Germany

Inflation, Money, Output Gap, and Import Prices
(4-quarter percentage change)



Source: IMF estimates.
1/ West Germany before mid-1990. Data spliced to remove discontinuity.
2/ Actual minus potential real GDP as a percent of potential.

constraints such as limits on degrees of freedom and problems of multi-colinearity in the data. A metric used to evaluate the importance of the various indicator variables is provided by a decomposition of the VAR system's forecast error variance for inflation. 1/ Further information is provided by examining the response of each variable to random perturbations in each equation (the "impulse responses").

a. The pre-unification data

The roles of various monetary and non-monetary variables in the inflation process were examined by VAR analysis using (initially, to avoid issues of data splicing) only data from the pe-unification period. The two main indicators of domestic monetary conditions were broad money growth and the spread between 10-year government bond yields and 3-month money market rates. 2/ The main non-monetary indicator was the output gap, defined as the ratio of real GDP to its trend value (as in Chart VI-1). A fourth indicator, import prices, incorporated both the exchange rate, which is a potential endogenous outlet for the external transmission of monetary policy, and an exogenous cost push element via changes in world commodity prices. Import prices, the GDP deflator and money were expressed as the four-quarter change in the logarithm of each series--i.e., approximately the inflation rate over the course of four quarters--in order to turn these variables into stationary time series. 3/ On the basis of likelihood ratio tests for higher order terms, a maximum lag length of 5 was selected for the VAR models. 4/

The analysis finds evidence that all the chosen variables provide some information about inflation developments (Table VI-1). In general, the results suggest that money is a fairly robust indicator of future inflation explaining anywhere between 27 and 48 percent of the error variance of inflation after 5 years. Nevertheless, the other variables can explain a large proportion of the remaining variance and generally provide useful independent information on future inflation.

1/ For more details, see Sims (1980) and Todd (1991).

2/ Initial estimates also examined the predictive value of equity prices. However, little significance could be found for this variable and so the results are not reported here.

3/ Because statistical tests suggested that the levels of all variables, including interest rates, were integrated of order unity, there would be a risk of spurious regression results if the data were not differenced.

4/ A more detailed discussion of the issue of lag length selection, along with some alternative VAR estimates for Germany, can be found in Reimers (1993).

Table VI-1. Contributions to Forecast Error Variance of Inflation: Estimation Sample, 1971:Q3-1989:Q4

(In percent of total)

	Money growth	Yield spread	Import price inflation	Output gap	Lagged inflation
Model (1):					
After 2 years	5.8	...	...	...	94.2
After 5 years	36.8	...	...	...	63.2
Model (2):					
After 2 years	13.1	...	...	31.7	55.2
After 5 years	48.0	...	...	19.8	32.2
Model (3):					
After 2 years	20.2	...	7.8	36.5	35.8
After 5 years	46.0	...	14.4	22.2	17.5
Model (4):					
After 2 years	...	12.7	6.7	35.5	45.1
After 5 years	...	13.5	5.0	41.9	39.5
Model (5):					
After 2 years	37.2	17.4	2.9	...	42.6
After 5 years	43.0	22.2	7.9	...	26.9
Model (6a): 1/					
After 2 years	26.6	14.5	4.4	21.7	32.7
After 5 years	34.5	25.9	5.5	15.9	18.2
Model (6b): 1/					
After 2 years	31.5	9.7	4.4	21.7	32.7
After 5 years	27.0	33.4	5.5	15.9	18.2

Source: Staff estimates.

1/ The orthoganalization process needed to decompose the error variance is not independent of the ordering of the variables (Sims (1980)). In model (6a), the ordering runs: money growth, spread, import price inflation, gap, price inflation. In model (6b), the order of the money and spread variables are reversed. In the other models, changes in ordering had little effect on the results.

On its own, money growth is capable of explaining some 37 percent of the error variance of inflation after 5 years (Table VI-1, "model (1)"). This simple model also confirms that causality (in the sense that lagged values of money are significant determinants of inflation) runs from money to prices. The peak impact of a shock to money growth occurs after two to three years--a result in tune with the earlier visual impression in Chart VI-1.

The proportion of the error variance explained by money rises to nearly one half (models (2) and (3)) if the two non-monetary variables--the output gap and import price inflation--are included. At the same time, the non-monetary variables considerably reduce the forecast variance attributed in the table to lagged inflation. 1/ The importance of the output gap appears to be particularly pronounced in the short run and after two years explains about one third of the forecast error variance of inflation.

Analysis also confirms that the yield spread variable contains independent information that augments the overall explanatory power of the VAR models. 2/ At the same time, there is some evidence that the yield spread is a useful substitute for the output gap, which would be consistent with the results in Hu (1993) that suggest yield spreads are useful predictors of output developments. For example, in the most general model (number (6) in Table VI-1), the inclusion of the yield spread renders the output gap variable jointly insignificant for the VAR as a whole, even though lags of the output gap are jointly quite significant in the inflation equation. And there is a degree of symmetry between the results for models (3) and (5) in Table VI-1 in which the output gap and yield spread variables appear, respectively, on their own. In general, however, the yield spread does not appear by itself to have been a good substitute for money as an indicator for future inflation (compare models (3) and (4)).

Additional information in interpreting the results is provided by an examination of the impulse responses of the VAR systems to different shocks. In the most general model, where all four monetary and non-monetary variables are included along with inflation, a shock to money growth has a fairly immediate, but temporary, impact on the output gap, and a more drawn out impact on price inflation. The latter effect gradually builds up to a peak toward the end of two years (Chart VI-2). By contrast, a positive shock to the yield spread, which might be interpreted as a lowering of short-term interest rates, has a delayed impact on output, which begins to rise significantly after a period of 18 months to 2 years. 3/ While

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1/ Block exclusion tests--analogous to F-tests in a single regression but extended to the VAR system--confirm that the output gap and import price inflation provide additional explanatory power for inflation over and above that provided by money growth alone.

2/ This result is consistent with the evidence presented in Davis and Henry (1994).

3/ This interpretation of shocks to the yield curve would be consistent with historical experience: most of the variance in the spread variable can be accounted for by variance in short-term rates as opposed to bond yields.

inflation reacts perversely in the short term, it is significantly higher in the medium term (Chart VI-2, middle panel). Finally, a shock to import price inflation (which could reflect unanticipated currency depreciation) appears to have a rather small impact on inflation largely because it leads to a contraction of monetary growth--perhaps reflecting the typical policy response in the past--and the opening up of an output gap.

b. Extending the estimation period after unification

Estimates of the VAR models incorporating data from the post-unification period (1990-93) indicate a smaller role for financial variables--both money and yield spreads--in explaining inflation and a significantly greater role for the output gap (Table VI-2). 1/ This would be in keeping with the earlier observation that the most recent inflationary episode was not preceded by a significant upsurge in monetary growth. The result is particularly strong if united Germany estimates of real GDP and the GDP deflator are used: the higher inflation rate in the unified economy, against a background of much weaker output growth was even more at odds with the relatively benign earlier expansion of the money stock. Of course, the fall in output in east Germany and rise in price level after unification was more in the nature of a one-off adjustment suggesting that underlying economic developments may for the time being perhaps be more reasonably measured by west German indicators.

4. A monetary conditions index

This section presents a simplified reduced form model of output and inflation, drawing on the results of the VAR models, from which the effects of various monetary indicators on future inflation can be quantified. This quantification is used as the basis for constructing an MCI.

a. A model of prices and output

The price equation was estimated by simplifying the unstructured distributed lag formulation of the most general VAR model by eliminating statistically insignificant regressors. 2/ This process revealed the most important proximate determinants of inflation to be the output gap, import

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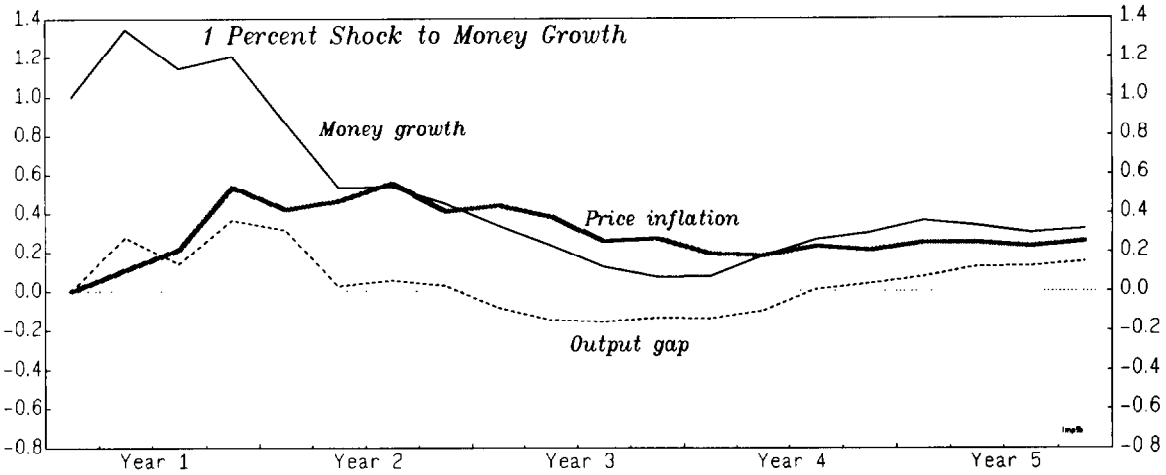
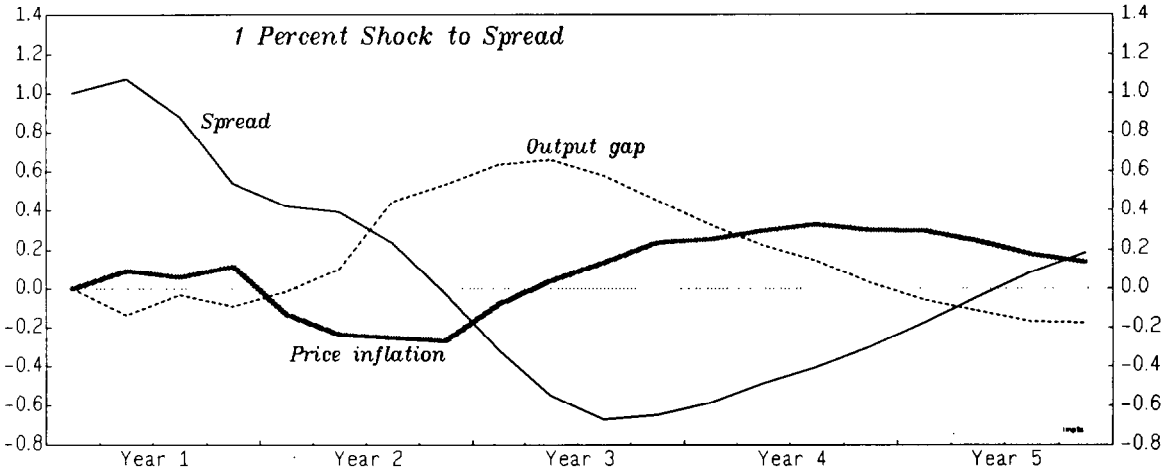
1/ See Annex 1 for data splicing assumptions. A dummy variable was included to allow for a potential break in behavior after the end of 1989 or to compensate for inappropriate splicing assumptions.

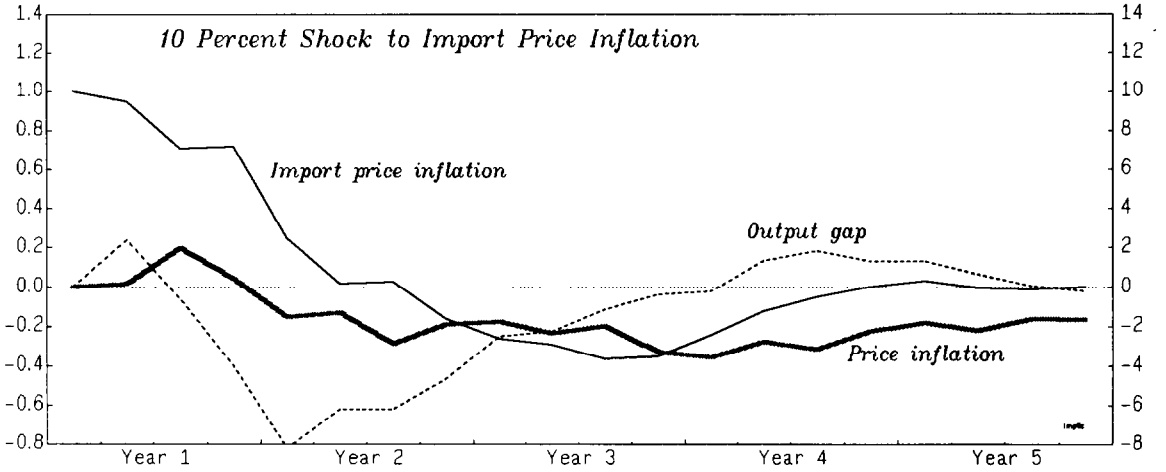
2/ The equation was estimated in fourth differences so the left hand side variable represents the inflation rate. Initially, an error correction approach was pursued along the lines of the "P-star" model outlined in Bundesbank, Monthly Report, January 1992. However, specification of the long-run determinants of the price level proved unsuccessful. See Annex 2 for details.

CHART VI-2
Germany

Impulse Responses: Estimated 1970-89
(In percent)







Source: IMF estimates.

Table VI-2. Contributions to Forecast Error Variance of Inflation: Estimation Sample, 1971:Q3-93:Q4 1/

(In percent of total)

	Money growth	Yield spread	Import price inflation	Output gap	Lagged inflation
Model (1):					
After 2 years	4.3	...	...	...	95.7
After 5 years	28.6	...	...	...	71.4
Model (2):					
After 2 years	8.8	...	...	36.0	55.2
After 5 years	29.2	...	...	29.1	41.7
Model (3):					
After 2 years	17.8	...	7.5	41.2	33.5
After 5 years	42.3	...	7.4	29.9	20.5
Model (4):					
After 2 years	...	11.0	10.8	36.0	42.2
After 5 years	...	9.3	13.0	36.2	41.5
Model (5):					
After 2 years	25.7	16.6	6.6	...	51.1
After 5 years	39.8	17.1	5.6	...	37.6
Model (6a): 2/					
After 2 years	22.7	8.9	5.6	32.6	30.2
After 5 years	32.6	15.2	4.3	26.0	22.0
Model (6b): 2/					
After 2 years	24.7	6.8	5.6	32.6	30.2
After 5 years	29.4	18.4	4.2	26.0	22.0

Source: Staff estimates.

1/ Data for inflation and the output gap refer to west Germany only.

2/ The orthoganalization process needed to decompose the error variance is not independent of the ordering of the variables (Sims (1980)). In model (6a), the ordering runs: money growth, spread, import price inflation, gap, price inflation. In model (6b), the order of the money and spread variables are reversed. In the other models, changes in ordering had little effect on the results.

price inflation and lagged money growth (see below). The equation, estimated using data only from the pre-unification period, has satisfactory statistical properties and stable parameters over a wide range of data sub-periods. Moreover, the equation continued to perform well (using west German inflation and output data) in the post-unification period, and easily passes out-of-sample forecast tests. In effect, the proximate factors that were important in determining inflation before unification appear to continue to remain important. 1/

The Price Equation 2/

$$\Delta_4\log(P) = \underset{(4.9)}{0.526}\,\Delta_4\log(P_{-1}) + \underset{(2.2)}{0.209}\,\Delta_4\log(P_{-2}) + \underset{(4.0)}{0.034}\,\Delta_4\log(PM_{-2})$$

$$+ \underset{(3.4)}{0.296}\,(\Delta_4\log(M_{-3}) - \Delta_4\log(M_{-4})) + \underset{(2.4)}{0.086}\,\Delta_4\log(M_{-5})$$

$$+ \underset{(2.8)}{0.129}\,\log(Y_{-1}/YTREND_{-1}) + \underset{(0.8)}{0.002}$$

OLS: 1971:Q3-89:Q4; RBARSQ = 0.902; DW = 1.88; AUTO = 9.51 (11.1); STAB(20) = 18.34 (31.4); STAB(40) = 26.61 (55.8); FORE(17) = 16.71 (27.6).

The properties of the equation suggest that inflation adjusts with a lag to changes in the output gap, money or import prices. In the case of a sustained increase in money growth of 1 percent, inflation would increase in the long-run by only 0.33 percentage points with about half the response occurring by the middle of the second year and the remainder completed by the beginning of the fifth year. For a shock to the output gap, the response is somewhat quicker with a 1 percentage point increase in capacity utilization raising inflation by about 0.3 percentage points by the end of one year and 0.49 percentage points in the long run if the increase were (unrealistically) sustained. A permanent 1 percent increase in import price

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1/ In keeping with the VAR results, full sample estimates through the first quarter of 1994 show some diminution of the coefficients on money and an increase in the coefficient on the output gap. However, the parameter changes are statistically insignificant.

2/ The mnemonics stand for: P, GDP deflator; Y, real GDP; YTREND, trend real GDP; PM, import prices; and M, the money stock (M3). The symbol Δ_4 represents a fourth difference ($\Delta_4 X = X - X_{-4}$). The reported test statistics (with critical values at the 5 percent significance level in parentheses) are: AUTO, test for serial correlation of up to lag five; STAB(n), test for parameter stability in last n periods of the estimation data period; FORE(17), out of sample parameter stability test for the period 1990:Q1-94:Q1.

inflation would eventually raise inflation by 0.13 percentage points, with most of the adjustment being completed after three years.

The income equation models the output gap as a function of lagged financial variables such as yield spreads, real short-term interest rates, real money stocks and the effective exchange rate. 1/ Of these, real short-term interest rates were found to dominate all other combinations of the other financial indicators (see below). Real rates, defined here by subtracting the 4-quarter percentage change of prices from nominal rates, enter the equation with a one-year lag. 2/ Like the inflation equation, the output equation has relatively stable parameters over various sub-periods of the pre-unification data. However, the equation--which, like the price equation, is estimated using only pre-unification period data--performs badly in explaining output in the post-unification period. In particular, it fails to predict the strength of the post-unification boom indicating that monetary factors alone cannot account for this phenomenon.

The Income Equation 3/

$$\Delta_4\log(Y) = \underset{(7.5)}{0.520}\,\Delta_4\log(Y_{-1}) - \underset{(3.5)}{0.225}\,(R_{-4}/100 - \Delta_4\log(P_{-4}))$$

$$- \underset{(5.8)}{0.462}\,\log(Y_{-4}/YTREND_{-4}) + \underset{(5.4)}{0.016}$$

OLS: 1971:Q3-89:Q4; RBARSQ = 0.777; DW = 2.10; AUTO = 3.67 (11.1); STAB(20) = 16.39 (31.4); STAB(40) = 32.28 (55.8); FORE(17) = 47.34 (27.6).

Simulation of the price and income equations together allows for joint feedback of the output gap onto prices and of prices onto real interest rates in the output equation. The implications for prices and income of simulated shocks to the financial variables are described in Table VI-3. For a permanent increase in the money supply, the long-run effect on prices is greater than the effect in the price equation alone because higher prices lead to lower real interest rates and higher output. For a permanent decrease in interest rates, the effects on prices come about through higher

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1/ Technically, the equation was estimated in an error correction format that assumes that output returns to its trend level in the long run.

2/ Estimates defining the inflation part of real interest rates using 4 quarter-ahead changes in prices produced similar estimation results, although the dynamic simulation properties of the price and income equations would be different from those reported below.

3/ See footnote to the price equation. The additional variable, R, stands for the 3-month money market interest rate.

output and hence a decline in the output gap. For an exchange rate depreciation, the effects are both direct and via (temporary) increases in output from lower real interest rates.

Table VI-3. Response to Shocks to Changes in Financial Variables

(In percent)

After:	8 quarters	12 quarters	20 quarters
1 percent increase in M3:			
effect on: prices	0.26	0.33	0.40
output	0.07	0.08	0.01
1 percentage point decrease in interest rates:			
effect on: prices	0.09	0.29	0.83
output	0.43	0.58	0.60
10 percent exchange rate depreciation 1/			
effect on: prices	0.95	1.21	1.49
output	0.15	0.31	0.07

Source: Staff estimates.

b. The monetary conditions index (MCI)

Table VI-3 suggests that changes in interest rates and exchange rates have similar impacts on prices over a two year horizon. Thereafter, the effects of interest rate changes become more important: after 3 years, a 1 percentage point reduction in interest rates has roughly two and a half times the impact on prices as a 1 percent depreciation of the exchange rate and more than 5 times the effect after 5 years. The impact of interest rate changes on output completely dominates the impact of exchange rate changes, which fade rapidly after the third year.

These results suggest that a monetary conditions index based on short-term interest rates and the exchange rate, where the weight on the former is rather greater than on the latter, might prove a useful indicator for future inflation. Specifically, a weighting of roughly 3-to-1 was suggested for forecasting inflation 3 years ahead and this was used to construct the following MCI:

1/ Simulated as a 10 percent fall in import prices.

$$MCI = -(RR - RR_{85}) - (1/3)*(RER/RER_{85} - 1)*100$$

where RR represents 3-month money market rates, RER the real effective exchange rate and the subscript 85 refers to the level in the first quarter of 1985. It should be noted that the choice of the latter period as a benchmark is arbitrary so that no significance can be attributed to the level of the MCI. However, an increase in its value should generally reflect a loosening of monetary conditions, and vice versa for a decrease. The index was constructed using real interest rates defined using either forward or backward measures of inflation expectations, although the qualitative properties of the index were similar in each case.

The MCI has a strong positive correlation with inflation two to three years ahead, which is similar in magnitude to that between inflation and lagged money growth (Table VI-4). In effect, the MCI as a single indicator of inflation, would have performed roughly as well as money growth on average in the past. For both money and the MCI the correlation is strong in the pre-unification period but very weak in the more recent period suggesting that neither indicator would have predicted developments in inflation around the turn of the decade very well (Chart VI-3). This is perhaps not surprising given the unprecedented nature of the demand shock to the west German economy that unification brought. The MCI, for example, was signalling (largely on the basis of the strong real appreciation of the deutsche mark in the second half of the 1980s) that monetary conditions had been tightening for some time before unification. 1/ However, it was not until 1992 that inflation stopped rising and began to head downwards. But it was also the case that, as discussed in section 2 above, the rise in inflation in the late 1980s and early 1990s was not preceded by a pick up in monetary growth. Furthermore, the pick up in monetary growth from the end of 1991 onward would, on the basis of past experience, have been suggesting that inflation should perhaps have begun to accelerate in 1993 and early 1994. The opposite in fact occurred.

5. Implications for monetary policy

The two indicators provide different evaluations of monetary conditions in the last two to three years. The early revival of money growth, dating from the end of 1991, would have suggested a significant and ongoing loosening of monetary conditions. By contrast, the MCI would have suggested that monetary conditions continued to tighten until very recently. This is because the effects on real interest rates of declines in nominal short-term interest rates, which did not begin until about a year after the initial upturn in monetary growth, were offset to some extent by falling inflation, while at the same time rate cuts coincided with some further modest appreciation of the exchange rate.

1/ The real exchange rate measure is based on relative normalized unit labor costs in manufacturing. As pointed out in Chapter III, this indicator may have exaggerated the implied loss of competitiveness.

Table VI-4. Inflation Correlation Coefficients

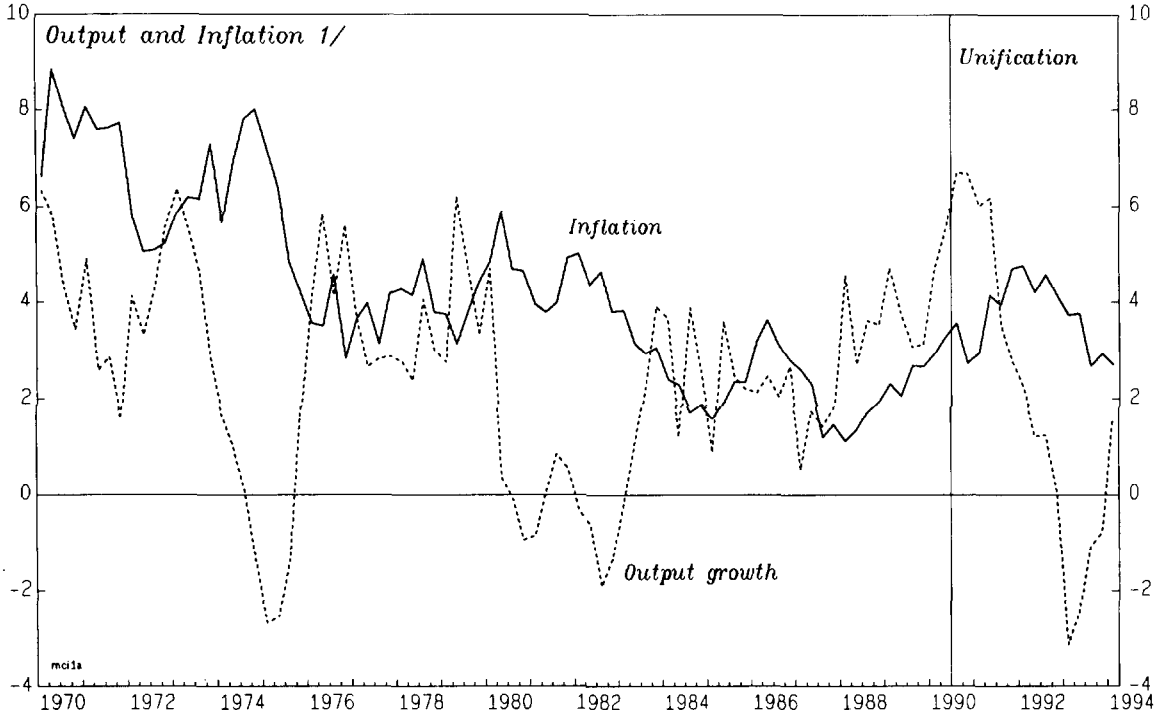
	1973-89	1973-93
MCI-backward looking price expectations:		
lagged 8	0.49	0.35
lagged 10	0.63	0.45
lagged 12	0.66	0.49
MCI-forward looking price expectations:		
lagged 8	0.53	0.39
lagged 10	0.65	0.49
lagged 12	0.63	0.50
M3 growth:		
lagged 8	0.74	0.64
lagged 10	0.69	0.62
lagged 12	0.64	0.59

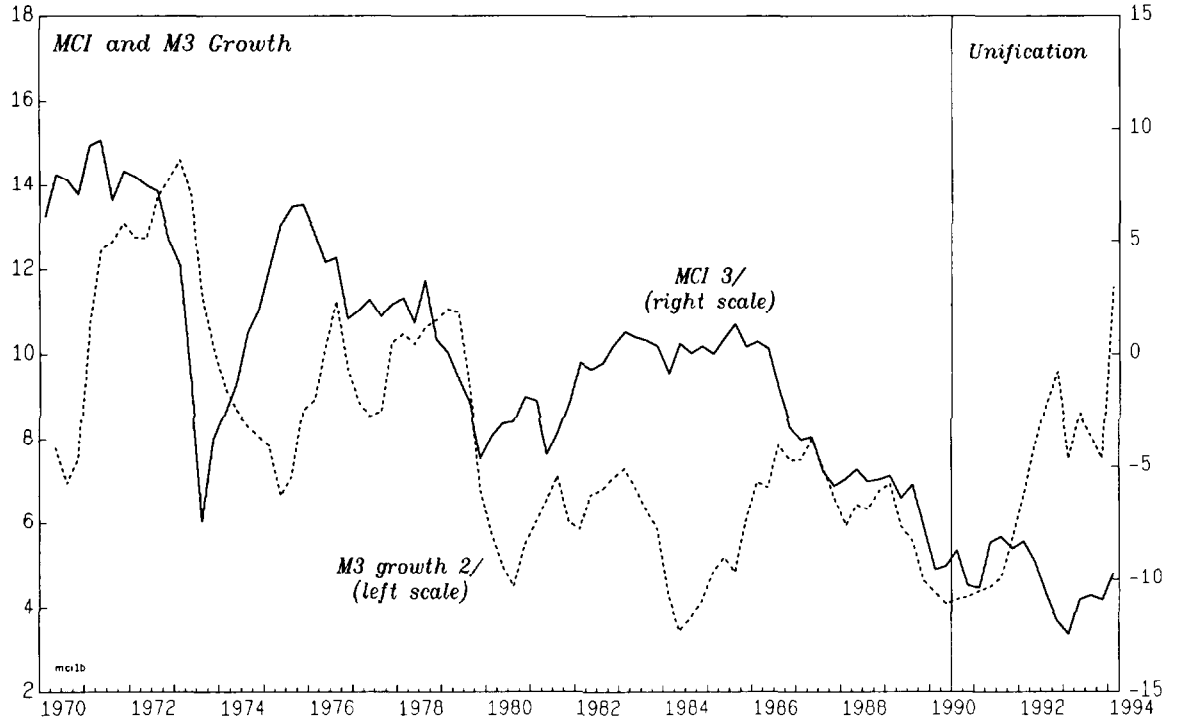
Source: Staff estimates.

Other non-financial indicators suggest that the outlook for price inflation in the remainder of this year and next year is favorable: in particular, recent wage settlements have been very low and producer and import prices flat or falling. This outlook would be consistent with the reading of monetary conditions provided by the MCI over the past few years and validates the decision to continue lowering interest rates during 1993 and 1994 despite the overshooting of the monetary target. However, a relevant issue for monetary policy at present is whether the continued rapid growth of broad money is signalling a pick up in inflation in two or three years time.

To shed some light on this issue, the inflation equation was used to project inflation through the end of 1997 on the basis of different assumptions about its key proximate determinants. In the baseline scenario, which approximates the staff's WEO projection, the output gap in west Germany is assumed to be closed rather gradually from its estimated 1994 average level of 2 3/4 percent, monetary growth would slow to a central target range of 5 1/2 percent a year and import price inflation would (consistent with WEO global assumptions) be 2 percent a year. On these assumptions, the GDP deflator would rise at a little under 2 percent a year in the medium term, despite the most recent surge in monetary growth (Table VI-5). In effect, the equation suggests that the output gap is imparting continuing downward momentum to inflation that more than offsets the effects of the monetary surge.

CHART VI-3
Germany
Monetary Conditions
(4-quarter percent change)





Source: IMF estimates.
1/ West Germany.
2/ Spliced data: see Annex I for details.
3/ In percent: a decline reflects a tightening of monetary conditions.

Furthermore, alternative assumptions about the determinants of inflation would suggest that the risks of significantly higher inflation in the medium term are not excessive. For example, 1 percent faster money growth or import price inflation at 5 percent a year (reflecting either higher world commodity prices or deutsche mark depreciation) would still leave inflation around 2 percent a year. The inflation outlook is more sensitive to the future path of the output gap. Thus, if the output gap were closed by early 1996, instead of sometime after 1997 as assumed in the baseline, inflation would be forecast to increase to 2 1/2 percent in 1997. This scenario would, on current estimates of the output gap and potential growth in the western Länder of around 2 percent a year, require output growth to accelerate to 3 to 4 percent in 1995-96.

Table VI-5. Inflation Scenarios

(In percent)

	1994	1995	1996	1997
Baseline inflation	2.8	1.7	1.8	1.9
Faster money growth	2.8	1.8	1.9	2.1
Higher import price inflation	2.8	1.8	2.0	2.2
Faster growth	2.9	2.0	2.3	2.5
Baseline assumptions:				
Money growth	9.0	5.5	5.5	5.5
Output gap	-3.2	-2.7	-1.9	-0.9
Import price inflation	0.7	2.0	2.0	2.0

Source: Staff estimates.

The staff's forecast of a slow closing of the output gap is partly based on an assessment of the effects of a sizable withdrawal of fiscal stimulus in both 1994 and 1995. The slow closing would, in the staff's judgement, permit a further modest loosening of monetary conditions: specifically, a reduction in short-term interest rates to around 4 1/2 percent by the end of the year against a background of a broadly stable real exchange rate. However, the mapping of monetary conditions into the output gap necessarily requires some judgement, especially given the breakdown in the estimated relationship between output and real interest rates in recent years. Nevertheless, some feel for the risks involved of further easing might still be gauged from the properties of the simple price-output model

described in Table VI-3 above. Specifically, a 1 percentage point cut in interest rates might be expected to have little immediate impact on inflation, but would help to close the output gap by about 0.6 percentage points after 3 years. Inflation in the following years would increase by about 1/4 percentage point a year. This would not seem to present an excessive risk, particularly since there are also risks on the downside that sustained recovery is not as yet assured.

6. Conclusions

On average in the past couple of decades, a monetary conditions index based on interest and exchange rates would have performed a similar role in signalling future inflation as money growth. Recently, the two indicators have moved in opposite directions with monetary growth picking up significantly in the last 2-to-3 years while the MCI has been suggesting a rather tighter policy stance. An assessment of inflation prospects and risks would confirm the appropriateness of recent official interest rate cuts and suggest, on the assumption that monetary growth slows, that the inflationary risks of further modest easing in the period immediately ahead are relatively small.

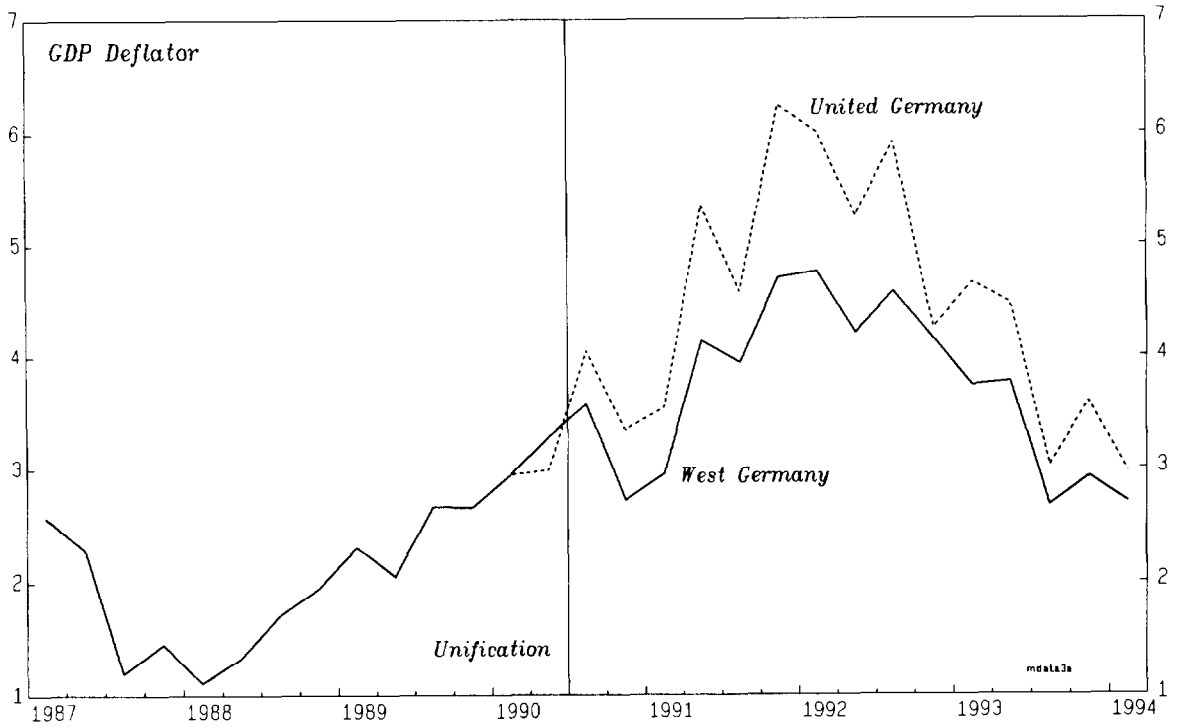
Data Splicing Assumptions — ANNEX 1

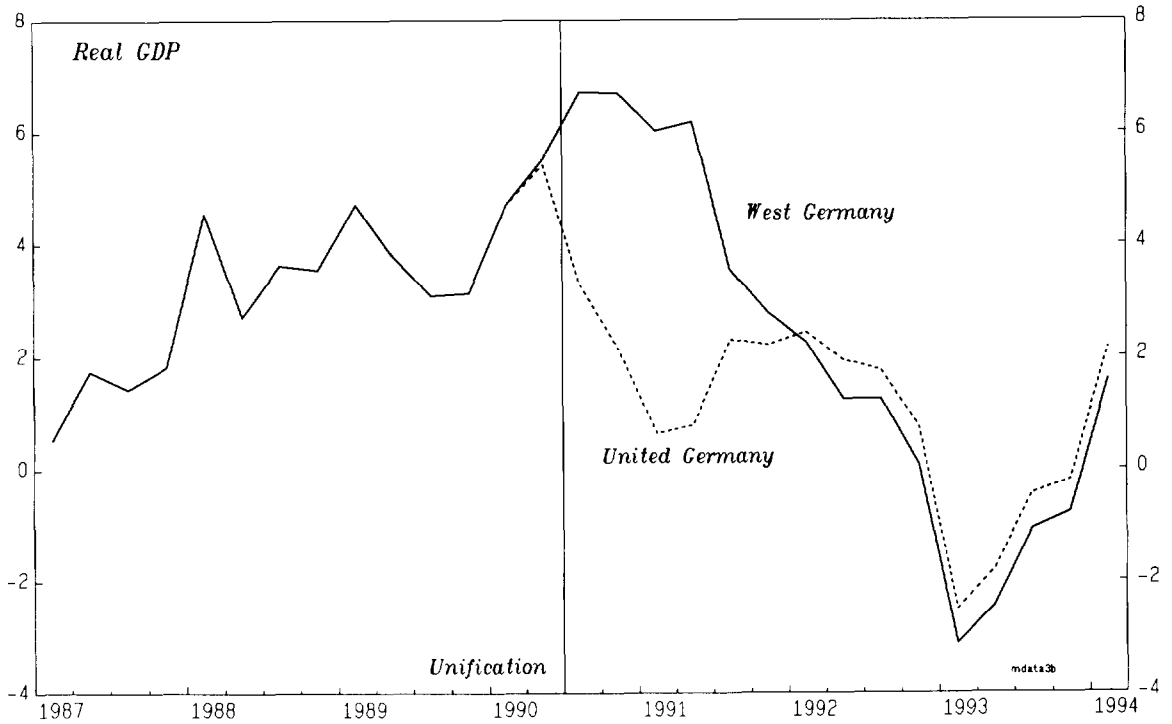
Time series analysis of the post-unification period requires splicing of key data series in order to remove discontinuities associated with the enlargement of the economic area. For nominal and real GDP data, quarterly estimates for united Germany were available from DIW from the beginning of 1990. These were spliced with earlier estimates for west Germany on the assumption that the growth rate in the first quarter of 1990 was the same in both the old and new Länder. As a result, and given the initial sharp fall in output in east Germany, real GDP growth in the unified economy is estimated to have been considerably weaker in 1990-91 than in the western Länder alone (Chart VI-4), while inflation would have been somewhat higher due to price adjustment in the east. Thereafter, the revival of the east German economy would have had a small offsetting effect on the recession in the west.

Money stock data for the unified economy have been published on a consistent basis since the beginning of 1991, although a separate east/west monetary survey also exists for the second half of 1990. On the basis of the overlapping observations, the unified German money stock was estimated for the last two quarters of 1990 and spliced with earlier data for west Germany on the assumption that money growth was the same in the eastern and western Länder in the third quarter of 1990. 1/

1/ Some partial support for this assumption is provided by the one overlapping observation (end-June) for the second quarter of 1990. The ratio of east/west money stocks was almost exactly the same in June 1990 as in the third quarter of 1990.

CHART VI-4
Germany
Inflation and Real GDP
(4-quarter percent change)





Source: IMF estimates.

The data indicate that money velocity in the united economy during the second half of 1990 was below the level in the western Länder. This might reflect, in part, the lack of non-monetary financial investment opportunities in the former GDR (Chart VI-5). According to the overlapping data for the second half of 1990, the velocity of money in the united economy was as much as 6 percent lower than in the western Länder alone. However, on the basis of the splicing assumptions, the discrepancy would have been only 3 percent prior to monetary union in mid-1990.

The P-Star Model

ANNEX 2

A strand of empirical work, recently revived by Hallman and others (1989) in the case of the U.S. economy, estimates a long-run price level ("P-star") based on a reformulation of the Quantity Theory identity. Deviations from the long-run price level are assumed to lead to equilibrating price changes in what is in effect an error correction model of inflation. The model has been successfully applied to German data by the Bundesbank. 1/

The starting point for the P-star model is to replace velocity and output by their long-run trend values in identity (1) in the main text. Rearrangement produces the following expression for the equilibrium price level, where an asterisk denotes a trend value:

$$P^* = M.V^*/Y^* \qquad \text{(II.1)}$$

If P* is a valid long-run expression for the price level, then it should be cointegrated with actual prices. 2/ Tests of this proposition require construction of the trend values of output and velocity. Here, the former was represented by a Hodrick-Prescott filter of actual real GDP in west Germany. The latter was constructed by de-trending actual velocity using regression techniques that produced stationary deviations of velocity from its trend. 3/

Tests, however, suggest that actual prices are not cointegrated with P-star (see tabulation below). This is true whether the cointegrating coefficient between the two is constrained to unity (it is extremely close to one in free estimation) or whether additional variables such as import prices are included in the cointegrating relationship. Splitting P-star into its components (money, trend output and trend velocity) reveals that the trend velocity term is statistically insignificant while the

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1/ See Monthly Report, January 1992.

2/ See Engle and Granger (1987) for an accessible discussion of the technical terms.

3/ See Annex 2 to Chapter II and Germany - Economic Developments and Selected Background Issues, SM/93/151, Chapter VI. Other methods of estimating trend velocity, for example the use of a more conventional long-run money demand function, produced qualitatively similar results.

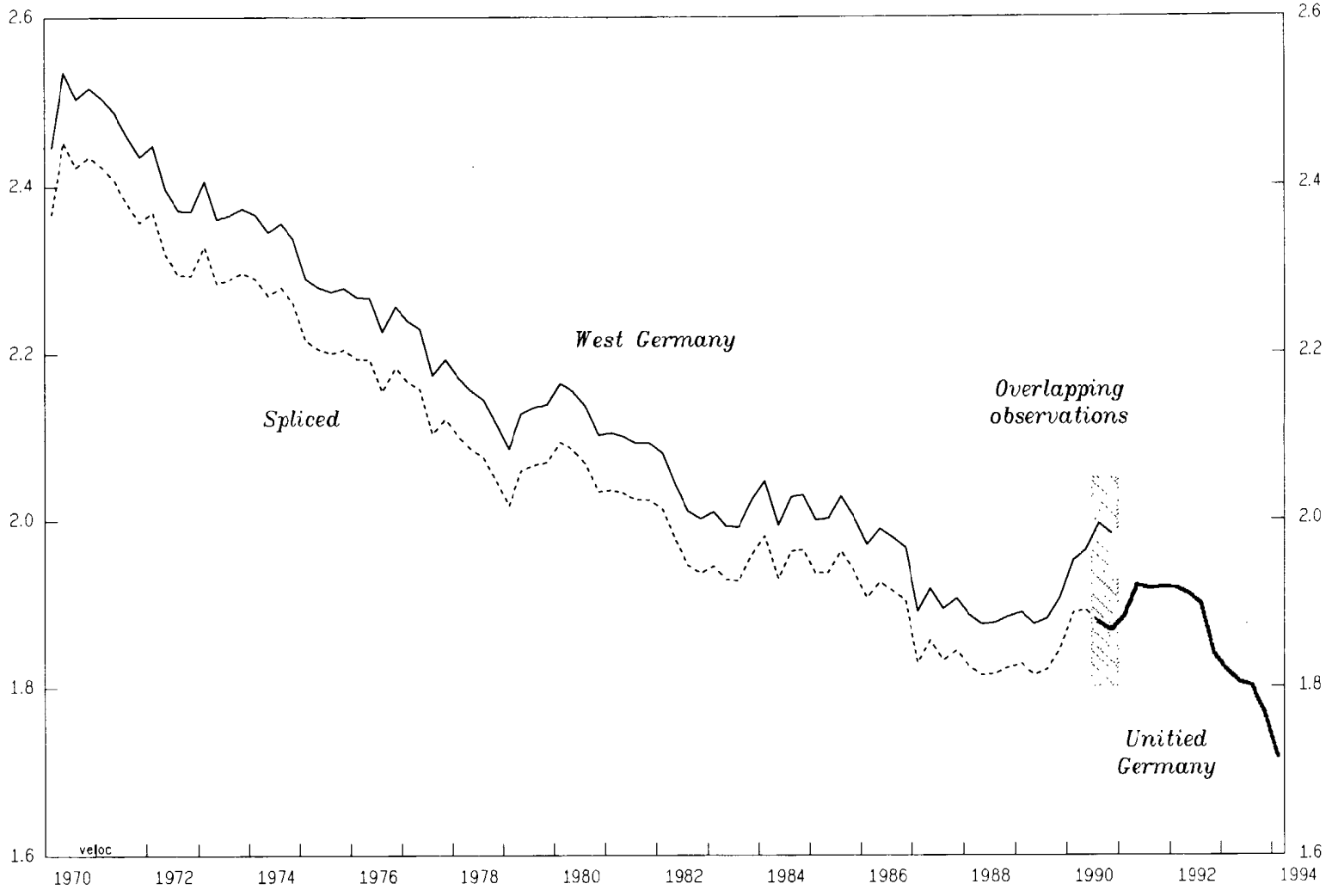
coefficients on money and trend output fall well short of their expected value of unity. There is some weak evidence that prices are cointegrated with the ratio of money to trend output and import prices. However, the long-run coefficient on the money/output term would be well below unity and the interpretation of the result is far from clear.

Cointegration Tests for a Long-run Price Equation, 1970-89

	Test statistic		
	CRDW	DF	ADF
Model:			
P = P*	0.23	1.55	3.20
P = 0.99 P* + 0.02 PM	0.23	1.52	3.03
P = 0.53 M - 0.27 Y* + 0.10 PM - 0.08 V*	0.47	3.62	3.87*
P = 0.68 (M-Y*) + 0.07 PM	0.43	3.30	3.56*

1/ Variables are in logarithms. The tests are, CRDW = cointegration regression Durbin Watson statistic; DF = Dickey-Fuller statistic; ADF = augmented Dickey-Fuller test with four lags. An asterisk denotes significance (i.e., likely cointegration) at the 10 percent level.

CHART VI-5
Germany
M3 Velocity 1/



Source: Staff extimates.
1/ Ratio of nominal GNP to M3 stock.

VII. Prospects for Self-Sustaining Growth in Eastern Germany

1. Introduction and overview

Considerable progress has been made in restructuring the economy of eastern Germany. The system of economic planning in existence at the time of economic and monetary union in mid-1990 has been replaced by a social market economy on the west German model. Most west German laws and institutions were extended to eastern Germany at the time of unification, and there has been further institutional convergence since. Privatization has proceeded quickly; by the end of 1994, virtually all of the former state-owned enterprises had been transferred to private ownership. The transformation has been more profound and complete than in any other country in transition in central and eastern Europe. Eastern Germany now possesses a stable political and legal framework, a substantial private enterprise sector, and a comprehensive social safety net.

These achievements have not been without cost: transfer payments from west Germany had increased to about 5 percent of all-German GDP by 1993 (Table VII-1). The restructuring process has also been accompanied by a large decline in measured production and a massive shakeout of labor. 1/ However, the downturn in production had already bottomed out in the course of 1991, and gross domestic product has been increasing since at annual rates of between 5 and 10 percent (Table VII-2).

Nonetheless, the question remains whether growth in east Germany can be sustained. There has been concern that the rapid increase in east German wages, which are now far higher than warranted by productivity, could prove to be an impediment to private investment. Moreover, the increase in output since 1991 has been concentrated in non-traded activities such as construction and retail trade that may have been stimulated by growing transfers from west Germany. Manufacturing output and exports of goods, on the other hand, have remained relatively weak, although signs of a stronger upswing were emerging by early 1994.

Inadequate economic growth in east Germany could make the region even more reliant on transfer payments and have serious repercussions for the public finances and macroeconomic performance in Germany as a whole. This chapter reviews in more detail some of the factors that will affect the prospects for an upswing in east Germany, including institutional arrangements, investment, and conditions in the labor market. On the basis of this analysis, an attempt is made to incorporate the most salient features into a quantitative framework for the assessment of potential growth. The simulations suggest that the prospects for growth are relatively good, but that employment would continue to decline unless supported by policy intervention.

1/ The size of the drop has most likely been exaggerated. Estimates of pre-unification gross domestic product are overly high in that they do not adequately reflect differences in quality between western and eastern products.

Table VII-1. Public Transfers to Eastern Germany

(In billions of deutsche mark)

	1991 1/	1992 1/	1993 2/	1994 2/
Federal government 3/	75	89	117	119
West German Länder governments and local authorities 4/	5	5	10	14
"German Unity" Fund	31	24	15	5
EC budget	4	5	5	6
Federal Labor Office 5/	25	24	18	18
Statutory pension insurance funds	--	5	12	12
Gross transfers, total 6/	140	152	177	174
less: Receipts of the Federal government in eastern Germany 7/	33	35	39	42
Net transfers, total	107	117	138	132

Source: Deutsche Bundesbank, Monthly Report, September 1993.

1/ Partly estimated.
2/ Estimated.
3/ Including financial assistance to the Federal Labor Office.
4/ Including the waiver of turnover tax revenue as a result of the population-based distribution of this tax.
5/ Corresponds to the share of the deficit incurred in eastern Germany, which is being financed by west German contribution payments.
6/ Excluding tax concessions, interest-subsidized loans and interest payments due to unification.
7/ Tax revenue and administrative reports.

Table VII-2. Eastern Germany: Basic Economic Indicators

	1990	1991	1992	1993
A. Output and Employment				
Real GDP 1/	...	-28.6	9.7	7.1
Employment 1/	...	-15.8	-10.7	-3.4
Productivity 2/	...	-15.2	22.8	10.9
B. Investment				
Gross fixed investment 3/	28.1	48.2	49.5	50.5
Private 3/	23.2	40.6	41.3	42.9
Business 3/	15.8	36.9	31.1	30.6
Residential 3/	7.4	3.7	10.2	12.3
Public 3/	4.9	7.6	8.2	7.6
Business investment per employed person 4/	38.4	88.8	108.2	130.0
(east in percent of west)	34.6	73	88.5	117.6
Public investment per capita 5/	6.6	8.7	12.2	13.4
(east in percent of west)	75.2	91.9	120.4	135.9
C. Labor costs				
Marginal product of labor 6/	13.9	13.7	19.8	24.2
Average gross wage 7/	19.6	26.0	35.4	40.0
(in percent of west German level)	37.9	47.4	61.2	67.0
Share of labor income 8/	87.6	113.3	108.3	105.6
D. Labor market				
Employment (millions)	8.923	7.509	6.709	6.483
Participants in labor market programs 9/	...	2.064	1.763	1.463
(in percent of employment)	...	27.5	26.3	22.6
Unemployment rate 10/	2.9	10.8	14.8	15.1
(west Germany)	6.2	5.5	5.8	7.3

Sources: Data provided by the authorities; and staff calculations.
1/ percent changes.
2/ Real GDP per employed person, percent change.
3/ percent of GDP.
4/ Gross business investment per employed person (in thousands of deutsche mark).
5/ Per population (in thousands of deutsche mark).
6/ Nominal GDP per employed person, multiplied by normal share of labor.
7/ Gross income from dependent employment per employee (in thousands of deutsche mark).
8/ Gross income from dependent employment as percent of national income.
9/ Retraining, job creation, short-time work, early retirement.
10/ In percent of labor force.

2. Determinants of growth

a. Investment

The standard neoclassical view of economic growth is that in the very long run, when the economy has reached a steady state, the growth rate of per capita income depends on the rate of technological innovation. During the transition to the steady state, when the economy is undergoing a process of capital-deepening, the growth rate also depends on the rate at which capital is accumulated.

The east German economy at the time of unification was far from a steady state. The inherited capital stock was of little value in a market economy, and technology lagged behind the west by perhaps two decades. Productivity and per capita incomes were substantially lower than in west Germany.

The implication is that economic growth in east Germany will be driven for a considerable time by capital accumulation. The speed of this process, and hence the rate of economic growth, will depend largely on the amount of new productive investment that is forthcoming. The propensity of private enterprises to invest in turn depends on a multiplicity of factors that affect the rate of return on capital. These include the degree of political stability, the efficiency and honesty of public administration, the condition of the infrastructure, the availability of a labor force that is technically skilled and diligent, and the level of wages.

An important objective of economic policy in the region has therefore been to create an environment conducive to private investment. A considerable effort has been devoted to rebuilding east Germany's public infrastructure, especially in the critical fields of transportation and telecommunications. Moreover, the government has made available generous assistance to potential investors in the region, including special tax allowances, accelerated depreciation, and subsidized credit. Several laws were passed to ensure that the property rights of investors took precedence over the restitution claims of former owners. Finally, the Treuhand has required buyers of its enterprises to make a contractual commitment to a specified volume of investment. 1/

These policies appear to have been met with some success, although it is difficult to know how investment would have performed in their absence. There has been a marked increase in gross-fixed investment, from less than 20 percent of GDP in 1990 to around 50 percent of GDP in 1993 (Table VII-2). There has also been a shift in the perceptions of investors. Early surveys showed that bottlenecks in public administration, a lack of market opportunities, uncertainty about property rights, and an inadequate transportation and telecommunications infrastructure were seen as important

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1/ These commitments have been linked with a commitment to maintain a specified level of employment. See Section 2.b. below.

obstacles to investment. In more recent surveys, these concerns have moved to the background.

b. Wages and employment

Instead, the high level of wages in east Germany has assumed greater prominence in the surveys on the obstacles to investment. This section examines the relationship between the level of wages, employment, and the incentive to invest.

The sharp increase in wages following unification can be attributed to a desire of labor unions to eliminate the wage differential with west Germany. The ostensible motivations for this policy were equity ("equal pay for equal work") and the desire to reduce migration to west Germany. 1/ Wage rates have as a result been far out of line with productivity. Not only is the average wage rate substantially higher than the marginal product of labor, but the share of labor in national income exceeds 100 percent, implying that the aggregate current profitability of the business sector is negative (Table VII-2).

Excessive wages affect both the level of output and the propensity to invest. The effect on the level of output results from the reduction in the demand for labor. Indeed, employment has declined every year since unification (Table VII-2). Although some initial decline in employment was to be expected, if only because labor force participation under central planning was artificially high, employment has continued to fall even though production bottomed out in the course of 1991.

The effect of excessive wages on the propensity to invest, and hence on the growth rate of output in the medium term, is of greater consequence. For any given level of total factor productivity, both the real wage and the real implied return on capital are determined by the capital-labor ratio. When a profit-maximizing firm increases its capital-labor ratio in response to higher wages, which in the short run can be accomplished only by cutting employment, the implied rate of return on capital declines, reducing the incentive to invest. In principle, extremely high wages could completely stifle new investment unless offsetting measures are taken.

As discussed above, the government has taken a number of measures to stimulate investment. In addition, direct and indirect labor subsidies are

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1/ The early wage negotiations in east Germany were dominated by union representatives from west Germany, who may have been eager to avoid low-wage competition from east Germany, while enterprise management was still predominantly in the hands of officials appointed by the old east German government, who offered little resistance to union demands. In some cases, for example in the metals industry, agreements were reached a few months following unification that provided for a full adjustment of wages in eastern Germany to the west German level within a few years. Some of the more generous agreements have since been amended.

widespread in east Germany. These helped to mitigate the adverse effect of high wages on investment and growth. Workers in special labor market programs accounted for about one-fifth of total employment in 1991-93. 1/ Moreover, the Treuhand has required buyers of enterprises to make a commitment to maintain employment at a specified level for some years. In exchange for these commitments, the Treuhand provided a subsidy by reducing the price charged to the buyers. 2/

There is a growing recognition that these measures may not be sufficient, and that wage moderation and greater wage flexibility may also be needed to forestall a further significant rise in unemployment and to enhance the incentive to invest in east Germany. Numerous enterprises have left the employers' associations, and there is evidence that many have been paying wages below the official tariff without much protest from the unions. Moreover, many labor unions have now distanced themselves from the objective of achieving wage parity with west Germany in the course of a few years. There has also been a somewhat greater willingness on the part of the labor unions to permit the negotiation of special wage concessions at the plant level when jobs are in jeopardy.

c. The composition of demand and output

While the adequacy of aggregate investment and conditions in the labor market are the most fundamental determinants of economic growth, the composition of demand and output also provides information on the likely pace of economic expansion. Aggregate demand in east Germany currently exceeds output by a wide margin, and there is a substantial trade imbalance (Table VII-3). Demand is sustained by large net transfer payments and by a substantial inflow of capital. The capital inflow partly finances private investment and partly the borrowing of state and local governments and the Treuhand. 3/

Put differently, east Germany's massive trade deficit was the necessary counterpart of the inflows of transfers and capital. The domestic tradable goods sector (which consists principally of manufacturing industry) was simply unable to satisfy the surge in demand brought on by these inflows. Moreover, the east German manufacturing sector was uncompetitive. Many goods were of low quality, at least initially, and costs were, and in some

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1/ These programs included short-time work, job creation measures, retraining. Recipients of special early retirement benefits are also counted as employed.

2/ Taking into account various subsidies for restructuring, debt relief, and other forms of assistance, the effective price charged to buyers of enterprises was, in many cases, zero or even negative.

3/ Public borrowing in east Germany amounted to DM 52 billion in 1993 (about 20 percent of GDP).

cases remain, excessive. 1/ Compared with 1990, the share of manufacturing in value added has fallen sharply, to less than 20 percent (Table VII-4). Although it has recovered somewhat since, it remains well below the industrialized country norm. In west Germany, for example, the share of manufacturing in value added has in recent years been around 30 percent.

The decline in the share of manufacturing and other tradable items was mirrored by a marked shift in the structure of production toward non-tradables such as private services and construction; these activities have made a substantial contribution to the growth of output in east Germany in 1992 and 1993. However, there has been concern that as transfers to east Germany stabilize, the impetus these transfers have imparted to the non-tradable sector will also level off. With little further expansion in the non-tradables sector, even a relatively rapid increase in the output of manufactures and other tradables would produce only slow economic growth given the small share of the tradable sector in overall value added. In sum, there would be a deceleration in economic growth as transfers from west Germany level off or decline.

An assessment of this observation would begin by defining the (disposable) income of the east German economy as the sum of domestic net production and net transfers. It then becomes apparent that in 1992-93, the share of income absorbed by non-tradables amounted to only 54 percent, substantially below the comparable ratio for west Germany (64 percent). Hence, there is considerable room for a further expansion of the non-tradables sector. The extent to which the slackening of transfer payments to east Germany is likely to constrain economic growth is taken up in the quantitative framework developed below.

1/ In the immediate aftermath of unification, east German consumers were reluctant to purchase poorly made domestic products. Producers in east Germany have in the meantime sharply upgraded quality and are beginning to regain the confidence of consumers and to increase their market share. The collapse of trade with the former CMEA countries has added to the woes of east German manufacturing, as have the difficulties of developing new markets in western Europe and elsewhere.

Table VII-3. Eastern Germany: Trade and Payments

	1990	1991	1992	1993
	(In billions of deutsche mark)			
Goods and non-factor services				
Exports	35.2	46.9	53.5	52.7
Imports	91.6	218.2	251.1	265.1
Foreign balance	-56.4	-171.3	-197.6	-212.4
Balance of factor services	2.0	9.2	11.8	11.3
Balance of transfers	...	107	117	138
Current balance	...	-55.1	-68.8	-63.1
Implicit capital account balance	...	55.1	68.8	63.1
	(In percent of GDP)			
Goods and non-factor services				
Exports	16.2	25.9	22.9	19.1
Imports	42.1	120.6	107.6	96.2
Foreign balance	-25.9	-94.7	-84.7	-77.1
Balance of factor services	0.9	5.1	5.1	4.1
Balance of transfers	...	59.2	50.1	50.1
Current balance	...	-30.5	-29.5	-22.9
Implicit capital account balance	...	30.5	29.5	22.9

Source: Data supplied by the authorities; and staff calculations.

Table VII-4. Eastern Germany: Gross Value Added by Sector

	1991	1992	1993	1990	1991	1992	1993
	(Percent changes)			(Percent of total)			
Agriculture and forestry	-66.1	18.8	41.1	2.9	1.3	1.4	1.9
Industry	-34.3	14.3	11.1	41.5	35.8	37.6	39.2
Mining and energy	-13.8	-12.2	-5.0	6.9	7.8	6.3	5.6
Manufacturing	-49.1	17.2	10.6	24.4	16.3	17.5	18.2
Construction	-12.8	28.1	19.2	10.2	11.7	13.8	15.4
Total services	-13.6	5.4	3.3	55.5	62.9	61.0	59.0
Trade and transport	-36.9	-3.0	7.5	18.4	15.2	13.6	13.7
Trade	-40.4	-0.2	5.7	12.6	9.9	9.1	9.0
Transport	-29.0	-8.2	11.2	5.7	5.3	4.5	4.7
Other private services	11.3	16.7	2.7	16.3	23.7	25.5	24.5
Public sector, private households and non-profit organizations	-12.5	-0.5	1.3	20.9	24.0	21.9	20.8
Gross value added	-23.7	8.8	6.7	100.0	100.0	100.0	100.0

Source: Deutsches Institut für Wirtschaftsforschung.

3. Quantitative framework

a. Introduction

In this section, an attempt is made to quantify the interplay among several of the key variables affecting economic growth: output, investment, wages, and employment. The model is based on the neoclassical theory of capital accumulation and growth. At its core are aggregate production functions and investment equations, all of which are calibrated on the basis of the historical experience in west Germany. Labor market conditions are analyzed by deriving labor demand functions using standard marginal productivity conditions.

b. Overview of the model

Three sectors are distinguished: tradables and non-tradables, with the latter further subdivided into private and public components. 1/ Output in each sector (denoted by i) is represented by a Cobb-Douglas production function:

$$Q_{ti} = A_{ti} K_{ti}^{\alpha} L_{ti}^{1-\alpha}$$

where Q_{ti} is output, A_{ti} is total factor productivity, K_{ti} is capital stock, and L_{ti} is labor input. The production elasticities of the factors, denoted by α, are the same across sectors. 2/ As indicated in the previous section, the overall income of the economy is the sum of output and net transfers

$$Y_t = Q_t + TR_t$$
$$Q_t = Q_{t,T} + Q_{t,NP} + Q_{t,NG}$$

where Q_t is output, TR_t are transfers, and the subscripts T, NG, and NP refer to the tradables, public non-tradables, and private non-tradables sectors.

The government sector is assumed to be essentially static, with value added remaining constant in real terms for most of the forecast horizon and increasing in step with value added in the other sectors in the longer run. For the sake of simplicity, the projections also assume that net transfers remain constant in real terms over the entire horizon. Moreover, the share

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1/ The tradeables sector is assumed to consist of manufacturing plus transport and telecommunications. Data limitations prevent a more precise delineation, which would include some other tradeable services. It is also assumed that the entire value-added of the government sector is non-tradeable.

2/ It is straightforward to show that provided the market wage and cost of capital faced by each sector are the same, and that the marginal conditions for profit maximization hold, the aggregate production function for the economy as a whole also has the Cobb-Douglas form. In this production function, the aggregate factors of production (capital and labor) are the sum of the factors of production employed in the individual sectors, and total factor productivity is a weighted sum of sectoral total factor productivity, where the weights are the share of labor employed in the individual sectors. Moreover, the marginal conditions for profit maximization hold for the aggregate production function.

of the non-tradables sector in overall income is assumed to converge to the equilibrium share according to a partial adjustment process

$$\sigma_{t+1} = \sigma_t + \xi(\bar{\sigma}-\sigma_t)$$
$$\sigma_t = \frac{Q_{t,NP} + Q_{t,NG}}{Y_t}$$

where the parameter is chosen to achieve the bulk of the adjustment in twenty years or so. Then, income is determined as

$$Y_t = \frac{Q_{t,T} + TR_t}{1-\sigma_t}$$

The next task is therefore to determine output in the tradable goods sector, which requires a model of investment and the demand for labor. With this model in hand, overall income and output can be determined, as well as the distribution of factors across sectors.

c. Derivation of the investment function

The investment function is based on the solution to the profit-maximization problem of a representative firm. Profits are maximized subject to the constraint of technology (i.e. the production function), but also subject to a term representing costs associated with changes in the capital stock. The solution to this problem (see Annex for details) produces a formula for investment which can be recognized as a partial adjustment model:

$$K_{t+1} = z\,K_t + \frac{F_K(K_t,L_t,A_t) - (r_t+\gamma)}{\psi(1+r_t-z)}$$

In the limit, assuming $r_t \rightarrow r$=const, K_t asymptotically increases each period by a factor of z and the marginal product of capital equals $r+\gamma$, the sum of the real rate of return on capital and the rate of depreciation. It is easy to show that the parameter z-1 is the steady state growth rate of the economy: that is, the rate at which the capital-output ratio remains constant.

The investment function was calibrated on the basis of west German data (again, details may be found in the Annex). For the purposes of the simulations, the following related and relatively simple form was used:

$$\frac{K_{t+1} - zK_t}{Y_t} = \alpha_0 + \alpha_1[(\frac{\bar{K}}{Y}) - \frac{K_t}{Y_t}]$$

It might be noted that calibrating the investment function on the basis of the west German experience may understate the volume of investment that can be expected in east Germany. In particular, investment in east Germany is unlikely to be constrained by the availability of domestic saving as may have been the case in west Germany in the period 1960-90. The estimates also do not take account of the large subsidies for investment available in east Germany, and may therefore again understate the propensity to invest in east Germany. 1/ On the other hand, the fact that Germany was a net exporter of saving for much of the period in question suggests that the saving constraint may not have been binding. In any event, it is probably safer to underestimate investment than to overestimate it.

d. Calibration of the production functions

Before proceeding to the more complex task of calibrating the multi-sector model, it is worth making some observations about the overall situation. Aggregate labor productivity in east Germany, as measured by real GDP per employed person, was about 34 percent of the west German level in 1990. In terms of the Cobb-Douglas production function used here, lower labor productivity can be explained by a lower capital-labor ratio, by lower total factor productivity, or by some combination of both. 2/ As there is no reliable information on the level of the capital stock in east Germany around the time of unification, it is not possible to determine both the capital-labor ratio and total factor productivity. One or the other will have to be set arbitrarily based on broad considerations of plausibility and consistency. In this connection, it should be noted that for any given level of labor productivity, there is an inverse relationship between total factor productivity and the implied capital stock. The following tabulation illustrates (assuming Y/L=28.40, the 1990 value for east Germany):

Range of Initial Conditions in Eastern Germany

Total factor productivity (in percent of west German level)	20.0	40.0	60.0	80.0	100.0
Capital stock (ratio to real GDP)	18.7	3.7	1.5	0.7	0.4

1/ An attempt can be made to correct for this by changing the steady-state cost of capital r.

2/ Part of the shortfall could also be explained by differences in the production elasticities of capital and labor. More generally, the form of the production function could have been entirely different. A full evaluation of these possibilities is beyond the scope of this study.

Thus, the range of estimates for the initial capital stock varies by a factor of ten or more. Some of the more extreme estimates are easily ruled out on the basis of plausibility considerations. The well-known inefficiency of resource allocation in east Germany's planned economy, and the outmoded technology widely used there, make it unlikely that total factor productivity reached 100 percent, or even 80 percent of the west German level. It is also improbable that the capital-output ratio greatly exceeded comparable values in west Germany, where it ranged from about 1.4 in 1960 to 2.0 in the late 1980s. Plausible estimates would put total factor productivity in east Germany in a range from 50 to 70 percent of the west German level.

Of course, total factor productivity should be expected to quickly increase from this initial level, eventually converging to the west German standard. Substantially improved technology has begun to be employed, and there has been a large influx of west German specialists in management, marketing, and finance. In the manufacturing sector, there are many examples of new facilities established in east Germany incorporating the most advanced technology. Indeed, most of these enterprises are more productive than the average west German facility. By constrast, in the non-tradables sector, less efficient enterprises may be able to persist for a considerably longer period of time.

In the final analysis, total factor productivity in the initial year (1990) in both the tradables sector and the private non-tradables sector was set at 60 percent of the west German level. By 1994, total factor productivity in the severely diminished tradable-goods sector is assumed to reach 77 percent of the west German level, and it increases to 100 percent of the west German level over the next 15 years. In the larger non-tradables sector, it increases to 70 percent in 1994, and then rises much more gradually, not reaching 100 percent of the west German level until 20 years later. Although these assumptions are somewhat arbitrary, there is no alternative to making judgements of this kind if the objective is to provide a quantitative assessment of the growth prospects in east Germany.

e. Modeling the labor market

The production functions, combined with estimates of the initial level of the capital stock, allow for the derivation of sectoral labor demand functions which take the following form

$$L_{ti} = [(1-\alpha)\, A_{ti}\, K_{ti}^{\alpha}\, w_{ti}^{-1}]^{1/\alpha}$$

where w_{ti} is the real wage. 1/ As mentioned earlier, the level of employment currently seen in east Germany is higher than would be consistent with this labor demand function; this reflects the operation of various labor market support schemes. For the purposes of the simulation, it is assumed that these support schemes continue to be phased out during the 1990s. In this model, this is represented by a progressive narrowing of the gap between notional labor demand, given the exogenously determined path of wage adjustment, and the actual level of employment.

Once the labor market gap has been fully eliminated, the pace of wage adjustment is set so as to allow for convergence of the unemployment rate to the NAIRU (assumed to be 10 percent) within a number of years. 2/ After the NAIRU has been reached, wages are determined endogenously to keep the unemployment rate constant.

4. Simulation results and cautionary notes

The principal result is that the outlook for self-sustaining growth in eastern Germany seems to be rather good, with growth rates of between 8 and 9 percent for the remainder of this decade (Table VII-5). These growth rates are sustained by investment which is considerably higher than in west Germany, and by the gradual convergence of total factor productivity to the west German level. The traded-goods sector, which contracted sharply following unification, is expected to grow more rapidly than the non-traded sector, and there is consequently a gradual increase in the share of traded-goods production in the economy. Beyond the turn of the century, the rate of economic expansion is projected to decrease towards its steady state value, with GDP growth averaging about 6 percent in 2000-09, and 3 percent in 2010-2019.

The outlook for the labor market is considerably less favorable and fraught with risks, which could have adverse repercussions for growth. Wages are much higher than compatible with full employment. 3/ A pronounced recovery in employment is therefore not likely to occur until after the turn of the century, and an equilibrium in the labor market will not be reached before 2005. 4/

1/ Defined as nominal gross wages per employed person divided by the output deflator.

2/ As will be seen below, in the discussion of the quantitative results, the labor market gap will continue to exist for at least the remainder of this decade.

3/ Gross wages per employed person increase from 70 percent of the west German level in 1993 to 76 percent by 1999. The growth of real gross wages per employed person in west Germany is assumed to average 2 1/2 percent per year in 1996-99, following a slight decline in 1993-94.

4/ Labor market equilibrium is defined as a measured unemployment rate equal to the NAIRU, without a need for policies to maintain employment.

Table VII-5. Eastern Germany: Growth Scenario

	1993	1994	1995	1996	1997	1998	1999
Real GDP	7.1	8.2	8.4	8.8	8.6	8.7	8.9
Tradables	9.9	9.2	9.0	10.6	11.0	11.6	12.3
Non-tradables	6.4	8.0	8.3	8.4	8.0	8.0	8.0
Percentage shares in GDP							
Tradables	20.0	20.2	20.3	20.6	21.1	21.6	22.3
Non-tradables	80.0	79.8	79.7	79.4	78.9	78.4	77.7
Employment	-3.4	-1.8	-0.3	-0.1	0.1	0.3	0.6
Labor market gap 1/	51.0	46.2	42.0	37.6	33.0	28.1	22.9
Real wage	1.8	3.7	2.4	2.8	3.0	3.0	3.0
(percent of west)	69.9	73.4	74.9	75.3	75.6	75.9	76.3
Gross investment 2/	30.6	24.2	23.1	22.2	21.5	20.9	20.4
(Western Germany)	13.9	13.5	13.7	13.9	14.1	14.2	14.4

Source: staff calculations.

1/ In percent of employment.
2/ Non-residential investment; in percent of GDP.

An indicator of pressure in the labor market is the "gap" shown in Table VII-5. This is the difference between notional labor demand (at the exogenously determined level of wages) and actual employment. 1/ This measure shows that employment will for some years remain substantially higher than warranted by productivity and wages. In these circumstances, the scenario assumes that a further rapid contraction of employment will be forestalled by active labor market support measures and by the employment guarantees obtained from buyers of enterprises by the Treuhand. Moreover, there are important adjustment costs to reducing the labor force. For example, German labor law makes provision for large severance payments. These adjustment costs, which have not been formally represented in the model, combined with the expectation that the gap between wages and productivity will narrow, may induce employers to maintain employment at a higher level than desirable from a purely short-term perspective. Such

1/ This estimate is subject to a large margin of error. If the level of total factor productivity in the non-traded sector were to increase to 85 percent of the west German level by 1999 (instead of 76 percent in the baseline and the same level as in the tradable goods sector), the share of employment not warranted by wages and productivity could decline to less than 15 percent by 1999.

calculations, however, are subject to serious risks. If enterprises come to realize that they have overestimated the potential markets for east German products or the pace of productivity improvements, they may decide that a further round of layoffs is indicated. This outcome would dampen the prospects for growth during the period when the layoffs occur.

These risks could be substantially reduced and labor market performance improved if real wages in east Germany were frozen at their 1994 level until 1998. The adoption of this policy by the labor unions would reverse, to some extent, the excessive convergence of east German wages towards the west German level that has taken place since 1990. As a result, the labor market gap would virtually vanish by 1999, with notional labor demand about 1 1/2 million (20 percent of labor force) higher than in the baseline scenario.

The results presented above need to be interpreted with considerable caution, as they are highly sensitive to the assumptions made about production, investment, and labor demand. First, although the volume of investment that has taken place in east Germany is high by any standard, its productivity may be rather different from that assumed in the model. For example, if total factor productivity in the tradables sector reached 100 percent of the west German level in another five years rather than in fifteen, the growth rate for the overall economy would be well over 10 percent during the second half of the 1990s.

Second, even if investment were as productive as assumed, the east German manufacturing sector may not be able to gain market share as quickly as the model implies. New entrants and local ventures, in particular, may be at a significant disadvantage compared with established producers in other industrial countries, in that they lack market power, access to proprietary technologies, and an established customer base. It should be remembered, though, that many production facilities in east Germany were purchased or newly established by large and well-capitalized multi-national enterprises.

Third, it is also possible that deteriorating conditions in the labor market could prompt measures to sustain employment by expanding the "secondary" labor market, that is various job creation schemes. To the extent that these activities discourage work effort, or compete with the private sector, they could prove to be an obstacle to profitable private investment and economic growth.

Despite these possible concerns, the growth rates projected by the model are not overly high compared with what has been observed in many of the newly industrialized countries of Asia, and with Germany's own economic recovery after the war. 1/ Although there are risks, especially those

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1/ During the 1950s, the growth of real GDP in west Germany averaged 8 percent per year, while manufacturing output increased at an annual rate of more than 10 percent.

stemming from excessively high wages, there is also a possibility that total factor productivity in manufacturing could improve more quickly than anticipated. If the growth rates envisaged in the baseline scenario are achieved, the economic restructuring of east Germany could be considered a success.

Derivation and Estimation of Investment Function — ANNEX

Behavioral relationships are derived from the profit-maximization problem of the representative firm

$$\max_{\{K_t, L_t, D_t\}} \sum_{t=0}^{\infty} \delta_t \, [F(K_t, L_t, A_t) - (K_{t+1} - K_t) - \gamma K_t - g(K_{t+1}, K_t) - w_t L_t - r_t D_t + (D_{t+1} - D_t)]$$

where δ_t is the discount factor, w_t is the real wage, γ is the depreciation rate, r_t is the implied real rate of return (inclusive of taxes and subsidies) on enterprise debt (or equity) D_t, and the function g(.) represents an adjustment cost to capital formation. 1/

The Euler equations for this problem are (subscripts denote partial derivatives)

$$F_L(K_t, L_t, A_t) = w_t$$

$$\delta_{t-1} = (1 + r_t)\delta_t$$

$$\delta_t [F_K(K_t, L_t, A_t) + (1-\gamma)K_t - g_2(K_{t+1}, K_t)] - \delta_{t-1}[1 + g_1(K_t, K_{t-1})] = 0$$

1/ Output Q_t is a function of the capital stock K_t, labor input L_t, and the level of total factor productivity A_t (which represents exogenous technological change)

$$Q_t = F(K_t, L_t, A_t)$$

As usual, it is assumed that the production function is homogenous of degree one in capital and labor.

Note that in the absence of the adjustment cost terms, the last equation reduces to the well known marginal condition

$$F_K(K_t, L_t, A_t) = r_t + \gamma$$

In other words, without an adjustment cost or other similar constraint on the speed of capital formation, the capital stock would instantaneously jump to its steady-state level.

Assuming that the adjustment cost function is quadratic, that is

$$F(K_t, L_t, A_t) = A_t K_t^{\alpha} L_t^{1-\alpha}$$

the difference equation for the capital stock may be written in the form shown in Section 3.c. in the body of the chapter.

In applying the investment equation, it will also be assumed that the production function takes the Cobb-Douglas form, and that total factor productivity is given by an exogenous trend (i.e. $A_t = A\, b^t$)

$$Q_t = A\, b^t K_t^{\alpha} L_t^{1-\alpha}$$

Then, it may be shown that the steady-state growth factor is given by

$$z = b^{\frac{1}{1-\alpha}} n$$

where n is the steady state growth rate of labor input.

The production function can be estimated in the usual way, using west German data. First, the parameter α is equal to the share of labor. Taking the average of the ratio of gross income from dependent employment to GDP over the period 1960-1990 yields $1-\alpha=0.57$, so $\alpha=0.43$. Second, total factor productivity (TFP) was derived as a residual by removing the contributions of capital and labor to output

$$\ln A_t = \ln Y_t - \alpha \ln K_t - (1-\alpha) \ln L_t$$

A linear trend was fitted to the resulting series (Chart VII-1)

$$\ln A_t = \underset{(24.1829)}{0.00989}\ t - \underset{(21.5570)}{17.4292}\ , R^2=0.9481$$

implying a long-term increase in TFP of about 1 percent per year. Similar results were obtained by adjusting TFP using the Hodrick-Prescott filter and taking percentage changes, although this method of adjustment reveals that there were long swings in the growth rate of TFP, with a sharp decline from the late 1960s to the early 1980s, and an increase that lasted until German unification in 1990. Assuming that total factor productivity grows by 1 percent (or slightly more) on trend and employment by 0.3 percent, this would be consistent with a steady-state growth rate of about 2 percent. 1/

Assuming a Cobb-Douglas production function and a quadratic adjustment cost function, the difference equation for the capital stock is

$$K_{t+1} = z\, K_t + \frac{\alpha \frac{Y_t}{K_t} - (r_t + \gamma)}{\psi(1 + r_t - z)}$$

The equation and the parameter estimates (using data for 1960 to 1990) are

$$K_t = \beta_1 K_{t-1} + \beta_2 \frac{Y_{t-1}}{K_{t-1}} + \beta_3 + e_t$$

$\beta_1 = 0.99555(86.3423)$
$\beta_2 = 71.7808(0.42747)$
$\beta_3 = 93.1979(0.71974)$
$R^2 = 0.9997$, $DW = 0.4956$

1/ The growth of the labor force and employment in west Germany since the mid-1980s has been substantially faster (about 3/4 percent per year, on average), reflecting high immigration. Whether immigration and labor force growth will continue at this rate over the longer term is an open question. If it did, the steady state growth rate would be closer to 2 1/2 percent.

This equation has a number of problems. In addition to strong serial correlation in the residuals, severe multicollinearity is present, resulting in unstable parameter estimates when estimated over different time periods. In particular, the estimated steady state growth rate of capital, at 1 percent, is inconsistent with what was derived from the information about the share of labor and growth of total factor productivity.

The equation was hence reestimated imposing the earlier estimate of 2.1 percent for the steady state growth rate by using $Z_t = K_t - 1.021\ K_{t-1}$ as the dependent variable. This yielded R^2=0.6850 and highly significant estimates for β_2 and β_3. With DW=0.2984, serial correlation in the residuals remained a problem.

Two approaches were taken to addressing the problem of serial correlation. The first was to simply adjust the preceding equation using Cochrance-Orcutt. The second was to use a more general dynamic specification which includes lagged values of the dependent variable. The first method gave parameter estimates β_2=995.466 (7.33627) and β_3=-472.383 (6.97133), with R^2=0.9585. These estimates can be used to derive a value for phi and for the steady-state capital-output ratio. In particular, we know that

$$\beta_1 = z$$
$$\beta_2 = \frac{\alpha}{\psi(1+r-z)}$$
$$\beta_3 = -\frac{r+\gamma}{\psi(1+r-z)}$$

and that α=0.43. An estimate γ=0.05 was obtained from data on the capital stock and depreciation. Solving the equations yields r=0.154 and ψ=0.00325, implying that K/Y is 2.11 in the steady state. 1/ These results need to be treated with some caution, as the calculation assumes that long-term r is exogenous, constant, and that it may be inferred from past investment behavior. Rather, it is likely that r depends on longer-term developments in the world economy and on the course of economic policy in Germany and elsewhere, especially tax policy.

The second approach uses $Z'_t = (K_t - 1.021\ K_{t-1})/Y_{t-1}$ as the dependent variable

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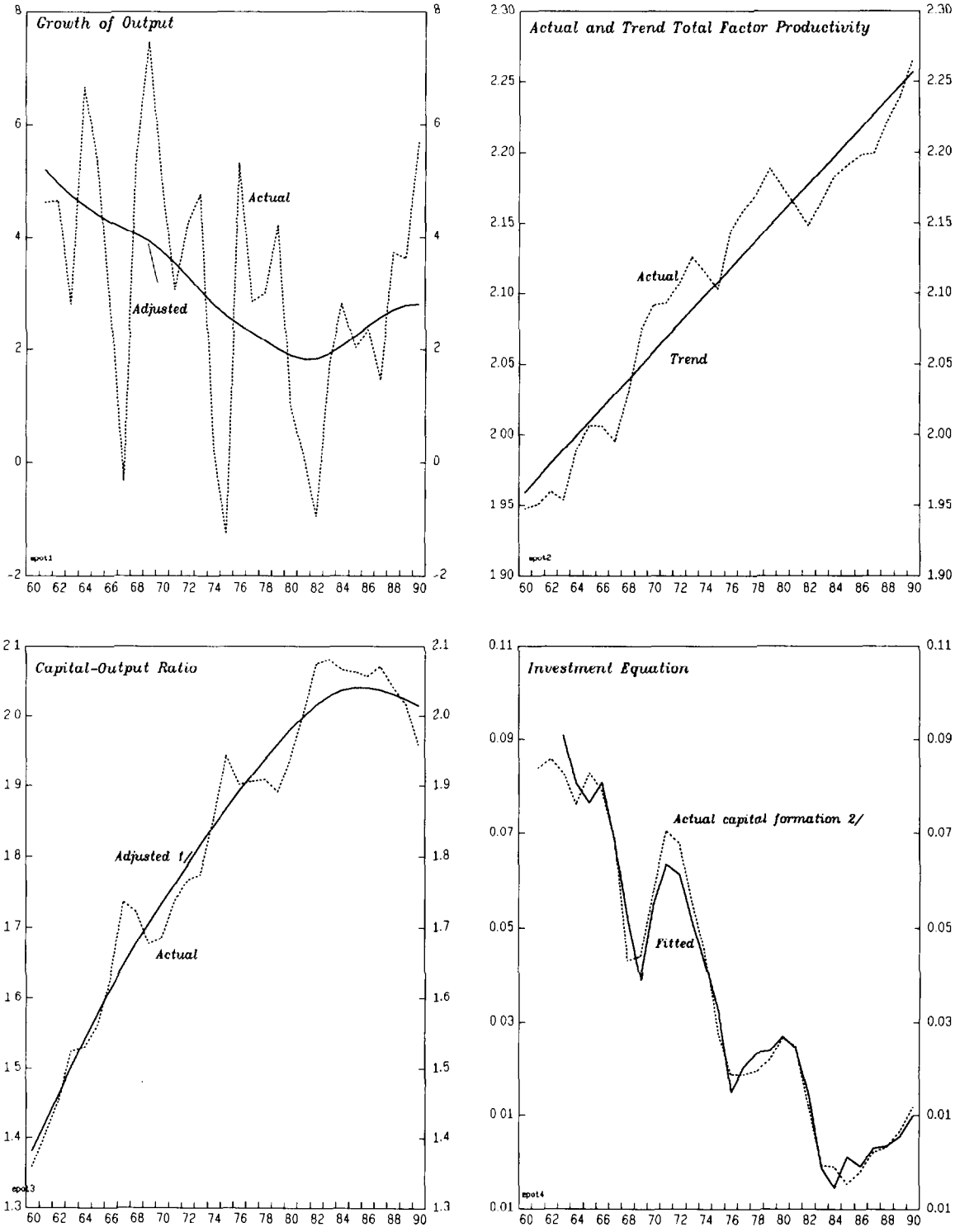
1/ Using the estimates for β_2 and β_3 obtained from the equation that was not corrected for serial correlation yielded similar estimates, i.e. r=0.138, ψ=0.00865, and K/Y=2.29, for the implied parameters.

CHART VII-1

West Germany

Output, Productivity, and Capital



Source: Deutsche Bundesbank.

1/ Adjusted using the Hodrick-Prescott filter (c=100).

2/ Measured by the variable Z' defined in Annex I (i.e. change in capital stock in excess of steady-state growth, in percent of GDP).

$$Z'_t = \beta_0 + \beta_1 Z'_{t-1} + \beta_2 Z'_{t-2} + \beta_3 \frac{K_{t-1}}{Y_{t-1}} + e_t$$

β_0 = 0.21363(7.45783)
β_1 = 0.70813(5.34050)
β_2 = -0.40976(4.20902)
β_3 = -0.10272(7.40101)
R^2 = 0.9800 , DW = 1.7711

The fit of this equation is shown in Chart VII-1. In the steady state, $Z'_t = 0$. This implies that $K/Y = -\beta_0/\beta_3 = 2.08$ in the long run, an estimate that is consistent with those obtained earlier. A simpler version of this equation, which collapses the dynamics implied by the lagged dependent variables, was used in the simulations. The equation was also estimated for the period 1960-1980, yielding an estimate of 2.05 for the steady-state capital-output ratio, relatively close to the current value (Chart VII-1). 1/

1/ A casual inspection of the data seems to confirm the impression that the capital-output ratio is converging to a value somewhat greater than 2 (Chart 2). However, simply eyeballing the series can be misleading. In the late 1970s that the ratio appeared to be converging to 1.9, and to 1.7 in the late 1960s.

Table A1. Germany: Key Data on Output, Income and Demand in 1993

	Total	West	East	East in percent of west
		(In billions of deutsche mark)		
Gross national product	3,106.8	2,820.0	286.8	10.2
Gross domestic product	3,107.5	2,832.0	275.5	9.7
Domestic demand	3,095.1	2,607.2	487.9	18.7
Private consumption	1,792.7	1,560.5	232.2	14.9
Public consumption	622.6	506.3	116.3	23.0
Gross investment	679.8	540.4	139.4	25.8
Labor income 1/	1,769.6	1,527.8	241.8	15.8
Household disposable income	2,040.6	1,778.6	262.0	14.7
		(In millions)		
Population 2/	81.1	65.5	15.6	23.9
		(In thousands)		
Employment	35,142	29,014	6,128	21.1
		(In deutsche mark)		
GDP per employed person	88,427	97,608	44,958	46.1
Average monthly labor income 1/ 3/	3,789	4,024	2,794	69.4
Investment per employed person	19,345	18,626	22,748	122.1
		(West Germany = 100)		
Unit labor costs	105.6	100.0	162.7	162.7

Sources: Statistisches Bundesamt, Volkswirtschaftliche Gesamtrechnungen; Bundesbank, Monthly Report; and staff estimates.

1/ According to place of residence.

2/ Estimate.

3/ Excludes social security contributions paid by employers.

Table A2. Germany: Output by Sector

(Percentage changes in 1991 prices)

	In billions of deutsche mark in 1991 prices in 1993	1990	1991	1992	1993
West Germany					
Agriculture, forestry, and fishing	35.8	4.3	-7.4	7.7	-1.6
Energy, water, and mining	71.2	-0.1	6.2	--	-3.4
Manufacturing	720.1	5.5	3.6	-1.5	-7.4
Construction	148.2	3.2	4.4	5.6	-1.7
Trade and commerce	223.1	7.9	6.7	-1.8	-2.3
Transport and communications	148.4	7.6	4.7	3.1	-0.1
Financial institutions	146.9	5.9	3.0	4.4	3.1
Other private services	701.4	7.4	6.2	4.5	2.5
Government services	277.2	1.6	1.6	1.5	0.7
Private households	68.9	4.2	4.5	4.2	2.7
Total value added	2541.2	5.5	4.3	1.6	-1.7
Imputed bank charges	123.5	4.2	8.2	5.1	3.0
Indirect and import taxes	208.3	6.6	9.8	2.7	-1.4
GDP	2626.0	5.7	4.5	1.6	-1.9
East Germany					
Agriculture, forestry, and fishing	4.2	...	-66.1	18.8	41.1
Energy, water, and mining	12.6	...	-13.8	-12.2	-5.0
Manufacturing	40.8	...	-49.1	17.2	10.6
Construction	34.5	...	-12.8	28.1	19.2
Trade and commerce	20.1	...	-40.4	-0.2	5.7
Transport and communications	10.5	...	-29.0	-8.2	11.2
Financial institutions	26.2	...	20.8	6.7	3.9
Other private services	28.8	...	2.7	27.2	1.6
Government services	42.8	...	-14.0	-2.4	0.6
Private households	4.0	...	19.9	30.3	10.0
Total value added	224.6	...	-23.7	8.8	6.7
Imputed bank charges	23.7	...	...	4.8	3.2
Indirect and import taxes	11.6	...	...	17.8	5.8
GDP	212.5	...	-28.6	9.7	7.1

Sources: Statistisches Bundesamt, Volkswirtschafliche Gesamtrechnungen; and Deutsches Institut fur Wirtschaftsforschung, Sozialprodukt und Einkommenskreislauf I/1989 bis IV/1993, Ostdeutschland.

Table A3. Germany: Aggregate Demand

(Percentage changes at 1991 prices)

	In billions of deutsche mark at current prices in 1993	1989	1990	1991	1992	1993
Germany						
Private consumption	1,792.7	...	...	4.2	2.3	0.1
Public consumption	622.6	...	...	-0.2	3.8	-0.7
Gross fixed investment	705.7	...	...	9.1	4.2	-3.3
Construction	434.3	...	...	3.3	9.5	3.1
Machinery and equipment	271.5	...	...	16.5	-1.9	-11.4
Stockbuilding 1/	-25.9	...	...	0.3	-0.3	-0.6
Total domestic demand	3,095.1	...	...	4.7	2.7	-1.4
Export of goods and nonfactor services	654.9	...	...	-1.6	0.1	-9.5
Imports of goods and nonfactor services	642.5	...	...	11.5	2.6	-10.0
Foreign balance 1/	12.4	...	...	-3.1	-0.6	0.2
Gross domestic product	3,107.5	...	...	1.5	2.1	-1.2
West Germany						
Private consumption	1,560.5	2.8	5.2	4.5	1.7	-0.0
Public consumption	506.3	-1.6	2.2	0.3	3.2	-1.3
Gross fixed investment	566.5	6.3	8.5	6.1	1.1	-6.9
Construction	346.8	4.4	4.9	3.6	5.5	-0.5
Machinery and equipment	219.8	8.8	13.2	9.1	-3.9	-15.0
Stockbuilding 1/	-26.1	0.3	-0.1	-0.4	-0.3	-0.7
Total domestic demand	2,607.2	2.9	5.2	3.6	1.5	-2.6
Export of goods and nonfactor services	887.9	10.2	10.4	13.7	3.7	-6.1
Imports of goods and nonfactor services	663.1	8.3	9.4	12.1	3.9	-9.5
Foreign balance 1/	224.8	0.9	0.8	1.2	0.2	0.6
Gross domestic product	2,832.0	3.6	5.7	4.5	1.6	-1.9
East Germany						
Private consumption	232.2	...	...	2.2	7.3	1.5
Public consumption	116.3	...	...	-3.2	7.2	2.6
Gross fixed investment	139.2	...	...	33.4	24.0	15.6
Construction	87.5	...	...	1.1	36.2	21.2
Machinery and equipment	51.7	...	...	103.9	10.8	8.2
Stockbuilding 1/	0.2	...	...	7.7	-0.4	0.6
Total domestic demand	487.9	...	...	13.7	11.2	6.0
Exports of goods and nonfactor services	52.7	...	...	32.4	12.9	-1.0
Imports of goods and nonfactor services	265.1	...	...	138.0	12.9	3.6
Foreign balance 1/	-212.4	...	...	-45.4	-12.2	-4.8
Gross domestic product	275.5	...	...	-28.6	9.7	7.1

Sources: Statistisches Bundesamt, Volkswirtschaftliche Gesamtrechnungen.

1/ Change in percent of last year's GDP.

Table A4. West Germany: Household Income, Consumption, and Saving

(Percentage changes)

	1989	1990	1991	1992	1993
Gross compensation of employees	4.6	7.7	8.1	6.0	0.9
Employees social security contributions	4.8	7.2	10.8	6.3	3.4
Wage taxes	8.3	-3.1	19.2	11.0	-1.1
Net compensation of employees	3.7	10.7	4.9	4.7	0.9
Disposable income	5.4	9.8	7.8	5.0	2.7
Final consumption expenditure	5.8	8.0	8.3	5.7	3.3
Saving	2.3	22.3	4.8	0.0	-1.9
Disposable income 1/	2.4	6.9	4.0	0.9	-0.7
Real final consumption expenditure	2.8	5.2	4.5	1.7	-0.0
Saving ratio	12.4	13.9	13.5	12.8	12.3

Sources: Statistisches Bundesamt, Volkswirtschaftliche Gesamtrechnungen.

1/ Deflated by private consumption deflator.

Table A5. West Germany: Labor Market and Prices

	1989	1990	1991	1992	1993
			(Percentage changes)		
Population	1.0	1.9	1.3	1.2	1.0
Labor force	0.6	1.9	1.0	0.9	-0.1
Employment 1/	1.5	3.0	2.6	0.9	-1.6
Of which: Producing sector 2/	2.5	2.7	1.4	-2.4	-7.2
			(In percent)		
Unemployment rate in terms of total labor force	6.8	6.2	5.5	5.8	7.3
			(Percentage changes)		
Negotiated hourly earnings	3.7	5.7	6.8	6.0	4.2
Unit labor costs, overall economy	0.9	2.1	4.1	4.8	3.5
GDP deflator	2.4	3.1	3.9	4.4	3.3
Consumer price index	2.8	2.7	3.5	4.0	4.1

Sources: Statistisches Bundesamt, Volkswirtschaftliche Gesamtrechnungen; Bundesbank, Monthly Report.

1/ According to place of work.
2/ Excluding construction and energy.

Table A6. West Germany: Wages and Prices

(Percentage changes)

	1989	1990	1991	1992	1993
GDP deflator	2.4	3.1	3.9	4.4	3.3
Private consumption deflator	2.9	2.7	3.7	4.0	3.4
Fixed investment deflator	3.0	4.3	4.8	3.9	2.5
Export deflator (goods)	2.6	-0.2	1.0	0.6	0.9
Import deflator (goods)	5.4	-1.6	1.9	-2.7	-1.4
Producer price index	3.2	1.7	2.4	1.4	-0.0
Producer goods	6.3	-0.3	0.6	-1.2	-2.6
Capital goods	2.2	2.6	2.9	2.7	1.3
Consumer goods	2.6	2.4	2.8	1.6	0.4
Consumer price index	2.8	2.7	3.5	4.0	4.1
Unit labor costs					
Overall economy	0.9	2.1	4.1	4.8	3.5
Producing sector 1/	0.8	2.1	4.3	5.6	3.6
Negotiated hourly wages					
Overall economy	3.7	5.7	6.8	6.0	4.2
Producing sector 1/	3.8	5.8	6.5	5.8	4.9

Sources: Statistisches Bundesamt, Volkswirtschaftliche Gesamtrechnungen; Bundesbank, Monthly Report.

1/ Excluding construction and energy.

Table A7. East Germany: Employment

	1991	1992	1993
	(Annual average, thousands of persons)		
Domestic employment	7,219	6,344	6,128
of which:			
in job-creation schemes	183	388	260
short-time workers	1,616	370	181
Early retirement	540	810	850
Further training	220	430	350
Unemployment	913	1,170	1,149
Net commuters 1/	290	365	355
Employment (resident concept)	7,509	6,709	6,483
Self-employed	362	411	445
Employees	7,147	6,298	6,038
	(Change from previous year)		
Domestic employment	-1,616	-875	-216
Early retirement	300	270	40
Further training	160	210	-80
Unemployment	673	257	-21
Net commuters 1/	211	75	-10
Employment (resident concept)	-1,405	-800	-226
Self-employed	94	49	34
Employees	-1,499	-849	-260
Memorandum item:			
Unemployment rate (in percent of labor force)	10.8	14.8	15.1

Sources: Federal Statistical Office, Deutsches Institut für Wirtschaftsforschung.

1/ East Germans working in West Germany minus West Germans working in East Germany.

Table A8. Germany: General Government Finances 1/

(In billions of deutsche mark; national accounts basis)

	1989	1990	1991			1992 3/			1993 4/
	Actual		West Germany 2/	East Germany	Germany 2/	West Germany	East Germany 2/	Germany 2/	Germany 2/
Total expenditure	1,018.9	1,118.1	1,290.5	235.3	1,395.4	1,360.5	308.8	1,516.8	1,589.5
Expenditure on goods and services	471.2	499.6	527.2	99.4	626.6	556.3	125.0	691.3	708.2
Public consumption	418.8	444.1	466.5	85.6	552.1	500.6	105.8	606.4	622.6
Public investment	52.4	55.5	60.7	13.8	74.5	65.7	19.2	84.9	85.7
Transfer payments	547.7	618.6	763.4	135.8	768.8	794.2	183.8	825.6	881.2
Social benefits	358.7	375.1	396.9	78.7	475.9	423.9	104.5	528.4	581.0
Subsidies	46.8	48.8	47.2	22.1	69.3	46.6	17.4	64.0	63.3
Interest	60.5	63.4	75.0	2.6	77.6	84.8	16.3	101.1	104.2
Other	81.7	131.3	244.3	32.3	146.0	238.8	45.6	132.1	132.6
Total revenue	1,021.6	1,068.4	1,198.2	236.7	1,304.5	1,296.7	294.1	1,438.3	1,487.7
Tax revenue	560.1	573.2	654.5	35.9	690.4	706.2	49.2	755.4	771.3
Indirect taxes	278.3	302.2	338.4	21.2	359.7	364.0	26.4	390.4	408.3
Direct taxes	281.8	271.0	316.1	14.7	330.8	342.2	22.8	365.0	363.0
Social security contributions	383.2	410.5	450.3	62.7	513.0	480.1	80.8	560.9	594.7
Other revenue	78.4	84.7	93.4	138.1	101.1	110.4	164.1	122.0	121.8
Financial balance	2.8	-49.7	-92.3	1.3	-90.8	-63.8	-14.7	-78.5	-101.8
(in percent of GNP)	0.1	-2.1	-3.5	1.0	-3.2	-2.3	-6.3	-2.6	-3.3
Of which:									
Territorial authorities	-14.0	-69.8	-110.0	-2.3	-112.2	-66.3	-14.6	-82.9	-114.0
Social security system	16.8	-20.4	17.7	3.7	21.3	2.3	1.9	4.4	12.2

Sources: Federal Statistical Office staff; and Federal Ministry of Finance.

1/ Until 1990, West Germany only.
2/ Including the German Unity Fund.
3/ Estimate.
4/ Interim technical projections provided by the authorities, July 1994.

Table A9. Germany: Territorial Authorities' Finances 1/

(Administrative basis; in billions of deutsche mark)

	1989 West Germany	1990 2/ Germany	1991 Germany	1992 Germany 4/	1993 Germany Est. 4/	1994 Germany Proj. 4/
Total expenditure	701.5	818.5	972.3	1,065.1	1,115 ½	1,179
Current expenditure	594.7	701.8	805.0	875.3	930 ½	991
Wages and salaries	220.5	233.6	291.9	317.3	331 ½	352
Goods	112.1	120.7	146.2	154.4	158 ½	161
Interest	61.0	64.6	77.1	100.6	102	122
Current transfers	203.2	211.0	293.1	303.1	338 ½	362
Other current expenditures	--	72.9	--	--	--	-5 ½
Capital expenditure	106.8	116.8	167.3	189.8	185	188
Investment	60.0	64.4	88.0	101.8	98 ½	95
Capital transfers	23.9	26.2	43.8	51.8	50	46
Loans	19.5	24.2	30.5	33.1	35	45
Total revenue	674.4	724.1	849.6	948.2	978	1,032 ½
Current revenue	653.3	703.3	823.3	920.8	943 ½	995 ½
Taxes	534.9	566.3	661.7	732.4	745 ½	784
Other	118.4	137.0	161.6	188.5	174	211 ½
Capital revenue	21.1	20.9	26.3	27.4	34 ½	37
Financial balance	-27.1	-94.4	-122.7	-116.3	-138	-146
(In percent of GDP)	-1.2	-3.9	-4.4	-3.9	-4 ½	-4 ½
Of which:						
Federal Government	-20.1	-48.1	-53.2	-39.3	-66.9	-69.7
States (west) 5/	-7.6	-19.4	-16.5	-16.1	-22	-28
States (east) 6/	...	...	-12.4	-15.0	-19 ½	-22
Municipalities (west)	1.7	-4.2	-6.0	-10.1	-9	-9
Municipalities (east)	...	...	1.9	-7.7	-5	-3
German Unity Fund	...	-20.0	-30.6	-22.4	-13.5	-3
Other special funds 3/	-1.1	-2.8	-5.9	-6.3	-1.7	-11 ½

Sources: Federal Ministry of Finance.

1/ In 1990, east Germany is included only for the second half of the year.

2/ Totals include Part B of the 1990 Federal Budget.

3/ European Recovery Program (ERP), Burden Equalization Fund (LAF), European Community accounts, Credit Repayment Fund (KAF), and Bundeseisenbahnvermögen (BEV) (1994).

4/ Interim technical projections provided by the authorities.

5/ Including Berlin (west).

6/ Including Berlin (east).

Table A10. Germany: Federal Government Finances

(Administrative basis; in billions of deutsche mark) 1/

	1989	1990	1991	1992			1993			1994
		Actual		Draft	Amended Draft	Outturn Actual	Draft	Amended Draft	Outturn Actual	Draft
Total expenditure	289.8	380.2	401.8	422.1	425.1	427.2	435.7	458.1 3/	457.5	480.0
Current expenditure	252.4	334.2	339.1	359.1	356.7	359.9	371.1	390.7	391.1	414.3
Wages and salaries	41.3	43.2	48.7	51.3	51.7	51.5	54.5	52.6	52.7	52.3
Goods	40.9	42.4	43.1	45.0	45.8	44.0	44.9	44.4	41.8	41.2
Interest	32.1	34.2	39.6	44.7	44.3	43.8	47.2	45.5	45.8	52.8
Current transfers to other levels of government	26.0	29.1	40.9	54.8	56.8	56.4	60.5	64.9	61.6	83.4
Other current transfers	112.1	185.2 2/	166.7	158.7	158.1	164.2	164.0	183.4	189.3	189.9
Other current expenditure	--	0.1	--	-0.2	--	--	--	--	...	-5.3
Capital expenditure	37.3	46.0	62.6	67.0	70.3	67.2	65.5	69.3	66.3	65.6
Investment	8.0	8.5	11.0	11.3	14.1	13.8	13.9	13.4	12.5	13.2
Capital transfers and loans to other levels of government	11.2	...	24.8	19.4	21.7	21.7	19.0	20.5	20.3	18.4
Other capital transfers and loans	18.2	...	26.8	36.3	34.5	31.8	32.6	35.5	33.6	34.0
Total revenue	269.7	332.3 4/	348.6	375.7	383.7	387.8	396.8	389.7	390.5	410.3
Current revenue	266.0	...	342.8	371.0	378.5	383.3	393.5	383.9	386.2	404.5
Taxes	247.1	276.2	317.9	343.3	350.2	352.9	367.5	356.1	356.0	375.2
Other	18.9	...	25.0	27.7	28.3	30.4	26.0	27.7	30.1	29.4
Capital revenue	3.7	...	5.7	4.7	5.3	4.5	3.2	5.8	4.3	5.8
Financial balance	-20.1	-47.9	-53.2	-46.4	-41.4	-39.3	-38.9	-68.5	-66.9	-69.7
(In percent of GDP)	-0.9	-2.0	-1.9	-1.5	-1.4	-1.3	-1.2	-2.2	-2.2	-2.2

Sources: Federal Ministry of Finance.

1/ Data for 1989 are for west Germany. Data for 1990 include transfers to the GDR in the first half of 1990 and budgetary developments in east Germany in the second half of 1990 (part B of the federal budget).
2/ Including expenditure related to east Germany.
3/ Including unspecified expenditure cuts.
4/ Including revenue related to part B of the federal budget.

Table A11. Germany: Länder Government Finances

(Administrative basis; in billions of deutsche mark)

	1989	1990	1991		1992		1993		1994 1/	
			West Germany 3/	East Germany 4/	West Germany 3/	East Germany 4/	West Germany 3/	East Germany 4/	West Germany 3/	East Germany 4/
			Actual		Actual		Estimate		Projection	
Total expenditure	282.7	299.6	320.1	88.5	336.8	100.3	352	109	357	115
Current expenditure	239.0	252.5	271.5	60.6	287.2	69.2	303	76 ½	309 ½	81 ½
Wages and salaries	118.4	125.2	134.2	19.2	142.3	24.8	149	29	150 ½	30
Goods	29.9	33.0	34.1	8.6	35.0	9.5	39	10 ½	39 ½	10 ½
Interest	21.3	22.1	24.0	0.2	25.3	0.5	26 ½	2	27 ½	3
Current transfers to other levels of government	38.1	40.9	44.7	19.8	48.0	21.1	52 ½	22 ½	53 ½	23
Other current transfers	31.3	31.3	34.4	12.9	36.6	12.9	36	12 ½	38	14 ½
Capital expenditure	43.7	47.1	48.6	27.9	49.6	31.1	49	32	47 ½	33 ½
Investment	12.7	13.4	14.4	4.3	14.1	5.1	13 ½	5 ½	13	6
Capital transfers and loans	14.6	15.8	16.4	12.1	17.2	11.2	17	12	16	11 ½
Other capital transfers and loans	16.3	17.9	17.8	11.5	18.2	14.8	18 ½	15	18	17
Total revenue	275.1	280.2	303.6	76.1	320.6	85.3	329 ½	89	329	93
Current revenue	260.4	265.1	286.6	65.0	304.1	76.4	313 ½	78	314 ½	82
Taxes	197.1	199.8	216.2	18.3	234.5	25.2	241 ½	28	247	32
Other	63.3	65.3	70.4	46.6	69.6	51.2	72	50 ½	67 ½	50
Capital revenue	14.7	15.1	17.0	11.1	16.5	8.9	16 ½	11	14 ½	11
Financial balance	-7.6	-19.4	-16.5	-12.4	-16.1	-15.0	-22	-19 ½	-28	-22
(In percent of GDP) 2/	-0.3	-0.8	-0.6	-0.4	-0.5	-0.5	-0.7	-0.6	-0.9	-0.7

Source: Federal Ministry of Finance.

1/ Interim technical projections provided by the authorities.
2/ Based on west German GDP in 1989 and 1990 and GDP of all Germany in 1991 to 1994.
3/ Including Berlin (west).
4/ Including Berlin (east).

Table A12. Germany: Municipalities' Finances

(Administrative basis; in billions of deutsche mark)

	1989	1990	1991		1992		1993		1994 1/	
			West Germany	East Germany	West Germany	East Germany	West Germany	East Germany	West Germany	East Germany
			Actual		Actual		Estimate		Projection	
Total expenditure	194.3	209.9	228.9	48.2	250.7	64.2	261	66 ½	263 ½	67 ½
Current expenditure	148.4	160.0	175.4	34.8	193.0	43.6	204 ½	46	210 ½	47 ½
Wages and salaries	60.7	65.2	71.6	18.1	76.8	23.8	79 ½	23	80 ½	21 ½
Goods	41.3	44.7	48.6	12.0	52.7	13.1	55 ½	13 ½	56 ½	13 ½
Interest	7.6	8.1	8.9	0.2	9.7	0.6	10 ½	1	11	1 ½
Current transfers to other levels of government	3.7	3.9	4.9	--	5.7	0.7	6 ½	½	7	½
Other current transfers	35.1	38.1	41.4	4.4	48.0	5.4	54	8	57	10
Capital expenditure	46.0	49.9	53.5	13.4	57.6	20.6	56 ½	20 ½	53	20
Investment	39.2	42.4	45.7	12.7	49.1	19.6	47 ½	19 ½	44	19
Capital transfers and loans	1.7	1.8	1.8	0.3	1.7	0.3	1 ½	½	2	½
Other capital transfers and loans	5.0	5.7	6.0	0.5	6.8	0.4	7 ½	1	7 ½	½
Total revenue	196.0	205.8	222.9	50.1	240.5	56.5	252	62	254 ½	64 ½
Current revenue	171.2	179.7	196.2	38.1	211.7	43.7	221 ½	48	224 ½	51
Taxes	68.0	69.0	75.6	2.2	81.4	4.0	82 ½	5	80 ½	6
Other	103.2	110.7	120.6	35.9	130.3	39.7	139	43	143 ½	45
Capital revenue	24.7	26.0	26.7	12.0	28.9	12.8	30 ½	14	30 ½	13
Financial balance	1.7	-4.2	-6.0	1.9	-10.1	-7.7	-9	-5	-9	-3
(In percent of GDP) 2/	0.1	-0.2	-0.2	0.1	-0.3	-0.3	-0.3	-1.1	-0.3	-0.1

Source: Federal Ministry of Finance.

1/ Interim technical projections provided by the authorities.
2/ Based on west German GDP in 1989 and 1990 and GDP of all Germany in 1991 to 1994.

Table A13. Germany: Tax Revenue of the Territorial Authorities 1/

(Cash basis; in billions of DM)

	1990	1991	1992	1993				1994	
				Projection			Actual	Projection	
				Nov. 1992 2/	May 1993	Nov. 1993	May 1994 8/	Nov.1993	May 1994
Total tax revenue	567.0	661.9	731.7	760.6	748.0	745.7	749.1	773.7	785.1
By type of tax									
Personal income tax	228.4	267.1	300.1	327.7	319.0	313.3	314.0	328.4	326.8
Corporate tax	30.1	31.7	31.2	27.0	25.8	27.3	27.8	25.8	27.0
Wealth tax	6.3	6.7	6.8	5.8	6.2	6.8	6.8	6.8	6.4
Trade tax 3/	38.8	41.3	44.8	42.2	41.4	41.2	42.3	41.6	41.8
Value-added tax 4/	154.6	179.7	197.7	216.6	215.7	215.7	216.3	225.3	228.0
Petroleum tax	36.6	47.3	55.2	56.4	55.8	56.1	56.3	56.7	64.0
Tobacco tax	18.3	19.6	19.3	20.0	19.2	19.5	19.5	19.6	19.8
Motor vehicle tax	8.4	11.0	13.3	13.3	13.5	14.0	14.1	14.2	13.9
Other taxes	45.5	57.5	63.3	51.5	51.8	51.8	52.1	55.4	57.4
By level of government									
Federal Government	276.2	317.8	352.9	359.8	356.1	354.4	356.0	365.6	375.9
Länder 5/	199.8	234.5	259.2	274.6	269.0	268.0	268.9	277.9	279.3
Municipalities 6/	69.2	78.0	85.4	88.9	86.5	86.3	87.5	87.0	86.8
European Communities 7/	21.2	31.5	34.2	37.3	36.8	37.0	36.6	43.2	43.1

Source: Federal Ministry of Finance.

1/ Tax revenue data in this table are calculated on a cash basis, and may differ from data on an administrative basis.
2/ Incorporates effect of tax law of February 1992.
3/ Tax based on capital stock of businesses and on return to capital.
4/ Including turnover tax on imports.
5/ Including municipal taxes in Berlin, Bremen, and Hamburg.
6/ Excluding municipal taxes in Berlin, Bremen, and Hamburg.
7/ Collection of import duties and the EC's share of value-added tax collections. Since 1988 also including other revenue which is calculated based on GNP.
8/ Preliminary; local government revenues partly estimated.

Table A14. Germany: Interest Rates

(In percent per annum, period averages)

	Discount Rate	Securites Repur-chase	Lombard Rate	Money Market Rate	Government Bond Yield 1/	Lending Rates: Current Account Loans	Lending Rates: Discount Loans	3-month Time Deposits	12-month Savings Deposits
1988	3.0	3.8	4.7	4.3	6.1	8.3	4.6	3.7	2.8
1989	4.9	6.6	6.8	7.1	7.1	9.9	6.9	6.1	3.1
1990	6.0	8.0	8.1	8.4	8.9	11.6	8.4	7.6	3.5
1991	6.9	8.9	9.1	9.2	8.6	12.5	9.4	8.2	3.6
1992	8.2	9.4	9.7	9.5	8.0	13.6	10.5	8.5	3.6
1993	6.9	7.4	8.1	7.2	6.3	12.8	9.1	6.7	3.4
1991									
I	6.3	8.7	8.8	9.1	8.7	12.1	9.0	8.0	3.6
II	6.5	8.8	9.0	9.0	8.5	12.3	9.1	8.1	3.6
III	7.2	8.9	9.1	9.2	8.7	12.6	9.7	8.2	3.5
IV	7.7	9.1	9.3	9.4	8.6	13.0	10.0	8.4	3.6
1992									
I	8.0	9.4	9.8	9.6	8.1	13.4	10.3	8.6	3.6
II	8.0	9.6	9.8	9.7	8.2	13.4	10.3	8.7	3.6
III	8.6	9.7	9.7	9.7	8.2	13.9	10.9	8.8	3.6
IV	8.2	8.8	9.5	8.9	7.3	13.7	10.5	8.1	3.6
1993									
I	7.9	8.5	9.2	8.3	6.7	13.5	10.2	7.6	3.5
II	7.2	7.8	8.6	7.6	6.6	13.1	9.5	7.1	3.4
III	6.6	6.9	7.8	6.8	6.2	12.7	8.7	6.4	3.3
IV	5.8	6.3	6.9	6.3	5.6	12.1	8.0	5.8	3.1
1994									
I	5.4	6.0	6.8	5.8	5.8	11.9	7.6	5.4	3.0
1993									
Jan.	8.2	8.6	9.5	8.5	7.0	13.7	10.4	7.9	3.6
Feb.	8.0	8.5	9.1	8.3	6.8	13.5	10.1	7.5	3.5
Mar.	7.5	8.3	9.0	7.9	6.4	13.3	10.0	7.4	3.5
Apr.	7.2	8.1	8.8	7.8	6.5	13.2	9.7	7.4	3.5
May	7.2	7.7	8.5	7.4	6.6	13.0	9.4	7.0	3.4
June	7.2	7.6	8.5	7.6	6.6	13.0	9.3	7.0	3.4
July	6.8	7.2	8.2	7.2	6.4	12.9	9.0	6.8	3.4
Aug.	6.8	6.8	7.8	6.6	6.2	12.7	8.8	6.2	3.3
Sep.	6.2	6.7	7.4	6.6	6.0	12.5	8.3	6.1	3.2
Oct.	5.8	6.6	7.1	6.6	5.8	12.3	8.2	6.1	3.2
Nov.	5.8	6.3	6.8	6.3	5.6	12.1	7.9	5.8	3.1
Dec.	5.8	6.1	6.8	6.1	5.5	12.0	7.8	5.7	3.1
1994									
Jan.	5.8	6.0	6.8	5.8	5.5	11.9	7.8	5.5	3.1
Feb.	5.2	6.0	6.8	5.9	5.8	11.9	7.7	5.3	3.1
Mar.	5.2	5.9	6.8	5.8	6.2	11.8	7.4	5.3	3.0
Apr.	5.0	5.6	6.6	5.5	6.3	11.8	7.2	5.1	3.0
May	4.5	5.3	6.2	5.2	6.4	11.5	6.8	4.8	3.0
June	4.5	5.1	6.0	5.0	6.9	11.3	6.7	4.6	3.0

Sources: Deustche Bundesbank; and IMF International Financial Statistics.

1/ Average over all bonds with a remining maturity of more than three years.

Table A15. Germany: Exchange Rate Developments

	DM/$	FF/DM	¥/DM	DM/£	Nominal Effective Exchange Rate
1985	2.94	3.05	81.10	3.78	84.0
1986	2.17	3.19	77.57	3.19	91.4
1987	1.80	3.34	80.43	2.94	96.9
1988	1.76	3.39	73.06	3.12	96.2
1989	1.88	3.39	73.42	3.08	95.3
1990	1.62	3.37	89.55	2.87	100.0
1991	1.66	3.40	81.29	2.93	98.9
1992	1.56	3.39	81.26	2.75	101.7
1993	1.65	3.43	67.34	2.48	104.6
1991					
I	1.53	3.40	87.49	2.92	100.7
II	1.73	3.39	79.79	2.96	97.6
III	1.74	3.40	78.27	2.94	97.8
IV	1.63	3.42	79.61	2.88	99.5
1992					
I	1.62	3.40	79.44	2.87	99.8
II	1.61	3.37	80.76	2.92	99.7
III	1.46	3.39	85.39	2.79	102.5
IV	1.55	3.40	79.46	2.44	105.0
1993					
I	1.63	3.39	74.02	2.41	105.5
II	1.62	3.37	68.01	2.48	104.2
III	1.68	3.47	62.99	2.52	104.0
IV	1.68	3.47	64.33	2.51	104.8
1994					
I	1.72	3.40	62.43	2.56	102.8
1993					
Jan.	1.62	3.39	77.43	2.48	105.2
Feb.	1.64	3.39	73.62	2.36	105.7
Mar.	1.65	3.40	71.01	2.41	105.5
Apr.	1.60	3.38	70.42	2.47	105.4
May	1.61	3.37	68.64	2.49	104.2
June	1.65	3.37	64.99	2.50	103.0
July	1.71	3.40	62.79	2.57	102.4
Aug.	1.70	3.50	61.22	2.53	104.0
Sep.	1.62	3.50	64.97	2.47	105.8
Oct.	1.64	3.51	65.32	2.46	106.0
Nov.	1.70	3.48	63.40	2.52	104.6
Dec.	1.71	3.42	64.29	2.55	103.9
1994					
Jan.	1.74	3.40	63.94	2.60	102.6
Feb.	1.74	3.40	61.22	2.57	102.2
Mar.	1.69	3.41	62.13	2.52	103.4
Apr.	1.70	3.42	60.90	2.52	102.9
May	1.66	3.42	62.56	2.49	103.8
June	1.63	3.42	62.99	2.48	104.4
July	1.57	3.43	62.79	2.43	105.6

Sources: IMF International Financial Statistics.

Table A16. Germany: Monetary Survey

(Percentage changes from a year earlier)

	(In billions of deutsche marks at end 1993)	1992 June	1992 Sep.	1992 Dec.	1993 Mar.	1993 June	1993 Sep.	1993 Dec.	1994 Mar.
Banking assets									
Lending to domestic non-banks	3,840.0	10.7	10.3	10.7	10.4	9.1	10.2	9.8	9.9
Of which:									
Enterprises and individuals	2,986.1	11.7	11.1	8.8	8.2	6.8	7.2	9.0	9.1
Public authorities	840.5	6.3	7.1	17.5	19.6	19.0	23.1	13.7	13.6
External assets, net 1/	413.9	-0.3	3.3	-0.1	-0.2	1.3	-0.3	3.3	-2.1
Banking liabilities									
Currency in circulation	212.0	6.9	8.7	16.7	14.6	13.0	11.2	5.7	11.9
Sight deposits	514.3	6.4	7.1	8.5	7.5	8.1	8.6	9.7	9.8
Narrow money (M1)	726.3	6.5	7.6	10.8	9.6	9.6	9.4	8.5	10.4
Time deposits	592.9	18.2	21.8	9.7	9.7	9.1	2.1	12.5	10.4
Money stock (M2)	1,319.2	11.7	14.0	10.3	9.6	9.3	5.9	10.3	10.4
Savings deposits at statutory notice	587.4	1.9	3.3	1.8	5.5	6.5	8.1	12.5	12.6
Money stock (M3)	1,906.6	8.4	10.5	7.6	8.3	8.4	6.6	10.9	11.1
Monetary capital 2/	2,146.0	9.4	9.0	7.3	6.7	6.8	7.2	7.9	7.1

Sources: Bundesbank, Monthly Report.

1/ Change in percent of M3 one year earlier.

2/ Time deposits for 4-years and over; savings deposits at agreed notice; bank savings bonds; bearer bonds outstanding; capital and reserves.

Table A17. Germany: Trade Flows by Destination 1/
(In billions of deutsche mark)

	1991	1992	1993	1993 I	1993 II	1993 III	1993 IV	1994 I
Exports to:								
Industrial countries	550.3	549.5	472.1	118.9	113.6	114.4	122.3	121.6
Of which:								
EU	360.0	364.7	288.8	74.0	69.5	69.9	73.8	75.2
Other European countries	118.7	114.5	107.9	...	...	...	...	...
U.S.A.	41.7	42.7	46.8	10.9	11.7	11.2	12.6	12.8
Japan	16.5	14.7	15.8	...	...	...	...	...
OPEC countries	21.3	23.1	18.2	5.1	4.5	3.9	4.8	4.6
Countries in transition	37.4	37.3	42.7	9.8	11.2	10.5	11.0	...
Developing countries	51.4	54.3	59.5	14.7	14.3	14.6	15.4	15.4
Of which:								
NIEs 2/	16.3	17.3	20.2	...	...	...	...	...
Other 3/	4.3	5.9	9.9	...	...	...	...	...
Imports to:								
Industrial countries	524.5	519.0	425.3	112.4	102.4	104.4	104.1	105.7
Of which:								
EU	334.9	331.7	252.0	69.1	60.4	61.0	60.5	61.1
Other European countries	96.9	96.8	90.3	...	...	...	...	...
U.S.A.	42.2	42.4	40.0	10.0	9.5	10.0	10.3	10.6
Japan	39.7	38.0	34.1	...	...	...	...	...
OPEC countries	14.8	15.3	13.7	3.5	3.3	3.6	3.3	3.1
Countries in transition	32.6	35.0	36.0	8.4	9.1	9.2	9.1	...
Developing countries	60.0	55.8	55.3	13.4	13.6	13.8	14.1	15.2
Of which:								
NIEs 2/	22.6	21.2	21.5	...	...	...	...	...
Other 3/	11.9	12.2	14.4	...	...	...	...	...

Sources: Bundesbank, Monthly Report and Saisonberienigte Wirtschaftszahlen.

1/ Quartely data, which are seasonally adjusted, may not add up to annual totals.
2/ Hong Kong, Republic of Korea, Singapore, and Taiwan, Province of China.
3/ Centrally planned economies in Asia (principally China).

Table A18. Germany: Long-Term Capital in the Balance of Payments Accounts 1/

(In billions of deutsche mark)

	1989	1990	1991	1992	1993	1993				1994
						I	II	III	IV	I
German investment abroad	-95.0	-106.6	-95.9	-116.8	-97.0	-48.7	-33.4	-16.7	1.8	-32.6
Direct investment	-27.4	-37.4	-38.0	-27.7	-19.3	-5.9	-2.9	-4.3	-6.2	-6.4
Advances and loans of enterprises	-4.7	-0.6	-1.5	-0.7	-1.0	0.3	-0.8	-0.1	-0.4	0.2
Portfolio investment	-50.2	-22.9	-27.3	-70.4	-40.3	-37.0	-21.3	-6.3	24.3	-20.6
Of which:										
Foreign currency bonds	-26.4	-4.4	-3.8	-0.4	-6.6	-3.1	-2.9	1.2	-1.7	-4.8
Deutsche mark bonds	-14.4	-20.1	-8.8	-7.4	-7.1	-6.2	-3.2	1.8	0.5	-1.9
Equities	-9.4	1.6	-14.7	-62.6	-26.6	-27.7	-15.2	-9.3	25.6	-14.0
Advances and loan of banks	-5.2	-37.1	-22.3	-9.4	-24.9	-3.9	-5.7	-4.3	-11.0	-3.1
Official 2/	-5.5	-6.7	-4.1	-5.8	-8.1	-1.6	-1.9	-0.8	-3.8	-2.1
Real estate investment	-1.2	-1.3	-1.4	-2.0	-2.4	-0.5	-0.6	-0.6	-0.7	--
Other	-0.9	-0.6	-1.2	-0.8	-1.0	-0.2	-0.2	-0.2	-0.4	-0.6
Foreign investment in Germany	72.8	41.2	68.6	156.5	283.4	75.3	77.0	56.8	74.3	8.1
Direct investment	13.4	4.1	7.1	3.8	-0.5	1.2	1.0	-0.6	-2.1	0.3
Advances and loans of enterprise	1.2	4.6	5.5	6.3	4.7	2.5	1.1	-0.3	1.4	0.2
Portfolio investment	40.1	15.3	61.7	123.8	241.7	68.1	67.1	50.5	56.0	-4.4
Of which:										
Bonds	22.8	19.8	59.7	130.6	226.0	74.5	61.5	38.8	51.2	-1.5
Official borrowers' note	-5.1	-1.5	-1.3	-2.8	3.5	-2.4	0.6	3.6	1.6	-0.5
Advances and loans to banks	18.2	17.5	-5.5	23.0	38.0	3.6	7.8	7.4	19.1	12.0
Other	-0.1	-0.3	-0.2	-0.3	-0.4	-0.1	-0.0	-0.2	-0.1	0.0
Balance on long term capital account	-22.2	-65.4	-27.3	39.7	186.5	26.5	43.6	40.2	76.2	-24.5

Source: Deutsche Bundesbank, Monthly Report, Supplement 3.

1/ Outflows of funds have a negative sign. From July 1, 1990 including external transactions of east Germany.

2/ Includes share contributions to international organizations.

Table A19. Germany: Short-Term Capital in the Balance of Payments Accounts 1/

(In billions of deutsche mark)

	1989	1990	1991	1992	1993	1993				1994
						I	II	III	IV	I
Banks	-56.7	0.4	39.7	63.8	-102.6	-10.7	-29.3	12.1	-74.6	71.1
Assets	-81.0	-24.5	18.9	15.5	-120.6	-20.8	-29.2	8.6	-79.3	54.6
Liabilities	24.3	24.9	20.7	48.3	18.1	10.1	-0.2	3.5	4.6	16.5
Enterprises and individuals	-51.6	-19.3	11.1	3.6	-60.5	-27.5	-0.4	-12.3	-20.2	-11.3
Financial credits	-41.3	-17.9	16.0	-23.6	-62.5	-25.5	0.9	-15.3	-22.6	-7.5
Assets	-53.1	-34.1	-11.8	-30.6	-63.0	-28.3	0.0	-13.4	-21.3	-11.3
Liabilities	11.8	16.2	27.8	7.1	0.5	2.8	0.9	-1.8	-1.4	3.8
Trade credits	-10.3	-1.4	-4.9	27.2	2.0	-2.0	-1.4	3.0	2.4	-3.8
Assets	-15.0	-8.0	-9.3	28.2	3.9	-1.0	-0.1	4.2	0.8	-5.7
Liabilities	4.7	6.6	4.4	-1.1	-1.9	-1.0	-1.2	-1.2	1.6	1.9
Official	-4.6	-5.0	-3.8	-7.3	-2.6	-1.8	-3.5	0.2	2.4	-1.3
Assets	-4.3	-7.3	-6.2	-6.2	-5.0	-1.6	-3.6	-1.0	1.2	-0.2
Liabilities	-0.2	2.3	2.3	-1.0	2.4	-0.1	0.2	1.2	1.2	-1.0
Balance of short term capital transactions	-112.9	-23.9	46.9	60.2	-165.7	-39.9	-33.2	-0.1	-92.4	58.6

Source: Deutsche Bundesbank, Monthly Report, Supplement 3.

1/ Outflows of funds have a negative sign. From July 1, 1990 including external transactions of east Germany.

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