

Economic Trends

No 510
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Introduction

Economic Trends brings together all the main economic indicators. It contains three regular sections of tables and charts illustrating trends in the UK economy.

'Economic Update' is a feature giving an overview of the latest economic statistics. The content and presentation will vary from month to month depending on topicality and coverage of the published statistics. The accompanying table on main economic indicators is wider in coverage than the table on selected monthly indicators appearing in previous editions of *Economic Trends*. Data included in this section may not be wholly consistent with other sections which will have gone to press earlier.

An article on international economic indicators appears monthly and an article on regional economic indicators appears every March, June, September and December. Occasional articles comment on and analyse economic statistics and introduce new series, new analyses and new methodology.

Quarterly articles on the national accounts and the balance of payments appear in a separate supplement to *Economic Trends* entitled *UK Economic Accounts* which is published every January, April, July and October.

The main section is based on information available to the ONS on the date printed in note 1 below and shows the movements of the key economic indicators. The indicators appear in tabular form on left hand pages with corresponding charts on facing right hand pages. Colour has been used to aid interpretation in some of the charts, for example by creating a background grid on those charts drawn to a logarithmic scale. Index numbers in some tables and charts are given on a common base year for convenience of comparison.

The section on cyclical indicators shows the movements of four composite indices over 20 years against a reference chronology of business cycles. The indices group together indicators which lead, coincide with and lag behind the business cycle, and a short note describes their most recent movements. The March, June, September and December issues carry further graphs showing separately the movements in all of the 27 indicators which make up the composite indices.

Economic Trends is prepared monthly by the Office for National Statistics in collaboration with the statistics divisions of Government Departments and the Bank of England.

Notes on the tables

1. All data in the tables and accompanying charts is current, as far as possible, to 16 April 1996.

2. Some data, particularly for the latest time period, is provisional and may be subject to revisions in later issues.

3. The statistics relate mainly to the United Kingdom; where figures are for Great Britain only, this is shown on the table.

4. Almost all quarterly data are seasonally adjusted; those not seasonally adjusted are indicated by NSA.

5. Rounding may lead to inconsistencies between the sum of constituent parts and the total in some tables.

6. A line drawn across a column between two consecutive figures indicates that the figures above and below the line have been compiled on different bases and are not strictly comparable. In each case a footnote explains the difference.

7. 'Billion' denotes one thousand million.

8. There is no single correct definition of *money*. Consequently, several definitions of money stock are widely used:

M0 the narrowest measure consists of notes and coin in circulation outside the Bank of England and bankers' operational deposits at the Bank.

M2 comprises notes and coin in circulation with the public plus sterling retail deposits held by the UK private sector with UK banks and building societies.

M4 comprises notes and coin in circulation with the public, together with all sterling deposits (including *certificates of deposit*) held with UK banks and building societies by the rest of the private sector.

The Bank of England also publish data for liquid assets outside M4.

9. Symbols used:

- .. not available
- nil or less than half the final digit shown
- + alongside a heading indicates a series for which measures of variability are given in the table on page T79
- † indicates that the data has been revised since the last edition; the period marked is the earliest in the table to have been revised
- * average (or total) of five weeks.

If you have any comments or suggestions about *Economic Trends*, please write to Michael Byrne, Technical Editor, ONS, Room 131E/1, Government Buildings, Great George Street, London, SW1P 3AQ.

Marketing and Customer Service Division
Office for National Statistics

16 April 1996

ONS Databank

The data in this publication can be obtained in computer readable form via the ONS Databank service which provides macro-economic time series data on disc. For more details about the availability of this and other datasets, prices or to place your order please telephone, write or fax: ONS Sales Desk, Room 131/4, Government Buildings, Great George Street, London, SW1P 3AQ. Telephone: 0171 270 6081 or fax 0171 270 4986. The ONS does not offer direct on-line access for these data but a list of host bureaux offering such a facility is available on request from the ONS.

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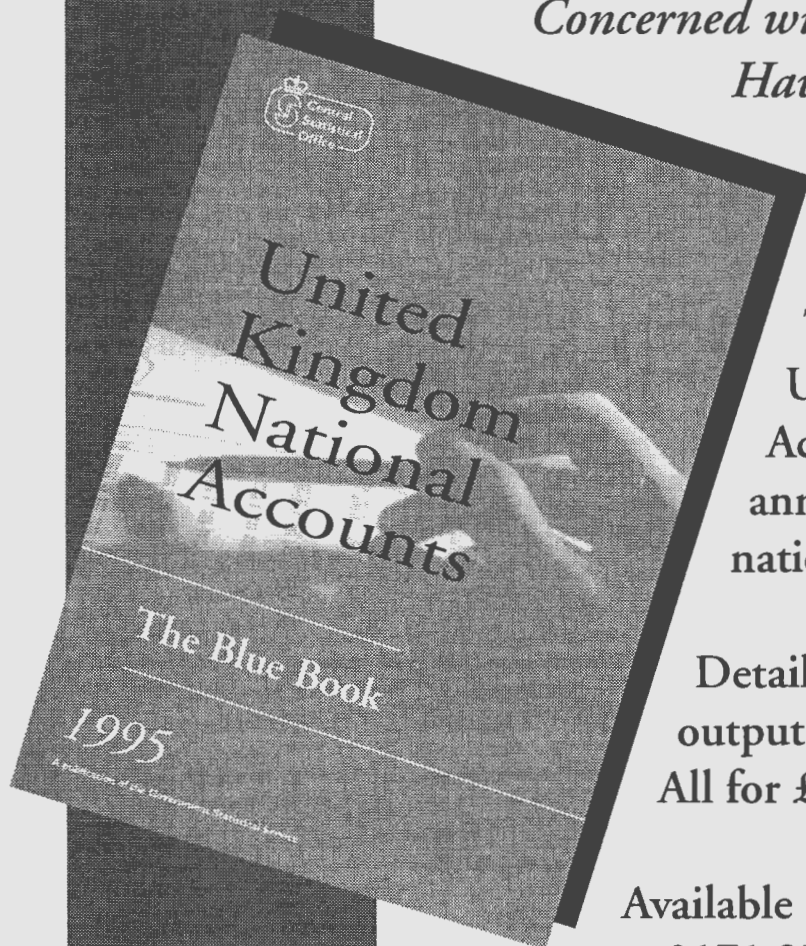
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ECONOMIC UPDATE - APRIL 1996

(Includes data up to 18 April 1996)

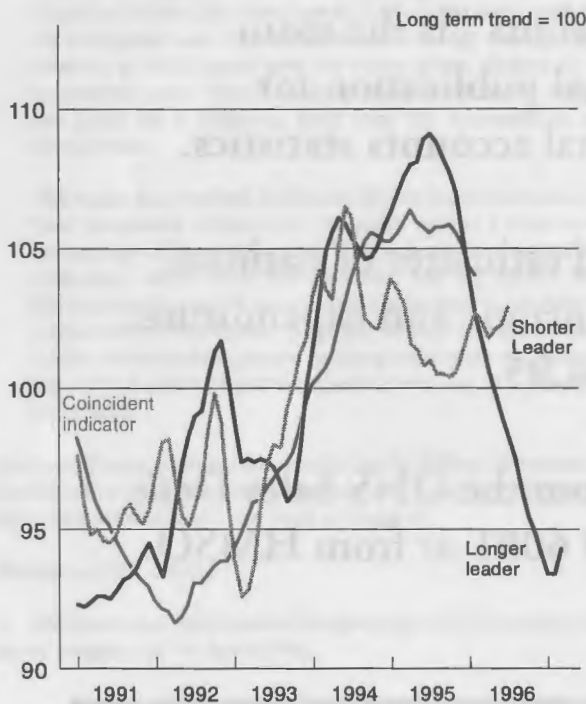
Overview

Early indications of the first quarter of 1996 show that growth in production output has remained subdued. Added to this, construction new orders in the first two months fell from the high reached in December. On the domestic demand side, total net borrowing was unchanged but this hides the shift from borrowing for consumption to borrowing for house purchases. This has been associated with an increase in house prices. External demand remained subdued, particularly from non-EC countries. However imports volumes fell faster than exports thereby boosting net exports. The labour market continued to show falling unemployment and growth in employment, on the LFS basis. Underling cost pressures had two conflicting factors - weak growth in producer prices, but a pick up in underlying average earnings growth.

Activity

The CSO's **coincident cyclical indicator** continued to fall in February. However as chart 1 shows, partial information suggest that the **shorter leading index** has risen since December 1995 and the **longer leading index** rose for the first time since June 1994 in February.

Chart 1
Cyclical Indicators

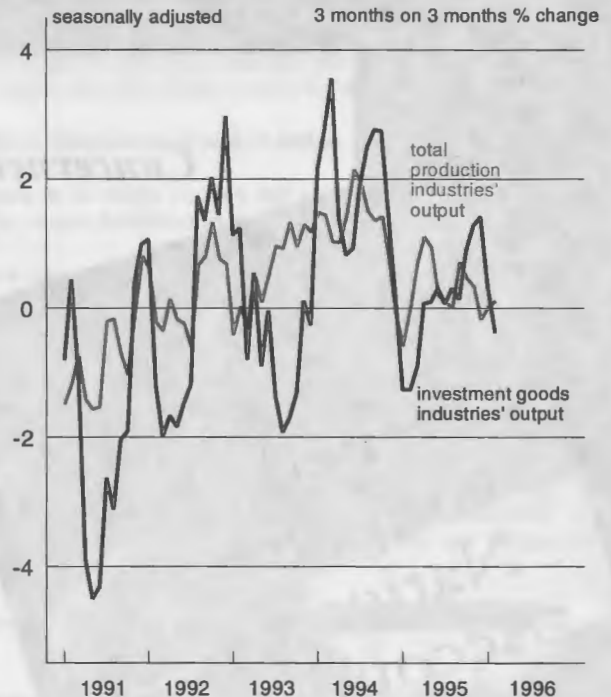


Output and expectations

2. The **index of industrial production**, seasonally adjusted, was 0.1% higher in the three months to February than the previous three months. Within this, **manufacturing output** fell by 0.5%, **mining and quarrying output**, including oil and gas extraction rose by 0.6% and output of the **electricity, gas and water supply** industries rose by 5.3%. Colder than average weather in February led to increased demand for gas and electricity. Latest estimates of annual

trends show no growth for output for production and manufacturing industries - the first simultaneous stagnation since 1992. Chart 2 shows that output of investment goods fell in early 1996.

Chart 2
Output of the production industries



3. The **CBI Monthly Trends Enquiry in manufacturing** revealed that the **output expectations** balance in the next 4 months, seasonally adjusted, rose from 13% in February to 19% in March.

4. The volume of new **construction orders** in Great Britain, seasonally adjusted, rose by 9% in the three months to February compared with the three months to November - boosted by a substantial rise in December 1995.

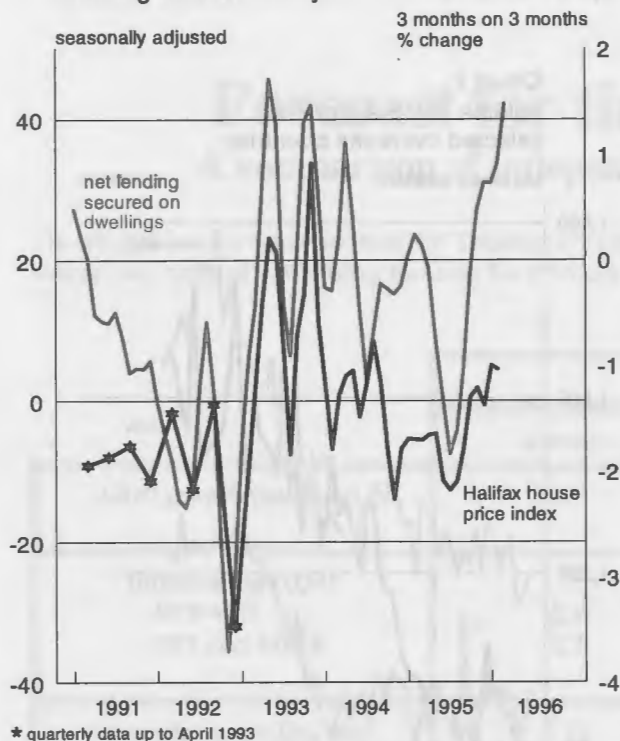
Indicators of domestic demand

5. **Total net personal borrowing**, seasonally adjusted, remained at £5.8 billion in the three months to November the same as in the three months to February. Over this period, **net borrowing secured on dwellings**, seasonally adjusted, rose from £3.7 billion to £3.9 billion while **net consumer credit**, seasonally adjusted, fell from £2.1 billion to £2.0 billion. Chart 3 shows how net borrowing secured on dwellings and house prices have risen recently.

Prices and wages

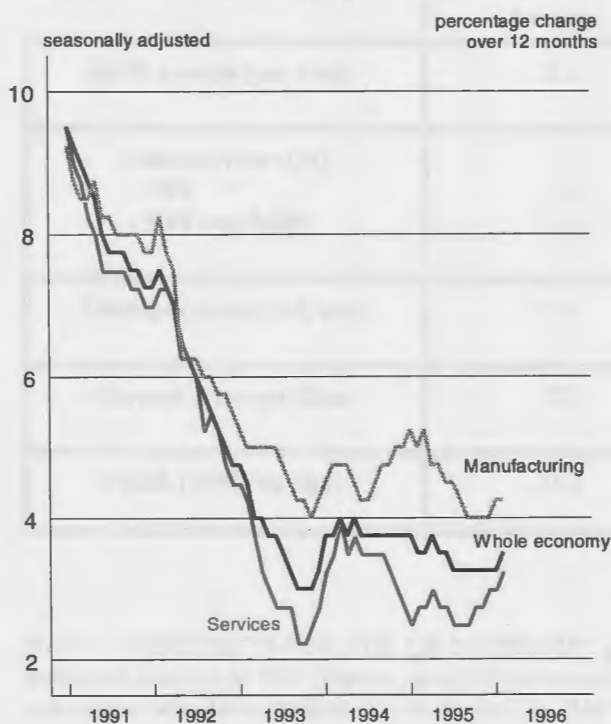
6. The 12-month rate of increase of the **retail prices index (RPI)** remained at 2.7% in March. Accelerations in prices of houses, seasonal foods and leisure goods were offset by intense price competition between petrol retailers. **Excluding mortgage interest payments**, the 12-month rate remained at 2.9%; to remain close to the middle of the government's target range of 1-4 %. **Excluding mortgage interest payments and indirect taxes (RPIY)**, rose from 2.5% in February to 2.6% in March.

Chart 3
Housing market activity



7. Producer price data continued to showed further signs of weakening inflationary pressure. The three month on three month annualized percentage growth in the **output price index for manufactured products** (home sales), seasonally adjusted and excluding food, beverages, tobacco and petroleum, fell from 1.9 % in February to 1.6% in March. Over the same period the annualized **input prices** (all manufacturing), seasonally adjusted, fell by 0.2% in March, after falling by 0.7% in February.

Chart 4
Whole economy underlying earnings in GB



8. **Expectations of price increases** remained stable in March. The CBI Monthly Trends Enquiry for manufacturing showed a balance of 11%, seasonally adjusted by the CSO, expecting to raise prices in the next four months

9. As chart 4 shows, **GB whole economy average earnings** growth picked up in February - the first upward movement since April 1995. Underlying whole economy average earnings growth was 3½% in February. By Sector, the underlying rate of increase in earning rose to 3¼% in the service sector and remained at the upwardly revised January figure of 4¼% for manufacturing.

Labour market and productivity

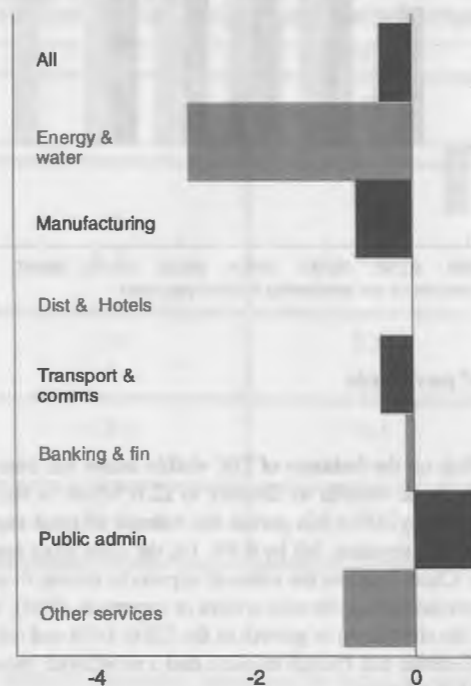
10. **UK claimant unemployment**, seasonally adjusted, fell in March by 25,700 to 2.187 million, or 7.8% of the workforce. In the three months to March the average monthly fall was 16,300 compared with an average fall of 9,500 in the three months to December 1995.

11. The Winter 1995 Labour Force Survey (LFS) (December to February) also showed a fall in unemployment to 8.2 per cent of the workforce. **ILO unemployment**, seasonally adjusted, was 2.302 million in Great Britain over this period - a fall of 94,000 since the Autumn survey

12. **GB employment in manufacturing industries** recovered moderately after the substantial fall in January. Employment rose by 3,000 between January and February, and 1,000 in the year to February. Employment in the rest of the production industries fell by 1,000 between January and February.

13. **LFS employment** in Great Britain, seasonally adjusted, rose by 118,000 between the Autumn and Winter surveys to 25.680 million. Chart 5 shows the latest sectoral split of seasonally unadjusted changes, which generally falls in Winter, indicates the differential prospects of sectors.

Chart 5
LFS employment in production and service sectors
Winter 1995/6 on Autumn 1995 percentage change



14. In the three months to February, **productivity in manufacturing** ceased to fall - it was unchanged compared with the three months to February 1995. **Unit wage costs in manufacturing** rose by 4.2% over the same period.

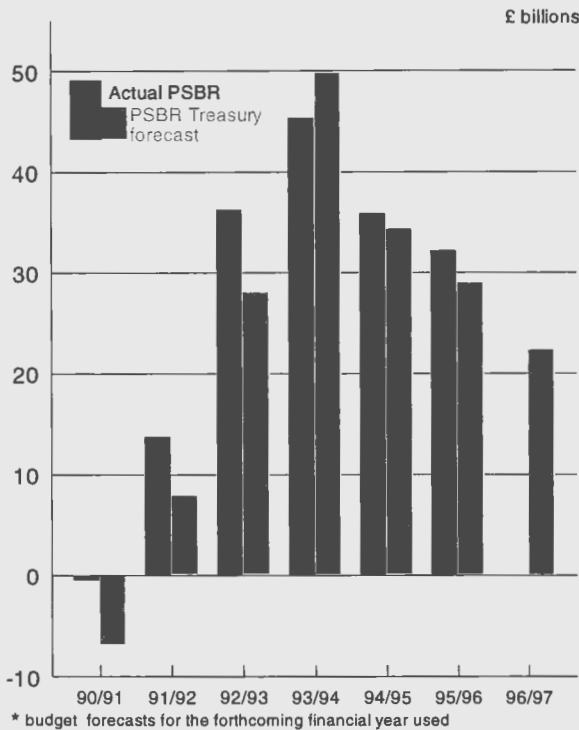
Monetary indicators

15. The annual growth of **narrow money (M0)**, seasonally adjusted, fell from 6.0% in February to 5.4% in March, but remained outside the Government's monitoring range of 0-4 %.

Government finances

16. In March the **public sector borrowing requirement (PSBR)** was £9.6 billion. For the financial year 1995-96 the PSBR was £32.2 billion compared with £35.9 billion in the same period last year. Excluding privatisation proceeds the figures were £34.6 billion and £42.3 billion respectively. Chart 6 shows the recent profile of public sector borrowing requirements.

Chart 6
Public sector borrowing requirement



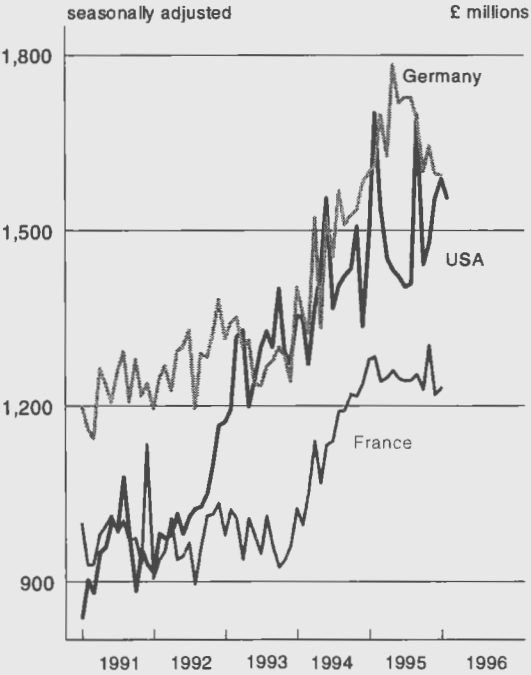
Balance of payments

17. The deficit on the **balance of UK visible trade** fell from £4.1 billion in the three months to October to £2.6 billion in the three months to January. Over this period the **volume of total exports, excluding oil and erratics**, fell by 0.4%. On the same basis **imports** fell by 1.3%. Chart 7 shows the value of exports to the top three UK export markets (accounting for over a third of exports in 1995), which reveals that the slowdown in growth in the US in 1995 and subdued growth in German and French markets had a substantial impact on demand for UK exports.

18. More timely data on **trade with non-EC countries** shows that the deficit increased from £2.3 billion in the three months to November to £2.6 billion in the three months to February. In the three months to February, **export volumes, excluding oil and erratics** fell

by 2.3% compared with the previous three months. On the same basis **imports** fell by 3.4%.

Chart 7
Volume of UK exports to selected overseas countries



Forecast for the UK Economy

A comparison of independent forecasts, April 1996.

The tables below are extracted from HM Treasury's "FORECASTS FOR THE UK ECONOMY" and summarise the average and range of independent forecasts for 1996 and 1997, updated monthly.

	Independent Forecasts for 1996		
	Average	Lowest	Highest
GDP growth (per cent)	2.3	1.7	3.2
Inflation rate (Q4)			
- RPI	2.4	1.2	3.4
- RPI excl MIPS	2.7	1.6	3.4
Unemployment (Q4, mn)	2.12	1.97	2.35
Current Account (£bn)	-5.7	-11.0	-1.1
PSBR (1996-97, £bn)	25.5	22.2	31.0

	Independent Forecasts for 1997		
	Average	Lowest	Highest
GDP growth (per cent)	3.1	2.0	3.9
Inflation rate (Q4)			
- RPI	3.4	1.7	5.1
- RPI excl MIPS	3.0	1.7	4.2
Unemployment (Q4, mn)	1.94	1.59	2.35
Current Account (£bn)	-7.2	-15.0	-0.1
PSBR (1997-98, £bn)	21.3	15.0	33.2

NOTE: "FORECASTS FOR THE UK ECONOMY" gives more detailed forecasts, covering 24 variables and is published monthly by HM Treasury, available on annual subscription, price £75,. Subscription enquiries should be addressed to Miss Jehal, Publishing Unit, Room 53a, HM Treasury, Parliament Street, London SW1P 3AG (0171 270 5607).

INTERNATIONAL ECONOMIC INDICATORS

(includes data up to 17 April 1996)

INTRODUCTION

The series presented here are taken from the Organisation of Economic Co-operation and Development's (OECD) Main Economic Indicators, except for the United Kingdom where several of the series are those most recently published. The series shown are for each of the G7 economies (United Kingdom, Germany, France, Italy, United States, Japan and Canada) and for the European Communities (EC) and OECD countries in aggregate. As data on unified Germany becomes more readily available it is the intention of this article to commence the replacement of data referring to Western Germany.

2. The length and periodicity of the series have been chosen to show their movement over a number of years as well as the recent past. There is no attempt here to make cross country comparisons across cycles. Further, because the length and timing of these cycles varies across countries, comparisons of indicators over the same period should be treated with caution.

COMMENTARY

3. Latest estimates of **gross domestic product (GDP) at constant market prices** show that growth of the Japanese economy accelerated,

on a quarterly basis, to 0.9% in 1995 Q4. Moreover, in the previous quarter growth was revised upwards from 0.2% to 0.6%. Over this earlier period the growth rates for the EC and OECD were 0.5% and a contraction of -0.2% respectively, indicative of declines occurring outside the G7.

4. A weakening in **consumer price inflation** was evident again in the G7 economies in February. The largest fall occurred in Italy where the rate fell by 0.6 percentage points to 5.0%. In the United Kingdom the rate fell from 2.9% to 2.7% and in Canada it declined from 1.5 % to 1.3%. The rate remained unchanged, however, in France and the United States where their respective inflation rates were recorded as 2.0% and 2.7%. Japan was the exception to this story as price deflation fell from 0.4% to 0.3%, although the rate of price changes has been volatile lately.

5. **Standardised unemployment rates** (ILO based) remained unchanged in both the United Kingdom at 8.4% and France at 11.8% in February. In the United States and Japan rates fell to 5.5% and 3.3% respectively.

1 Gross domestic product at constant market prices: index numbers

1990 = 100

	United Kingdom	Germany ¹	France	Italy	EC	United States	Japan ²	Canada	Major 7	OECD
	FNAO	GABI	GABH	GABJ	GAEK	GAEH	GAEI	GAEG	GAEO	GAEJ
1980	76.8	79.9	79.2	80.3	79.0	77.1	66.8	75.1	75.9	76.2
1985	84.9	84.7	85.4	86.1	85.1	87.4	80.3	86.6	85.4	85.5
1986	88.6	86.7	87.6	88.6	87.5	89.9	82.1	89.5	87.8	87.8
1987	92.8	87.9	89.5	91.4	90.1	92.7	85.5	93.2	90.6	90.6
1988	97.5	91.1	93.6	95.3	93.8	96.4	90.8	97.8	94.7	94.5
1989	99.6	94.4	97.6	97.9	97.1	98.8	95.2	100.2	97.7	97.5
1990	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1991	98.0	104.6	100.8	101.2	103.0	99.4	104.0	98.2	101.5	101.0
1992	97.5	105.8	102.1	102.0	104.0	101.7	105.1	98.8	103.1	102.5
1993	99.7	103.8	100.6	100.8	103.4	104.8	105.2	101.0	104.5	103.8
1994	103.5	107.4	103.5	102.9	106.4	109.1	105.7	105.5	107.7	106.8
1995	106.0	..	106.0	..	..	..	106.5	108.2	..	..
1993 Q1	98.6	104.0	100.4	100.9	103.0	103.6	105.1	100.0	103.7	103.7
Q2	99.2	104.4	100.5	101.0	103.2	104.2	105.2	101.0	104.2	104.1
Q3	100.2	105.5	100.7	100.0	103.6	104.9	105.4	101.0	104.6	104.6
Q4	100.9	105.2	100.9	101.1	103.9	106.5	104.9	102.0	105.4	105.3
1994 Q1	101.9	105.8	101.6	101.3	104.8	107.4	105.3	103.0	106.3	106.0
Q2	103.2	106.8	103.1	102.4	106.0	108.5	105.8	105.0	107.3	107.1
Q3	104.1	107.9	104.2	104.0	107.0	109.6	106.5	107.0	108.4	108.0
Q4	104.8	108.7	105.2	104.0	107.8	111.0	105.3	108.0	109.0	108.7
1995 Q1	105.3	..	105.9	105.6	108.6	111.7	105.5	108.1	109.6	109.2
Q2	105.8	..	106.1	105.5	109.1	112.1	106.1	107.9	110.1	109.5
Q3	106.3	..	106.2	107.6	109.7	113.2	106.7	108.2	110.9	109.3
Q4	106.8	..	105.9	..	..	..	107.7	108.4	..	..
Percentage change, latest quarter on corresponding quarter of previous year										
1995 Q3	2.1	..	1.9	3.5	2.5	3.3	0.2	1.1	2.3	1.2
Q4	1.9	..	0.7	..	..	..	2.3	0.4	..	..
Percentage change, latest quarter on previous quarter										
1995 Q3	0.5	..	0.1	2.0	0.5	1.0	0.6	0.3	0.7	-0.2
Q4	0.5	..	-0.3	..	..	..	0.9	0.2	..	..

1 Western Germany (Federal Republic of Germany before unification)

2 GNP

2 Consumer prices¹ Percentage change on year earlier

	United Kingdom	Germany ²	France	Italy	EC	United States	Japan	Canada	Major 7	OECD ³
1980	18.0	5.5	13.4	21.1	13.6	13.7	8.0	10.2	12.7	14.8
1985	6.1	2.2	5.9	8.6	6.2	3.5	2.1	4.0	4.0	6.9
1986	3.4	-0.1	2.7	6.2	3.7	1.9	-0.1	4.1	2.1	5.9
1987	4.2	0.2	3.1	4.6	3.3	3.7	0.1	4.4	2.9	7.7
1988	4.9	1.3	2.8	5.0	3.7	4.0	0.7	4.0	3.4	8.6
1989	7.8	2.8	3.5	6.6	5.2	4.9	2.2	5.0	4.5	6.2
1990	9.5	2.7	3.4	6.0	5.7	5.4	3.1	4.8	5.0	6.8
1991	5.9	3.5	3.2	6.5	5.1	4.2	3.3	5.6	4.3	6.1
1992	3.7	4.0	2.4	5.3	4.2	3.1	1.6	1.5	3.1	4.9
1993	1.6	4.2	2.1	4.2	3.4	3.0	1.3	1.9	2.6	4.1
1994	2.4	3.0	1.7	3.9	3.0	2.5	0.7	0.2	2.3	4.4
1995	3.5	1.8	1.8	5.4	3.8	2.9	-0.1	2.2	2.6	5.7
1995 Q1	3.4	2.0	1.7	4.4	3.7	2.8	0.4	1.6	2.6	5.5
Q2	3.5	1.9	1.6	5.5	3.8	3.1	-0.2	2.7	2.8	5.8
Q3	3.7	1.7	1.8	5.8	3.7	2.7	0.1	2.4	2.6	5.9
Q4	3.2	1.6	1.9	5.7	3.6	2.8	-0.5	2.0	2.5	5.7
1995 Mar	3.5	1.9	1.8	5.0	3.8	2.8	-0.2	2.2	2.6	5.6
Apr	3.3	2.1	1.6	5.1	3.8	3.0	-0.4	2.5	2.7	5.7
May	3.4	1.8	1.6	5.5	3.8	3.2	-0.4	2.9	2.8	5.7
Jun	3.5	1.9	1.6	5.9	3.9	3.1	0.2	2.7	2.8	5.9
Jul	3.5	1.9	1.5	5.6	3.7	2.9	0.4	2.6	2.6	5.9
Aug	3.6	1.5	1.9	5.8	3.7	2.7	-0.2	2.3	2.5	5.8
Sep	3.9	1.7	2.0	5.8	3.8	2.6	-0.1	2.3	2.6	5.9
Oct	3.2	1.7	1.8	5.9	3.6	2.8	-0.8	2.4	2.6	5.8
Nov	3.1	1.6	1.9	5.7	3.7	2.7	-0.6	2.0	2.4	5.6
Dec	3.2	1.5	2.1	5.5	3.6	2.9	-0.1	1.7	2.5	5.7
1996 Jan	2.9	1.4	2.0	5.6	2.9	2.7	-0.4	1.5	2.2	5.6
Feb	2.7	..	2.0	5.0	2.8	2.7	-0.3	1.3	2.2	5.5

1 Components and coverage not uniform across countries

2 Western Germany (Federal Republic of Germany before unification)

3 OECD data includes 'higher inflation' countries (Mexico and Turkey)

3 Standardised unemployment rates: percentage of total labour force¹

	United Kingdom	Germany ²	France	Italy	EC ³	United States	Japan	Canada	Major 7	OECD
	GABF	GABD	GABC	GABE	GADR	GADO	GADP	GADN	GAEQ	GADQ
1980	6.4	2.9	6.3	7.5	6.4	7.1	2.0	7.4	5.5	5.8
1985	11.2	7.1	10.3	9.6	10.9	7.1	2.6	10.4	7.2	7.8
1986	11.2	6.4	10.4	10.5	10.8	6.9	2.8	9.5	7.1	7.7
1987	10.3	6.2	10.5	10.9	10.6	6.1	2.9	8.8	6.7	7.3
1988	8.6	6.2	10.0	11.0	9.9	5.4	2.5	7.7	6.1	6.7
1989	7.2	5.6	9.4	10.9	9.0	5.2	2.3	7.5	5.7	6.2
1990	6.8	4.8	8.9	10.3	8.4	5.4	2.1	8.0	5.6	6.1
1991	8.8	4.2	9.5	9.9	8.7	6.7	2.1	10.2	6.3	6.7
1992	10.1	4.6	10.4	10.5	9.3	7.3	2.2	11.3	6.8	7.4
1993	10.4	5.8	11.7	10.2	10.9	6.7	2.5	11.2	7.2	7.8
1994	9.5	6.8	12.3	11.8	11.4	6.0	2.9	10.3	7.0	7.8
1995	8.7	..	11.6	..	11.0	5.5	3.2	9.5	6.8	7.5
1995 Q3	8.7	..	11.5	12.1	11.0	5.6	3.2	9.5	6.8	7.5
Q4	8.6	..	11.6	..	11.1	5.5	3.3	9.4	6.8	7.6
1995 Mar	8.8	6.7	11.7	..	11.0	5.4	3.0	9.6	6.7	7.5
Apr	8.8	6.8	11.6	12.2	11.0	5.6	3.1	9.4	6.8	7.6
May	8.8	6.8	11.6	..	11.0	5.6	3.1	9.5	6.8	7.5
Jun	8.8	..	11.6	..	11.0	5.5	3.2	9.5	6.7	7.5
Jul	8.8	..	11.5	12.1	11.0	5.6	3.2	9.7	6.8	7.6
Aug	8.7	..	11.5	..	11.0	5.6	3.2	9.5	6.8	7.5
Sep	8.6	..	11.5	..	11.0	5.6	3.2	9.2	6.8	7.5
Oct	8.6	..	11.6	..	11.0	5.4	3.2	9.4	6.7	7.5
Nov	8.5	..	11.6	..	11.0	5.5	3.4	9.4	6.8	7.6
Dec	8.6	..	11.7	..	11.3	5.5	3.4	9.4	6.9	7.6
1996 Jan	8.4	..	11.8	..	11.1	5.7	3.4	9.5	6.9	7.7
Feb	8.4	..	11.8	..	..	5.5	3.3	..	..	..

1 Uses an ILO based measure of those without work, currently available for work, actively seeking work or waiting to start a job already obtained

2 Western Germany (Federal Republic of Germany before unification)

3 Excludes Denmark, Greece and Luxembourg

4 Balance of payments current account as percentage of GDP

	United Kingdom	Germany ^{1,2}	France	Italy	United States ¹	Japan ¹	Canada
1980	1.2	-1.7	-0.6	-2.3	0.1	-1.0	-0.6
1985	0.6	2.7	-0.1	-0.9	-3.1	3.6	-1.3
1986	-0.2	4.5	0.3	0.4	-3.5	4.3	-2.8
1987	-1.1	4.1	-0.6	-0.2	-3.7	3.6	-2.8
1988	-3.5	4.2	-0.5	-0.7	-2.6	2.7	-3.5
1989	-4.3	4.9	-0.5	-1.2	-2.0	2.0	-4.2
1990	-3.5	3.1	-0.8	-1.3	-1.7	1.2	-3.8
1991	-1.5	-1.2	-0.5	-2.1	-0.1	2.1	-4.1
1992	-1.6	-1.2	0.3	-2.3	-1.1	3.2	-3.9
1993	-1.8	-1.1	0.7	1.1	-1.6	3.1	-4.3
1994	-0.3	-0.9	0.7	1.5	-2.2	2.8	-3.3
1995	-1.0	..	..	..	..	2.2	-1.7
1994 Q4	-0.4	-0.3	0.2	0.5	-0.6	0.6	-0.5
1995 Q1	-0.5	..	0.5	0.2	-0.6	0.6	-0.8
Q2	-1.1	..	0.3	0.7	-0.6	0.6	-0.7
Q3	-1.2	..	0.1	0.8	0.6	0.5	-0.1
Q4	-1.0	..	..	..	..	0.5	-

1 Balance as percentage of GNP

2 Western Germany (Federal Republic of Germany before unification)

5 Total industrial production: index numbers

1990 = 100

	United Kingdom	Germany ¹	France	Italy	EC	United States	Japan ²	Canada ³	Major 7	OECD ⁴
	DVZI	HFGA	HFFZ	HFGB	GACY	HFGD	HFGC	HFFY	GAES	GACX
1980	81.5	97.3	88.0	87.9	83.8	79.3	67.3	81.4	78.7	78.9
1985	88.0	100.3	88.5	84.8	86.3	89.0	79.8	94.5	86.3	86.3
1986	90.1	102.3	89.5	87.9	88.1	89.9	79.6	93.8	87.3	87.2
1987	93.7	102.7	91.3	91.3	90.1	94.3	82.4	98.4	90.5	90.3
1988	98.2	106.3	95.0	96.8	94.1	98.5	90.7	103.6	95.6	95.3
1989	100.3	111.4	98.5	99.8	98.0	100.0	95.9	103.4	98.5	98.4
1990	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1991	96.3	103.7	100.3	99.1	99.8	98.3	101.9	95.8	99.7	99.7
1992	96.2	100.9	100.2	98.9	98.6	101.5	96.1	96.8	99.5	99.4
1993	98.1	93.4	97.6	96.5	95.5	105.7	92.0	101.2	99.0	99.1
1994	103.1	97.1	101.3	101.5	100.3	111.3	93.1	107.8	103.4	103.7
1995	105.6	..	103.6	106.9	103.6	115.1	96.0	112.0	106.5	106.8
1995 Q1	105.1	96.8	103.8	104.2	102.9	114.9	96.5	112.3	106.3	106.6
Q2	105.3	98.4	104.4	106.1	103.8	114.5	96.4	111.8	106.5	106.6
Q3	106.1	98.6	104.7	107.9	104.2	115.4	94.7	112.1	106.6	106.8
Q4	105.9	..	101.6	109.4	103.6	115.5	96.5	111.9	106.7	107.1
1995 Feb	104.9	97.4	102.6	104.4	102.4	114.8	96.8	112.5	106.3	106.4
Mar	105.9	96.5	104.8	105.9	103.9	115.0	97.9	111.7	107.0	107.2
Apr	105.3	98.6	103.2	107.6	103.2	114.5	97.0	111.9	106.6	106.4
May	105.5	98.6	105.1	105.5	104.3	114.4	96.5	112.2	106.6	106.8
Jun	105.1	98.0	104.9	105.3	104.0	114.5	95.7	111.3	106.2	106.5
Jul	105.8	100.6	105.4	107.8	104.3	114.6	93.5	111.8	106.2	106.2
Aug	105.9	97.6	105.4	108.4	104.6	115.7	96.6	112.1	107.2	107.4
Sep	106.5	97.5	103.3	107.5	103.8	115.8	94.0	112.3	106.5	106.7
Oct	105.5	95.4	101.5	106.7	102.8	115.3	95.3	111.9	106.0	106.3
Nov	105.9	95.4	102.0	106.1	103.3	115.6	96.7	112.1	106.6	107.0
Dec	106.3	..	101.3	115.3	104.8	115.7	97.6	111.7	107.6	107.9
1996 Jan	105.8	..	..	103.3	..	115.2	97.6	112.9	..	..
Feb	106.2	..	..	..	..	116.7	99.8	..	..	..
Percentage change: average of latest three months on that of corresponding period of previous year										
1996 Jan	1.7	..	..	3.0	..	1.0	1.9	-0.1	..	..
Feb	1.5	..	..	..	..	1.0	2.6	..	..	..
Percentage change: average of latest three months on previous three months										
1996 Jan	0.0	..	..	0.7	..	-0.1	2.1	0.1	..	..
Feb	0.1	..	..	..	..	0.3	3.1	..	..	..

1 Western Germany (Federal Republic of Germany before unification)

2 Not adjusted for unequal number of working days in a month

3 GDP in industry at factor cost and 1986 prices

4 Some countries excluded from area total

6 Producer prices (manufacturing) Percentage change on a year earlier

	United Kingdom	Germany ¹	France ²	Italy	EC	United States	Japan	Canada	Major 7	OECD ³
1980	12.8	7.0	9.4	..	11.3	13.5	14.8	13.4	13.2	13.2
1985	5.3	2.1	4.4	7.7	4.9	0.8	-0.8	2.7	1.9	4.8
1986	4.2	-2.3	-2.0	0.1	-1.0	-1.4	-4.7	0.9	-1.5	1.5
1987	3.7	-0.5	0.2	3.1	1.2	2.1	-2.9	2.7	1.1	5.8
1988	4.3	1.6	4.8	3.5	3.4	2.5	-0.3	4.5	2.4	7.2
1989	4.7	3.4	5.2	5.8	4.8	5.2	2.1	1.8	4.4	5.8
1990	5.8	1.5	-1.0	4.2	2.5	4.9	1.6	0.3	3.3	4.7
1991	5.4	2.1	-1.2	3.3	2.2	2.1	1.1	-1.0	1.9	3.3
1992	3.5	1.7	-1.4	1.9	1.2	1.3	-1.0	0.5	0.8	2.2
1993	3.7	0.0	-2.6	3.7	1.2	1.3	-1.6	3.3	0.8	2.1
1994	2.5	-3.0	1.1	3.7	1.4	0.6	-1.7	5.6	0.5	3.1
1995	4.0	2.2	6.4	7.9	5.7	1.8	-0.7	8.1	3.1	6.8
1995 Q4	4.3	1.7	2.7	7.2	4.6	1.9	-0.7	5.8	2.8	6.5
1996 Q1	3.9	..	..	..	..	..	..	..	..	..
1995 Apr	3.9	2.5	8.8	8.2	6.4	2.1	-0.4	9.4	3.4	7.0
May	3.9	2.5	8.9	9.0	6.5	2.2	-0.5	8.9	3.5	7.0
Jun	3.9	2.6	8.5	9.2	6.4	2.2	-0.6	8.7	3.4	7.0
Jul	4.1	2.4	7.1	9.2	6.3	1.9	-0.7	8.3	3.2	6.9
Aug	4.2	2.3	6.8	9.0	6.1	1.3	-0.7	7.2	2.9	6.7
Sep	4.2	2.4	5.7	8.7	5.9	2.2	-0.6	7.7	3.1	6.9
Oct	4.4	2.1	4.0	7.9	5.2	2.0	-0.6	6.7	3.1	6.7
Nov	4.3	1.6	2.6	7.2	4.6	1.8	-0.6	5.6	2.6	6.4
Dec	4.3	1.4	1.7	6.5	4.2	1.9	-0.8	5.1	2.5	6.3
1996 Jan	3.9	..	-0.4	5.9	2.5	2.6	-0.8	2.5	1.8	6.9
Feb	4.0	..	-1.4	..	..	2.0	-0.9	1.9	..	..
Mar	3.7	..	..	..	..	..	..	..	..	..

1 Western Germany (Federal Republic of Germany before unification).

2 Producer prices in intermediate goods

3 OECD includes 'higher inflation' countries (Mexico and Turkey)

7 Total employment: index numbers¹

1990 = 100

	United Kingdom	Germany ^{2,3}	France ³	Italy	EC	United States ³	Japan	Canada ³	Major 7	OECD
	DMBC	GAAR	GAU	GAAS	GADW	GADT	GADU	GADS	GAEU	GADV
1980	93.5	95.3	96.6	97.0	100.0	84	89	84.3	..	..
1985	91.2	93.5	95.6	97.3	93.1	91	93	89.1	92.3	92.1
1986	91.4	94.4	96.1	97.9	93.8	93	94	91.9	93.6	93.4
1987	93.4	95.3	96.5	97.8	95.0	95	95	94.3	95.2	95.0
1988	96.7	96.3	97.5	99.0	96.8	98	96	97.4	97.1	97.0
1989	99.4	97.2	99.0	98.6	98.5	100	98	99.4	98.9	98.8
1990	100.0	100.0	100.0	100.0	100.0	100	100	100.0	100.0	100.0
1991	97.1	101.9	100.0	101.3	99.9	99	102	98.1	99.9	99.9
1992	94.6	102.8	99.4	100.7	98.7	100	103	97.5	100.1	99.7
1993	93.6	100.9	98.2	95.9	96.3	101	103	98.8	100.1	99.5
1994	94.2	99.3	98.4	94.0	96.0	104	104	101.0	101.4	100.7
1995	94.9	..	..	..	96.5	106	103	102.6	102.4	101.6
1994 Q1	93.9	100	97.8	94.0	95.3	102.1	101.3	96.9	99.7	99.0
Q2	94.0	99	98.9	94.6	96.0	104.1	104.5	101.1	101.6	100.8
Q3	94.3	99	99.3	95.3	96.5	105.4	104.0	104.1	102.2	101.5
Q4	94.7	99	98.8	93.9	96.1	105.8	103.2	101.8	102.1	101.3
1995 Q1	94.8	..	99.1	92.4	95.8	104.6	101.4	99.5	100.9	100.3
Q2	94.8	..	..	93.9	96.6	105.9	104.3	103.0	102.5	101.8
Q3	94.8	..	..	95.0	96.9	106.8	104.4	105.2	102.9	102.3
Q4	95.0	..	..	94.3	96.8	106.5	103.1	102.7	102.5	101.9
1996 Jan	..	..	..	93.1	..	104.4	101.2	100.3	..	..
Feb	..	..	..	..	..	105.3	100.8	101.0	..	..

Percentage change, latest quarter on that of corresponding period of previous year

1995 Q3	0.5	..	..	-0.3	0.4	1.3	0.4	1.1	0.7	0.8
Q4	0.3	..	..	0.4	0.7	0.7	-0.1	0.9	0.4	0.6

Percentage change latest quarter on previous quarter

1995 Q3	0.0	..	..	1.2	0.3	0.8	0.1	2.1	0.4	0.5
Q4	0.2	..	..	-0.7	-0.1	-0.3	-1.2	-2.4	-0.4	-0.4

1 Not seasonally adjusted except for the United Kingdom

2 Western Germany (Federal Republic of Germany before unification)

3 Excludes members of armed forces

8 Average wage earnings in manufacturing¹ Percentage change on a year earlier

	United Kingdom ²	Germany ³	France	Italy	EC	United States	Japan	Canada	Major 7	OECD
1980	17.6	6.5	15.0	18.7	11.0	8.7	7.4	10.0	8.9	9.5
1985	9.0	4.2	5.7	11.2	7.1	3.8	3.1	3.8	3.8	5.1
1986	7.7	4.0	4.0	4.8	5.2	2.1	1.4	2.8	3.7	3.3
1987	8.1	3.8	3.1	6.5	5.4	1.8	1.7	3.3	2.4	3.5
1988	8.5	4.6	3.0	6.1	5.4	2.8	4.5	3.9	4.6	4.4
1989	8.8	3.5	3.8	6.0	5.9	2.9	5.8	5.4	4.4	4.9
1990	9.3	5.1	4.6	7.3	6.8	3.3	5.3	4.7	5.3	5.4
1991	8.2	5.7	4.3	9.8	7.1	3.3	3.5	4.8	5.0	5.0
1992	6.6	6.2	3.6	5.4	5.5	2.4	1.1	3.4	2.9	3.6
1993	4.5	-3.6	2.6	3.7	4.5	2.5	-7.0	2.0	2.8	2.8
1994	4.7	2.9	2.3	3.3	5.0	2.8	10.2	2.2	2.7	2.8
1995	4.5	..	..	3.1	..	2.4	-6.7	1.5	0.6	1.8
1995 Q2	4.8	..	..	2.3	7.6	2.3	-7.1	1.0	0.5	2.8
Q3	4.4	..	..	3.5	3.8	2.7	-6.2	2.3	1.0	1.5
Q4	3.9	..	..	3.9	3.0	2.6	-7.2	2.0	0.0	0.7
1995 Feb	5.6	..	..	2.4	3.3	2.0	-6.5	0.5	0.8	1.4
Mar	4.8	..	..	2.3	3.1	2.2	-6.6	-0.3	0.7	1.3
Apr	5.2	3.8	2.4	2.3	7.6	2.3	-6.7	0.7	1.2	3.5
May	4.5	..	..	2.3	7.5	2.3	-6.6	1.2	1.1	3.4
Jun	4.4	..	..	2.2	7.6	2.3	-8.1	0.9	-0.6	1.8
Jul	4.9	3.3	..	3.5	3.8	2.8	-2.5	1.1	1.1	1.6
Aug	4.2	..	..	3.4	3.7	2.8	-8.3	3.3	0.6	1.3
Sep	3.9	..	..	3.9	3.8	2.6	-7.6	2.6	1.1	1.6
Oct	4.0	..	..	3.9	3.0	2.6	-7.7	2.4	0.6	1.3
Nov	3.7	..	..	3.9	3.0	2.5	-8.6	1.7	0.2	0.9
Dec	3.9	..	..	3.9	3.1	2.7	-5.3	2.2	-0.6	0.1
1996 Jan	..	..	..	3.2	..	3.5	-0.2	1.8	..	..
Feb	..	..	..	..	..	2.8	2.9	..	..	..

1 Definitions of coverage and treatment vary among countries

2 Figures for Great Britain refer to weekly earnings; others are hourly

3 Western Germany (Federal Republic of Germany before unification)

9 Retail Sales (volume): index numbers

1990 = 100

	United Kingdom	Germany ¹	France	Italy	EC	United States	Japan	Canada	Major 7	OECD
	EAPS	GADD	GADC	GADE	GADH	GADA	GADB	GACZ	GAEW	GADG
1980	..	83.5	91.5	72.6	80.2	72.2	103.2	74.8	76.7	77.5
1985	..	80.8	90.5	87.4	84.3	85.9	100.0	89.3	85.2	85.2
1986	87.0	83.6	92.6	93.3	88.0	90.7	101.5	93.4	89.1	89.0
1987	91.5	86.9	94.8	97.8	91.5	93.1	107.1	98.6	92.3	92.1
1988	97.3	89.8	98.2	95.7	94.0	96.7	91.5	102.4	95.4	95.2
1989	99.3	92.2	99.4	102.3	97.6	99.3	95.0	102.3	98.3	98.2
1990	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1991	98.7	105.7	100.1	97.3	100.6	97.9	101.9	89.6	99.0	99.2
1992	99.4	103.6	100.3	102.2	100.8	101.1	99.1	90.8	100.4	100.3
1993	102.4	99.3	100.3	99.0	99.1	106.4	94.3	93.5	102.1	101.3
1994	106.2	97.5	100.8	94.4	98.3	113.0	92.8	101.1	105.1	104.0
1995	107.5	..	100.2	89.1	98.8	117.5	98.6	101.5	107.9	107.3
1995 Q3	107.4	..	101.5	91.6	99.7	118.3	99.1	102.0	108.7	108.1
Q4	108.3	..	97.6	82.5	97.0	119.0	98.5	101.2	107.8	107.3
1995 Jul	107.9	..	101.6	91.0	99.0	117.6	98.5	101.4	108.1	107.5
Aug	107.1	..	101.8	93.8	100.0	118.7	99.7	102.6	109.2	108.6
Sep	107.3	..	101.1	90.1	100.0	118.7	99.0	101.9	108.8	108.3
Oct	107.3	..	95.9	79.5	96.0	118.1	97.7	101.3	106.9	106.3
Nov	108.6	..	99.6	86.2	98.0	119.3	99.4	100.9	108.5	108.0
Dec	108.7	..	97.3	81.7	97.0	119.7	98.3	101.3	108.1	107.7
1996 Jan	108.0	..	102.7	..	100.0	118.7	100.1	101.4	109.0	108.4
Feb	108.7	..	103.3	..	..	..	..	..	..	..
Percentage change average of latest three months on that of corresponding period of previous year										
1996 Jan	1.8	..	-0.9	..	0.3	2.7	4.8	-1.9	1.4	2.1
Feb	1.9	..	-0.2	..	..	..	..	..	..	..
Percentage change average of latest three months on previous three months										
1996 Jan	1.2	..	0.3	..	-0.3	0.6	0.5	-0.7	0.2	0.3
Feb	0.7	..	2.3	..	..	..	..	..	..	..

1 Western Germany (Federal Republic of Germany before unification) - series suspended

10 World trade¹

1990 = 100

	Export of manufactures			Import of manufactures			Export of goods			Import of goods			World trade	
	World	OECD	Other	World	OECD	Other	World	OECD	Other	World	OECD	Other	manufactures	goods
	GAFE	GAFF	GAFG	GAFH	GAFI	GAFJ	GAFK	GAFL	GAFM	GAFN	GAFO	GAFP	GAFR	GAFQ
1990	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1991	103.1	102.3	106.2	104.2	103.4	106.3	103.6	103.2	104.3	103.8	103.1	105.7	103.6	103.7
1992	107.8	107.1	110.7	110.6	109.8	113.0	109.7	108.5	106.8	108.2	109.3	111.3	109.2	108.9
1993	112.1	109.3	123.0	114.6	111.3	123.7	113.4	111.6	115.9	113.8	111.3	122.3	113.3	113.4
1994	125.5	121.6	140.5	128.3	125.4	136.0	124.8	122.5	129.1	125.6	122.9	133.0	126.9	124.9
1992 Q1	107.4	107.1	108.5	109.2	109.0	109.9	108.4	108.4	105.3	107.7	108.4	108.6	108.3	108.0
Q2	106.9	106.0	110.4	109.9	109.0	112.5	109.2	107.5	106.6	107.4	108.7	110.9	108.4	108.3
Q3	108.4	107.5	111.7	111.8	110.8	114.3	110.8	109.2	107.5	108.9	110.4	112.5	110.1	109.8
Q4	108.6	107.7	112.4	111.7	110.4	115.2	110.4	109.0	107.9	108.9	109.6	113.2	110.1	109.6
1993 Q1	109.3	107.1	117.9	111.9	109.2	119.3	110.5	109.1	112.2	111.2	108.7	118.2	110.6	110.6
Q2	110.5	108.1	119.9	112.7	109.6	121.1	111.9	110.4	113.5	112.6	110.0	119.8	111.6	111.9
Q3	113.0	109.7	125.4	115.6	111.7	126.1	114.6	112.3	118.0	115.5	112.2	124.7	114.3	114.6
Q4	115.6	112.3	128.6	118.2	114.5	128.3	116.5	114.5	119.8	116.1	114.1	126.4	116.9	116.6
1994 Q1	119.5	115.3	136.0	122.2	118.4	132.5	120.0	116.7	126.0	120.8	117.6	130.0	120.9	120.0
Q2	123.7	119.8	138.8	126.1	123.1	134.2	123.0	120.5	127.6	123.7	121.0	131.4	124.9	123.1
Q3	127.7	123.6	143.2	130.4	127.5	138.3	126.6	124.3	131.1	127.7	124.5	135.1	129.0	126.7
Q4	131.0	127.6	144.1	134.4	132.7	138.9	129.7	128.4	131.7	130.2	128.3	135.6	132.7	129.7
1995 Q1	134.2	130.1	150.0	138.3	134.0	150.1	132.9	130.4	141.9	133.8	129.1	147.0	136.2	133.0
Q2	135.6	131.9	150.0	139.7	135.8	150.1	133.9	131.5	141.9	134.9	130.7	147.0	137.6	134.0
Percentage change, latest quarter on corresponding quarter of previous year														
1995 Q1	12.3	12.8	10.3	13.2	13.2	13.3	10.7	11.7	12.6	10.8	9.8	13.1	12.7	10.8
Q2	9.6	10.1	8.1	10.8	10.3	11.8	8.9	9.1	11.2	9.1	8.0	11.9	10.2	8.9
Percentage change, latest quarter on previous quarter														
1995 Q1	2.4	2.0	4.1	2.9	1.0	8.1	2.5	1.6	7.7	2.8	0.6	8.4	2.6	2.5
Q2	1.0	1.4	0.0	1.0	1.3	0.0	0.8	0.8	0.0	0.8	1.2	0.0	1.0	0.8

¹ Data used in the World and OECD aggregates refer to Germany after unification

Chart I: Gross domestic product

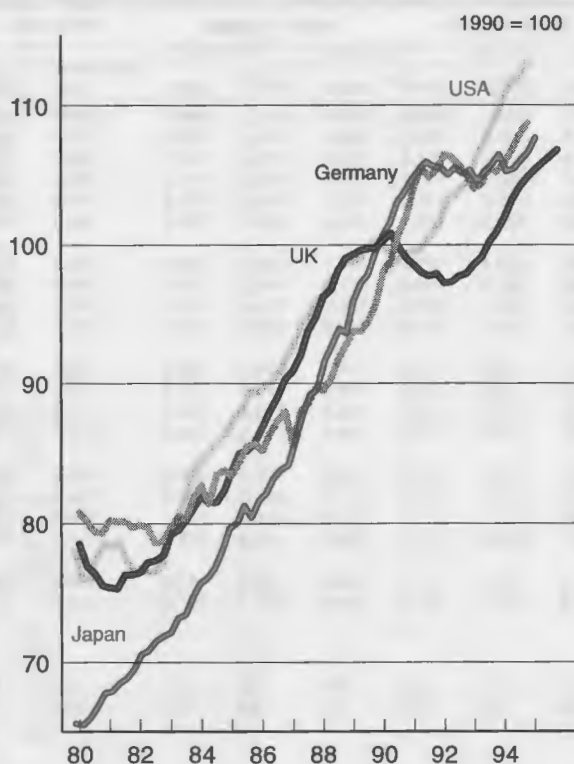


Chart II: Consumer price index

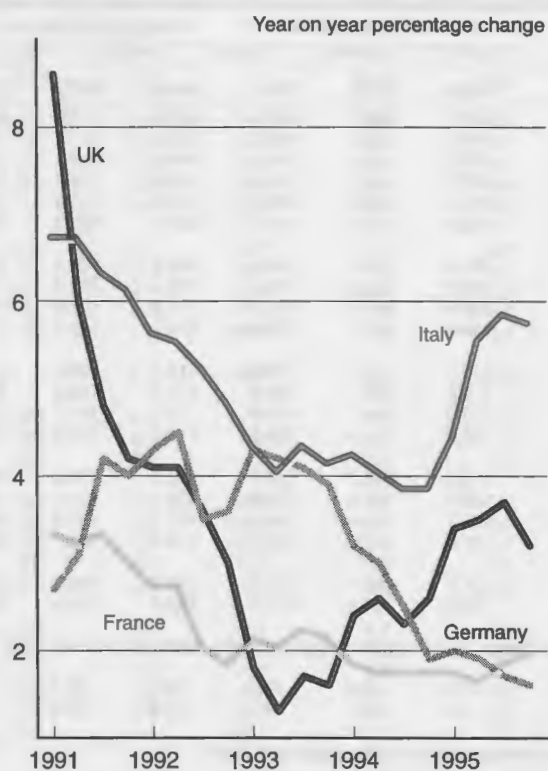
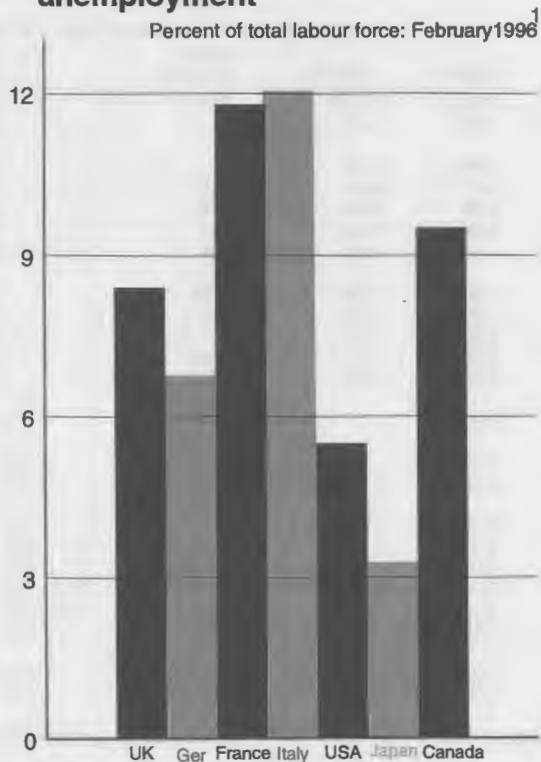


Chart III: Standardised unemployment



1. Germany refers to May 1995, while Italy refers to July. Canada refers to January.

Chart IV: Current account balance

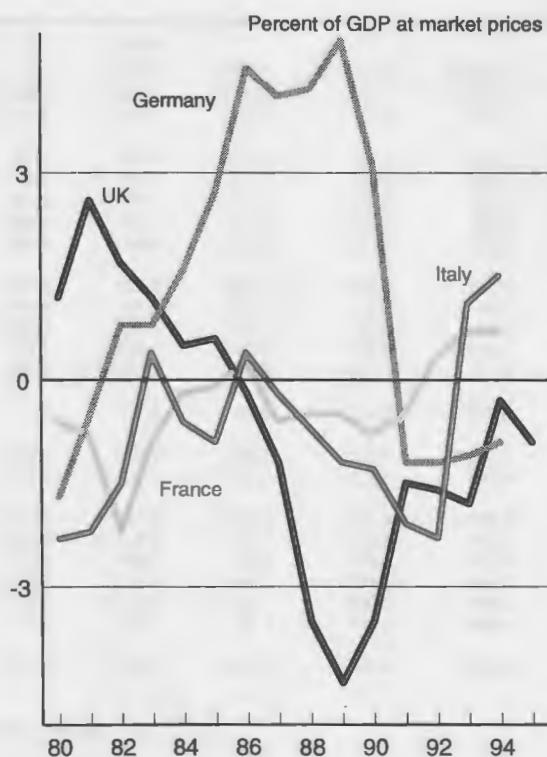


Chart V: Industrial Production

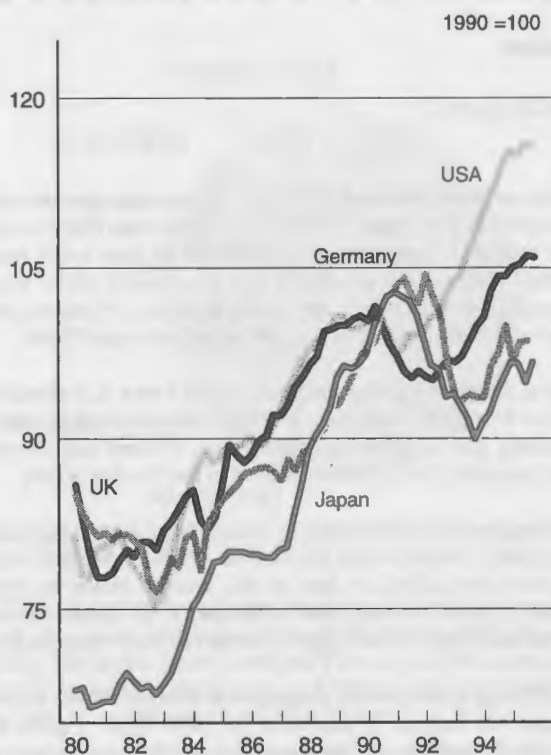


Chart VI: Producer price inflation

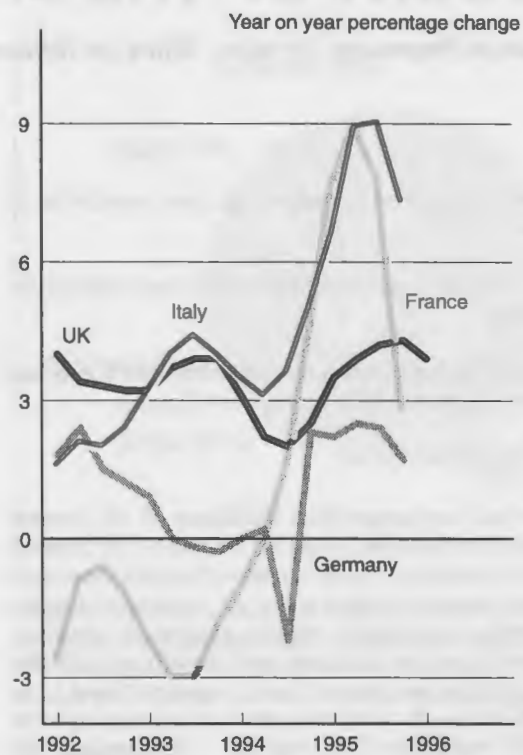


Chart VII: Employment

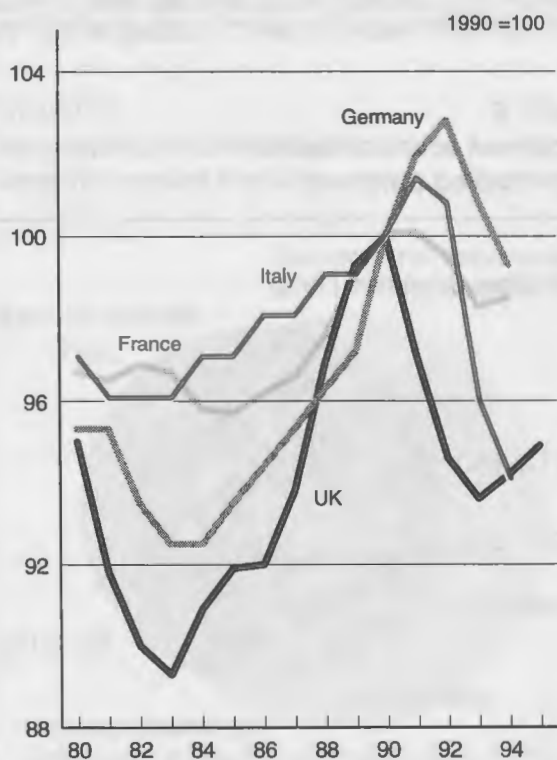
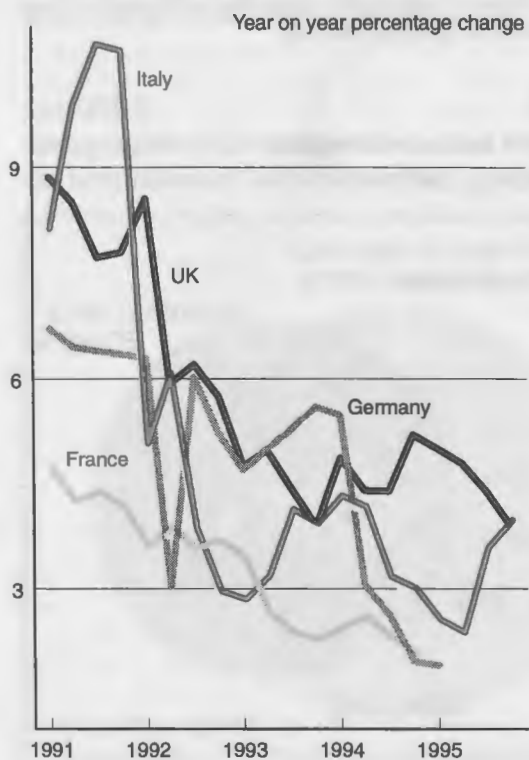


Chart VIII: Wage earnings (manufacturing)



GEOGRAPHICAL ANALYSIS OF THE CURRENT ACCOUNT OF THE BALANCE OF PAYMENTS

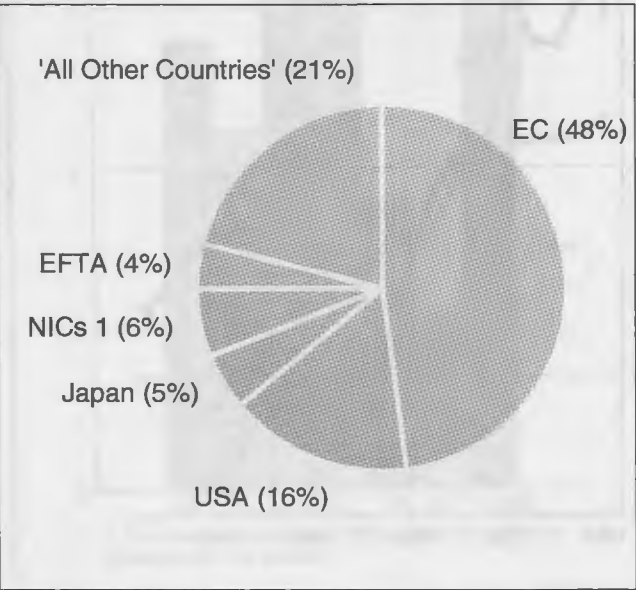
by Balance of Payments Division, Office for National Statistics

- The 1994 geographical breakdown has been extended to 36 countries.
- Substantial improvements have been made to methodology and data sources.
- In 1994 the UK had a current account deficit with Europe and surpluses with Asia, Africa, America and Oceania.

INTRODUCTION

We have revised our geographical breakdown of the overseas current account for 1994 and expanded the number of countries covered to 36. The breakdown gives estimates of the main components of the current account for each of the 36 countries and makes estimates for the continents and a selection of economic groupings. A similar breakdown is normally calculated annually and published in *Economic Trends*, the latest such article being published in the October 1995 edition. The methodologies used to disaggregate the total of world transactions into estimates of transactions with individual countries have been substantially improved and new data sources incorporated. The expanded breakdown gives explicit estimates for Mexico and adds the following twelve countries to the analysis:- Hong Kong, Singapore, Saudi Arabia, India, Malaysia, Israel, South Korea, China, Thailand, Taiwan, Russia and Poland. As a result of these changes, the data published here are inconsistent with those for earlier years published in the previous article in October 1995. The data published in this article should therefore not be compared directly with earlier years' data as the results of any such comparison would be misleading.

CHART 1
UK current account credits
major trading partners



The data contained in this article are consistent in aggregate with that published in the December 1995 Balance of Payments First Release. Please note that these are not the most up to date world totals available. They are not consistent with the revised whole world totals published on 26 March 1996 in the Balance of Payments First Release which also appear in this edition of *Economic Trends*.

Details of the country groupings are shown in Annex A. It should be noted that EC figures relate to the 1995 composition of the European Community and therefore include Sweden, Finland and Austria. This is in contrast to the definition used in the October article.

Attributing overseas transactions by geographical areas is subject to considerable conceptual and practical uncertainty. We give more detail about the difficulties later in this article. However, these estimates provide a broad picture of the pattern of current account flows between the UK and major overseas economic groupings.

The following tables present geographical analyses of the current account of the balance of payments for 1994. Table 1 gives the geographical breakdown of the current account balance for trade in goods and earnings from invisibles, with earnings from invisibles further disaggregated into their major components, ie. trade in services, investment income and transfers. Table 2 gives a similar breakdown of the current account credits. Table 3 gives the equivalent breakdown of the current account debits.

Charts 1 and 2 show transactions with the UK's major trading partners. The EC is the most important trading partner. Roughly half of both the UK's total current account credits and debits (by value) are with the other 14 countries of the EC (excluding the UK). The

CHART 2
UK current account debits
major trading partners

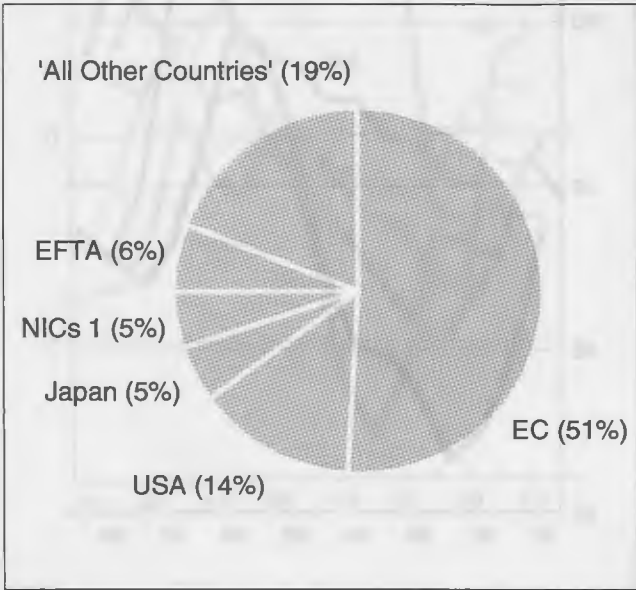
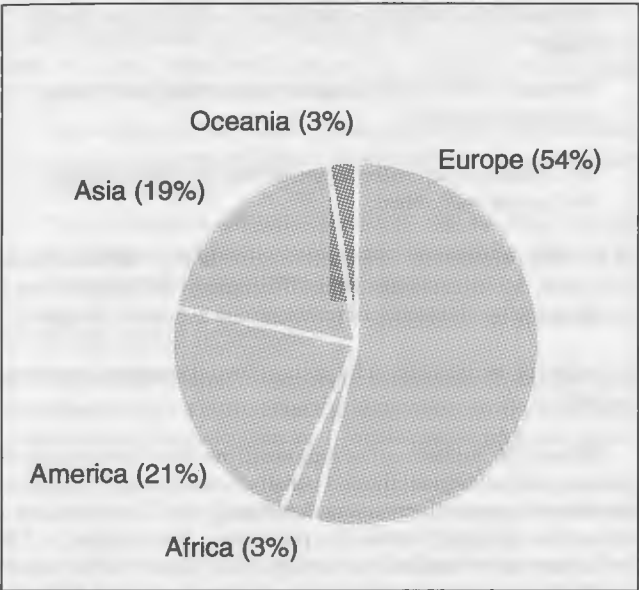


CHART 3
Continents' shares of total credits



USA is the partner for a further 16 per cent of credits and 14 per cent of debits. Japan, the European Free Trade Area and NICs 1 (ie. Hong Kong, Singapore, South Korea and Taiwan) each have around 5 per cent of both debits and credits. 'All Other Countries' contribute 21 per cent of credits and 19 per cent of debits.

Charts 3 and 4 show the values of trade by continent. Trade with Europe constitutes 54 per cent of credits and 61 per cent of debits. Trade with Asia and America contributes most of the rest of trade in roughly equal amounts with only a small amount of trade with Africa and Oceania.

Charts 5 and 6 show how much of the world is now covered by this geographical breakdown. The extra 12 countries provide information by country on a further 11 per cent of credits and 9 per cent of debits, bringing the coverage of both up to 90 per cent for the total current

CHART 5
Geographical coverage of current account credits

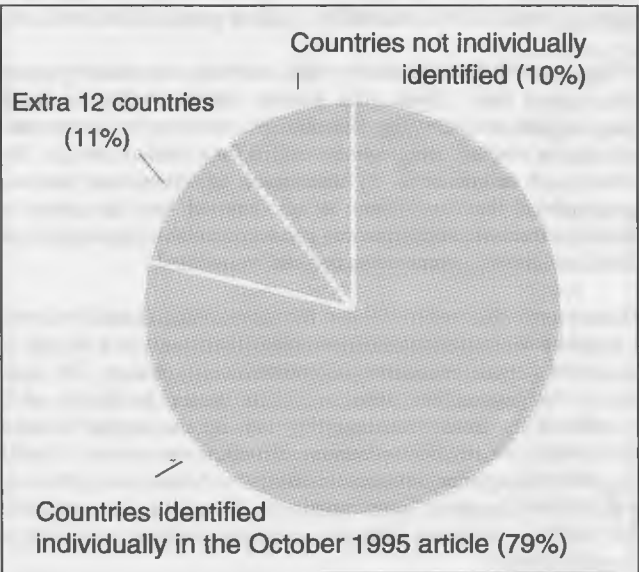
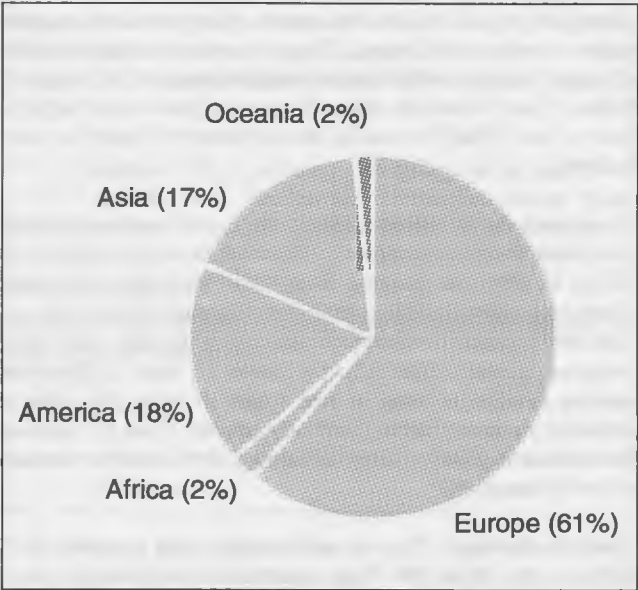


CHART 4
Continents' shares of total debits

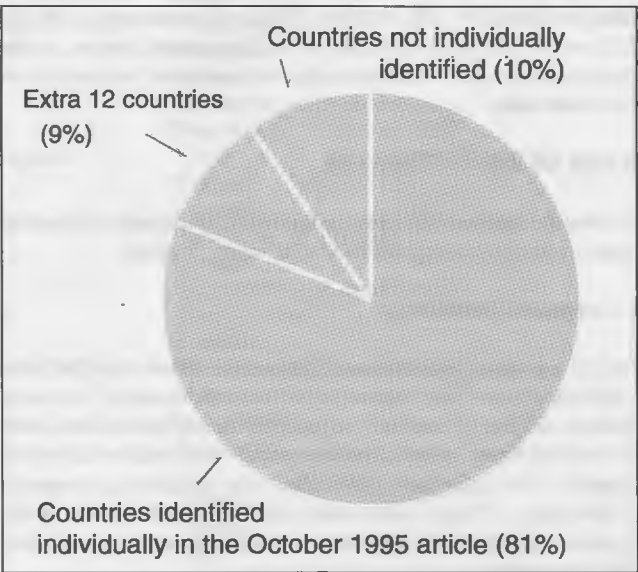


account. Within this, there is at least 85 per cent coverage for each of the major accounts (ie. trade in goods, trade in services, transfers and investment income) except for transfers debits, which are only a small proportion of total debits and are discussed further below.

SUMMARY

Current Account total: For the overseas current account as a whole the UK had a deficit of £2 billion in 1994. A deficit of £11 billion was recorded with EC countries and institutions. There were overall surpluses with all continents except Europe. The surplus with the USA was £6 billion. Surpluses of over £1 billion were also recorded with the Republic of Ireland, South Africa, Hong Kong, Singapore, Italy and Australia. Deficits of over £1 billion were recorded with Spain, Norway, France, Germany and Switzerland.

CHART 6
Geographical coverage of current account debits



Visible Trade: In 1994 there was an overall deficit on visible trade of £11 billion. By value, 57% each of UK exports and imports went to European Community countries generating a deficit of £6 billion. About 15% of UK exports and imports go to American countries with a roughly neutral balance. Trade with Asia is of a similar order of magnitude to that with America but generates a deficit of some £5 billion. Chart 7 shows the value of exports of goods from the UK in order of size. Chart 8 shows the value of imports of goods similarly ordered.

Earnings from Invisibles: This is the sum of trade in services, investment income and transfers. There was an overall surplus of £9 billion in 1994. Net earnings from invisibles with the European Community showed a deficit of £6 billion. Transactions with America, Asia and Oceania all contributed surpluses while trade with Africa produced a small deficit. Chart 9 shows the value of invisibles receipts (credits) in order of size. Chart 10 shows the value of invisibles payments (debits), similarly ordered. Chart 11 compares the net trade in goods with the net earnings from invisibles for each of the 36 countries.

Trade in Services: Trade in services generated a surplus of £5 billion for the UK in 1994. Trade in services showed a surplus for all continents except Europe. The largest surpluses were seen with the USA (£2 billion), Saudi Arabia (£1 billion) and Japan (£1 billion). The deficit on services with the countries of the European Community (EC) was £3 billion. Large deficits were seen with Spain (£2 billion) and France (£1 billion).

Investment Income: There was a £9 billion surplus on investment income in 1994. Investment income flows tend to be predominantly between industrial countries and around three quarters of both credits and debits were with other OECD countries. There were surpluses with Japan (£5 billion), the USA (£4 billion), Italy (£2 billion), Hong Kong (£2 billion) and America excluding NAFTA (£2 billion). There was a deficit with Switzerland of £4 billion. The deficit with the EC was £1/2 billion. Fluctuations in the net credit balance reflect many short-term factors, including the profitability of overseas direct investments and currency fluctuations.

Transfers: Transfers are those overseas transactions made without a quid pro quo. There was a deficit on transfers in 1994 of £5 billion, of which EC Institutions comprised £2 billion. The deficit on transfers is dominated by transactions with the institutions of the Economic Community, the transfers to non-OECD countries in the form of aid (both official and private) and remittances to friends and relatives abroad by UK residents. The large transactions (with the EC) are the UK's contributions to the Community budget on the debits side and agricultural subsidies and social and regional aid on the credits side.

BASIS OF THE ESTIMATES

In using the attached estimates, the following conceptual and practical qualifications to the figures need to be borne in mind.

Conceptual Limitations

Ideally, a geographical balance of payments account should allocate transactions in a way that reflects flows of economic resources between different economies. In practice, the source and destination of financial flows (on which balance of payments statements largely depend) will often not fully reflect the underlying economic relationships. This is particularly true for countries such as the United Kingdom which are centres for international financial services and settlements.

In order to reflect the flows of resources appropriately, a geographical balance of payments account should allocate transactions as follows:

Visible trade to the country of residence of the new or former owner;

Services to the region of the residents which rendered or received the service;

Investment income to the region from or by whose residents the income was earned.

In practice, determining residency is one of the most difficult issues to resolve. More details about the difficulties of defining residency for the purposes of balance of payments are available on request.

Examples of the difficulty of reflecting flows of economic resources include:

- Where UK residents act as intermediaries for a whole range of financial and allied activities on behalf of non-resident principals, but where the payments may be made indirectly via UK intermediaries rather than directly between the principals. For example, a UK broker may earn commission on arranging the charter of a Norwegian ship for the carriage of goods between an American parent company and its French subsidiary. Payment for the charter plus the broker's commission may be made to the broker in London through a British subsidiary, with consequential settlements over inter-company accounts and between the broker and the shipping company. In such cases, the financial flows will bear a very imperfect relationship to the underlying services.

- Where holding companies serve as conduits for channelling funds to or from more than one overseas economy, a classification based on the country in which holding companies are registered will not fully reflect the indirect economic relationship. For example, a subsidiary of a UK company in country A may earn part of its profits in countries B and C, but all profits will usually be attributed to country A in an analysis of direct investment earnings which enter into the overseas current account.

Practical Limitations

At present, the UK balance of payments accounts are prepared on the basic premise that the United Kingdom is a multilateral trading country and that the accurate recording of the total of economic transactions between UK residents and non-residents as a whole is paramount. Not all the sources of data used in preparing the accounts attempt to distinguish individual countries, although many do and steps are being taken to expand the range of geographical data used.

Where country detail is not reported, estimates are made by using any related data. Some data sources report details for broad geographical areas only (eg. film and TV) and these have been subdivided by country using country details for a related category for which such details exist. In other cases, eg. investment income, geographical data on income is not reported, but the assets or liabilities from which such income arises are available in geographical detail and proxy income estimates can be imputed.

In addition to the need to 'fill out' the geographical details for some categories where the data are incomplete, there remains a margin of uncertainty about the accuracy of reported data by country. The finer the level of geographical detail sought, the greater the likelihood of misallocation. Enterprises reporting data are encouraged to make their best estimates, but as country attribution may not be a crucial aspect of management information from which details are extracted, a significant degree of approximation is likely to occur, especially for overseas countries with less significant volumes of earnings from invisibles.

RELIABILITY AND INTERPRETATION OF THE ESTIMATES

Given the conceptual and practical limitations described above (which are expanded upon in Annex B), these estimates should be seen as a very broad indication of the economic relationships between the UK and overseas economies.

- They will be more reliable and more meaningful in terms of main geographical areas and major partner countries than for smaller partner countries.
- They are more meaningful for goods and services than for investment income, the latter being particularly affected by flows through financial intermediaries.

FUTURE PUBLICATION

As stated in the October 1995 article, it is planned to update these estimates annually and to continue to improve the quality of the data. Expanded and improved data for 1994 have been produced several

months ahead of the next proposed annual update. This abbreviated article has been published to make them publicly available as soon as possible. The improved methodologies and data collection will be applied to earlier years, where possible. A 36 country breakdown will be produced for these years and for 1995 in the next annual article, which is planned for the October 1996 edition of Economic Trends.

The geographical data presented in this article can be supplied in machine-readable form. For further information contact Roger Jullion, Balance of Payments Division on 0171-270-6095.

ACKNOWLEDGEMENT

We would like to thank the Department of Trade and Industry for their support of this project.

ANNEX A

GEOGRAPHICAL GROUPS AND ZONES

	SPECIFIED COUNTRIES	EXCLUDING SPECIFIED COUNTRIES	
Europe	Austria	Albania	Hungary
	Belgium/ Luxembourg	Andorra	Latvia
	Denmark	Belarus	Liechtenstein
	Finland	Bosnia - Hercegovina	Lithuania
	France	Bulgaria	Macedonia
	Germany	Croatia	Malta
	Greece	Cyprus	Moldova
	Ireland	Czech Republic	Romania
	Italy	Estonia	Slovakia
	Netherlands	Gibraltar	Slovenia
	Poland		Ukraine
	Portugal		Vatican City State
	Russia		Yugoslavia
	Spain		
	Sweden		
	Turkey		
Africa	Republic of South Africa	Algeria	Libya
		Angola	Madagascar
		Benin	Malawi
		Botswana	Mali
		British Indian Ocean Territories	Mauritania
		Burkina Faso	Mauritius
		Burundi	Morocco
		Cameroon	Mozambique
		Cape Verde	Namibia
		Central African Republic	Niger
		Chad	Nigeria
		Comoros	Rwanda
		Congo	Sao Tome & Principe
		Djibouti	Senegal
		Egypt	Seychelles & Dependencies
		Equatorial Guinea	Sierra Leone
		Eritrea	Somalia
		Ethiopia	St Helena & Dependencies
		Gabon	Sudan
		Gambia	Swaziland
		Ghana	Tanzania
		Guinea	Togo
		Guinea Bissau	Tunisia
		Ivory Coast	Uganda
		Kenya	Zaire
		Lesotho	Zambia
		Liberia	Zimbabwe

	SPECIFIED COUNTRIES		EXCLUDING SPECIFIED COUNTRIES	
America	USA		Anguilla	Grenada
	Canada		Antigua & Barbuda	Guatemala
	Mexico		Argentina	Guyana
			Aruba	Haiti
			Bahamas	Honduras
			Barbados	Jamaica
			Belize	Montserrat
			Bermuda	Netherlands Antilles
			Bolivia	Nicaragua
			Brazil	Panama
			British Virgin Islands	Paraguay
			Cayman Islands	Peru
			Chile	St Kitts & Nevis
			Columbia	St Lucia
			Costa Rica	St Vincent
			Cuba	Suriname
			Dominica	Trinidad & Tobago
			Dominican Republic	Turks & Caicos Islands
			Ecuador	Uruguay
			El Salvador	US Virgin Islands
			Falkland Islands	Venezuela
Asia	China		Afghanistan	Macao
	Hong Kong		Armenia	Maldives
	India		Azerbaijan	Mongolia
	Israel		Bahrain	Myanmar
	Japan		Bangladesh	Nepal
	Malaysia		Bhutan	North Korea
	Saudi Arabia		Brunei	Oman
	Singapore		Cambodia	Pakistan
	South Korea		Gaza & Jericho	Philippines
	Taiwan		Georgia	Qatar
	Thailand		Indonesia	Sri Lanka
			Iran	Syria
			Iraq	Tajikistan
			Jordan	Turkmenistan
			Kazakhstan	United Arab Emirates
			Kuwait	Uzbekistan
			Kyrgyzstan	Vietnam
			Laos	Yemen
			Lebanon	
Oceania	Australia		American Oceania	Palau
	New Zealand		Australian Oceania	Papua New Guinea
			Fiji	Pitcairn
			Kiribati	Polar Regions
			Marshall Islands	Solomon Islands
			Micronesia	Tonga
			Nauru	Tuvalu
			New Zealand Oceania	Vanuatu
			Northern Mariana Islands	Western Samoa

ECONOMIC ZONES (INCLUDING SPECIFIED COUNTRIES)

OECD	Australia		Greece		Norway
	Austria		Iceland		Portugal
	Belgium/Luxembourg		Ireland		Spain
	Canada		Italy		Sweden
	Denmark		Japan		Switzerland
	Finland		Mexico		Turkey
	France		Netherlands		USA
	Germany		New Zealand		
NAFTA	Canada	EFTA	Iceland	NICs 1	Hong Kong
	Mexico		Liechtenstein		Singapore
	USA		Norway		South Korea
			Switzerland		Taiwan

OECD = Organisation for Economic Co-operation and Development
NAFTA = North American Free Trade Area
NICs 1 = the core Newly Industrialising Countries
EFTA = European Free Trade Area

ANNEX B

Country attribution of overseas transactions

The following notes summarise the basis of country attribution adopted for the various categories of transactions. More details about the methodologies used are available on request from Balance of Payments Division.

Visible trade

In general, imports of goods are allocated according to the country of consignment and exports of goods are allocated to the country of last known destination.

Invisibles

General government services and transfers

For the major components, detailed geographical information on the location of those receiving or making payments is available from returns provided by government departments.

Sea transport

The estimates relating to ships owned by or on charter to UK operators are taken from the UK Chamber of Shipping's quadrennial census. Freight services on exports and cross trades are allocated using the ports of discharge of the goods.

For freight services on UK imports, flag data are used to allocate payments. The resulting proportions are used to calculate the shares of overseas operators' disbursements in the United Kingdom.

Passenger revenue credit and debit estimates are made partly from the International Passenger Survey, which gives the required country analysis of fares paid. Other parts of the estimates rely on assumptions about the market for cruises.

Civil aviation

Passenger revenue credit and debit estimates are made from the International Passenger Survey. Other transactions with overseas airlines are allocated by nationality of airline. Freight services on UK imports earned by overseas airlines are allocated to the countries of consignment of the imports.

Travel

The allocation of expenditure of overseas visitors to the UK is by country of residence. UK residents' expenditures abroad are allocated to the country in which most time was spent, or, if this cannot be determined, the furthest country visited. As a result, expenditure in countries with appreciable numbers of transit tourists may be understated and expenditure in other long haul destinations overstated.

Financial and other services

Regular information on geographical breakdowns is obtained for consultants, advertising, royalties, other business services, banks, and telecommunications and postal services.

Data from Lloyd's of London are used as a proxy for all insurance related services. For most of the remaining categories, partial information has been supplemented with estimates based on expert knowledge and proxies.

Investment income

Overseas investment income flows are in general attributed to the country of the immediate counterparty. This will not always correspond to the underlying economic reality, eg direct investment earnings may be allocated to an overseas affiliated holding company in one country (say, the Netherlands), although that holding company may have affiliates in other countries which contribute to the earnings of the holding company. In this situation, the figures for individual countries may be less meaningful than those for regional groups, eg the European Community. This point is particularly valid for offshore centres.

Imperfections in measurement as well as limitations in country attribution of investment flows emphasise the need to view these data as broad indications which are more reliable and meaningful at summary regional levels.

As far as the methodologies used for deriving the data are concerned:

- For some categories, income is directly reported at country level, although still subject to the general limitations described above, eg direct investment earnings.
- For other categories, income is directly reported only in global terms but can be allocated to countries by precise and detailed data on assets and liabilities underlying the income, eg UK banks' borrowing and lending.
- For some categories, the data on assets and liabilities may be less precise and/or less detailed and global income figures are allocated by a combination of specific assets and liabilities for broad areas and more detailed country data for analogous assets and liabilities. For example, for non-bank financial institutions, income from overseas securities is allocated to broad areas by some reported asset data, but then subdivided to country level by data reported by UK banks.
- For a minority of categories, no geographical data are available and allocation is according to an analogous category, eg income on UK company bonds is allocated on the assumption that the geographical distribution of overseas holdings is similar to that for overseas foreign currency deposits in UK banks. Even though such assumptions are clearly hazardous, they are unlikely to be seriously misleading if the financial assets may be viewed as substitutes by overseas residents.

ANNEX C

References to other publications and data

Eurostat: Geographical breakdown of the current account, ISBN 92-826-8690-6, price ECU 25

Publications which give geographical data on services:-

ONS First Release on Overseas Travel and Tourism, monthly, latest published 6 March 1996

ONS First Release on Overseas Earnings from Royalties and Services, annual, latest published 4 December 1995.

ONS News Release on Overseas Transactions of the Film and TV industry, annual, latest published 9th October 1995.

ONS New Release on Overseas Transactions of UK Consultancy firms, annual, latest published 20 October 1995.

ONS Business Monitor MQ6 Overseas Travel and Tourism published 13 March 1996.

Publications which give geographical data on overseas direct investment:-

ONS First Release on Overseas Direct Investment, annual, latest published 18 December 1995.

ONS Business Monitor MA4 Overseas Direct Investment published 14 March 1996.

Publications giving other geographical data:-

Bank of England press notice on International Banking Statistics (external business of banks in the United Kingdom), quarterly, latest published 18 March 1996.

TABLE 1 - GEOGRAPHICAL ANALYSIS OF THE CURRENT ACCOUNT - BALANCES
1994

£ Millions

	Trade in goods (E)	Total invisibles (A+B+C)=(D)	Trade in services (A)	Investment income (B)	Transfers (C)	Total trade (A+E)=(G)	Total current account (D+E)=(F)
Germany	-4659	531	411	93	27	-4248	-4128
France	-1775	-1264	-1120	-119	-25	-2895	-3039
Italy	-289	2188	270	1952	-34	-19	1899
Netherlands	-247	-57	24	-69	-12	-223	-304
Belgium & Luxembourg	491	-964	274	-1236	-2	765	-473
Republic of Ireland	936	268	429	113	-274	1365	1204
Denmark	-309	15	66	-46	-5	-243	-294
Greece	571	-988	-671	-320	3	-100	-417
Spain	1325	-2417	-2168	-168	-81	-843	-1092
Portugal	1	-326	-342	28	-12	-341	-325
Austria	25	-550	-110	-425	-15	-85	-525
Sweden	-775	474	272	197	5	-503	-301
Finland	-922	175	47	126	2	-875	-747
EC Institutions	0	-2643	85	-614	-2114	85	-2643
Norway	-1553	447	294	151	2	-1259	-1106
Switzerland	-2165	-4224	39	-4254	-9	-2126	-6389
Iceland	-119	37	10	30	-3	-109	-82
Turkey	199	-216	-190	-16	-10	9	-17
South Africa	512	765	433	350	-18	945	1277
USA	-340	5903	2211	3822	-130	1871	5563
Canada	89	461	86	522	-147	175	550
Japan	-5488	6169	1170	5003	-4	-4318	681
Australia	898	1350	427	1297	-374	1325	2248
New Zealand	-102	292	75	327	-110	-27	190
Hong Kong	-598	1883	178	1716	-11	-420	1285
Singapore	60	1373	48	1326	-1	108	1433
Saudi Arabia	457	82	1297	-1212	-3	1754	539
India	106	-16	-3	52	-65	103	90
Malaysia	81	444	153	291	0	234	525
Israel	502	-65	123	-182	-6	625	437
South Korea	-3	864	179	682	3	176	861
China	-730	81	33	78	-30	-697	-649
Thailand	-111	117	25	90	2	-86	6
Taiwan	-754	15	62	-52	5	-692	-739
Russia	-48	-38	14	-23	-29	-34	-86
Poland	196	-33	53	-58	-28	249	163
Mexico	157	410	55	356	-1	212	567
Europe excl. above	170	-1174	-675	-427	-72	-505	-1004
Africa excl. above	1291	-817	295	-1066	-46	1586	474
America excl. above	318	1670	249	1645	-224	567	1988
Asia excl. above	1973	-339	454	-373	-420	2427	1634
Oceania excl. above	-109	-67	10	-12	-65	-99	-176
International Org.	0	-1068	107	-171	-1004	107	-1068
WORLD TOTAL	-10738	8748	4679	9404	-5335	-6059	-1990
ZONES							
EC TOTAL	-5627	-5558	-2533	-488	-2537	-8160	-11185
OECD	-14051	7714	1559	7364	-1209	-12492	-6337
NAFTA	-94	6774	2352	4700	-278	2258	6680
NICs 1	-1295	4135	467	3672	-4	-828	2840
EFTA	-3837	-3740	343	-4073	-10	-3494	-7577
Total Europe	-8947	-10759	-2988	-5085	-2686	-11935	-19706
Total Africa	1803	-52	728	-716	-64	2531	1751
Total America	224	8444	2601	6345	-502	2825	8668
Total Asia	-4505	10608	3719	7419	-530	-786	6103
Total Oceania	687	1575	512	1612	-549	1199	2262
International Org.	0	-1068	107	-171	-1004	107	-1068

TABLE 2 - GEOGRAPHICAL ANALYSIS OF THE CURRENT ACCOUNT - CREDITS
1994

	£ Millions							
	Trade in goods (E)	Total invisibles (A+B+C)=(D)	Trade in services (A)	Investment income (B)	Transfers (C)	Total trade (A+E)=(G)	Total current account (D+E)=(F)	Current account as a % of world total
Germany	17548	10741	3499	7042	200	21047	28289	11%
France	13557	7055	2305	4643	107	15862	20612	8%
Italy	6907	5210	1355	3821	34	8262	12117	5%
Netherlands	9686	5727	1453	4242	32	11139	15413	6%
Belgium & Luxembourg	7665	4025	1109	2888	28	8774	11690	5%
Republic of Ireland	6671	2726	1349	1245	132	8020	9397	4%
Denmark	1755	845	386	448	11	2141	2600	1%
Greece	926	468	405	33	30	1331	1394	1%
Spain	5043	1934	883	1002	49	5926	6977	3%
Portugal	1245	560	210	340	10	1455	1805	1%
Austria	1029	648	246	398	4	1275	1677	1%
Sweden	3328	1715	677	1021	17	4005	5043	2%
Finland	1299	657	188	463	6	1487	1956	1%
EC Institutions	0	3558	85	117	3356	85	3558	1%
Norway	1988	1365	853	495	17	2841	3353	1%
Switzerland	2432	3249	758	2470	21	3190	5681	2%
Iceland	110	67	34	32	1	144	177	0%
Turkey	801	390	169	205	16	970	1191	0%
South Africa	1443	1364	687	611	66	2130	2807	1%
USA	16662	25044	9142	15697	205	25804	41706	16%
Canada	1899	2202	838	1318	46	2737	4101	2%
Japan	2980	10952	1968	8931	53	4948	13932	5%
Australia	1911	3330	1115	2019	196	3026	5241	2%
New Zealand	410	718	249	380	89	659	1128	0%
Hong Kong	2356	4373	856	3475	42	3212	6729	3%
Singapore	1875	3039	488	2531	20	2363	4914	2%
Saudi Arabia	1506	1566	1424	125	17	2930	3072	1%
India	1341	773	362	365	46	1703	2114	1%
Malaysia	1235	975	346	587	42	1581	2210	1%
Israel	1051	337	292	33	12	1343	1388	1%
South Korea	1046	1065	257	803	5	1303	2111	1%
China	851	547	196	341	10	1047	1398	1%
Thailand	762	434	236	192	6	998	1196	0%
Taiwan	759	325	135	183	7	894	1084	0%
Russia	723	288	213	69	6	936	1011	0%
Poland	718	208	143	59	6	861	926	0%
Mexico	388	661	99	558	4	487	1049	0%
Europe excl. above	1725	1729	1008	629	92	2733	3454	1%
Africa excl. above	3180	1969	1147	692	130	4327	5149	2%
America excl. above	2783	5612	1058	4509	45	3841	8395	3%
Asia excl. above	4976	4606	2199	2150	257	7175	9582	4%
Oceania excl. above	41	34	17	14	3	58	75	0%
International Org.	0	244	107	137	0	107	244	0%
WORLD TOTAL	134611	123335	40546	77313	5476	175157	257946	100%
ZONES								
EC TOTAL	76659	45869	14150	27703	4016	90809	122528	48%
OECD	106240	90289	29290	59691	1308	135530	196529	76%
NAFTA	18949	27907	10079	17573	255	29028	46856	18%
NICs I	6036	8802	1736	6992	74	7772	14838	6%
EFTA	4530	4681	1645	2997	39	6175	9211	4%
Total Europe	85156	53165	17328	31662	4175	102484	138321	54%
Total Africa	4623	3333	1834	1303	196	6457	7956	3%
Total America	21732	33519	11137	22082	300	32869	55251	21%
Total Asia	20738	28992	8759	19716	517	29497	49730	19%
Total Oceania	2362	4082	1381	2413	288	3743	6444	3%
International Org.	0	244	107	137	0	107	244	0%

TABLE 3 - GEOGRAPHICAL ANALYSIS OF THE CURRENT ACCOUNT - DEBITS
1994

£ Millions

	Trade in goods (E)	Total invisibles (A+B+C)=(D)	Trade in services (A)	Investment income (B)	Transfers (C)	Total trade (A+E)=(G)	Total current account (D+E)=(F)	Current account as a % of world total
Germany	22207	10210	3088	6949	173	25295	32417	12%
France	15332	8319	3425	4762	132	18757	23651	9%
Italy	7196	3022	1085	1869	68	8281	10218	4%
Netherlands	9933	5784	1429	4311	44	11362	15717	6%
Belgium & Luxembourg	7174	4989	835	4124	30	8009	12163	5%
Republic of Ireland	5735	2458	920	1132	406	6655	8193	3%
Denmark	2064	830	320	494	16	2384	2894	1%
Greece	355	1456	1076	353	27	1431	1811	1%
Spain	3718	4351	3051	1170	130	6769	8069	3%
Portugal	1244	886	552	312	22	1796	2130	1%
Austria	1004	1198	356	823	19	1360	2202	1%
Sweden	4103	1241	405	824	12	4508	5344	2%
Finland	2221	482	141	337	4	2362	2703	1%
EC Institutions	0	6201	0	731	5470	0	6201	2%
Norway	3541	918	559	344	15	4100	4459	2%
Switzerland	4597	7473	719	6724	30	5316	12070	5%
Iceland	229	30	24	2	4	253	259	0%
Turkey	602	606	359	221	26	961	1208	0%
South Africa	931	599	254	261	84	1185	1530	1%
USA	17002	19141	6931	11875	335	23933	36143	14%
Canada	1810	1741	752	796	193	2562	3551	1%
Japan	8468	4783	798	3928	57	9266	13251	5%
Australia	1013	1980	688	722	570	1701	2993	1%
New Zealand	512	426	174	53	199	686	938	0%
Hong Kong	2954	2490	678	1759	53	3632	5444	2%
Singapore	1815	1666	440	1205	21	2255	3481	1%
Saudi Arabia	1049	1484	127	1337	20	1176	2533	1%
India	1235	789	365	313	111	1600	2024	1%
Malaysia	1154	531	193	296	42	1347	1685	1%
Israel	549	402	169	215	18	718	951	0%
South Korea	1049	201	78	121	2	1127	1250	0%
China	1581	466	163	263	40	1744	2047	1%
Thailand	873	317	211	102	4	1084	1190	0%
Taiwan	1513	310	73	235	2	1586	1823	1%
Russia	771	326	199	92	35	970	1097	0%
Poland	522	241	90	117	34	612	763	0%
Mexico	231	251	44	202	5	275	482	0%
Europe excl. above	1555	2903	1683	1056	164	3238	4458	2%
Africa excl. above	1889	2786	852	1758	176	2741	4675	2%
America excl. above	2465	3942	809	2864	269	3274	6407	2%
Asia excl. above	3003	4945	1745	2523	677	4748	7948	3%
Oceania excl. above	150	101	7	26	68	157	251	0%
International Org.	0	1312	0	308	1004	0	1312	1%
WORLD TOTAL	145349	114587	35867	67909	10811	181216	259936	100%
ZONES								
EC TOTAL	82286	51427	16683	28191	6553	98969	133713	51%
OECD	120291	82575	27731	52327	2517	148022	202866	78%
NAFTA	19043	21133	7727	12873	533	26770	40176	15%
NICs 1	7331	4667	1269	3320	78	8600	11998	5%
EFTA	8367	8421	1302	7070	49	9669	16788	6%
Total Europe	94103	63924	20316	36747	6861	114419	158027	61%
Total Africa	2820	3385	1106	2019	260	3926	6205	2%
Total America	21508	25075	8536	15737	802	30044	46583	18%
Total Asia	25243	18384	5040	12297	1047	30283	43627	17%
Total Oceania	1675	2507	869	801	837	2544	4182	2%
International Org.	0	1312	0	308	1004	0	1312	1%

CHART 7
Trade in Goods, 1994

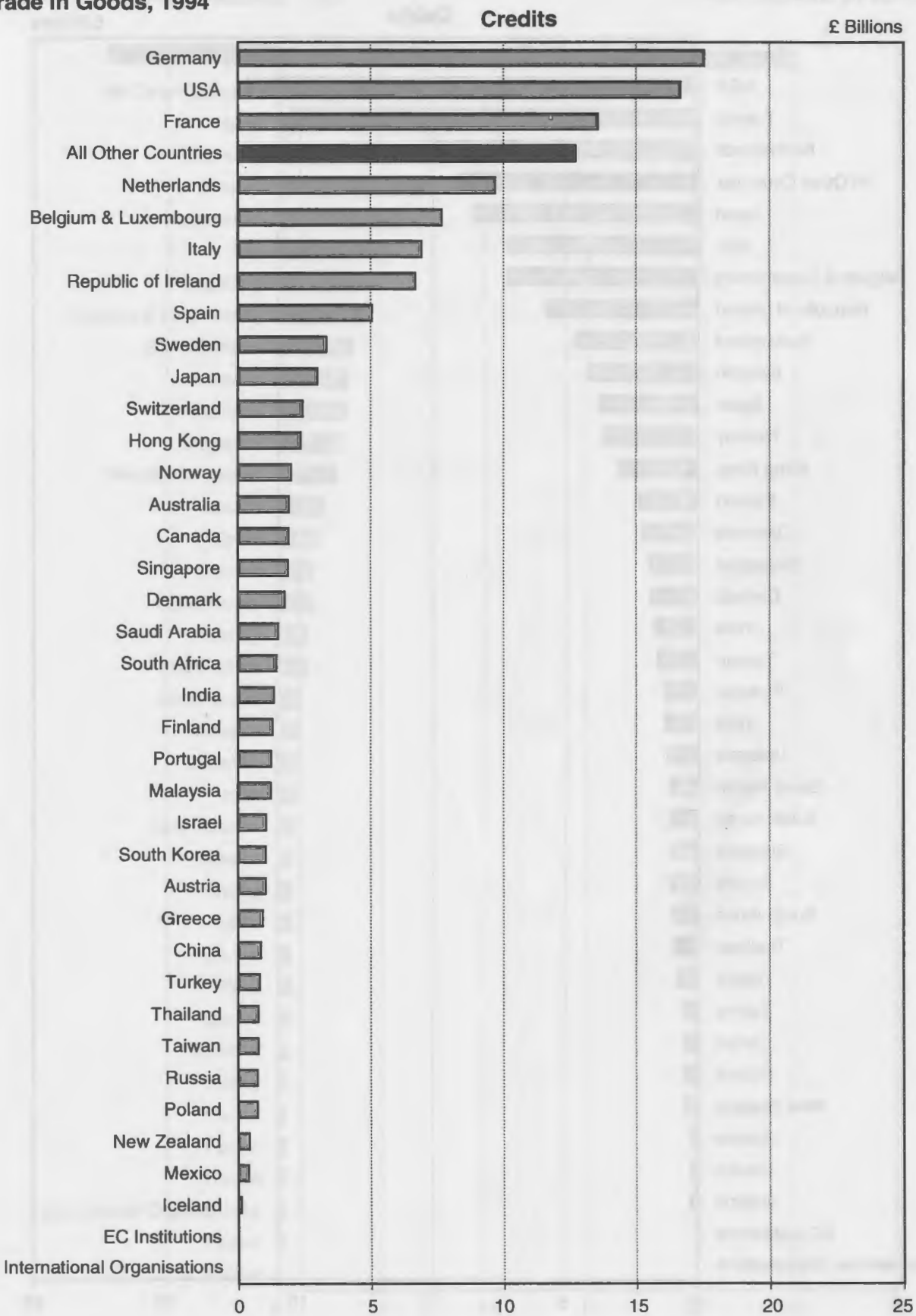


CHART 8
Trade in Goods, 1994

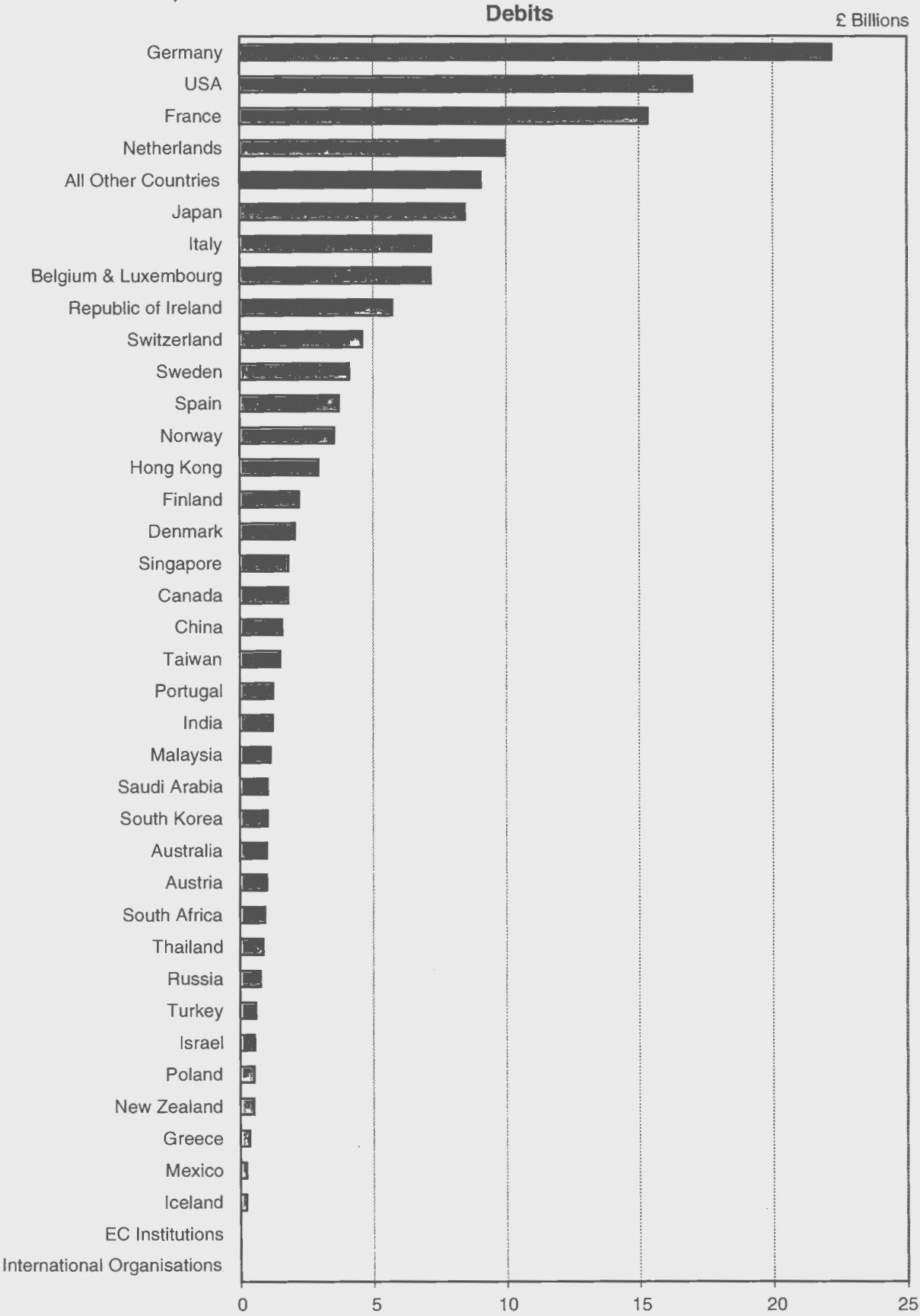


CHART 9
Earnings from Invisibles, 1994

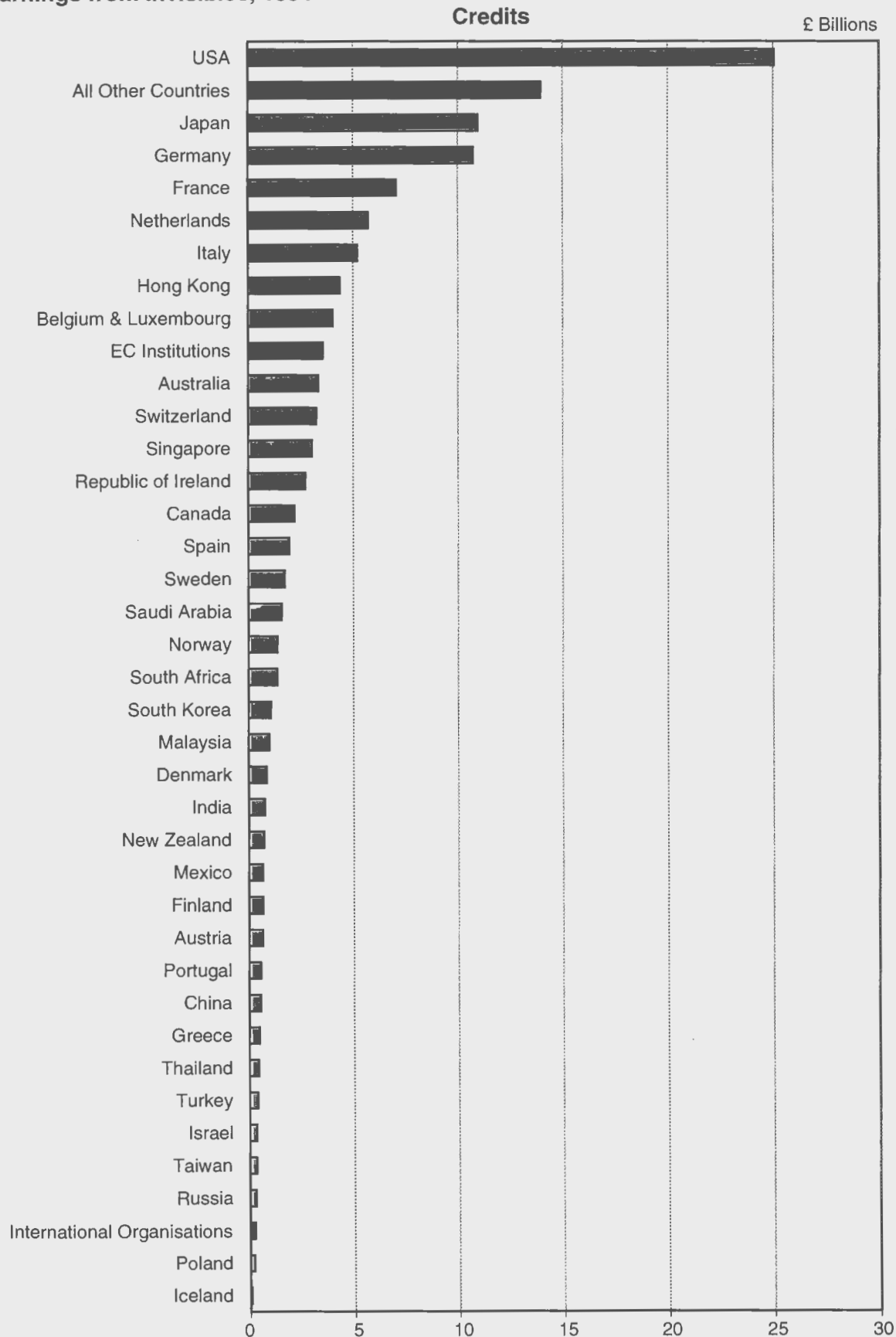


CHART 10
Earnings from Invisibles, 1994

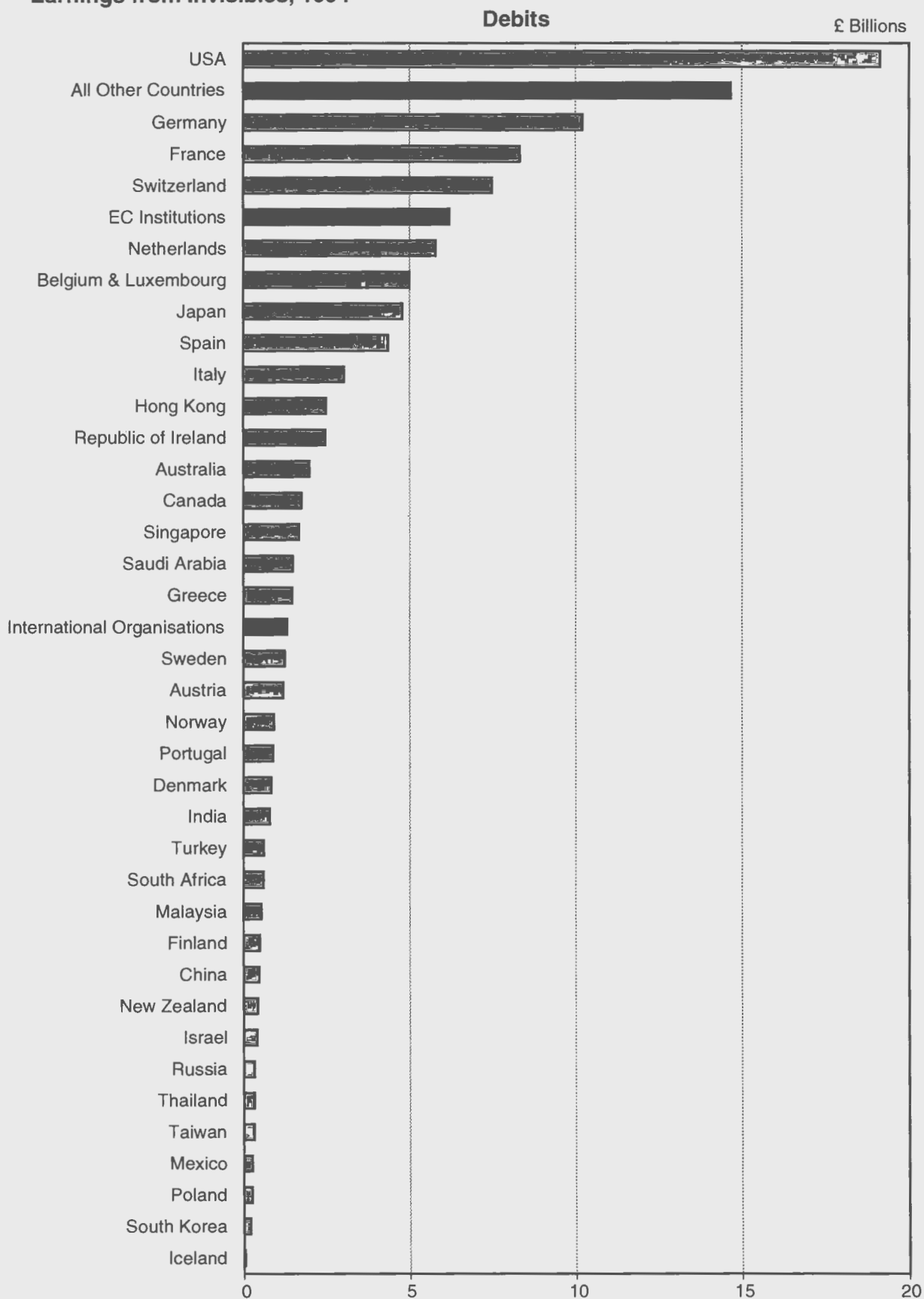
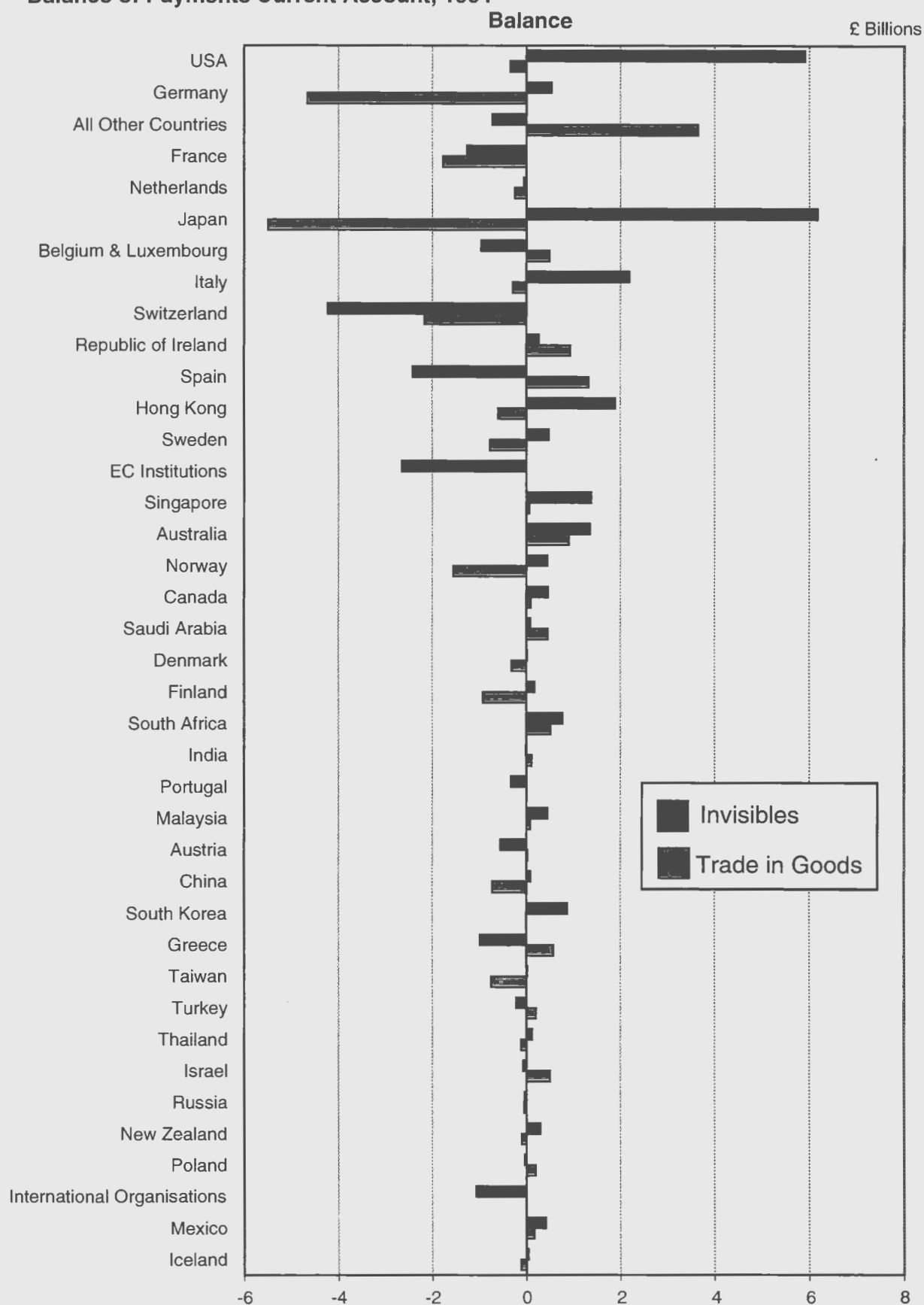


CHART 11
Balance of Payments Current Account, 1994



TESTING FOR BIAS IN INITIAL ESTIMATES OF KEY ECONOMIC INDICATORS

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The first article in this series was published in the May 1992 issue of *Economic Trends*. That article reported the results of the analysis of potential bias, based on 10 years of data up to the end of 1991. Since then the analysis was successively updated and published each year (in the May issues in 1993 and 1994 and in the April issue of *Economic Trends* in 1995). The current article updates it again by shifting the 10-year data span to the end of 1995.

Main Results

- The mean revisions have fallen in the latest three years for five of the eleven indicators, indicating a trend of improvements in the reliability of the first estimates. These five indicators were PPI, Retail Sales, GDP (ten weeks estimates) at constant prices, and GDP(longer term) at current and at constant prices.
- The indicators, which showed higher revisions in the last three years were Visible Trade, IOP, Current Balance and PSBR. The main reason for these higher revisions were the recent changes and improvements made in the method of collection of data and of estimation, particularly the introduction of *Intrastat* and conversion from the Standard Industrial Classification '80 (SIC '80) to SIC '92.
- The initial estimates of longer term GDP growth at both constant and current prices continued to show evidence of significant bias in the expansion phase of the economic cycles. PPI and IOP were the other two indicators where initial estimates indicated evidence of bias in the expansion phase.

Methodology

Revisions become necessary for at least three main reasons: 1) receipts of further more comprehensive data, 2) changes in estimating procedure, and 3) replacement of judgmental adjustments with more source data. The difference between the first and the "final" estimate also gives an indication of the magnitude of error in the first estimates. In order to reduce this error in the first estimates and following the recommendation in the Pickford report the office launched in 1989 an extensive programme of improvements to data sources and methodology. The results of these recent improvements would not be fully incorporated in this article because most of the data covered relate to first estimates made before 1989. This is particularly true for the longer term revisions to GDP where the first estimates covered relate to the period q4 1982 to q3 1992.

As in the previous articles, we considered an indicator to be biased if in the long run its mean revision is different from zero. However, we have to allow for the fact that the average revision over some finite period may be non-zero simply through random effects.

Therefore, we need to test whether an observed mean differs from zero by more than could be expected due to random effects; in statistical terminology, whether the mean revision is significantly different from zero.

We considered that the standard t-test would not be directly applicable to test the significance of mean revisions because the successive values in a revision series are frequently correlated. The t-test requires the conditions of normality and the independence of successive values. While the revision values generally seemed to follow a normal distribution, serial correlation coefficients frequently indicated that successive values were not independent. Therefore, for all series with a positive coefficient the t-values were calculated after allowing for the serial correlation. For series with negative coefficient of correlation, raw t-values were used to test the significance of the means. The formulas used are given in the technical notes.

The revisions series were also tested for the effects of economic cycles. The expansion and contraction phases of the economy have been defined respectively as the period from a trough to a peak and from a peak to a trough. These are identified from the coincident index of the cyclical indicators published in the monthly issues of *Economic Trends*. The individual revision values were then associated with either of the two phases according to the quarter or the month of the initial estimate, thus obtaining two separate revisions series for each variable. Separate means were calculated for the expansion and contraction phases and t-values, corrected for serial correlations, were obtained for each separate series to test for any evidence of bias due to the economic cycles.

The periods covered for the main analysis in this article are 10 years from 1986 to 1995, 5 years from 1991 to 1995 and 3 years from 1993 to 1995 inclusive. The dating here refers to publication of the revised data. For example with the long term revision to GDP, where the revision taken is three years after the first publication, the final value included relates to Q3 1992, the twelfth revision of which appeared in the quarterly GDP First Release (formerly called Press Notice) in December 1995.

It was, however, felt that to test the effects of the economic cycles properly, on the overestimation or the underestimation of the growth rates, a longer series of data were needed. Eighteen years of data were thus obtained for the PPI, IOP, visible trade and GDP at constant prices. Out of about 224 revision values for the monthly series, some 140 values were associated with the expansion and 84 with the contraction phases. For the quarterly series, there were 76 revision values covering the initial estimates from 1974 to 1992, with 41 in the expansion and 35 in the contraction phase of the economy.

Technical Notes:

In the first few articles of this series we used the Cochrane-Orcutt procedure to allow for serial correlation in the revisions series. We used this method on only those series where a significant correlation was observed. It excluded many series with positive but non-significant correlations.

We now use a simpler procedure as shown below. In this the t-test automatically allows for any positive serial correlation and, therefore, is applied to all series. If the serial correlation is negligible, there will be a negligible adjustment of the t-value.

It can be shown (Priestly, *Spectral Analysis and Time Series*, 1981, p.320) that the variance of the sample mean is given (approximately) by

$$\sigma^2(1 + \alpha)/n(1 - \alpha);$$

When α is zero (no serial correlation) this formula reduces to the usual formula, namely σ^2/n . The equivalent number of independent observations will be $n(1 - \alpha)/(1 + \alpha)$.

This variance is estimated (Box and Jenkins, *Time Series Analysis, Forecasting and Control*, 1976, p.195) by

$$s^2 = s^2(1 + \alpha) / n(1 - \alpha)$$

where s^2 denotes the usual estimate of variance and α is estimated as equal to the first order serial correlation of the revisions.

A corrected t-statistic, therefore, would be calculated directly (without needing to use the CO procedure) by

$$t = \text{mean revision} / s_{\star}$$

with $n^* = n(1 - \alpha^2) / (1 + \alpha^2)$ degrees of freedom which also gives the equivalent number of independent observations for estimating variance (Priestly, 1981, p.327).

The tests for bias were carried out over the 10 year, 5 year and 3 year periods.

The detailed results are shown in table 1 and 2 and in the charts in the annex. Additional charts for GDP and PPI also show the association of revision values with the coincident index of the economic cycles. Owing to the introduction of a new statistical system (INTRASTAT), measuring trade with the European Single Market, monthly statistics on the overall balance were not produced in the first half of 1993. The revisions analysis for **visible trade**, therefore, excludes this period.

The results are discussed below in the sections relating to each indicator.

Visible Trade

The visible trade balance is the difference between the values of exports and imports on a balance of payment basis. Monthly estimates are published in First Release. The revisions over three months are taken as a percentage of total trade (exports+imports). All three periods covered end in December 1995, the publication date of the revised estimates for August 1995.

The mean revision in the latest 3 year period was higher compared to the same period ending in December 1994. The introduction of the

Intrastat system has made a significant change to the way trade is recorded with the EU countries from January 1993. This was the main cause for a predominance of positive revisions in the latest period. The t-values for all three periods, however, remained not significant.

Index of production (IOP)

The index of production covers total manufacturing plus energy and water supply (SIC Divisions 1-4). The monthly index is published in First Release. Revisions to the three months on three months growth rate are taken as the difference between the fourth and the first estimate. The figure published in the December 1995 issue, consequently, relates to the third revised estimate for July 1995.

The mean revisions in all three periods ending in December 1995 were higher compared to the same periods ending in 1994. Revisions in the last 3 years were predominantly positive. This was mainly as a result of improvements in the methods for collecting the relevant output data and also of reclassifying the industry groups from SIC (Standard Industrial Classification) 80 to SIC92. The t-value, consequently for the latest 3 year period became highly significant. The t-value for the 5 year period also became significant, but it remained not significant for the 10 year period.

Producer price index (PPI)

The revisions relate to the index numbers of producer prices for the output of manufactured products (SIC Division 2-4). The index is published in First Release. Revisions over two months to percentage annual growth is taken and the figures published in December 1995 refers to the revisions for growth in September 1995.

The mean revision for the 5 year period ending December 1995 was lower than for the same period ending in December 1993, but it was higher for the latest 3 year period. The t-value became significant for the 3 year period. The results also indicated a significant downward bias in the initial estimates during the expansion phase of the business cycle.

Retail sales

The index of retail sales volume is published in First Release. The revision analysis is based on three months on three months percentage growth as revised three months after the first publication. The reading for December 1995 refers to the revision between the first and fourth estimate of three month on three month percentage growth for August 1995.

The average revisions over the 5 and 3 year periods ending December 1995 were lower when compared to the corresponding periods ending December 1994. The t-values for these two periods also became non-significant.

GDP (short term (I), at constant prices)

The revision taken for this analysis is the difference between 10 week estimates and 6 week estimates, published in First Release, for the quarterly changes in total output. The last figure for Q4 1995 relates to the 10 week estimate for Q3 1995 published in the quarterly First Release in December 1995.

The mean revisions over all three periods ending in December 1995 were lower than before. The t-values for all three periods remained non-significant.

GDP (short term (ii), constant prices)

Quarterly estimates are published in quarterly GDP First Release. Revisions for quarter on quarter growth in GDP is taken from the first estimate and the estimate six months later. Consequently the figure included for Q4 1995 relates to the second revision to Q1 1995 published in the quarterly GDP First Release in December 1995.

The t-values for all three periods remained non-significant. However, the mean revision for the 3 year period was slightly higher than in the same period ending in December 1994. The average revision over the 5 and 10 year periods were slightly lower than before.

GDP (longer term, constant prices)

Revisions to the four quarter growth of GDP are taken from the initial estimate and three years later. The last revision included in the analysis relates, therefore, to the twelfth revision to Q3 1992, published in the quarterly GDP First Release in December 1995.

The mean revisions over all three recent periods continued to decline. The t-value for the 10 year period was significant but it remained not significant for the other two periods ending in December 1995. When tested for the effect the business cycles between 1977-95, the results showed a significant downward bias in the initial estimates during the expansion phases. The mean revisions to the growth rate 0.83 percentage compared to the overall mean during the period of 0.5 percentage points.

GDP (longer term, current prices)

Revisions are taken over twelve quarters for the four quarter percentage growth rate. The last figure relates to the 12th revision to Q3 1992 published in the quarterly GDP First Release in December 1995.

The mean revisions continued to decline for all three periods. However, the t-values for the 10 year period remained significant. The results showed a highly significant negative bias in the expansion phase of the business cycles.

Current balance (short term)

The current balance is the difference between exports and imports of visible trade and invisible (services, transfers and investment income). The figures are published in the balance of payments First Release. For the bias analysis, revisions over six months are taken for the current balance as a percentage of GDP at factor cost. The last reading for Q4 1995 relates to the second revision to Q1 1994, published in December 1995.

The t-values for all these periods remained not significant. There were a predominance of negative revisions in the latest year which resulted in a slightly higher average in the latest 3 year period than before.

Current balance (longer term)

Longer term revisions to the current balance are taken as a percentage of GDP over three years. The last figure for Q4 1995, therefore, relates to the revisions to Q3 1992.

The average revision for the 5 and the 3 year periods were lower than before. However, the t-value for the 5 year period remained significant.

Public sector borrowing requirement (PSBR)

Monthly estimates of PSBR are published in the First Release and Financial Statistics. Revisions over three months are taken for PSBR as a percentage of 1/3rd of GDP at market prices. The last figure published in December 1995, therefore, relates to the third revision to August 1995.

The revisions are higher in the latest three years than in the five and the ten year period. The t-values remain non-significant for all three periods. However, there were a predominance of negative revisions in the latest periods.

TABLE 1: REVISIONS ANALYSIS (1986 - 1995)

Indicator	Revision reference	No of years	No of obs.	Mean rev. ignoring sign	Mean rev.	Std. dev.	Coeff. of serial corr.	SE of Mean ¹	t-value ¹	% of + rev.	% of - rev.	Range of revision values	
Visible trade balance monthly balance as % of total trade	Three months after the first publication	10	113	0.46	-0.03	0.65	0.14	0.07	-0.44	46	54	from	to
		5	53	0.45	0	0.67	0.4	0.14	-0.03	45	55	-1.72	1.93
		3	29	0.64	0.1	0.88	0.37	0.25	0.41	59	41	-1.72	1.93
Index of Production 3-month on 3-month % growth	Three months after the first publication	10	120	0.23	0.07	0.30	0.33	0.04	1.77	62	38	-0.63	0.99
		5	60	0.17	0.10	0.19	0.42	0.04	2.74	* 70	30	-0.34	0.64
		3	36	0.20	0.17	0.18	0.21	0.04	4.69	** 89	11	-0.29	0.64
Producer Price Index percentage annual growth rate	Two months after the first publication	10	120	0.07	0.03	0.09	0.36	0.01	2.41	* 71	29	-0.19	0.26
		5	60	0.06	0.02	0.08	0.36	0.01	1.11	65	35	-0.19	0.18
		3	36	0.05	0.02	0.06	0.09	0.01	2.15	* 64	36	-0.07	0.17
Retail sales 3-month on 3-month % growth	Three months after the first publication	10	120	0.13	0.04	0.18	0.23	0.02	1.71	63	37	-0.50	0.60
		5	60	0.13	0.04	0.16	0.36	0.03	1.21	57	43	-0.44	0.50
		3	36	0.13	0.04	0.17	0.39	0.04	0.92	53	47	-0.26	0.50
GDP (short term (i) at constant prices) quarter on quarter quarterly growth %	Ten week est. from six weeks estimates	10	40	-0.15	0.03	0.20	0.11	0.05	0.83	52	48	-0.44	0.52
		5	20	0.07	-0.01	0.09	-0.28	0.02	-0.31	35	65	-0.13	0.22
		3	12	0.07	-0.01	0.09	-0.23	0.02	-0.43	33	67	-0.13	0.17
GDP (short term (ii) at constant prices) quarter on quarter quarterly growth %	Six months after the first publication	10	40	0.27	0.07	0.37	-0.05	0.06	1.18	60	40	-1.13	1.17
		5	20	0.17	0.06	0.19	0.26	0.06	1.02	60	40	-0.24	0.40
		3	12	0.19	0.12	0.19	0.18	0.06	1.91	75	25	-0.18	0.40
GDP (long term at constant prices) quarter on quarter annual growth %	Three years after the first publication	10	40	0.53	0.36	0.60	0.19	0.11	3.14	** 75	25	-0.85	1.67
		5	20	0.48	0.27	0.64	0.18	0.17	1.55	73	27	-0.85	1.67
		3	12	0.41	0.05	0.54	0.12	0.18	0.27	50	50	-0.85	1.00
GDP (long term at current prices) quarter on quarter annual growth %	Three months after the first publication	10	40	0.78	0.43	0.85	0.31	0.19	2.30	* 72	28	-1.50	2.00
		5	20	0.80	0.27	0.96	0.34	0.31	0.88	60	40	-1.50	
		3	12	0.62	0.08	0.94	0.34	0.39	0.19	42	58	-1.50	1.17
Current balance quarterly balance as % of GDP at factor cost	Six months after the first publication	10	40	0.37	0.01	0.50	0.07	0.09	0.14	50	50	-0.87	1.30
		5	20	0.46	-0.03	0.60	0.00	0.13	-0.25	35	65	-0.87	
		3	12	0.43	-0.07	0.54	0.24	0.20	-0.34	25	75	-0.77	1.01
Current balance quarterly balance as % of GDP at factor cost	Three years after the first publication	10	40	0.44	-0.06	0.61	0.21	0.12	-0.53	47	53	-1.85	1.76
		5	20	0.48	-0.32	0.58	-0.10	0.13	-2.42	* 35	65	-1.85	0.34
		3	12	0.55	-0.37	0.66	-0.21	0.19	-1.84	34	66	-1.85	0.34
PSBR monthly PSBR as % of GDP at factor cost	Three months after the first publication	10	120	0.18	-0.05	0.28	0.28	0.03	-1.67	38	62	-1.02	0.63
		5	60	0.17	-0.07	0.24	0.21	0.04	-1.72	35	65	-0.99	0.32
		3	36	0.19	-0.09	0.25	0.25	0.05	-1.79	33	67	-0.99	0.32

Note: All periods end in December (for monthly data) or in Q4 (for quarterly figures) of 1995. Therefore the ten year period starts in January 1986, the five year in January 1991 and the three year in January 1993. These dates relate to the publication dates e.g. revision published in Q4 1995 for GDP would relate to Q3 1995.

¹ = t-value and Std Error are corrected for the effects of serial correlation except for the cases where the coefficient of correlation is negative.

* = significant at the 5% level.

** = significant at the 1% level.

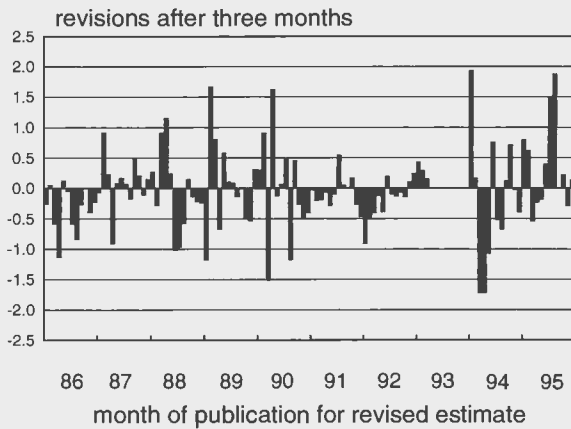
TABLE 2: TESTS OF THE EFFECTS OF ECONOMIC CYCLES ON THE FIRST ESTIMATES
(growth rates per cent)

Item	Period Covered	Overall Mean	t-value	Expansion Phase		Contraction Phase	
				Mean	t-value	Mean	t-value
Visible trade	1977 - 1995	-0.05	-0.82	-0.03	0.30	0.09	1.38
IOP	1977 - 1995	0.08	1.87	0.12	2.60	0.00	0.03
PPI	1977 - 1995	0.03	3.42	0.03	3.97	0.04	1.85
Retail Sales	1977 - 1995	0.00	0.07	-0.01	-0.48	0.03	0.68
GDP (constant prices)							
short term 10 weeks	1982 - 1995	0.06	1.92	0.07	2.20	0.00	0.08
short term 6 months	1977 - 1995	0.10	2.28	0.07	1.42	0.14	1.88
GDP (longer term)							
constant prices	1977 - 1995	0.50	2.75	0.83	4.69	0.16	
current prices	1985 - 1995	0.45	2.64	0.76	5.79	0.27	0.29
Current Balance							
short term 6 months	1983 - 1995	0.02	0.27	0.00	0.02	0.05	0.38
longer term 3 years	1983 - 1995	0.00	0.01	0.05	0.31	-0.04	-0.32
PSBR	1984 - 1995	0.01	0.38	0.05	0.94	-0.03	-0.48

NOTE: t-values are after allowing for positive correlation

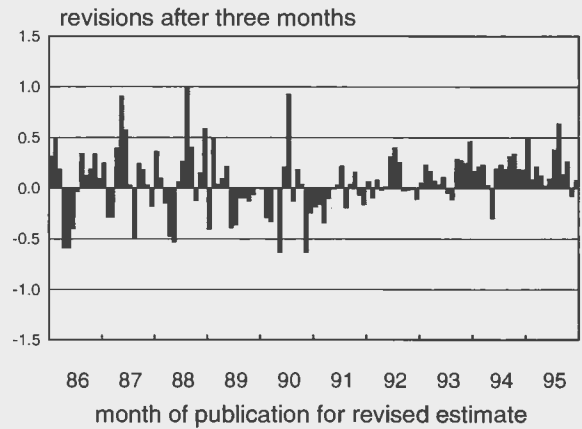
Visible trade balance

revision as percent of total trade



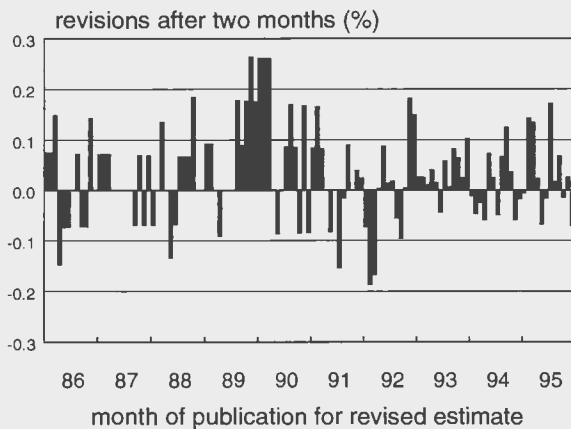
Index of production

three month on three month per cent change



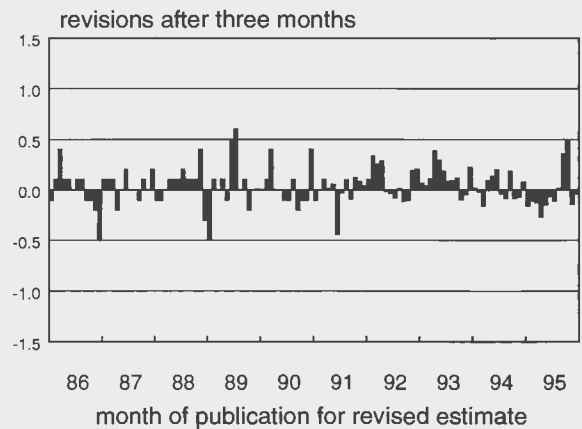
Producer price index

annual growth rates



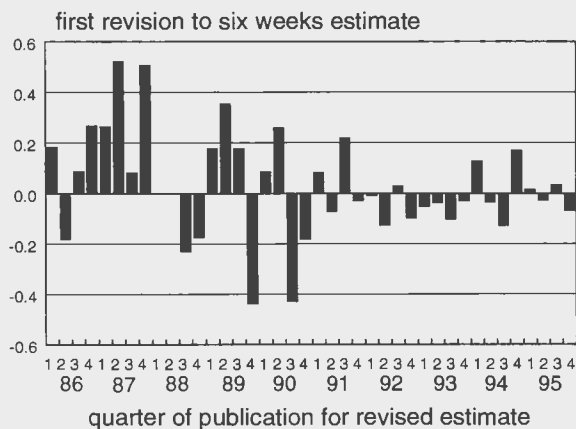
Retail sales

three month on three month per cent change



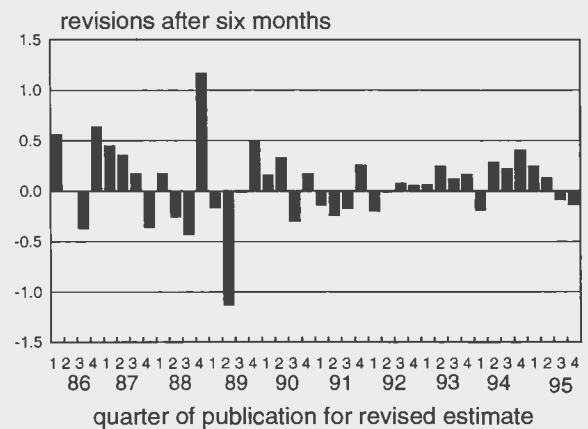
GDP (short term (i), at constant prices)

quarter on quarter per cent change



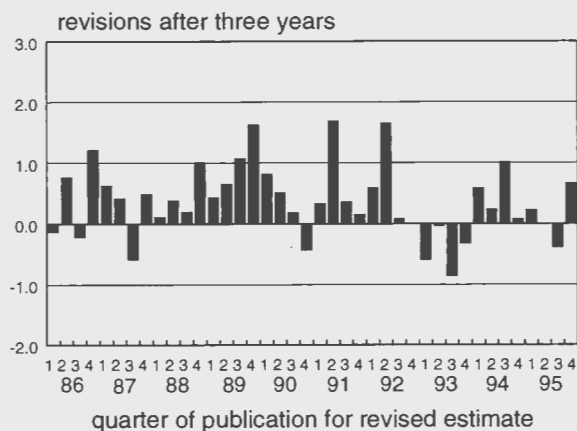
GDP (short term (ii), at constant prices)

quarter on quarter per cent change



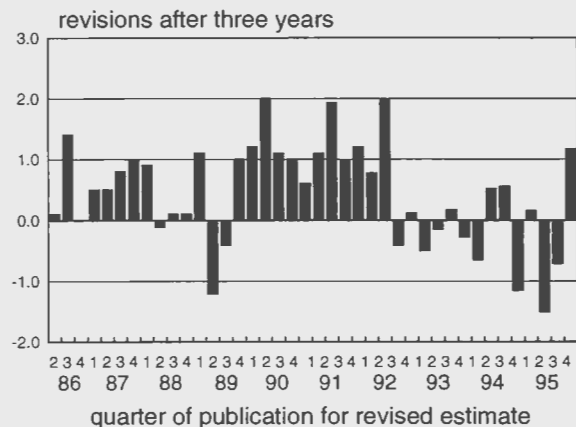
GDP (long term at constant prices)

four quarter percent change



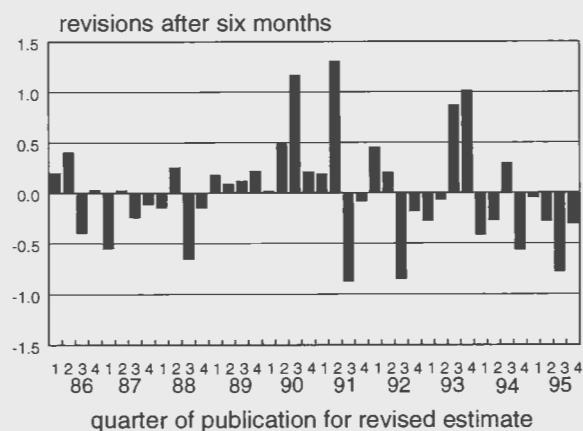
GDP (long term at current prices)

four quarter per cent change



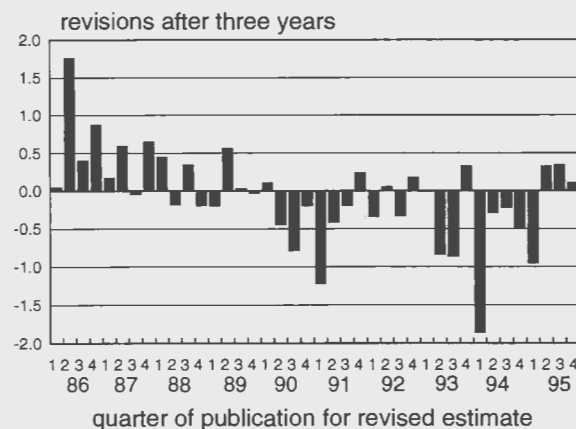
Current balance (short term)

as percent of GDP at factor cost



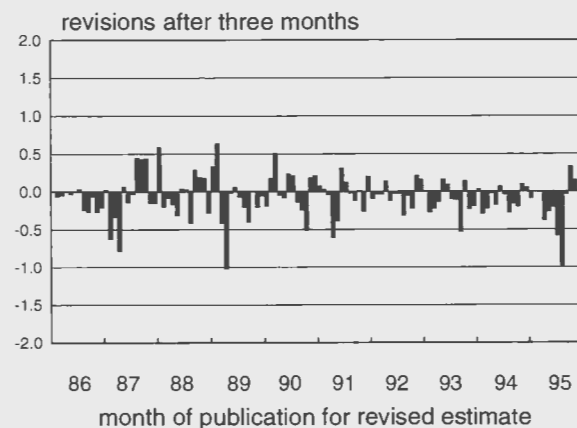
Current balance (long term)

as percent of GDP at factor cost



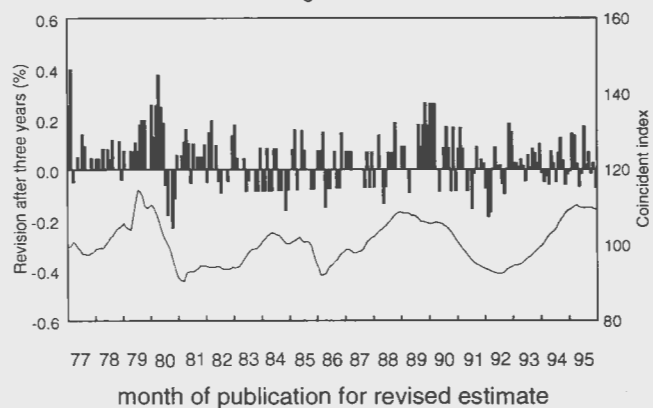
Public sector borrowing requirement

as percent of 1/3 GDP at market prices

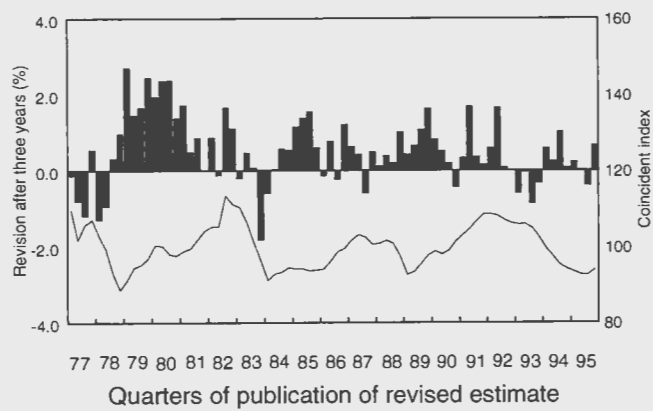


Producer price index

(also showing the economic cycles)
annual growth rates



GDP at constant prices
(also showing the economic cycles)
four quarter per cent change



Environmental Accounts - Valuing the Depletion of Oil and Gas Reserves

Prashant Vaze, Office for National Statistics

Summary

This paper presents options on how national income should be adjusted within the environmental satellite accounts, to place a value on the depletion of natural resources. There is already an extensive international literature on the subject, which has focused attention on a number of different methodologies. This paper discusses these unresolved controversies. Three methodologies are used to illustrate differences in opinion: the User Cost, the Net Price and the Present Value. The first method imputes a value for the depletion allowance using expectations about fuel price and the perceived longevity of the reserve. The latter two are not influenced by these considerations. The final part of the paper considers the impacts of shocks to the oil market - new oil discoveries and changes in world price - on the depletion allowance. Are the accounts providing policy makers with the appropriate advice about the sustainability of future revenue?

The Office for National Statistics's preferred option is to calculate the depletion allowance using the present value method but to supplement the adjusted NDP with data on the life expectancy of reserves. This life expectancy should be based on expert opinion on the volume of remaining oil reserves. The ONS invites comments from interested parties.

Introduction

The United Kingdom's Office for National Statistics is preparing an environmental satellite account which will extend the scope of the national income beyond its traditional boundaries. One of the adjustments being proposed is to allow the commercial depletion of natural resources to be set against national income.

This article discusses some of the different methods used to value the depletion of oil and gas reserves. The ideas discussed in this article can be applied to other non-renewable resources and with slight adjustment to renewable resources also. In the UK sales of domestically produced fossil fuels far exceeds that of other minerals. The CSO has shown previously (Bryant and Cook, 92) that the value of oil and gas depletion has, in 1985 when real prices of oil were relatively high, been as much as 3% and 7% of the net domestic product depending on the methodology used.

Though there has been a lot of discussion there is no internationally agreed method of accounting for the depletion of natural assets. This article discusses the current controversies, brings to the fore points of dispute and then computes the depletion allowance according to three different methodologies. The desire is to select a single means of valuation. Results from the completed analysis will be used in the UK's environmental accounts.

Explanation of terms

Depletion allowance - a sum of money by which domestic product is adjusted to allow for the depletion of oil and gas

Economic rent - the difference between the revenue received by oil industry and the costs of production, including a reasonable return on invested capital

Unit rent - the amount of economic rent earned by tonne of oil or per cubic metre of gas

The benefits from owning natural resources

The average price of Brent crude oil was £75 / tonne in 1994. The cost of production in the UK allowing for operating costs and a 15% return on capital invested in machinery and exploration activities was about £50 / tonne. The UK is a relatively high cost producer

Table 1
Income earned by Exchequer and economic rents earned from UK oil and Gas - current prices

Year	Economic rent # calendar year £ million	Oil and Gas Taxes * financial year £ million
1979	3480	2323
1980	6048	3963
1981	9441	6889
1982	11070	8339
1983	13485	9339
1984	16572	12671
1985	15467	11896
1986	4982	5319
1987	5594	5147
1988	2510	3600
1989	1984	2736
1990	2763	2634
1991	1917	1298
1992	1392	1626
1993	2172	1506
1994	2865	1800

rents are an ONS estimate of the revenue from selling oil and gas less the full cost of production, figures relate to calendar years

* oil and gas taxes include license fees, royalty, corporation tax, gas levy supplementary petroleum duty, petroleum revenue tax: Source 1995 Brown Book, figures relate to financial year

compared to other countries. Adelman (1986) reports that costs of extraction in Saudi Arabia were around a pound per tonne. The difference between the market price of oil and the costs of production, including a reasonable return of profit to the extracting company is known as the economic rent. This rent is a return on the endowment of a scarce natural resource. Strictly speaking this rent may be decomposed into a Ricardian rent, which is a reward for site specific characteristics of the deposit such as its size and ease of access, and a resource rent which rewards scarcity of the asset. The UK Exchequer, in common with other Governments, has sought to appropriate the economic rent earned from resources within its territorial control. The tax regime on North Sea oil reflects this wish. Table 1 shows the ONS's estimate of economic rent and the tax and royalty earned by the UK Exchequer. Data for tax and royalty were taken from the 1995 edition of the DTI publication *The Energy Report Volume 2* ("Brown Book").

This economic rent contributes to national accounts as value added, and comprises a large part of the gross profits earned by the oil and gas extraction. Though it appears in GDP and NDP no allowance is made for the fact that the asset base is being liquidated in order to generate this income.

Fossil fuels are a finite resource. By exploiting the resources now, the present generation captures the economic rent and denies future generations this source of income. Sustainability requires that the present generation considers the implications of its actions on future generations. This paper discusses what proportion of this rent could be considered a cost on the future.

International Context

International agreements exist to ensure that national accounting practices are comparable. There is as yet no proscribed procedure for creating an environmental satellite account. Within the new System of National Accounts (SNA93) untapped fossil fuel is considered a 'Subsoil asset' and has to be accounted for in the national balance sheet. Though it appears in the balance sheet the depletion and discovery of sub-soil reserves does not effect either Gross or Net Domestic Product. The SNA gives guidance on the valuing of the reserves for the purposes of calculating the national balance sheet:

"The value of reserves is usually determined by the present value of the expected net returns resulting from the commercial exploitation of those assets....As the ownership of subsoil assets does not change frequently on markets, it may be difficult to obtain appropriate prices which can be used for valuation purposes. In practice, it may be necessary to use the valuations which the owners of the assets place on them in their own accounts."

A new European System of Accounts sets out how SNA93 will be implemented within the European Union. The following guidance is given:

"Proven reserves of mineral deposits located on or below the Earth's surface that are economically exploitable given current technology and relative prices are valued by the present value of the expected net returns resulting from the commercial valuation of those assets."

The UN has set out a System for Integrated Environmental and Economic Accounts (SEEA) in a guidance manual. This aims to provide state-of-the-art assistance for countries developing environmental satellite accounts.

Guidance for completing the balance sheet instructs that changes in resource reserve values should be decomposed into the following effects:

- **depletion of natural assets:** reduction in volumes as a result of commercial exploitation of the asset
- **other economic appearance/disappearance of non-produced assets:** a change in volume of resource that can be extracted economically either because of changes in market prices affecting the viable volume, or revisions in the known reserves
- **real holding gains/losses:** change in the price of the resource in relation to the rate of inflation

The depletion allowance can be calculated by summing one or more of the above components. Which of the components is to be summed depends on the valuation technique selected; this is described in greater detail later.

The SEEA describes several different approaches to valuing depletion allowances. Significantly depletion is the only volume change that can effect the Environmental Domestic Product (EDP). Changes in wealth arising from changes in volume other than depletion or changes in price are consigned to other volume changes or nominal revisions.

Points at issue in calculating a depletion allowance

The purpose of the satellite environmental accounts is to give an accurate view of how economic activity effects natural resources and environmental services. Certain controversies still have not been resolved. These are discussed under the following headings:

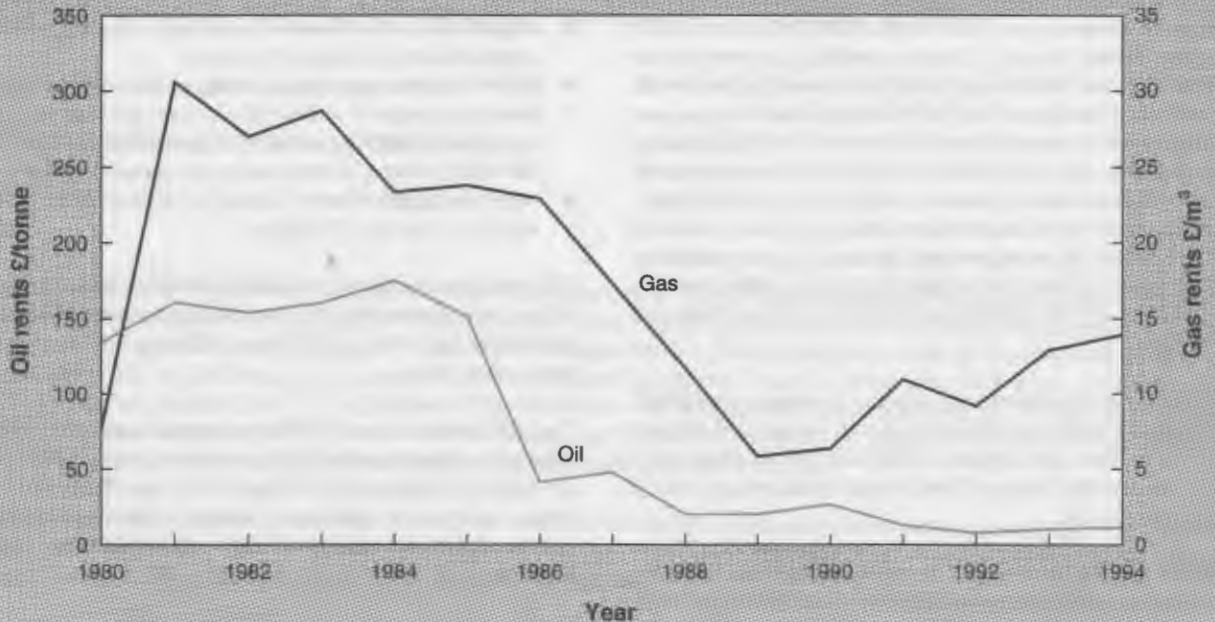
- should a depletion allowance be used to adjust GDP or NDP in the satellite account?
- should it be assumed the value of natural resources stays constant over time?
- should the depletion allowance take account of the permanent income stream which can be generated by extraction of the resource?
- should new discoveries be thought of as additions to income?
- proven reserves under-estimate the volume of oil and hence overstate the scarcity of reserves. How should this information be taken into account?

Should depletion be subtracted from GDP or NDP?

Commentators frequently draw an analogy between natural resources and man-made capital. Net domestic product is gross domestic product less an allowance made for the deterioration of man-made capital. Viewed this way a depreciation allowance for loss of natural capital ought to be subtracted only from net domestic product. This is the approach advocated by the SEEA.

A number of people have argued the depletion allowance should be deducted from GDP reducing both gross and net measures of domestic product relative to the figures currently observed. There are several justifications for adjusting gross product rather than net product. The commonest is to regard natural resources not as capital but as stocks of goods, like raw material. Reductions in stock are conventionally subtracted from gross output. El Serafy argues that the concept of depreciation cannot apply to assets that cannot be replaced. Since receipts from selling minerals cannot be used to recreate these minerals, sustainability compels us to adjust GDP (El Serafy, 1993). Harrison draws an analogy between mining and the transport industry; extraction does not create the resource it merely makes it accessible. As with transport margins the depreciation

Chart 1 Real rents for oil and gas - 1990 prices



Source: ONS Calculations

allowance from the resource should be deducted from the gross output of the industry (Harrison, 1993).

Future values of the economic rent

The value of a reserve depends crucially on how prices will change over time - more precisely on changes in economic rents.

Hotelling showed that under competitive conditions natural resource owners would manage production so that the economic rent earned by depleting the resource rises at the same rate as the expected rate of return on capital of an equivalently risky project (Hotelling, 1931). It is commonly accepted that when fossil fuels become scarce the rent they command will rise. However empirical confirmation of the time path implied by the Hotelling rule is difficult to find. Adelman (1986) shows that over the 1980s the production of high cost US oil has risen and that of low cost Saudi oil had fallen in contradiction of Hotelling type behaviour. Some commentators believe that since production costs, hence rents, vary from site to site highly disaggregated analysis needs to be undertaken to demonstrate profit maximising behaviour (Hamilton, K. 1994, operationalised in Born, A. 1992). The change in oil and gas rents, presented in Chart 1, gives no support for a Hotelling type increase in rents over the last 14 years.

There are a number of reasons why rents would not rise in line with the rate of return on capital in the UK. In the North Sea genuinely variable costs of production are a relatively small proportion of costs. A large part of the costs are the expected return on capital. As a result the oil industry cannot increase unit rents by simply reducing the volume of production (moving down the supply curve). Secondly the Petrol Revenue Tax has operated so that the Government and not the oil industry extracts rents for oil production (less so for gas). Operators are therefore in a poor position to benefit from any improvements in their unit rents. In addition to these effects oil companies are conscious that market prices of oil and tax regimes are liable to change over time making any optimally plan for the extraction uncertain.

The issue of future values of rent only arises if the depletion value is being imputed. If imputation is not taking place then there is no need to forecast future fossil fuel prices to adjust domestic product.

Whether to allow for a permanent stream of income from asset proceeds

El Serafy believes counting the rental income in its entirety as depreciation gives rise to a counter intuitive situation that the national income of Saudi Arabia is almost unaffected by its vast oil reserves since all excess profits would be deducted from the income measure (El Serafy, 1989). However an oil rich country is palpably better off than a country without oil since its admittedly time bound flow of rents can be invested either domestically or overseas to yield a permanent flow of income. El Serafy decomposes the rental stream into two components - true income which contributes towards GDP, and user cost which is the share of the rent that if invested generates a stable stream of income.

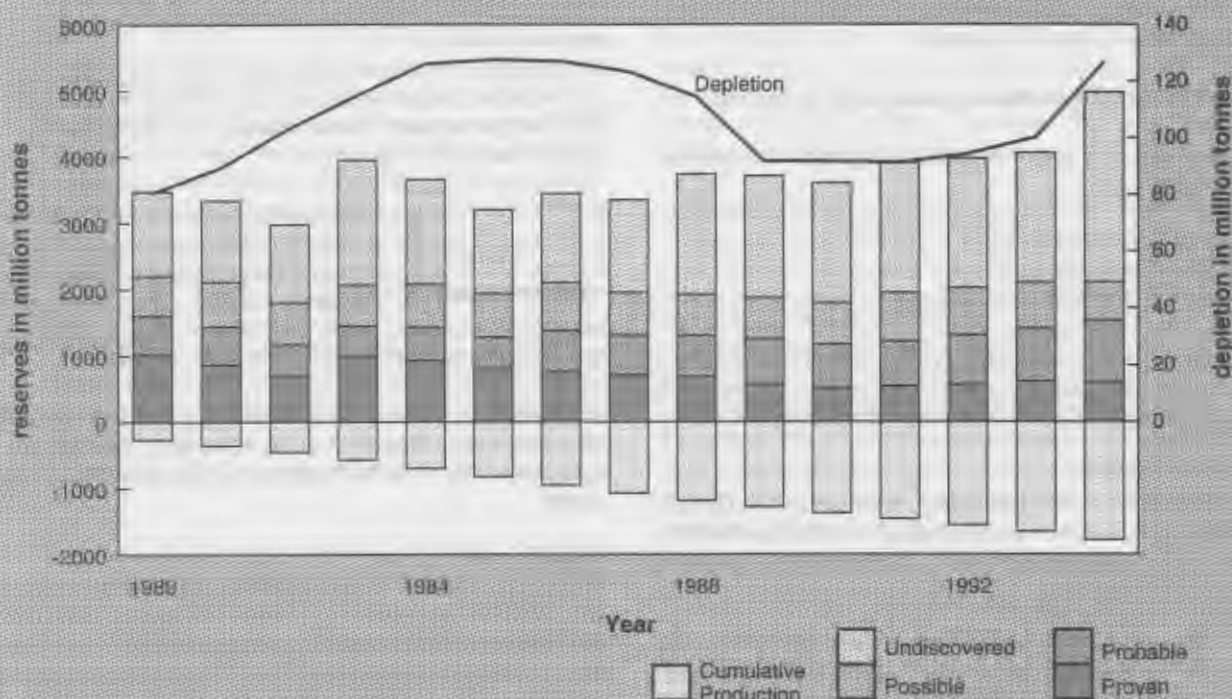
Weale endorses the idea of adding back a permanent income to domestic product and shows when rents rise at the rate of return on capital they can entirely be drawn as permanent income (Weale, 1990).

Though regarded as ingenious and prudent management Vanoli (1995) criticises the El Serafy view as inconsistent with standard national accounting concepts. He draws an analogy between depletion of oil reserves and the stocks of a valuable industrial raw material. By convention an asset is withdrawn from the balance sheet of the seller at the full value of the sale whatever use is made of the proceeds from the sale. Harrison and Hill have argued that the concept of a permanent income from a depletable asset is only valid if particular behaviour on the part of the authority receiving the rent is assumed. In such circumstances the addition to domestic product would be expected to be reflected elsewhere in domestic product.

Sustainability and other volume changes

The volume of new fossil fuel discoveries often exceeds the volume

Chart 2 Oil reserves



Source: DTI, *the Brown Book*, Various editions

of depletion. In Repetto et al's (1989) well known pilot environment account for Indonesia the net change in petroleum wealth was positive between the periods 1970 and 1974 as a result of oil discoveries.

Repetto credits all new discoveries as an increment to national income in the year in which they occur. Two other approaches have been adopted in the literature. Analysts applying the Repetto approach in developing countries have treated discoveries as other volume changes and have excluded these from the production account (Bartelmus et al, 1992 & Tongeren et al). El Serafy treats discovery as a demonstration that the resource is less scarce than was previously supposed, which causes the depreciation allowance to be henceforth be lower.

Others have argued that depletion is a transaction between agents (from non-produced natural assets to economic assets) and therefore can legitimately be brought into the income account; the same is not the case for discovery.

The worked examples later in this paper use all three of these approaches.

Proven reserves

The SNA suggests that natural resource stocks are constituted by proven reserves. Proven reserves are those reserves which have a better than 90 per cent chance of being produced under current technical and economic conditions. North Sea reserves of oil and gas are located deep under the sea and undertaking the seismographic and exploratory drilling to prove a reserve is expensive. For the last decade remaining proven reserves have represented six years oil production and about ten years gas production.

Other less stringent estimates of reserves exist. Probable reserves have a greater than 50% chance of being produced and Possible

reserves a significant but less than 50% chance of being developed. Within the UK simulation models using Monte Carlo techniques are used to assess the size and existence of undiscovered oil fields. The ONS has presented data on undiscovered reserves using an average of the DTI's higher and lower bound estimates of undiscovered reserves. This limits of these range should not be regarded as maxima or minima. Undiscovered reserves are of course more speculative but represent a genuine best estimate of reserves.

Chart 2 shows the relative magnitudes of these different estimates of resource availability in relation to current and cumulative levels of oil extraction. The volume of proven reserves are no doubt useful for short-term planning purposes but cannot be used for long term assessments of sustainability.

In the worked examples later in this paper two values of 'VR', the total volume of reserves, are used. The lower value is the volume of proven reserves in the year in question 'P'. The higher or maximum and undiscovered ('M+U') is calculated by summing the remaining 'Proven', 'Probable', 'Possible' and the average of the upper and lower boundaries of the undiscovered reserves. The volume of 'Undiscovered' has doubled over the past 7 years as new areas of sea have been subjected to the statistical analyses. In 1995 the area to the West of the Shetlands was analysed for the first time and this has caused a sizeable rise in the undiscovered reserves. Implicitly this analysis assumes rents in these new regions is the same as those of fields already in production. Given these areas are further away and conditions more hostile their rents will probably be lower.

In addition to the issues raised above, the US Bureau for Economic Analysis has developed means of computing rents that avoid having to impose an expected rate of return from capital (BEA, 1994). The BEA also attempts to value oil according to its replacement cost inferred from the costs of proving new finds.

Sefton and Weale (1994) have analysed the effects of resource depletion and trade. They argue the depletion allowance for resources which are extracted and then subsequently exported should be netted from the importing country's domestic product and added back to the exporting country's domestic product.

The cost of depleting oil and gas deposits in the UK

Three approaches are used to compute the depletion allowance for oil and gas reserves.

- user cost (UC) by El Serafy
- net price (NP), by Repetto
- present value (PV) by Bartelmus et al

A social rate of time preference rate of 6% is used. It is assumed that resources rents either stay constant over time or rise at the rate of 3% per annum, the latter is proxied by using a discount rate of 3%.

Calculation of rent

Rents are calculated by using formula (1) in the box below. The DTI collects information on revenue and costs in the oil and gas industry to assist the setting of petroleum taxes. These are published by the DTI in the Brown Book.

The ONS has calculated the value of capital assets using a Perpetual Fixed Inventory Model of the industry's capital stock. No formal estimate is available for splitting capital stock and exploration costs between the oil and gas sub-sectors. This was carried out using the weighted average development costs over the previous ten years. These are separately reported in the Brown Book. In line with changes proposed in SNA93 this analysis treats expenditure on exploration as if it were fixed capital (depreciated over 20 years). A real rate of return of 15% has been assumed - this is the rate which is safeguarded under the UK's oil and gas fiscal regime. Rents are calculated in 1990 prices.

The PV and the UC approach are calculated using two different social discount rates proxying for constant rents and an annual 3% appreciation in rents.

User cost (UC)

To operationalise the user cost approach El Serafy assumes that the total receipts of the rental stream, R and the social discount rate r are constant. The ratio of X - the true income, to R - the total receipts (net of extraction costs) is given by:

$$\frac{X}{R} = 1 - \frac{1}{(1+r)^{n+1}}$$

In general the greater the life expectancy of the reserve and the higher the rate of discount the higher the proportion of receipts that are true income and the lower the user cost. In

order to calculate the life expectancy of the reserve it is assumed that rent and extracted volume remain constant over time.

The difference between the economic rent and the depreciation allowance can be thought of as the value added from *owning the natural resource*. It can be thought of as a factor return to the natural capital.

Net price (NP)

The net price method was advocated by Repetto and his associates at the World Resources Institute. It is calculated by simply multiplying the unit rental by the change in volume of proven reserves over the accounting period. The longevity of the reserves does not directly influence the value of the reserve, nor the social discount rate. Depletion is costed at the full unit rent; the fact the cost of depletion will be felt some years in the future or that earlier liquidation of the asset allows the funds to be invested does not impact on the analysis.

Repetto advocates adding the discovery of new resources to income in the year of discovery. Where new discoveries exceed depletion there is a net contribution to income. The Net price method can be calculated without treating new discoveries as income - and the

Formulae	Definitions
$R = G - (O + r \cdot K)$ (1)	R - economic rent earned by oil or gas industry in year
$UR = R / D$ (2)	O - operating costs by oil or gas industry in year
$T = VR / D$ (3)	G - revenue earned by oil or gas industry in year
$V_t = [1 - 1 / (1 + i)^T] / i \cdot R$ (4)	r - rate of return expected by oil or gas industry
User cost	K - total net fixed capital
$\delta = [1 / (1 + i)^T] \cdot R$ (5)	UR - unit rent: rent earned per unit volume resource extracted
Net price	D - volume of annual production
$\delta = UR \cdot (V - N)$ (6)	T - life expectancy of reserve
Present Value	VR - volume proven or discovered + undiscovered reserves
$\delta = R - (1 / (1 + i)) \cdot V_{(t+1)}$ (7)	V_t - present value of reserve at end of year t
	i - social discount rate
	δ - total depletion in year
	N - net new discoveries in year

For most of the period under survey gas produced in the North Sea was sold directly to British Gas - a monopoly purchaser of gas. The yield of the gas levy has been added to the gross gas revenues as a crude proxy for rent earned by British Gas for purchase of gas at below its opportunity cost.

A brief description of the three methodologies is presented below. The algebra for the three different methodologies is presented in equations 5, 6 and 7. An intuitive comparison of the user cost and present value methods is given in Annex 4 of a pilot environmental account of Papua New Guinea (Bartelmus *et al*, 1992) and a more formal description of the El Serafy method is described in Hartwick and Hageman (1993).

SEEA presents results on this basis. If new discoveries are not treated as income the net price gives the same adjustment to income as the present value method which is shown below.

Present Value (PV)

This seeks to follow the SNA93 prescriptions most closely. Changes in present value of the resource arising from discounting or real changes in rent and changes in economically available volume do not effect domestic product but enter in the balance accounts as price revisions and other volume changes.

$$\delta_y = R_t$$

This method adjusts *income* by multiplying net depletion by the unit rental. The depreciation allowance δ_y is given in box. Discoveries of oil and price effects only appear in the balance sheet. The balance sheet (a statement of the value of all sub-soil assets) calculates the present value of expected income stream. New discoveries of the resource are treated as other volume changes. From one year to the next the value of the income stream is raised because the income earned from remaining reserves becomes 'less discounted'. This appreciation δ_p is treated as a nominal revision and only effects the balance account. The valuation of the reserve V_t takes into account the expected life expectancy of the reserve, any forecast real changes in price and any changes in expected reserve. To operationalise this analysis it is assumed that the reserves are depleted at a constant rate and that unit rents either stay

$$\delta_p = -\frac{i}{1+i} * V_{t+1}$$

constant or rise at 3% real. Table 2 shows the effects of this on the oil balance sheet. This method follows closely the prescriptions given in Harrison (1995). The Annex to this paper shows the above formulae were derived and are based on Bartelmus et al (1992).

Results and discussion

Charts 3 and 4 show the change in depletion allowance calculated between the periods 1980 and 1994 for oil and gas resources respectively. Tables 4 and 5 in the Annex give details for oil and gas industry respectively. Six lines are shown, four of which show the effect of changing discount rate and reserves on the user cost method. The path of the net price is markedly different to the other lines and the NP is the only methodology capable of showing a net contribution to income (a negative cost). This occurs when discoveries exceed depletion over the year. The reason why the path of the Net Price method differs so markedly from those of the other two methods is because of assumptions about volume rather than price.

The relative ordering of costs of depreciation are as follows:

present value > net price > user cost

This ordering of the results is as expected since UC uses the longevity of the income stream to down play the rental value. The allowance for net price exceeds the present value cost when there is a large downward revision of reserves. The actual figures are attached in Tables 4 and 5 in the Annex.

When depletion costs are calculated using only proven reserves the UC costs are lower than PV by 20% for oil and 40% for gas. When M+U reserves are used in place of proven reserves differences between approaches become much more pronounced since the life expectancy of the reserve is much extended. The cost of depletion using UC is only 10% of that using NP.

Use of a higher discount rate reduces the depletion allowance in the PV method. The effect of changing discount rate is relatively small when proven reserves are used; typically lowering costs by 15%-30% but pronounced when assuming the existence of undiscovered resources - reducing costs by 60%-75%.

The choice of methodology and discount rate materially affect the results. In 1984 oil rents were £19bn or 6% of NNP (about 80% of the income earned from mining and quarrying sector). NP and PV credit the whole of this to depreciation of the asset, the UC method counts only £4bn and £18bn.

Balance Sheet

In order to judge the sustainability of reserves it is useful to see depletion in relation to stocks of the economic asset. Table 2 shows how an balance sheet might look. The balance sheet has been

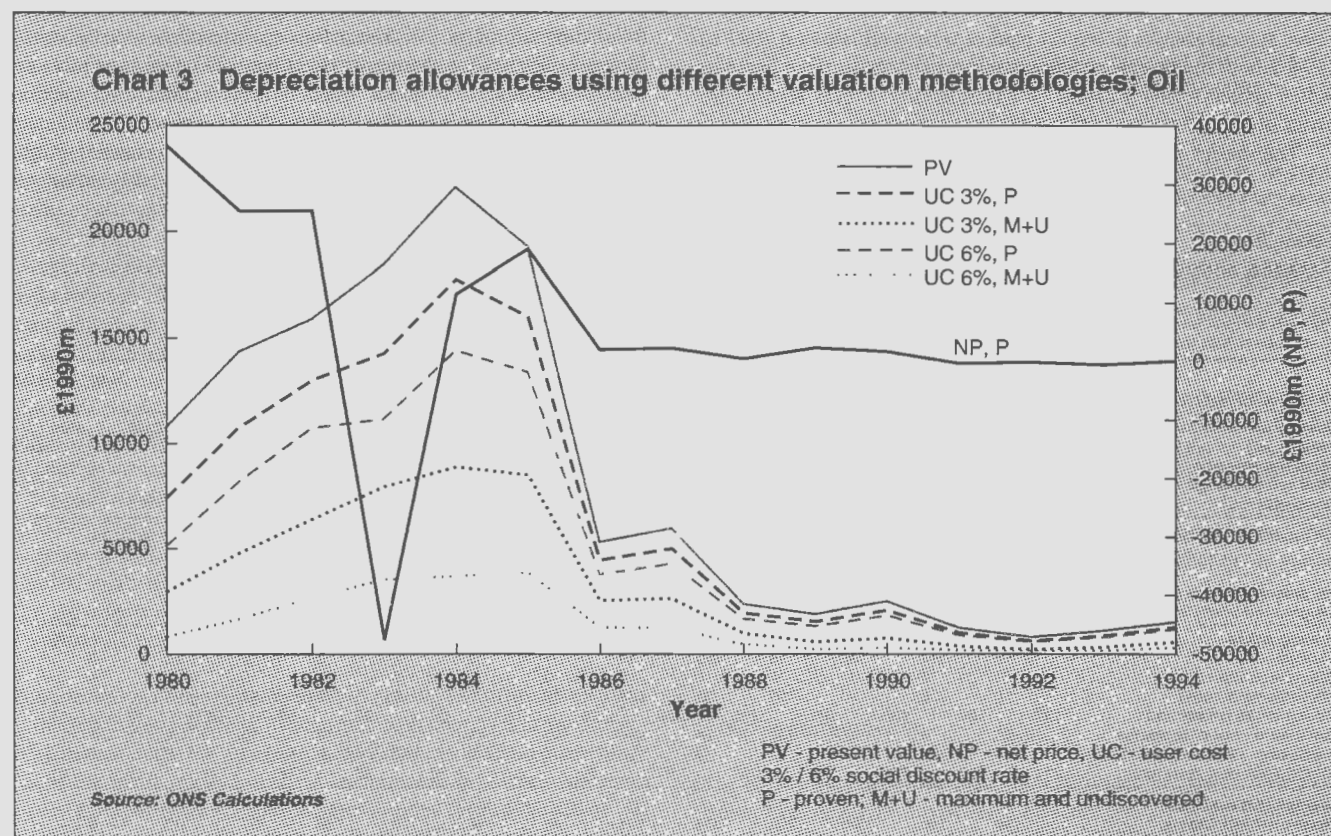
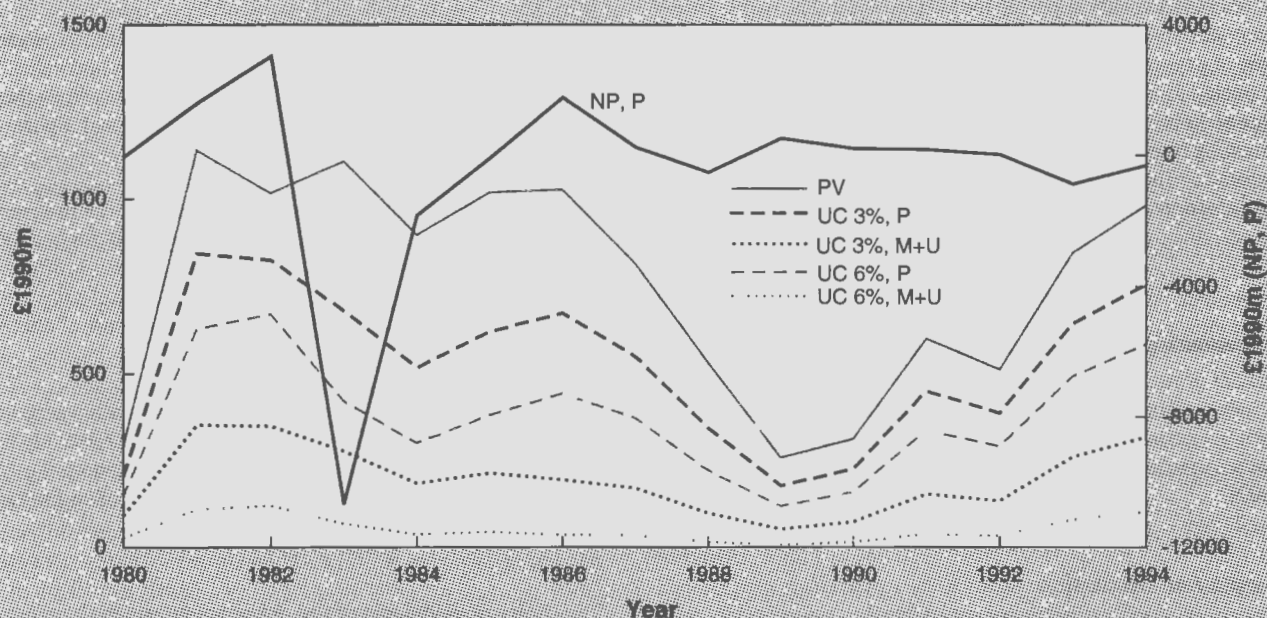


Chart 4 Depreciation allowances using different valuation methodologies; Gas



Source: ONS Calculations

PV - present value, NP - net price, UC - user cost
3% / 6% social discount rate
P - proven, M+U - maximum and undiscovered

calculated for oil stocks, assuming future real rents do not change over time. The present value method is used to compute the depletion allowance.

Scenarios studies

Three typical shocks to the oil market were simulated on 1992 to 1994 data to investigate whether appropriate signals were given to policy makers trying to assess the sustainability of rents. Results are given in Table 3.

The shocks are

- sharp rise in oil prices in 1992, rents double, prices return to historic levels in 1993
- doubling of proven reserves from 1992 onwards
- doubling the rate of extraction in 1992

The effect of rising oil prices is fairly straight forward. The rise in units rents causes a proportionate change in the depletion allowance for all methodologies. This rise in the depletion allowance lasts only for the duration of the change in price. Over 1992 there is an increase in the volume of proven and of 'M+U'. If rents double the NP method shows a net gain in income relative to the base case. The message being sent is opposite that from the other two approaches. More importantly the signal varies from year to year depending on whether there is a net rise or fall in reserves.

Table 2
Balance account for oil

The maximum and undiscovered stock figures are used through out
All volumes in 000s tonnes of oil equivalent

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Volume of oil reserves														
Opening stocks 1st Jan	3521	3312	3171	3268	3881	3530	3150	3393	3320	3623	3643	3631	3928	4025
Usage	80.5	89.5	103.2	115.0	126.1	127.6	127.1	123.4	114.5	91.7	91.6	91.3	94.3	100.1
Natural regeneration	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other volume changes	129	51	-200	-727	225	252	-370	-50	-417	-112	-80	-388	-192	-134
Closing stocks	3312	3171	3268	3881	3530	3150	3393	3320	3623	3643	3631	3928	4025	4059
Life expectancy start year	44	37	31	28	31	28	25	28	29	39	40	40	42	40
Net present value of oil reserves £bn														
Assumes constant levels of real rents over time														
Opening stocks	165	211	220	248	306	257	67	79	32	28	37	18	11	16
Economic use	11	14	16	18	22	19	5	6	2	2	2	1	0	1
Natural regeneration	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other volume changes	17	8	-31	-116	39	38	-15	-2	-8	-2	-2	-5	-2	-1
Closing stocks present rent	137	189	235	346	245	200	78	76	38	28	36	22	12	16
Revaluation - real price change	-27	8	-10	-32	34	144	-12	44	0	-9	19	9	-4	-2
Revaluation - discounting & life expect.	-47	-39	-3	72	-46	-12	11	0	10	0	-0	2	0	-3
Closing stock next years rent	211	220	248	306	257	67	79	32	28	37	18	11	16	21
Average rent over year														
Present unit rent £/tonne	134	160	154	160	175	151	42	48	20	20	27	13	8	10

Table 3
Simulated shocks to the oil market between 1992 and 1994 - 1990 prices £million

	Present Value method Net Changes to balance sheet				Income Account	Net Price Income Account		User Cost Income Account			
	<i>P</i>	<i>3% M+U</i>	<i>P</i>	<i>6% M+U</i>	Depletion	<i>P</i>	M+U	<i>P</i>	<i>3% M+U</i>	<i>P</i>	<i>6% M+U</i>
The base case											
1992	626	231	538	104	741	-149	-2330	622	216	525	65
1993	876	339	749	154	1043	-573	-1016	871	318	731	100
1994	1273	592	1125	296	1460	46	-386	1267	566	1105	226
A short run price shock doubles prices in 1992											
1992	1251	463	1075	207	1481	-299	-4659	1244	432	1051	131
1993	876	339	749	154	1043	-573	-1016	871	318	731	100
1994	1273	592	1125	296	1460	46	-386	1267	566	1105	226
Proven reserves double in 1992											
1992	544	231	415	104	741	-4510	-2330	523	216	373	65
1993	758	339	572	154	1043	-573	-1016	728	318	513	100
1994	1143	592	919	296	1460	46	-386	1100	566	836	226
The rate of extraction doubles											
1992	1401	843	958	524	1481	591	-1589	1358	800	624	440
1993	731	348	485	159	1043	-573	-1016	871	318	731	100
1994	1198	609	982	308	1460	46	-386	1267	566	1105	226

Notes: P - proven; M+U - maximum plus undiscovered; 3%/6% discount rates

If proven reserves are doubled this represents a prolonging of the expected duration of rental income from sub-soil assets. Resources are less scarce than previously supposed. The NP method credits the discovery as a large (£5bn) rise in income in 1992. There are no changes in subsequent years. The PV method ignores the new discoveries in its income account, but the improvement in the reserve situation impacts on the balance account from 1992 onwards reducing the price revaluation term. The UC, P method reports a permanent reduction in the depletion allowance reflecting the fact that the income stream from the oil will last longer and so capital losses in any year are a smaller proportion of the rent. The UC 'M+U' method ignores changes in proven reserve volumes.

Doubling the rate of oil extraction has two effects, it causes the total rent earned in 1992 to double and it also shortens the lifetime of the remaining resource. The NP approach causes the depletion allowance become 'more positive' capturing but obfuscating the net deterioration of oil stocks compared to the base case. Depletion of proven reserves increases from -£0.4 bn to + £0.3bn that of 'M+U' from -£0.7bn to about £0. The effect of doubling depletion rates on the PV method is more clear cut; it is doubled. The effect on the balance sheet is more pronounced than the impact on income reflecting the shortened life expectancy of rental income. Allowances rise most at higher discount rates and more inclusive measures of resource availability. The UC method gives similar results as the PV balance sheet except that the effects are felt in the income account. In all cases depletion allowances revert to the base case in 1993.

The conflation of resource discoveries and depletion makes changes in the NP method difficult to interpret. Reliance on just the income adjustments in the PV approach masks changes in the sustainability of the UK's oil stocks but these are captured in the balance sheet accounts under other volume changes or price revaluations. The UC method gives very similar numbers to the PV approach but volume

and price effects are seen in the income account rather than the balance sheet.

Conclusions

The ONS has considered the arguments raised in this paper. Its preferred approach is to use the net present value methodology. This would be used in the environmental satellite account to adjust net income but not the gross income. The depletion allowance would not make any allowance for a permanent income stream from the rent. Because of this the issue of having to forecast future oil rents does not arise - the depletion allowance will be based on prevailing levels of rent. Changes in known volumes, for instance through new discoveries, will also not affect the measure of income but will affect the balance sheet. The income adjustment will not be affected by the remaining volume of reserves.

If this approach is used in the satellite accounts the annual depletion allowance will equal the annual rental earnings. However the volume of remaining reserves is appropriate relevant to decisions about the sustainability of the fossil fuel income. It is suggested that the accounts give prominence to the expected duration of reserves based on current extraction rates and estimates of total reserves. This life expectancy of reserves will be affected by new changes in views on oil availability.

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Annex

Changes in the Net Present Value of the rental stream over the year drawn from Bartelmus et al (1992)

Let

R_t - total rent in year t

T - life expectancy of the resource

V_t - value of reserve in year t as it would appear in the balance sheet

i - social rate of discount

$$V_t = R_t + \frac{1}{1+i} * R_{t+1} + \frac{1}{(1+i)^2} * R_{t+2} + \dots + \frac{1}{(1+i)^{T-t}} * R_{t+T}$$

$$V_{t+1} = R_{t+1} + \frac{1}{1+i} * R_{t+2} + \frac{1}{(1+i)^2} * R_{t+3} + \dots + \frac{1}{(1+i)^{T-t-1}} * R_{t+T}$$

V_t can be expressed as

$$V_t = R_t + \frac{1}{1+i} * V_{t+1}$$

The change in value from one year to the next adding together the depletion allowance and the revaluation term is given by

$$V_{t+1} - V_t = \frac{1+i}{1+i} * V_{t+1} - R_t + \frac{1}{1+i} * V_{t+1} = -R_t + \frac{i}{1+i} * V_{t+1}$$

This can be decomposed into a depletion allowance ($-R_t$) and a revaluation of the remaining income stream of $i / (1 + i)$.

Table 4
Valuation of the depreciation of oil - 1990 prices £ million

	Present Value method Net Changes to balance sheet				Income Account Depletion	Net Price Income Account		User Cost Income Account			
	P	3% M+U	P	6% M+U		P	M+U	P	3% M+U	P	6% M+U
1980	7499	3182	5460	1403	10769	36564	31746	7401	2954	5142	841
1981	10885	5076	8525	2375	14335	25479	33492	10782	4798	8176	1657
1982	13073	6669	10994	3394	15856	25471	21630	12990	6394	10703	2646
1983	14378	8248	11538	4355	18405	-47517	-15497	14258	7943	11126	3512
1984	17867	9262	14797	4709	22054	11371	-107149	17741	8878	14361	3669
1985	16081	8812	13681	4714	19249	19006	52946	15986	8499	13347	3842
1986	4466	2624	3832	1478	5294	1958	15811	4441	2544	3745	1249
1987	5040	2730	4347	1464	5940	2263	-11701	5013	2634	4251	1196
1988	1960	1026	1680	537	2326	467	1484	1949	987	1641	429
1989	1549	613	1320	280	1851	2321	-6106	1540	576	1289	185
1990	2090	805	1812	366	2450	1658	-548	2079	756	1773	241
1991	1014	394	872	179	1200	-368	158	1009	370	852	118
1992	626	231	538	104	741	-149	-2330	622	216	525	65
1993	876	339	749	154	1043	-573	-1016	871	318	731	100
1994	1273	592	1125	296	1460	46	-386	1267	566	1105	226

Notes: P - proven; M+U - maximum plus undiscovered; 3%/6% discount rates

Table 5
Valuation of the depreciation of gas 1990 prices £ million

	Present Value method Net Changes to balance sheet				Income Account Depletion	Net Price Income Account		User Cost Income Account			
	P	3% M+U	P	6% M+U		P	M+U	P	3% M+U	P	6% M+U
1980	212	98	163	45	287	-66	-47	204	90	147	29
1981	878	385	694	177	1143	1596	-269	845	352	630	112
1982	855	377	730	180	1019	3034	3142	825	348	672	122
1983	713	308	486	134	1111	-10682	-12991	681	276	423	71
1984	543	209	353	90	899	-1844	-5822	517	183	302	39
1985	650	242	440	104	1021	-95	-4874	620	213	382	46
1986	702	223	502	96	1029	1764	-6001	672	193	444	38
1987	573	193	420	83	816	242	501	549	169	373	37
1988	358	112	254	49	532	-536	-1456	343	97	224	18
1989	184	58	135	25	260	517	953	176	51	120	10
1990	234	82	180	35	314	203	155	224	72	162	17
1991	466	170	372	74	601	175	-1135	449	152	338	40
1992	400	148	321	65	513	18	-73	385	133	292	36
1993	669	284	542	130	847	-887	-983	644	259	494	82
1994	785	345	640	161	984	-306	-1072	756	316	585	105

Notes: P - proven; M+U - maximum plus undiscovered; 3%/6% discount rates