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Economic Trends

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Contents

INTERNATIONAL ECONOMIC INDICATORS

(includes data up to 17 February 1994)

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.

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. Between 1993 Q2 and 1993 Q3, Gross Domestic Product (GDP) at constant market prices grew in all the G7 economies except Italy. Growth was most rapid in the United States (0.8 per cent), the United Kingdom (0.7 per cent) and Germany (0.7 per cent). Between 1993 Q3 and 1993 Q4 growth accelerated in the United States to 1.4 per cent.

4. Annual growth in consumer prices in the United Kingdom rose from 1.9 per cent in December 1993 to 2.5 per cent in January 1994. Over the same period, consumer price inflation in Germany fell from 3.7 per cent to 3.5 per cent. Overall figures for the European Community show consumer price inflation fell from 3.5 per cent in July 1993 to 3.2 per cent in November 1993.

5. In the two countries where recovery has been well established, standardised unemployment rates fell - from 10.7 per cent in January 1993 to 9.9 per cent in December 1993 in the United Kingdom, and from 7.0 per cent to 6.3 per cent in the United States. Elsewhere - in continental Europe and Japan, unemployment has risen. In Germany, rates rose from 5.2 per cent in January 1993 to 6.3 per cent in November 1993, while in France they rose from 10.9 per cent to 12.0 per cent. In Japan, the unemployment rate rose from 2.3 per cent in January 1993 to 2.8 per cent in November 1993, but remained low compared with other G7 countries.

1 Gross domestic product at constant market prices: index numbers

1985 = 100

	United Kingdom[1]	Germany[2]	France	Italy	EC	United States	Japan[3]	Canada	Major 7	OECD
	FNAO	GABI	GABH	GABJ	GAEK	GAEH	GAEI	GAEG	GAEO	GAEJ
1980	90.5	94.3	92.7	93.3	93.0	88.2	83.2	86.7	88.7	88.9
1985	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1986	104.4	102.3	102.5	102.9	102.9	102.9	102.7	103.3	102.9	102.9
1987	109.3	103.7	104.8	106.1	105.9	106.1	106.8	107.6	106.2	106.3
1988	114.8	107.5	109.5	110.5	110.3	110.3	113.5	113.0	111.0	111.0
1989	117.3	111.4	114.2	113.7	114.2	113.0	118.8	115.7	114.5	114.5
1990	117.8	118.0	117.1	116.1	117.7	114.4	124.6	115.6	117.2	117.4
1991	115.2	123.4	117.9	117.6	119.5	113.6	129.9	113.6	118.1	118.4
1992	114.5	124.9	119.5	118.7	120.3	116.5	131.4	114.4	120.1	120.3
1993	..	..	..	..	..	119.9	..	..	..	..
1990 Q4	116.5	120.4	117.3	116.4	118.4	113.7	127.1	114.3	117.3	117.7
1991 Q1	115.5	122.7	117.1	116.8	118.9	113.0	129.1	112.5	117.4	117.8
Q2	115.0	123.9	117.7	117.5	119.5	113.5	129.9	113.7	118.0	118.3
Q3	114.8	123.4	118.4	117.7	119.6	113.9	131.0	114.0	118.3	118.6
Q4	115.1	123.7	118.6	118.3	120.0	114.0	131.8	114.2	118.6	118.9
1992 Q1	114.0	125.4	119.6	118.9	120.5	115.0	132.6	114.2	119.5	119.8
Q2	114.3	125.4	119.6	119.3	120.5	115.8	132.2	114.2	119.9	120.1
Q3	114.7	124.9	119.7	118.6	120.3	116.8	132.1	114.3	120.2	120.4
Q4	115.1	123.7	119.2	118.0	119.9	118.4	132.0	115.0	120.8	120.9
1993 Q1	115.7	121.7	118.4	117.8	119.3	118.7	133.0	116.0	120.9	121.0
Q2	116.4	122.4	118.6	118.6	..	119.2	132.1	117.0	121.2	..
Q3	117.2	123.2	118.9	118.0	..	120.1	132.6	117.7	..	..
Q4	..	..	..	..	..	121.8	..	..	..	..
Percentage change, latest quarter on corresponding quarter of previous year										
1993 Q3	*2.2*	*−1.4*	*−0.7*	*−0.5*	..	*2.8*	*0.4*	*3.0*	..	..
Q4	..	..	..	..	..	*2.9*	..	..	..	..
Percentage change, latest quarter on previous quarter										
1993 Q3	*0.7*	*0.7*	*0.3*	*−0.5*	..	*0.8*	*0.4*	*0.6*	..	..
Q4	..	..	..	..	..	*1.4*	..	..	..	..

1 Estimates due to rebasing to 1990
2 Western Germany (Federal Republic of Germany before unification)
3 GNP

2 Consumer prices[1] Percentage change on year earlier

	United Kingdom	Germany[2]	France	Italy	EC	United States	Japan	Canada	Major 7	OECD
1980	18.0	5.5	13.6	21.0	13.7	13.5	7.8	10.2	12.7	13.5
1985	6.1	2.2	5.8	8.6	6.1	3.5	2.0	4.0	4.0	4.9
1986	3.4	−0.1	2.7	6.1	3.7	1.9	0.6	4.2	2.1	3.0
1987	4.2	0.2	3.1	4.6	3.3	3.6	0.1	4.4	2.9	3.6
1988	4.9	1.3	2.6	5.0	3.6	4.1	0.7	4.0	3.3	4.3
1989	7.8	2.8	3.7	6.6	5.3	4.8	2.3	5.0	4.6	5.4
1990	9.5	2.7	3.4	6.0	5.6	5.5	3.1	4.8	5.0	5.8
1991	5.9	3.5	3.2	6.5	5.1	4.2	3.3	5.6	4.3	5.2
1992	3.7	4.0	2.4	5.3	4.3	3.0	1.7	1.5	3.1	4.0
1993	1.6	4.1	2.1	4.2	..	3.0	1.3	1.8	..	..
1992 Q4	3.0	3.6	1.9	4.8	3.8	3.0	1.0	1.8	2.8	3.7
1993 Q1	1.8	4.3	2.1	4.3	3.5	3.2	1.3	2.0	2.8	3.8
Q2	1.3	4.2	1.9	4.1	3.3	3.2	0.9	1.7	2.7	3.8
Q3	1.7	4.2	2.2	4.3	3.4	2.7	1.8	1.7	2.7	3.9
Q4	1.6	3.7	2.2	4.2	..	2.7	1.1	1.8	..	..
1993 Jan	1.7	4.4	2.1	4.2	3.5	3.3	1.3	2.1	2.9	3.8
Feb	1.8	4.2	2.0	4.4	3.4	3.3	1.4	2.3	2.9	3.8
Mar	1.9	4.2	2.2	4.2	3.4	3.1	1.2	1.9	2.8	3.7
Apr	1.3	4.3	2.0	4.2	3.3	3.2	0.9	1.8	2.7	3.8
May	1.3	4.2	2.0	4.0	3.3	3.2	0.9	1.8	2.7	3.8
Jun	1.2	4.2	1.9	4.1	3.2	3.0	0.9	1.6	2.6	3.8
Jul	1.4	4.3	2.1	4.4	3.5	2.8	1.9	1.6	2.7	4.0
Aug	1.7	4.2	2.2	4.5	3.4	2.7	1.9	1.7	2.7	4.0
Sep	1.8	4.0	2.3	4.2	3.4	2.7	1.5	1.9	2.6	3.9
Oct	1.4	3.9	2.2	4.3	3.3	2.8	1.3	1.9	2.6	3.9
Nov	1.4	3.6	2.2	4.2	3.2	2.7	0.9	1.9	2.4	3.8
Dec	1.9	3.7	2.1	4.0	..	2.7	1.0	1.7	..	..
1994 Jan	2.5	3.5	..	4.2	..	..	..	..	..	..

1 Components and coverage not uniform across countries
2 Western Germany (Federal Republic of Germany before unification)

3 Standardised unemployment rates: percentage of total labour force[1]

	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	3.1	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	10.4	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	2.8	8.8	6.7	7.3
1988	8.6	6.2	10.0	10.9	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	2.2	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	8.7	4.2	9.5	9.8	8.7	6.6	2.1	10.2	6.3	6.8
1992	9.9	4.6	10.4	9.8	9.4	7.3	2.2	11.2	6.8	7.5
1993	10.3	..	..	..	..	6.7	..	11.1	..	..
1992 Q4	10.4	4.9	10.7	9.3	9.7	7.2	2.3	11.5	6.9	7.6
1993 Q1	10.5	5.3	11.0	9.0	10.2	6.9	2.3	10.9	6.8	7.7
Q2	10.3	5.6	11.5	10.6	10.6	6.9	2.4	11.3	7.0	7.8
Q3	10.4	5.9	11.7	10.3	10.8	6.7	2.5	11.3	6.9	7.9
Q4	10.0	..	..	..	..	6.4	..	11.0	..	..
1992 Dec	10.6	5.0	10.9	–	9.8	7.2	2.4	11.4	6.9	7.6
1993 Jan	10.7	5.2	10.9	9.0	10.0	7.0	2.3	11.0	6.8	7.6
Feb	10.5	5.3	11.0	–	10.2	6.9	2.3	10.8	6.8	7.7
Mar	10.4	5.5	11.2	–	10.4	6.9	2.3	11.0	6.9	7.7
Apr	10.3	5.6	11.4	10.6	10.5	6.9	2.3	11.3	7.0	7.8
May	10.3	5.6	11.5	–	10.6	6.9	2.5	11.3	7.0	7.8
Jun	10.3	5.7	11.6	–	10.7	6.8	2.5	11.3	7.0	7.9
Jul	10.4	5.8	11.7	10.3	10.8	6.7	2.5	11.5	7.0	7.9
Aug	10.4	5.9	11.7	..	10.8	6.7	2.5	11.3	6.9	7.9
Sep	10.4	6.1	11.8	..	10.9	6.6	2.6	11.1	6.9	7.9
Oct	10.2	6.2	12.0	..	10.9	6.6	2.7	..	7.0	7.9
Nov	10.0	6.3	12.0	..	10.9	6.4	2.8	..	6.9	..
Dec	9.9	..	..	..	..	6.3	..	..	..	..

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	1.3	−1.7	−0.6	−2.3	0.1	−1.0	−0.6
1985	0.8	2.7	−0.1	−0.9	−3.1	3.6	−0.6
1986	–	4.5	0.3	0.4	−3.5	4.3	−2.3
1987	−1.1	4.1	−0.6	−0.2	−3.7	3.6	−2.1
1988	−3.4	4.2	−0.5	−0.7	−2.6	2.7	−2.6
1989	−4.2	4.9	−0.5	−1.2	−1.9	2.0	−3.6
1990	−3.1	3.1	−0.8	−1.3	−1.7	1.2	−3.9
1991	−1.1	−1.3	−0.5	−1.9	−0.1	2.1	−4.3
1992	−2.0	−1.4	0.3	−2.2	−1.1	3.2	−4.0
1992 Q3	−1.5	−0.5	–	−0.5	−1.2	3.2	−3.1
Q4	−2.6	−0.3	0.2	−0.4	−1.5	3.4	−3.3
1993 Q1	−2.0	−0.3	0.1	−0.3	−1.4	3.7	−4.7
Q2	−1.7	−0.2	0.3	0.3	−1.7	2.9	−3.2
Q3	−1.3	−0.6	..	..	−1.7	2.9	−3.1

1 Balance as percentage of GNP
2 Western Germany (Federal Republic of Germany before unification)

5 Total industrial production: index numbers

1985 = 100

	United Kingdom[1]	Germany[2]	France	Italy	EC	United States	Japan[3]	Canada[4]	Major 7	OECD[5]
	DVZI	HFGA	HFFZ	HFGB	GACY	HFGD	HFGC	HFFY	GAES	GACX
1980	92.6	97.3	101.9	103.6	97.2	89.1	84.4	86.2	91.0	91.3
1985	100.0	100.3	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1986	102.4	102.2	100.9	103.6	102.2	100.9	99.8	99.3	101.1	101.2
1987	106.5	102.6	102.8	107.6	104.8	106.0	103.3	104.1	104.9	104.9
1988	111.6	106.3	107.7	114.1	109.3	110.7	113.7	109.6	110.7	110.5
1989	114.0	111.4	112.1	117.6	113.5	112.4	120.3	109.5	114.1	114.1
1990	113.6	117.1	114.2	117.6	115.7	112.4	125.3	106.0	115.7	115.8
1991	109.1	120.7	114.1	115.4	115.5	110.3	127.7	102.2	115.0	115.1
1992	108.6	118.4	113.0	114.8	114.4	112.9	120.4	102.6	114.4	114.5
1993	111.6	..	..	..	..	..	..	..	..	..
1992 Q4	109.8	112.9	110.6	112.0	111.6	114.7	117.1	104.1	113.7	113.6
1993 Q1	109.9	109.5	108.5	113.3	110.5	116.3	117.8	106.0	114.2	114.0
Q2	110.8	109.5	..	109.9	110.0	116.9	115.9	106.8	113.9	113.7
Q3	112.2	110.3	..	110.9	111.1	117.7	115.7	107.8	114.6	114.7
Q4	113.5	..	..	..	..	..	..	..	..	..
1992 Dec	108.9	110.1	108.0	107.6	109.2	115.4	116.3	104.6	113.0	112.8
1993 Jan	109.3	109.8	108.0	113.4	109.8	115.8	115.9	104.8	113.5	113.2
Feb	110.6	108.4	110.8	114.1	110.8	116.4	117.2	105.8	114.2	114.1
Mar	109.7	110.4	109.8	112.4	110.9	116.6	120.3	107.3	115.0	114.7
Apr	109.9	109.0	109.2	107.6	109.1	116.9	117.1	106.4	113.9	113.5
May	111.8	109.9	109.3	112.3	110.8	116.7	114.3	106.1	113.8	113.8
Jun	110.7	109.6	109.2	109.7	110.0	117.1	116.2	108.0	114.1	113.8
Jul	112.2	108.8	109.9	112.3	110.9	117.4	115.6	107.0	114.4	114.5
Aug	112.0	111.1	109.9	110.3	111.3	117.6	114.6	107.8	114.4	114.6
Sep	112.2	111.1	109.9	110.1	111.0	118.0	117.0	108.7	115.0	115.0
Oct	113.6	110.2	109.5	..	..	118.9	110.9	108.6	..	..
Nov	113.9	108.3	..	..	..	119.9	113.1	..	..	..
Dec	113.2	..	..	..	..	..	..	..	..	..
Percentage change: average of latest three months on that of corresponding period of previous year										
1993 Nov	*2.7*	*−5.0*	..	..	..	*4.6*	*−4.5*	..	..	..
Dec	..	..	..	..	..	..	..	..	..	..
Percentage change: average of latest three months on previous three months										
1993 Nov	*1.2*	*0.0*	..	..	..	*1.3*	*−1.6*	..	..	..
Dec	..	..	..	..	..	..	..	..	..	..

1 Estimates due to rebasing to 1990
2 Western Germany (Federal Republic of Germany before unification)
3 Not adjusted for unequal number of working days in a month
4 GDP in industry at factor cost and 1986 prices
5 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
1980	12.8	7.1	9.2	..	11.3	13.4	14.8	13.4	13.2	13.2
1985	5.3	2.0	4.4	7.8	5.0	0.8	−0.8	2.8	2.0	2.9
1986	4.2	−2.4	−2.8	0.2	−0.8	−1.4	−4.7	0.9	−1.5	−1.1
1987	3.7	−0.4	0.6	3.0	1.3	2.1	−2.9	2.8	1.1	1.5
1988	4.3	1.6	5.1	3.5	3.5	2.5	−0.2	4.4	2.5	3.5
1989	4.7	3.4	5.4	5.9	5.0	5.1	2.1	1.9	4.4	5.3
1990	5.8	1.5	−1.1	4.2	2.4	4.9	1.6	0.3	3.3	3.9
1991	5.4	2.1	−1.3	3.3	2.3	2.1	1.0	−1.0	2.0	2.6
1992	3.5	1.6	−1.6	1.9	1.1	1.2	−0.8	0.5	0.7	1.7
1993	3.9	0.1	..	..	..	1.2	..	..	..	..
1993 Q1	3.2	0.8	−2.3	3.1	1.2	2.0	−1.1	4.0	1.3	2.5
Q2	3.7	0.0	−3.3	3.9	0.9	2.0	−1.5	3.3	1.1	2.6
Q3	3.9	−0.3	−3.4	4.3	1.2	0.8	−1.8	3.1	0.5	2.5
Q4	4.0	−0.2	..	..	..	0.3	..	..	..	..
1992 Dec	3.3	1.0		2.5	1.0	1.5	−1.2	3.6	0.9	2.1
1993 Jan	3.3	1.0		2.8	1.2	2.0	−1.1	4.4	1.3	2.5
Feb	3.2	0.7		2.9	1.1	2.0	−1.0	3.8	1.2	2.5
Mar	3.2	0.6		3.5	1.1	2.0	−1.2	3.8	1.2	2.6
Apr	3.5	0.3		3.7	0.9	2.5	−1.2	3.9	1.4	2.8
May	3.7	−0.1		3.9	0.9	2.1	−1.5	3.2	1.1	2.7
Jun	3.8	−0.3		4.1	0.9	1.3	−1.5	2.9	0.8	2.4
Jul	4.0	−0.2		4.2	1.2	1.3	−1.7	2.8	0.8	2.7
Aug	3.9	−0.2		4.4	1.3	0.5	−1.8	3.4	0.4	2.4
Sep	4.0	−0.5		4.3	1.2	0.5	−2.0	3.0	0.4	2.3
Oct	4.0	−0.3		4.1	1.5	0.3	−2.1	2.9	0.4	2.3
Nov	3.6	−0.2		..	..	0.3	−2.1	2.9	..	..
Dec	4.0	−0.1		..	..	0.3	..	..	..	..

1 Western Germany (Federal Republic of Germany before unification).
2 Producer prices in intermediate goods

7 Total employment: index numbers[1]

1985 = 100

	United Kingdom[2]	Germany[3,4]	France[4]	Italy	EC	United States[4]	Japan	Canada[4]	Major 7	OECD
	DMBC	GAAR	GAAU	GAAS	GADW	GADT	GADU	GADS	GAEU	GADV
1980	103.6	102	101.1	100	..	93	95	95	..	..
1985	100.0	100	100.0	100	100	100	100	100	100	100
1986	100.2	101	100.5	101	101	102	101	103	101	101
1987	102.0	102	100.9	100	102	105	102	106	103	103
1988	105.2	103	102.0	102	104	107	104	109	105	105
1989	107.8	104	103.5	101	106	109	106	111	107	107
1990	108.6	107	104.6	103	107	110	108	112	108	109
1991	105.5	109	104.8	104	108	109	110	110	108	108
1992	102.7	110	104.3	103	106	110	111	109	108	108
1992 Q2	103.5	110	104.7	105	107	110	112	109	109	109
Q3	102.2	110	104.7	104	106	111	112	112	109	109
Q4	101.2	110	103.4	102	105	110	111	109	108	108
1993 Q1	100.9	108	103.2	100	104	109	109	107	107	107
Q2	101.0	108	103.5	98	104	111	112	111	109	108
Q3	101.3	..	..	99	104	113	112	113	109	109
1993 Jul	..	107	..	99	104	113	112	114	112.3	109
Aug	..	107	..	..	104	113	112	114	111.6	109
Sep	..	108	103.0	..	..	112	112	112	112.6	108
Oct	..	108	..	..	..	112	112	111	112.3	..
Nov	..	107	..	..	..	113	112	110	..	..
Percentage change, latest quarter on that of corresponding period of previous year										
1993 Q2	−2.4	−1.8	−1.1	−6.7	−2.8	0.9	0.0	1.8	0.0	−0.9
Q3	−0.9	..	..	−4.8	−1.9	1.8	0.0	0.9	0.0	0.0
Percentage change latest quarter on previous quarter										
1993 Q2	0.1	0.0	0.3	−2.0	0.0	1.8	2.8	3.7	1.9	0.9
Q3	0.3	..	..	1.0	0.0	1.8	0.0	1.8	0.0	0.9

1 Not seasonally adjusted except for the United Kingdom
2 Estimates due to rebasing to 1990
3 Western Germany (Federal Republic of Germany before unification)
4 Excludes members of armed forces

8 Average wage earnings in manufacturing[1] Percentage change on a year earlier

	United Kingdom[2]	Germany[3]	France	Italy	EC	United States	Japan	Canada	Major 7	OECD
1980	*17.8*	*6.5*	*15.2*	*18.6*	*12.4*	*8.6*	*7.5*	*10.9*	*9.0*	*10.9*
1985	*9.1*	*4.2*	*5.7*	*11.2*	*7.6*	*4.2*	*3.1*	*4.2*	*5.3*	*7.4*
1986	*7.7*	*4.0*	*3.9*	*4.9*	*5.5*	*2.0*	*1.4*	*3.0*	*3.0*	*3.7*
1987	*8.0*	*3.8*	*3.2*	*6.4*	*5.5*	*2.0*	*1.7*	*2.9*	*2.9*	*5.4*
1988	*8.5*	*4.6*	*3.1*	*6.1*	*5.5*	*2.9*	*4.6*	*3.8*	*4.7*	*3.7*
1989	*8.8*	*3.5*	*3.8*	*6.1*	*6.0*	*2.8*	*5.8*	*5.5*	*4.5*	*5.0*
1990	*9.3*	*5.1*	*4.5*	*7.2*	*6.6*	*3.6*	*5.4*	*5.2*	*5.2*	*5.7*
1991	*8.2*	*5.7*	*4.3*	*9.8*	*7.6*	*2.6*	*3.5*	*4.9*	*4.9*	*5.2*
1992	*6.6*	*6.2*	*3.6*	*5.4*	*7.8*	*2.6*	*1.0*	*3.9*	*3.9*	*4.0*
1993	..	..	*2.6*	..	..	*2.5*	..	..	..	..
1993 Q1	*4.7*	..	*3.4*	*2.8*	*3.4*	*2.5*	*−0.5*	*3.0*	*2.4*	*3.1*
Q2	*5.0*	..	*2.6*	*3.1*	*3.2*	*2.5*	*0.7*	*1.5*	*3.1*	*3.0*
Q3	*4.4*	..	*2.3*	*4.1*	*4.4*	*2.5*	*0.4*	*2.3*	*3.0*	*2.9*
Q4	..	..	*2.2*	..	..	*3.3*	..	..	..	..
1992 Dec	*5.4*	..	..	*2.4*	*5.4*	*2.5*	*−1.0*	*3.8*	*1.8*	*2.4*
1993 Jan	*5.0*	..	*3.4*	*2.8*	*4.8*	*3.4*	*−3.6*	*3.8*	*1.6*	*2.3*
Feb	*5.1*	..	..	*2.8*	*4.7*	*2.5*	*1.3*	*3.8*	*3.3*	*3.9*
Mar	*4.2*	..	..	*2.7*	*4.7*	*2.5*	*1.0*	*2.3*	*3.2*	*3.9*
Apr	*5.3*	..	*2.6*	*2.6*	*4.7*	*2.5*	*2.0*	*2.3*	*3.2*	*3.9*
May	*4.8*	..	..	*2.6*	*4.6*	*2.5*	*2.3*	*1.5*	*3.2*	*3.1*
Jun	*4.8*	..	..	*4.1*	*4.6*	*2.5*	*−0.9*	*2.3*	*2.8*	*2.8*
Jul	*5.0*	..	*2.3*	*4.1*	*4.6*	*2.5*	*−1.2*	*3.1*	*2.7*	*2.7*
Aug	*3.6*	..	..	*4.1*	*3.9*	*2.5*	*2.3*	*1.5*	*3.1*	*3.8*
Sep	*4.5*	..	..	*4.2*	*4.6*	*2.5*	*1.5*	*2.3*	*3.2*	*3.1*
Oct	..	..	*2.2*	*3.9*	..	*2.5*	*0.6*	*1.5*	*3.2*	..
Nov	..	..	..	..	..	*3.3*	*0.9*	..	..	..
Dec	..	..	..	..	..	*3.3*	..	..	..	..

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

1985 = 100

	United[2] Kingdom	Germany[1]	France	Italy	EC	United States	Japan	Canada	Major 7	OECD
	FAAM	GADD	GADC	GADE	GADH	GADA	GADB	GACZ	GAEW	GADG
1980	86.4	103.0	101.0	83.1	94.6	84.0	103.2	83.6	89.9	90.7
1985	100.0	100.0	100.0	100.0	99.9	100.0	99.9	100.0	100.0	100.0
1986	105.3	103.4	102.4	106.8	104.4	105.5	101.5	104.6	104.5	104.4
1987	110.6	107.5	104.5	112.0	108.6	108.3	107.1	110.3	108.3	108.0
1988	117.5	111.1	108.0	109.5	111.7	112.6	111.4	114.6	112.0	111.7
1989	119.9	114.1	109.5	117.1	116.1	115.6	115.8	114.5	115.4	115.2
1990	120.8	123.7	110.1	114.4	119.2	116.5	121.7	112.0	117.3	117.4
1991	119.4	130.7	109.7	111.3	120.2	114.2	124.2	100.4	116.3	116.6
1992	120.2	128.6	108.9	117.0	120.5	117.8	120.8	101.6	117.8	117.8
1993	124.4	..	..	..	..	..	..	..	..	..
1993 Q3	124.9	125.0	110.3	..	118.1	124.3	114.4	105.5	119.9	119.1
Q4	125.8	..	..	..	..	..	..	..	..	..
1993 Apr	123.3	124.5	112.4	120.0	120.6	121.5	115.9	104.8	119.5	118.8
May	122.9	119.7	104.6	111.6	115.8	122.6	114.8	104.8	118.2	117.4
Jun	124.8	121.3	113.4	..	116.7	123.5	114.9	104.1	118.7	118.1
Jul	124.5	122.6	111.0	..	117.9	124.0	114.1	105.2	119.4	118.7
Aug	124.9	125.9	107.8	..	117.5	124.7	114.1	105.7	119.7	118.9
Sep	125.2	126.5	112.1	..	119.1	125.0	114.9	105.7	120.5	119.7
Oct	125.6	122.2	108.7	..	..	126.2	..	105.8	121.1	..
Nov	126.1	..	107.4	..	..	..	..	..	..	..
Dec	126.0	..	..	..	..	..	..	..	..	..
1994 Jan	126.8	..	..	..	..	..	..	..	..	..
Percentage change average of latest three months on that of corresponding period of previous year										
1993 Dec	*3.7*		..	..	..	..	..	..	..	..
1994 Jan	..		..	..	..	..	..	..	..	..
Percentage change average of latest three months on previous three months										
1993 Dec	*0.7*	..	..	..	..	..	..	..	..	..
1994 Jan	..	..	..	..	..	..	..	..	..	..

Chart I: Gross domestic product

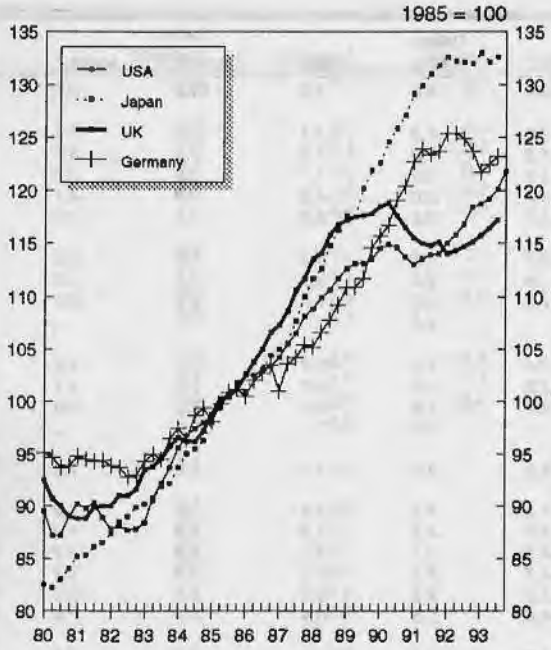


Chart II: Consumer price index

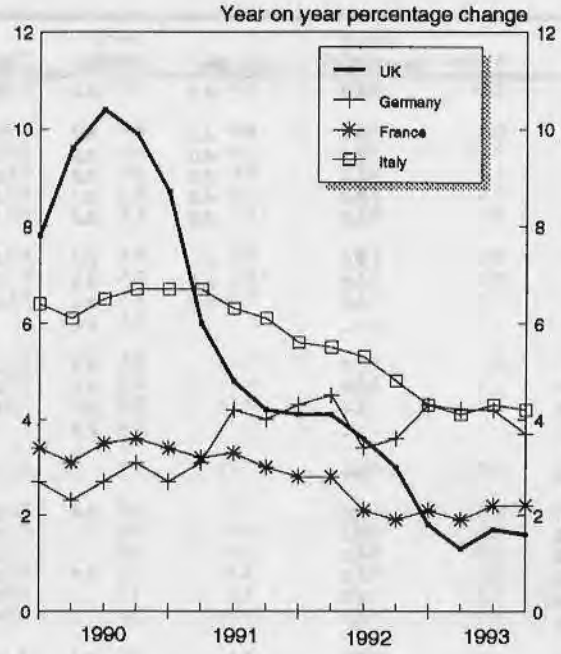
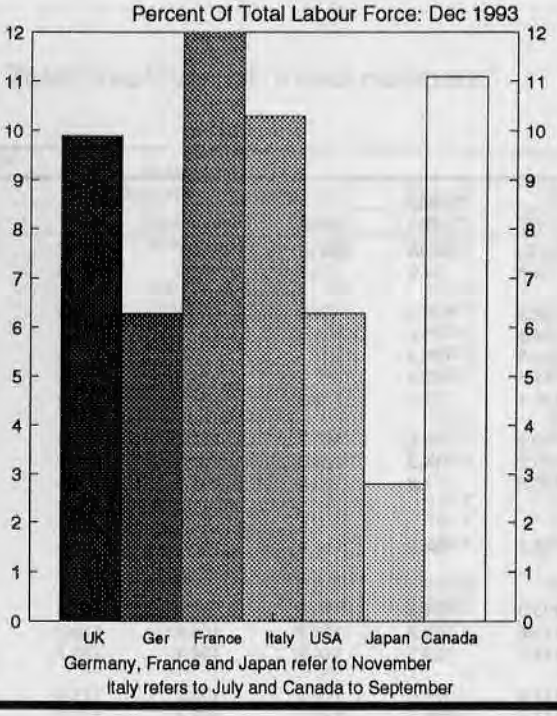


Chart III: Standardised unemployment



Germany, France and Japan refer to November
Italy refers to July and Canada to September

Chart IV: Current account balance - percentage of GDP at market prices

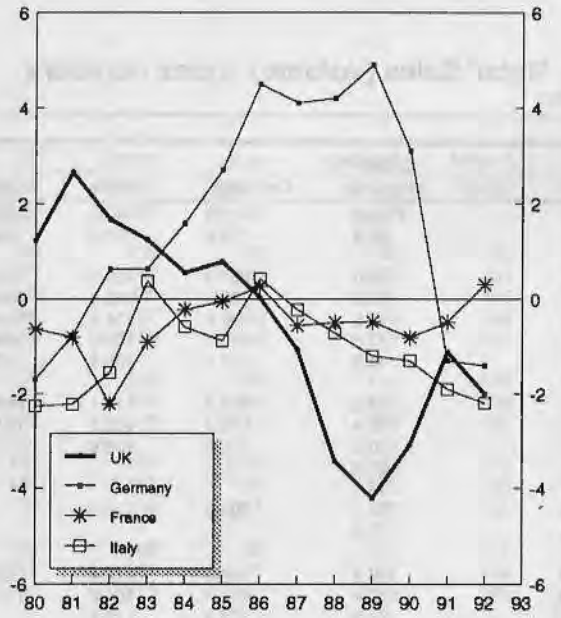


Chart V: Industrial production

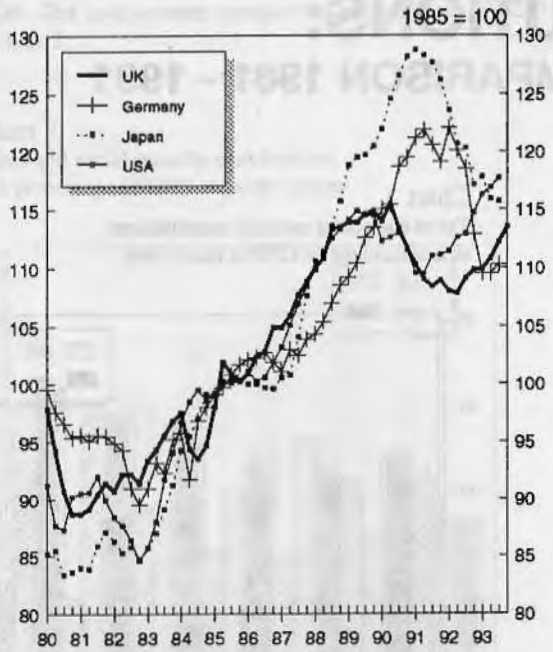


Chart VI: Producer price inflation

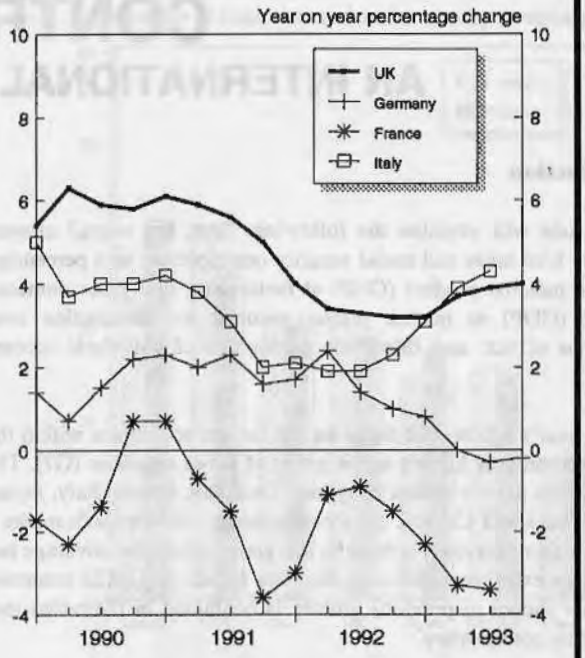


Chart VII: Employment

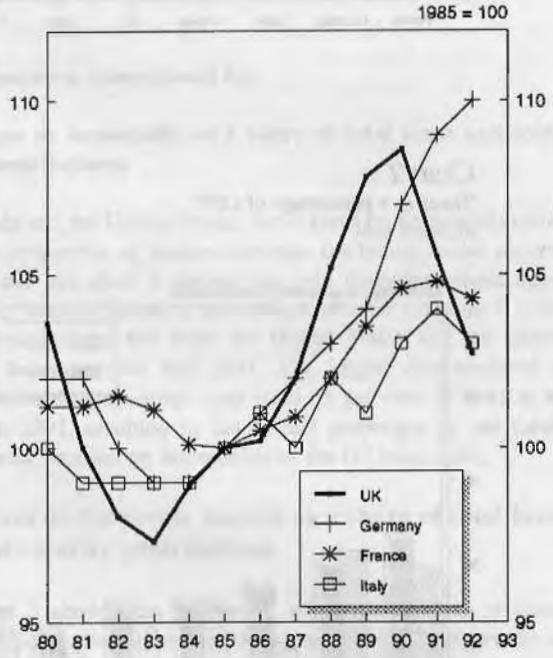
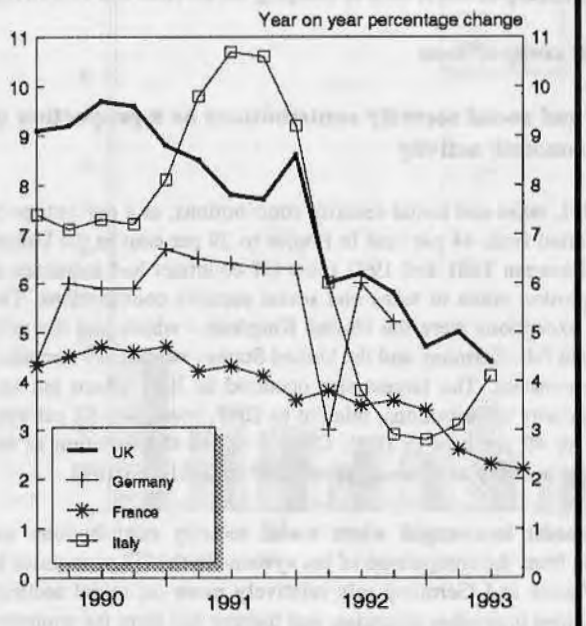


Chart VIII: Wage earnings (manufacturing)



TAXES AND SOCIAL SECURITY CONTRIBUTIONS:
AN INTERNATIONAL COMPARISON 1981 - 1991

Introduction

This article will examine the following: **first**, the overall amount taken by total taxes and social security contributions as a percentage of gross national product (GNP) at factor cost, and gross domestic product (GDP) at market prices; **second**, the distribution over categories of tax; and **third**, the percentage of household income taken.

2. This year's article will focus on the largest economies within the OECD, commonly known as the group of seven countries (G7). The G7 countries are the United Kingdom, Germany, France, Italy, Japan, United States and Canada. As a consequence this approach marks a departure from previous articles in this series where the coverage has been more extensive. However, the data for all 20 OECD countries that were shown in previous articles is contained in the tables that follow this commentary.

3. Comparisons between countries is complicated by the varying length and depth of economic cycles. This affects to varying degrees: the level of tax and social security contributions; the level of GNP and GDP; the distribution of tax; and the level of household disposable income. Caution should therefore be employed when interpreting these results. There are also other means of financing government expenditure, such as charging for services and borrowing.

Overall comparisons

Taxes and social security contributions as a proportion of total economic activity

4. In 1991, taxes and social security contributions, as a percentage of GNP, varied from 44 per cent in France to 29 per cent in the United States. Between 1981 and 1991 most G7 countries had increases in the proportion taken in taxes and social security contributions. The notable exceptions were the United Kingdom - which had the only significant fall, Germany and the United States - where they remained roughly constant. The largest rise occurred in Italy where tax and social security contributions, relative to GNP, rose from 32 per cent in 1981 to 40 per cent in 1991. Chart 1 shows the variation in tax and social security as percentage of GNP in 1981 and 1991.

5. The order is changed when social security contributions are excluded from the comparison of tax systems in the G7 economies in 1991. France and Germany rely relatively more on social security contributions than other countries, and thereby fall from the countries with the two highest tax burdens (including social security contributions), as a percentage of GNP, to joint fourth if social security contributions are excluded from the comparison. Japan and the United States had the lowest tax as a percentage of GNP, both including and excluding social security contributions. Chart 2 shows the effect of excluding social security contributions from the comparison.

6. The exclusion of social security contributions does not affect the direction of change in tax as a percentage of GNP between 1981 and 1991. It rose in all countries except the United Kingdom, the United States and Germany, over this period.

Chart 1
Taxes and social security contributions as a percentage of GNP at factor cost

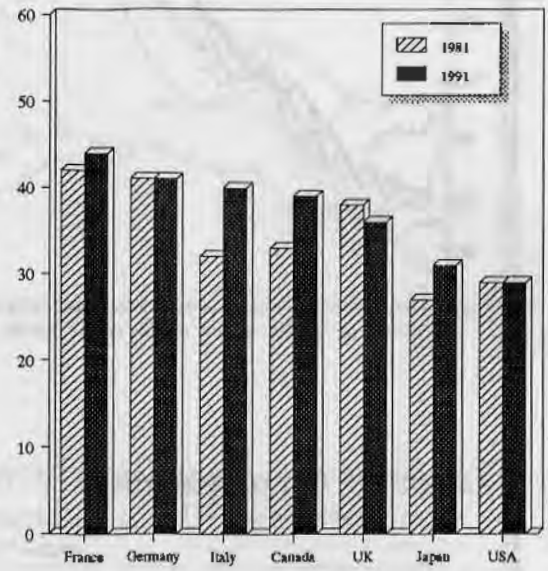
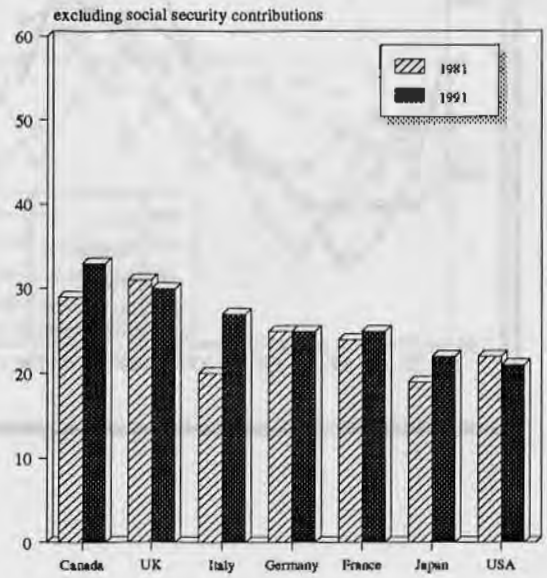


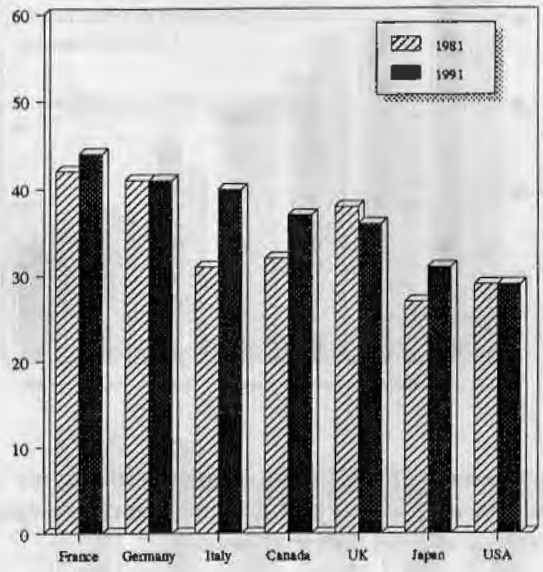
Chart 2
Taxes as a percentage of GNP at factor cost



7. Changing the measure of national income to GDP does not have a significant effect on the percentage of national income taken in taxes and social security contributions. The only G7 country where there was any significant difference in 1991 was Canada, where

taxes and social security contributions were equivalent to 37 per cent of GDP compared with 39 per cent on the GNP basis. This was due to an outflow of net income from abroad equivalent to over 3 per cent of GDP. The inter-country comparison on the basis of GDP is shown in chart 3.

Chart 3
Taxes and social security contributions
as a percentage of GDP at market prices



Distribution over categories of tax

Direct taxes on households as a share of total taxes and social security contributions

8. In Canada and the United States, direct taxes on households raised the largest proportion of taxation revenue (including social security contributions). As chart 4 shows, the only countries where direct taxation on households as a percentage of total taxes and social security contributions fell were the United States and the United Kingdom, between 1981 and 1991. The largest rise occurred in Canada, where the percentage rose from 35 per cent in 1981 to 41 per cent in 1991, resulting in the largest proportion of tax raised through direct taxation on households in the G7 economies.

Direct taxes on corporate income as a share of total taxes and social security contributions

9. As chart 5 shows, the proportion of taxation raised in direct taxation on corporate income by 1991 was below 10 per cent in all countries except Japan. Despite a fall of 1 percentage point between 1981 and 1991, Japan's rate at 17 per cent of tax raised, was nearly twice as much as the country ranked second - the United Kingdom. The proportion raised through direct taxation on corporate income remained fairly constant in most countries. The only country where there was a significant change in the proportion of tax raised through corporation tax was Canada, where the proportion raised was halved from 12 per cent in 1981 to 6 per cent in 1991. This represented a significant shift in the balance of taxation from corporations to the households.

Chart 4
Direct taxes on households as a
percentage of total taxes and social security contributions

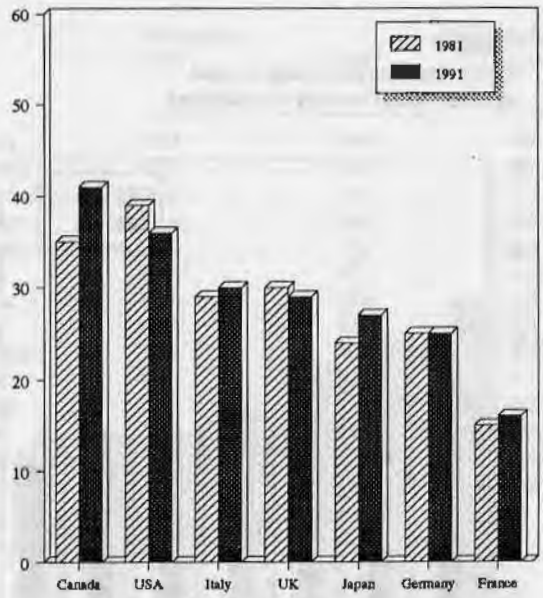
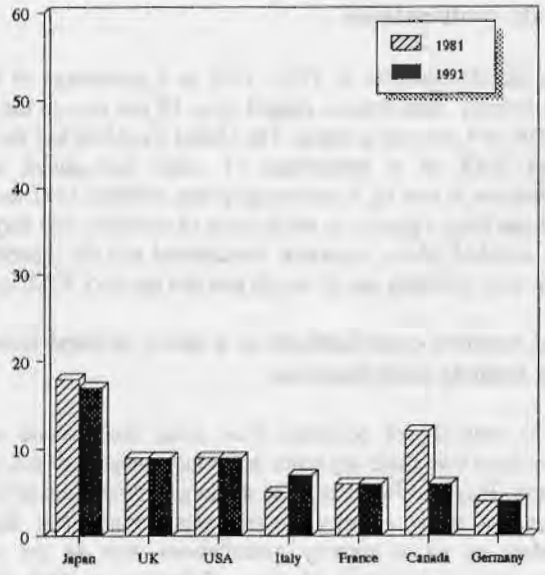


Chart 5
Direct taxes on corporate income as a
percentage of total taxes and social security contributions

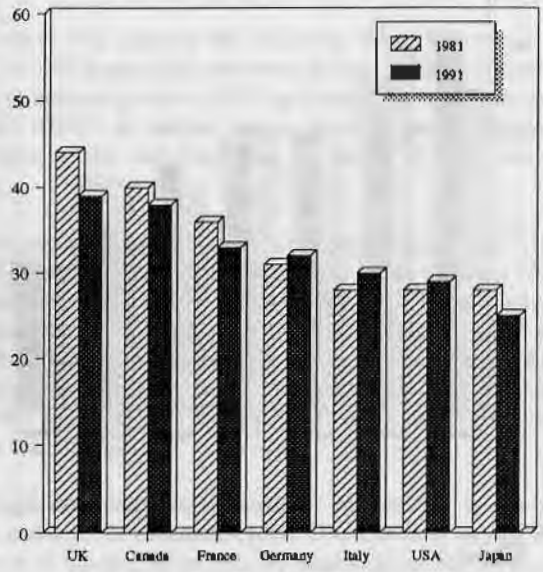


Indirect taxes as a share of total taxes and social security contributions

10. Indirect taxation, as a proportion of tax and social security contributions, fell in the majority of countries. The most pronounced fall was in Japan, where it fell from 28 per cent in 1981 to 25 per cent in 1991. This represented a slight shift in the burden of taxation in Japan from indirect to direct taxation. Although most countries rely on indirect taxes for a significant

proportion of tax revenue (including social security contributions), the United Kingdom was the only country where indirect taxes raise more than any other form of taxation, including social security contributions. Chart 6 shows the varying reliance on indirect taxes.

Chart 6
Indirect taxes as percentage of total taxes and social security contributions



Value added tax as a share of total taxes and social security contributions

11. In the G7 countries in 1991, VAT as a percentage of tax and social security contributions ranged from 19 per cent in the United Kingdom to 4 per cent in Japan. The United Kingdom had the largest rise in VAT as a percentage of taxes and social security contributions, it rose by 7 percentage points between 1981 and 1991. (There has been a growth in the number of countries that levy VAT. In the attached tables, Australia, Switzerland and the United States are the only countries out of the 20 that did not levy VAT in 1991).

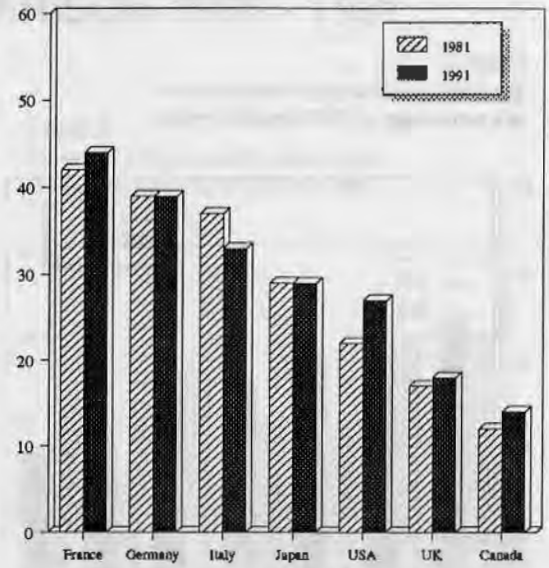
Social security contributions as a share of total taxes and social security contributions

12. The majority of countries raise more from social security contributions than from any other individual category of tax. France, Germany, Italy and Japan all raise the largest proportion of taxation revenue via social security contributions. France was the most dependent on social security contributions with 44 per cent of taxation revenue raised by this form of taxation in 1991. Between 1981 and 1991 the only country where social security contributions fell significantly as a percentage of taxation was Italy. The United States had the largest rise in the proportion raised through social security contributions over this period; it rose from 22 per cent of taxation revenue in 1981 to 27 per cent in 1991. Chart 7 shows the varying contribution social security makes to the tax systems of the G7 economies.

Taxes on capital as a share of total taxes and social security contributions

13. The proportion of tax and social security contributions raised through taxes on capital remained low in all countries. Rates in 1991 varied from a tenth of 1 per cent in Italy, to just under two per cent in Japan.

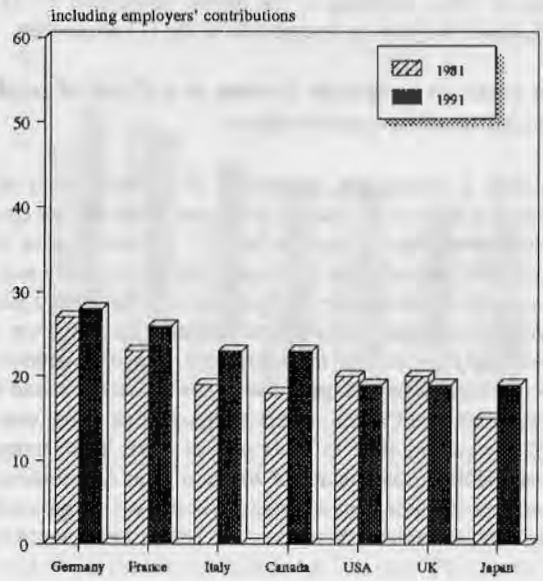
Chart 7
Social security contributions as a percentage of total taxes and social security contributions



Direct taxes on households, including employers' social security contributions and the community charge, as a percentage of total personal income

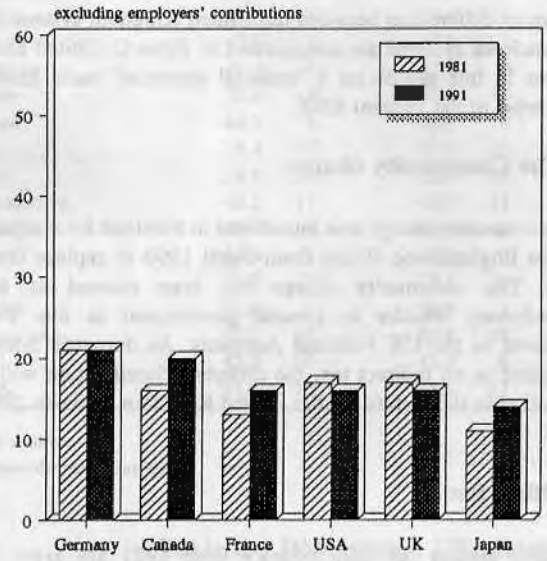
14. Direct taxes, including employers' social security contributions and the community charge, as a percentage of total personal income ranged from 28 per cent in Germany to 19 per cent in Japan in 1991. The percentage rose in all countries except the United Kingdom and the United States between 1981 and 1991. In both countries the rises in total personal income outpaced rises in direct taxes on households over this period. The United Kingdom moved from having the joint third highest tax take, as a proportion of personal income, in 1981 to the second lowest in 1991. Chart 8 shows the variation in direct taxes as a percentage of households' income.

Chart 8
Direct taxes on households as a percentage of total personal income



15. Excluding employers' contributions reduces the amount of household income taken through direct taxes by between 3 and 10 percentage points in 1991. All countries except the United States and the United Kingdom had increases in the proportion of personal income paid in direct taxes between 1981 and 1991 on this basis. Chart 9 shows the lower percentage taken if employers' contributions are excluded. Italy is not shown as there were no figures on the breakdown of social security contributions between employers and employees.

Chart 9
Direct taxes as percentage of total personal income [1]



1. Data is unavailable for employers' contributions in Italy from 1989.

Preliminary estimates for 1992

16. For some member countries of OECD, provisional data for 1992 are available in the latest edition of *OECD Revenue Statistics*. While these figures are not on the same basis as those in the rest of the article a number of points can be made.

17. Figures on total receipts of taxes and social security as a percentage of GDP are shown in table A opposite. Figures for non-European countries in the G7 were unavailable in 1991 and 1992. Of the countries available, Germany and Italy had large rises between 1991 and 1992. In Germany there was a rise of 3.4 percentage points while Italy had a rise of 1.9 percentage points. France and the United Kingdom had small falls over this period.

Table A : Total receipts from taxes and social security contributions as a percentage of GDP at market prices: preliminary estimates for 1992.

	Percentages 1991	1992	Differences between 1991 and 1992
Sweden	50.3	50.4	0.1
Denmark	48.2	48.9	0.7
Netherlands	47.2	46.7	-0.5
Norway	47.0	46.7	-0.3
Belgium	42.0	45.4	-3.4
France	43.9	43.7	-0.2
Austria	42.0	43.6	1.6
Italy	40.5	42.4	0.9
Germany	36.6	40.0	0.4
Ireland	37.9	38.0	0.1
Finland	37.9	37.7	-0.2
Spain	34.6	35.9	-1.3
United Kingdom	36.2	35.8	-0.4
Switzerland	31.4	32.2	-0.2

Technical notes

1. Limitations of the comparisons

The comparisons made in this article indicate only broadly the relative importance of taxation in different countries. There are various factors which should be kept in mind:

- Total taxation, the composition of taxes, and the burden of taxes on household income, reflect differences between countries in their economic and financial structures and in the degree of government involvement in providing services and financial support (for example, medical care and retirement pensions).

- Comparisons are also affected by the methods governments choose to achieve their aims, for example: government tax receipts may be reduced through a system of tax relief, or a gross system may be adopted under which money is collected in taxes and then handed back as cash grants.

- The extent to which governments finance their expenditure by borrowing or from taxation varies between countries, and over time, and has an effect on the ratios of taxes to the gross national product.

- Including or excluding social security contributions can have a marked effect on comparisons between countries.

The figures shown here relate to total tax yields in each country: they reveal nothing about the incidence of tax on different groups.

2. Sources

The figures in the tables for direct taxes, indirect taxes and social security contributions are based on returns supplied to the OECD by national statistical offices and summarised in *OECD National Accounts 1979 - 1991, Detailed Tables, Volume Two*. These returns are made on the accounting conventions of the international organisations, which differ from those established in the United Kingdom; consequently the estimates made are not in all cases identical to those given in the CSO's own publications. Taxes on capital - which in the OECD national accounts presentation are included indistinguishably in capital transfers - have been derived from *Revenue Statistics of OECD Member Countries 1966 - 1992*. Figures for value added tax have also been obtained from this publication.

In this article, national accounts data have been used as the prime source, because the figures will be the more consistent with other statistics which are frequently derived from the national accounts publication.

3. Differences between OECD National Accounts Statistics and OECD Revenue Statistics

There are a few minor differences between the definitions of taxes and social security contributions used in revenue statistics and those used in the national accounts returns.

The main differences are in the time of recording the transactions. Hence revenue statistics use a cash based system (that is transactions at the time the public authority receives the money), while national accounts are accrual based (entries occur when a transaction is due to be paid).

4. Differences between the United Kingdom system of national accounts, the Former SNA and the Present SNA

The national accounts returns to OECD are based as far as possible on the System of National Accounts introduced by the United Nations in 1968 (the "Present SNA"). However, two countries - Greece and Switzerland - still provide figures on the basis of the previous system (the "Former SNA"). The figures on one basis are not strictly comparable with those on the other but the difference in definitions has little effect on the comparisons made in this article.

The main differences between the United Kingdom system and the international systems are summarised in Table C. United Kingdom figures in this article on a "national accounts" basis have been converted to the Present SNA.

5. The Community charge

The community charge was introduced in Scotland from April 1989 and in England and Wales from April 1990 to replace domestic rates. The community charge has been classed as a non-discretionary transfer to general government in line with its treatment in the UK National Accounts. As domestic rates were classified as an indirect tax, the different classification will cause distortion in the results for the United Kingdom between 1989 and 1992.

6. Other issues

Detailed figures for each country from 1981 are given in the Appendix.

All mention of Germany in the text, charts and appendix tables refer to *western* Germany (Federal Republic of Germany before the unification of Germany).

Table C shown on the following page, provides in alphabetical order of country, the percentages scored both on an OECD National Accounts basis and on a Revenue Statistics basis. In the table, there are small differences in ranking for a number of the countries shown.

Table B : Total taxes and social security contributions : percentage of GNP and ranking

	1981				1986				1991			
	National Accounts		Revenue Statistics		National Accounts		Revenue Statistics		National Accounts		Revenue Statistics	
	Per Cent	Rank	Per Cent	Rank	Per Cent	Rank	Per Cent	Rank	Per Cent	Rank	Per Cent	Rank
Australia	33.5	14	33.5	14	36.5	16	36.4	16	..	..	34.4	17
Austria	50.0	4	49.6	4	50.3	6	49.9	6	..	..	49.1	7
Belgium	50.0	4	49.6	4	52.3	4	52.1	4	49.8	6	49.6	6
Canada	37.2	13	40.0	12	39.0	13	40.2	13	44.5	9	45.2	10
Denmark	55.7	3	55.6	3	64.1	1	61.0	1	59.0	2	59.0	2
Finland	39.0	12	39.6	13	43.6	11	44.5	9	45.5	8	43.8	13
France	47.6	7	47.6	7	50.3	6	50.4	5	50.6	5	50.8	5
Germany	46.4	8	42.3	9	45.3	9	41.7	12	46.3	7	46.9	9
Greece	29.6	18	31.6	16	40.8	12	42.3	11	42.6	11	44.6	11
Ireland	44.3	9	41.6	10	52.1	5	49.1	8	..	..	47.0	8
Italy	33.4	15	33.4	15	37.6	15	38.7	15	44.1	10	44.3	12
Japan	28.6	20	28.3	19	30.2	19	30.6	19	33.3	13	33.2	18
Luxembourg	40.1	11	40.0	11	38.9	14	39.0	14	..	..	40.1	15
Netherlands	49.7	6	49.4	6	49.6	8	49.2	7	52.8	4	52.0	4
Norway	56.6	1	48.7	2	56.9	3	59.1	3	53.6	3	54.2	3
Spain	28.7	19	27.2	20	19.8	20	33.9	17	..	..	38.2	16
Sweden	56.6	1	56.9	1	60.4	2	61.7	2	63.0	1	63.1	1
Switzerland	30.1	17	30.8	18	32.6	17	32.9	18	31.4	15	31.2	20
U.K.[1]	43.7	10	42.4	8	43.8	10	43.5	10	40.2	12	41.8	14
U.S.A.	31.1	16	31.1	17	30.6	18	30.4	20	31.5	14	31.9	19

.. Not available

[1] Includes the community charge

Table C : Definitions : UK system of national account, former SNA and present SNA

	UK system	Former SNA	Present SNA
Definition of gross national product at factor cost			
i. Net property income from abroad			
a. Unremitted profits	Included	Excluded	Excluded
b. Profits remitted abroad	Measured after deduction of tax	Measured before deduction of tax	Measured before deduction of tax
ii. Rent income of public authorities (other than from dwellings)	Includes only capital consumption in place of imputed rents	Includes imputed rents before deduction interest and depreciation	Includes only capital consumption in place of imputed rents
Definition of taxes			
Direct taxes are taxes on income and indirect taxes are taxes on expenditure			
There are the following differences in treatment:-			
Motor vehicle licence duties paid by households	Indirect	Indirect	Direct
Taxes on capital gains[1]	Capital	Capital	Direct
Compulsory fees, fines and penalties	Non-tax	Indirect	Non-tax[2]

[1] For the United Kingdom, the betterment levy (introduced in 1967) and the development land tax (introduced in 1977) both representing a charge on the development value of land - are classified and treatment in the same way as taxes on capital gains.

[2] Only compulsory fees paid by household are excluded; similar payments by business are treated as indirect taxes.

1 Taxes and social security contributions as a percentage of gross national product at factor cost

Percentages

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Australia[1]	29.8	30.2	29.3	31.0	31.1	32.0	32.2	32.0	32.1	32.3	..
Austria	43.2	42.2	41.9	43.1	43.9	43.6	43.1	42.7	41.7	41.9	..
Belgium	45.8	47.7	47.7	48.7	48.9	48.1	48.3	46.8	45.0	45.7	45.4
Canada	33.3	33.8	32.9	33.0	33.1	34.6	35.3	35.7	35.7	37.7	38.8
Denmark	46.8	46.3	48.2	49.7	51.2	53.0	53.7	53.7	52.8	50.6	50.4
Finland	34.9	34.4	34.4	35.9	37.2	38.5	36.2	37.6	37.5	38.7	40.0
France	41.8	42.8	43.7	44.8	44.7	44.0	44.6	43.9	43.8	43.8	44.2
Germany	41.3	41.5	40.9	41.0	41.4	40.7	40.9	40.6	40.9	39.3	41.1
Greece[2]	26.9	30.9	32.4	33.4	33.7	36.0	36.1	34.4	32.2	34.4	36.7
Irish Republic	39.3	42.0	44.2	46.0	45.4	46.0	45.6	47.9	44.8	44.2	..
Italy	31.5	33.6	35.0	34.8	34.9	35.5	36.2	36.7	38.3	39.2	40.1
Japan	26.8	27.1	27.3	27.7	28.2	28.3	29.8	30.1	30.4	31.5	31.1
Luxembourg	37.0	34.0	35.6	34.9	35.5	35.0	..	..	..	..	..
Netherlands	45.2	45.4	46.5	44.9	44.6	45.3	48.3	48.8	45.5	45.4	47.7
Norway	50.5	50.4	49.8	49.3	50.8	48.9	49.9	49.8	48.2	48.2	47.8
Spain	27.1	27.1	29.1	29.5	28.9	29.9	32.1	32.2	34.1	33.8	..
Sweden	51.0	50.4	51.8	51.6	51.3	53.0	57.3	55.8	57.9	57.9	54.7
Switzerland[2]	28.5	29.0	29.5	29.9	29.9	30.8	30.5	30.8	30.1	30.3	30.0
United Kingdom[3]	37.7	38.2	37.9	37.9	37.7	37.5	37.2	37.3	36.9	37.1	36.3
United States	28.7	28.0	27.6	27.6	28.1	28.3	29.2	28.7	29.1	29.1	29.0

1 Fiscal years beginning on 1 July of year indicated.
2 Former SNA.
3 Includes the community charge.

Source: Data derived from OECD statistics

2 Taxes as a percentage of gross national product at factor cost

Percentages

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Australia[1]	29.8	30.2	29.3	31.0	31.1	32.0	32.2	32.0	32.1	32.3	30.5
Austria	30.5	29.8	29.7	30.8	31.4	31.1	30.6	30.3	29.4	29.6	..
Belgium	31.8	33.6	32.9	33.1	32.9	31.9	32.0	30.9	29.5	30.0	29.4
Canada	29.3	29.7	28.6	28.6	28.6	29.9	30.5	30.8	31.1	32.7	33.3
Denmark	45.8	45.0	46.3	47.7	49.2	51.3	51.6	52.2	51.3	49.0	48.9
Finland	30.2	29.8	29.9	31.0	31.7	33.1	31.1	32.8	32.8	33.7	34.0
France	24.1	24.5	24.8	25.5	25.3	25.1	25.4	24.9	24.6	24.5	24.8
Germany	25.2	24.9	24.8	25.0	25.2	24.5	24.6	24.4	25.0	23.6	25.1
Greece[2]	18.1	20.9	21.6	22.3	22.2	24.9	25.3	23.9	22.0	24.7	25.6
Irish Republic	36.0	38.7	41.1	43.0	41.8	42.7	42.4	44.5	42.7	40.8	..
Italy	20.0	21.2	22.4	22.8	22.8	23.0	23.8	24.4	25.7	26.1	26.8
Japan	19.0	19.1	19.2	19.6	20.0	20.0	21.3	21.7	22.1	22.3	22.0
Luxembourg	26.0	24.3	26.5	25.9	26.6	26.1	..	..	..	..	..
Netherlands	26.9	26.2	25.2	24.6	24.6	25.9	27.8	28.1	26.6	28.3	29.9
Norway	38.3	37.9	37.7	37.8	39.1	35.6	35.5	35.8	35.5	35.7	35.3
Spain	14.8	14.8	16.6	17.5	16.8	17.9	20.1	20.3	21.8	21.4	..
Sweden	36.0	36.4	38.0	38.2	38.5	39.6	43.7	41.7	43.2	42.2	39.0
Switzerland[2]	19.9	20.2	20.4	20.6	20.6	21.4	21.0	21.4	20.7	20.8	20.4
United Kingdom[3]	31.4	31.7	31.0	31.0	31.0	30.7	30.4	30.4	30.4	30.7	29.9
United States	22.3	21.5	21.0	20.8	21.1	21.2	22.0	21.3	21.7	21.6	21.3

1 Fiscal years beginning on 1 July of year indicated.
2 Former SNA.
3 Includes the community charge.

Source: Data derived from OECD statistics

3 Taxes and social security contributions by category as a percentage of gross national product at factor cost

Percentages

	Direct taxes						Indirect taxes					
	Households[1]			Corporations			Total			*of which:* VAT		
	1981	1986	1991	1981	1986	1991	1981	1986	1991	1981	1986	1991
Australia[1]	13.7	14.9	12.6	3.4	2.9	4.4	12.7	14.2	13.5	..	..	..
Austria	11.9	12.6	12.0	0.7	1.6	2.2	16.7	16.6	16.2	8.6	8.9	8.6
Belgium	16.3	16.4	14.0	2.5	3.2	2.8	12.7	12.1	12.2	7.9	7.3	7.3
Canada	11.7	13.1	16.0	4.1	3.3	2.3	13.4	13.3	14.9	..	..	2.9
Denmark	..	..	..	..	..	..	19.0	20.5	18.1	10.7	10.3	9.3
Finland	14.6	16.4	16.1	1.6	1.6	2.1	13.9	15.0	15.6	..	..	9.4
France	6.2	6.6	6.9	2.4	2.7	2.5	15.1	15.5	14.8	8.7	8.4	7.8
Germany[2]	10.5	10.1	10.3	1.7	2.1	1.7	12.9	12.2	13.0	6.4	5.7	6.8
Greece[3]	3.6	4.6	4.4	1.0	1.5	1.7	13.1	18.4	19.0	..	..	..
Irish Republic	..	..	..	..	..	..	18.2	20.5	18.7	5.7	9.0	8.3
Italy	9.5	10.5	11.7	1.5	2.5	3.0	9.0	10.0	12.1	4.7	5.3	5.8
Japan	6.6	6.8	8.3	4.7	5.3	5.4	7.6	7.5	7.7	..	..	1.4
Luxembourg	..	..	..	..	..	..	11.5	12.3	13.1	4.3	4.7	5.3
Netherlands[2]	11.7	9.9	13.3	3.1	3.3	3.6	11.8	12.5	12.8	6.9	7.4	7.4
Norway	12.5	11.7	13.6	8.2	4.0	4.4	17.6	19.8	17.3	8.8	10.0	8.4
Spain	5.5	6.1	..	1.8	0.6	..	7.4	10.9	10.7	..	4.6	5.5
Sweden	20.3	20.5	19.5	1.1	1.8	0.9	14.5	17.2	18.5	6.9	7.2	9.1
Switzerland[3]	11.9	12.4	12.2	1.3	1.5	1.4	6.5	6.8	6.0	..	..	..
United Kingdom	11.4	10.5	10.7	3.4	4.0	3.2	16.4	16.0	14.3	4.5	5.9	6.7
United States	11.2	10.3	10.4	2.6	2.5	2.2	8.1	8.1	8.4	..	..	..

	Taxes on capital			Social security contributions						Community charge
				Total			*of which:* Paid by employers			
	1981	1986	1991	1981	1986	1991	1981	1986	1991	1991
Australia[1]	0.1	..	..	..	..	..	..	..	..	
Austria	0.1	0.1	..	12.7	12.5	12.5	9.7	9.8	9.8	
Belgium	0.4	0.3	0.3	14.0	16.1	16.0	8.5	9.6	..	
Canada	0.1	0.2	0.2	4.0	4.7	5.4	2.4	2.9	3.1	
Denmark	0.2	0.3	0.3	1.0	1.7	1.6	..	..	..	
Finland	0.1	0.1	0.2	9.4	10.7	12.1	10.4	10.5	12.8	
France	0.3	0.3	0.6	17.7	18.9	19.4	11.8	12.0	11.9	
Germany	0.1	0.1	0.1	16.2	16.2	16.0	7.6	7.6	7.5	
Greece[3]	0.4	0.4	0.5	8.9	11.0	11.1	..	..	..	
Irish Republic	0.1	0.1	0.2	7.4	8.3	..	..	..	..	
Italy	0.1	0.1	0.1	11.5	12.5	13.3	8.6	8.8	..	
Japan	0.2	0.4	0.6	7.8	8.3	9.1	4.0	4.4	4.7	
Luxembourg	0.1	0.1	0.1	10.9	8.9	..	..	..	..	
Netherlands	0.2	0.2	0.2	18.4	19.4	17.8	9.0	8.8	3.7	
Norway	–	0.1	0.1	12.2	13.4	12.5	..	..	..	
Spain	0.2	0.3	0.4	12.3	12.0	..	12.1	11.4	..	
Sweden	0.1	0.1	0.1	15.1	13.4	15.7	14.5	12.9	15.2	
Switzerland[3]	0.2	0.6	0.7	8.6	9.4	9.6	3.0	3.1	3.2	
United Kingdom	0.2	0.3	0.2	6.2	6.8	6.4	3.5	3.5	3.8	1.4
United States	0.3	0.2	0.3	6.4	7.2	7.7	3.4	3.7	3.8	

1 Fiscal years beginning on 1 July of year indicated.
2 Households includes unincorporated businesses, except for Germany and the Netherlands.
3 Former SNA.

Source: Data derived from OECD statistics

4 Taxes and social security contributions by category as a percentage of total taxes[1] and social security contributions

Percentages

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
AUSTRALIA [2]											
Direct taxes:											
Paid by households[3]	45.8	45.1	44.3	44.9	45.2	46.5	45.0	45.5	44.1	42.8	..
Paid by corporations	11.4	10.1	8.9	9.3	9.4	9.1	10.3	10.7	12.7	14.1	..
Total	57.2	55.2	53.2	54.2	54.6	55.6	55.3	56.2	56.8	56.9	..
Indirect taxes	42.6	44.6	46.7	45.7	45.4	44.4	44.7	43.8	43.2	43.0	..
Taxes on capital	0.3	0.1	0.1	–	–	–	–	–	–	–	..
Social security contributions	..	..	..	..	..	..	..	..	..	..	..
AUSTRIA											
Direct taxes:											
Paid by households[3]	27.5	27.5	27.4	27.7	28.5	28.8	28.0	28.2	26.2	27.2	..
Paid by corporations	4.4	4.0	4.0	4.1	4.4	4.3	4.1	4.1	4.8	4.8	..
Total	31.9	31.5	31.4	31.8	32.9	33.1	32.1	32.3	31.0	32.0	..
Indirect taxes	38.4	38.9	39.3	39.6	38.4	38.1	38.7	38.5	39.2	38.4	..
of which: VAT	20.0	19.8	20.5	21.5	20.7	20.5	20.7	20.5	21.0	20.6	..
Taxes on capital	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1	..
Social security contributions	29.5	29.4	29.1	28.5	28.5	28.6	29.0	29.0	29.6	29.5	..
BELGIUM											
Direct taxes:											
Paid by households[3]	35.6	36.4	35.2	35.1	34.7	34.1	33.1	32.4	31.1	31.3	30.9
Paid by corporations	5.4	6.2	5.9	6.2	6.5	6.6	6.6	6.9	6.7	6.5	6.1
Total	41.0	42.6	41.1	41.3	41.2	40.7	39.7	39.3	37.8	37.8	37.0
Indirect taxes	27.6	27.1	27.4	26.1	25.5	25.1	25.9	26.2	27.3	27.1	27.0
of which: VAT	17.4	16.4	16.4	15.8	15.4	15.1	15.3	15.8	16.2	15.9	16.0
Taxes on capital	0.8	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7
Social security contributions	30.6	29.6	30.9	32.0	32.7	33.6	33.8	33.9	34.3	34.4	35.3
of which: paid by employers	18.7	16.9	17.4	18.2	19.2	20.0	20.2	20.5	21.0	20.6	..
CANADA											
Direct taxes:											
Paid by households[3]	35.1	36.8	36.8	35.9	36.2	37.9	38.2	38.6	38.7	42.3	41.3
Paid by corporations	12.2	10.6	10.4	11.4	10.9	9.7	9.7	9.3	9.0	7.7	6.0
Total	47.3	47.4	47.2	47.3	47.2	47.6	47.9	47.9	47.7	50.0	47.3
Indirect taxes	40.4	39.7	39.0	38.9	38.5	38.3	38.2	38.1	39.1	36.2	38.3
of which: VAT	..	..	..	..	..	..	..	..	..	1.4	7.4
Taxes on capital	0.3	0.5	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.4
Social security contributions	12.0	12.3	13.3	13.2	13.7	13.6	13.4	13.6	12.7	13.4	14.0
of which: paid by employers	7.2	7.1	7.9	8.0	8.3	8.3	8.0	8.1	7.7	7.8	8.0
DENMARK											
Direct taxes:[6]											
Paid by households[3]	..	..	..	..	..	..	..	..	..	..	..
Paid by corporations	..	..	..	..	..	..	..	..	..	..	..
Total	56.8	57.0	57.3	57.6	58.2	57.7	57.9	59.8	60.6	59.9	60.5
Indirect taxes	40.6	39.7	38.4	38.0	37.4	38.7	37.7	36.9	36.1	36.3	35.9
of which: VAT	22.8	22.3	21.1	20.6	20.0	19.4	18.9	18.2	18.1	18.5	18.4
Taxes on capital	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.5	0.6	0.5
Social security contributions	2.2	2.9	3.9	4.0	3.9	3.1	3.8	2.7	2.8	3.2	3.1
FINLAND											
Direct taxes:											
Paid by households[3]	41.9	41.5	41.7	41.4	41.8	42.7	40.9	41.9	41.2	41.5	40.2
Paid by corporations	4.6	4.7	4.9	4.3	3.9	4.1	3.3	3.8	4.0	5.4	5.2
Total	46.5	46.2	46.6	45.7	45.7	46.8	44.2	45.7	45.3	46.9	45.4
Indirect taxes	39.9	40.2	40.1	40.3	39.2	39.0	41.4	41.0	41.9	39.9	38.9
of which: VAT	19.3	19.3	19.3	20.5	20.3	20.5	23.7	23.1	24.0	23.0	22.0
Taxes on capital	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5
Social security contributions	13.4	13.3	13.0	13.7	14.8	13.9	14.0	12.9	12.4	12.8	15.2

4 Taxes and social security contributions by category as a percentage of total taxes[1] and social security contributions

continued

Percentages

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
FRANCE											
Direct taxes:											
Paid by households[3]	14.8	14.7	15.4	15.4	14.9	14.9	14.6	13.9	13.7	13.8	15.6
Paid by corporations	5.8	5.9	5.2	5.5	5.6	6.2	6.4	6.6	6.9	6.6	5.6
Total	20.6	20.6	20.6	20.9	20.5	21.1	21.0	20.5	20.6	20.4	21.2
Indirect taxes	36.2	36.1	35.5	35.4	35.6	35.3	35.2	35.4	34.7	34.4	33.4
of which: VAT	20.9	21.0	20.3	19.6	19.7	19.2	19.2	19.3	18.9	18.5	17.6
Taxes on capital	0.8	0.6	0.6	0.6	0.6	0.7	0.8	0.9	0.9	1.0	1.5
Social security contributions	42.4	42.7	43.3	43.1	43.3	42.9	43.0	43.2	43.8	44.2	43.9
of which: paid by employers	28.3	28.2	28.3	27.6	27.8	27.3	27.0	26.5	26.9	27.1	27.0
GERMANY											
Direct taxes:											
Paid by households[4]	25.3	25.0	24.7	24.5	24.9	24.9	25.6	25.1	25.7	23.8	25.1
Paid by corporations	4.2	4.3	4.6	4.9	5.4	5.2	4.5	4.8	4.9	4.4	4.1
Total	29.5	29.3	29.3	29.4	30.3	30.1	30.1	29.9	30.6	28.2	29.2
Indirect taxes	31.2	30.5	31.2	31.3	30.3	30.0	29.8	30.0	30.4	31.6	31.7
of which: VAT	15.4	14.8	15.4	15.3	14.5	14.1	14.5	14.4	14.3	15.4	16.6
Taxes on capital	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.2
Social security contributions	39.1	40.0	39.3	39.1	39.2	39.7	39.8	39.8	38.8	39.9	38.9
of which: paid by employers	18.4	18.8	18.5	18.4	18.5	18.7	18.7	18.8	18.3	18.8	18.3
GREECE[5]											
Direct taxes:											
Paid by households[3]	13.3	14.6	13.7	14.4	13.5	12.9	12.4	13.5	12.2	12.7	12.0
Paid by corporations	3.7	4.0	3.0	3.4	3.3	4.2	4.5	3.9	4.3	5.1	4.7
Total	17.0	18.6	16.7	17.8	16.8	17.1	16.9	17.4	16.5	17.8	16.7
Indirect taxes	48.7	47.4	48.7	47.8	48.3	51.1	52.0	51.0	50.6	52.6	51.8
*of which:*VAT	..	..	..	..	..	..	22.3	23.3	25.5	26.5	25.6
Taxes on capital	1.4	1.7	1.4	1.1	1.0	1.1	1.1	1.2	1.2	1.3	1.2
Social security contributions	32.9	32.3	33.2	33.3	33.9	30.7	30.0	30.4	31.7	28.3	30.3
IRISH REPUBLIC											
Direct taxes:[6]											
Paid by households[3]	..	..	..	..	..	..	..	..	..	..	..
Paid by corporations	..	..	..	..	..	..	..	..	..	..	..
Total	34.6	34.0	34.1	35.5	35.7	37.0	38.0	39.4	35.6	37.3	..
Indirect taxes	46.3	46.3	46.5	45.8	45.4	44.7	44.0	42.9	46.0	43.9	..
of which: VAT	14.5	18.2	19.9	20.1	19.4	19.7	19.0	19.8	20.4	19.4	..
Taxes on capital	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	..
Social security contributions	18.8	19.4	19.1	18.4	18.6	18.0	17.7	17.4	18.1	18.4	..
ITALY											
Direct taxes:											
Paid by households[3]	30.1	30.1	30.0	30.7	31.1	29.5	28.7	30.3	29.3	29.2	29.2
Paid by corporations	4.8	5.3	5.6	5.7	6.4	7.0	8.3	6.3	8.3	8.1	7.4
Total	34.9	35.4	35.6	36.4	37.5	36.5	37.0	36.6	37.6	37.3	36.6
Indirect taxes	28.4	27.5	28.2	28.8	27.7	28.1	28.6	29.7	29.2	29.3	30.1
of which: VAT	15.0	14.4	14.8	15.2	14.4	15.0	14.7	15.3	14.0	14.9	14.4
Taxes on capital	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.1
Social security contributions	36.5	36.9	36.0	34.6	34.6	35.1	34.2	33.5	33.0	33.3	33.2
of which: paid by employers	27.4	26.6	25.8	24.6	24.7	24.9	23.9	23.6	..	..	..
JAPAN											
Direct taxes:											
Paid by households[3]	24.5	24.6	25.3	24.4	23.4	24.2	24.0	23.4	23.0	24.8	26.7
Paid by corporations	17.5	17.2	17.1	18.0	19.0	18.6	18.7	19.6	21.4	18.6	17.4
Total	42.0	41.8	42.4	42.4	42.4	42.8	42.7	43.0	44.4	43.4	44.1
Indirect taxes	28.2	27.8	26.8	27.4	27.5	26.5	27.2	27.5	26.4	26.2	24.8
of which: VAT	..	..	..	..	..	..	..	..	3.4	4.3	4.4
Taxes on capital	0.8	0.9	1.0	1.1	1.2	1.5	1.7	1.6	1.7	1.4	1.8
Social security contributions	29.0	29.5	29.8	29.1	28.9	29.2	28.4	27.9	27.5	29.0	29.3
of which: paid by employers	14.8	15.1	15.1	14.8	14.8	15.4	14.7	14.5	14.6	14.9	15.2

4 Taxes and social security contributions by category as a percentage of total taxes[1] and social security contributions

continued

Percentages

		1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
LUXEMBOURG												
Direct taxes:[6]												
Paid by households[3]		..	..	..	..	..	..	..	..	..	..	..
Paid by corporations		..	..	..	..	..	..	..	..	..	..	..
	Total	39.0	38.8	39.9	39.1	40.5	39.0	..	..	..	..	..
Indirect taxes		31.1	32.4	34.4	34.6	34.2	35.2	..	..	..	..	..
of which: VAT		11.7	12.2	12.0	13.2	12.9	13.4	..	..	..	..	..
Taxes on capital		0.3	0.4	0.3	0.3	0.3	0.3	..	..	..	..	..
Social security contributions		29.6	28.4	25.4	26.0	25.0	25.5	..	..	..	..	..
NETHERLANDS												
Direct taxes:												
Paid by households[4]		25.9	25.1	22.6	22.2	20.8	21.8	21.2	22.0	23.0	26.3	27.8
Paid by corporations		6.8	6.6	6.0	5.6	6.8	7.3	8.1	7.7	7.6	7.9	7.6
	Total	32.7	31.7	28.6	27.8	27.6	29.1	29.3	29.7	30.6	34.2	35.4
Indirect taxes		26.2	25.5	25.2	26.7	27.1	27.6	27.7	27.4	27.4	27.7	26.7
of which: VAT		15.3	14.7	14.5	15.4	15.9	16.3	16.1	16.2	16.1	16.2	15.4
Taxes on capital		0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5
Social security contributions		40.6	42.4	45.8	45.1	44.9	42.8	42.5	42.4	41.5	37.6	37.4
of which: paid by employers		19.8	19.4	19.4	19.3	19.3	19.5	17.0	16.6	16.2	8.0	7.7
NORWAY												
Direct taxes:												
Paid by households[3]		24.7	24.2	22.8	22.5	21.2	23.9	25.1	28.5	29.0	28.2	28.4
Paid by corporations		16.3	15.9	16.8	18.0	19.2	8.2	6.9	5.6	7.9	10.0	9.1
	Total	41.0	40.1	39.6	40.5	40.4	32.1	32.0	34.1	36.9	38.2	37.5
Indirect taxes		34.7	35.1	36.0	36.1	36.5	40.5	39.0	37.6	36.6	35.9	36.2
of which: VAT		17.5	17.7	17.6	16.8	17.4	20.4	20.2	19.7	18.5	18.1	17.6
Taxes on capital		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1
Social security contributions		24.2	24.7	24.3	23.3	23.0	27.3	28.9	28.1	26.3	25.8	26.2
of which: paid by employers		15.1	15.4	14.9	14.4	13.7	15.8	16.2	17.2	16.8	16.4	16.5
SPAIN												
Direct taxes:												
Paid by households[3]		20.3	18.7	20.3	21.6	22.7	20.5	23.8	24.6	25.4	25.2	..
Paid by corporations		6.5	6.7	6.7	6.5	1.2	2.0	3.5	2.9	5.4	5.2	..
	Total	26.8	25.3	27.0	28.1	23.9	22.5	27.3	27.5	30.8	30.4	..
Indirect taxes		27.1	28.8	29.2	30.4	33.1	36.4	34.0	34.3	32.2	31.8	..
of which: VAT		..	..	..	..	..	15.2	16.4	16.9	16.7	16.2	..
Taxes on capital		0.7	0.6	0.7	0.9	1.1	1.2	1.2	1.3	1.2	1.1	..
Social security contributions		45.4	45.3	43.1	40.6	41.8	40.0	37.5	36.9	35.9	36.7	..
of which: paid by employers		44.6	44.2	41.3	37.8	39.2	38.0	..	..	..	..	..
SWEDEN												
Direct taxes:												
Paid by households[3]		39.8	40.9	39.5	38.8	38.7	38.6	37.6	39.7	39.8	38.3	35.6
Paid by corporations		2.1	2.7	3.5	3.6	3.1	3.3	4.7	4.7	4.9	3.6	1.7
	Total	26.8	25.3	27.0	28.1	40.9	37.1	43.5	43.4	47.7	47.7	37.3
Indirect taxes		28.4	28.5	30.1	31.4	32.9	32.5	30.8	30.1	29.6	30.8	33.8
of which: VAT		13.6	13.2	13.4	13.3	14.0	13.6	13.2	13.4	13.4	14.8	16.7
Taxes on capital		0.2	0.2	0.2	0.2	0.3	0.2	3.0	0.2	0.2	0.2	0.2
Social security contributions		29.5	27.7	26.6	26.0	25.0	25.4	23.9	25.3	25.5	27.1	28.7
of which: paid by employers		28.4	26.6	25.5	24.8	23.8	24.3	22.9	24.3	24.3	25.9	27.8
SWITZERLAND[5]												
Direct taxes:												
Paid by households[3]		41.7	41.8	41.3	41.5	40.5	40.4	39.4	39.3	38.9	40.0	40.8
Paid by corporations		4.5	4.7	4.8	4.5	4.5	5.0	4.9	5.2	4.8	5.1	4.8
	Total	46.2	46.5	46.1	46.0	45.0	45.4	44.3	44.5	43.7	45.1	45.6
Indirect taxes		22.9	22.4	22.4	22.0	21.9	22.1	22.6	22.0	22.2	20.8	20.1
Taxes on capital		0.7	0.8	0.8	0.8	1.9	2.1	2.2	2.8	2.9	3.0	2.2
Social security contributions		30.2	30.3	30.7	31.3	31.1	30.4	30.9	30.7	31.2	31.1	32.1
of which: paid by employers		10.7	10.6	10.5	10.5	10.3	10.1	10.2	10.2	10.3	10.3	10.5

4 Taxes and social security contributions by category as a percentage of total taxes[1] and social security contributions

continued

Percentages

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
UNITED KINGDOM											
Direct taxes:											
Paid by households[3]	30.2	29.6	28.8	28.0	27.8	27.9	27.2	27.3	27.6	29.4	29.4
Paid by corporations	9.1	10.1	10.7	11.7	12.6	10.6	10.6	10.8	12.3	11.0	8.9
Total	39.3	39.7	39.5	39.7	40.4	38.5	37.8	38.1	39.9	40.4	38.3
Indirect taxes	43.6	42.8	41.9	41.6	40.9	42.7	43.2	42.9	41.6	37.4	39.4
of which: VAT	12.1	13.7	13.8	14.7	15.7	15.7	15.8	16.8	16.7	17.1	19.2
Taxes on capital	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.6	0.6	0.7	0.6
Social security contributions	16.6	17.0	18.0	18.1	18.0	18.1	18.3	18.4	17.5	17.2	17.8
of which: paid by employers	9.2	8.8	9.1	9.1	9.1	9.4	9.5	9.6	9.5	10.0	10.4
Community charge	..	..	..	..	..	..	..	..	0.4	4.4	4.0
UNITED STATES											
Direct taxes:											
Paid by households[3]	39.2	39.7	37.3	36.1	36.8	36.3	37.1	36.0	37.2	36.9	35.8
Paid by corporations	9.2	7.1	8.2	9.0	8.5	8.9	9.7	9.9	9.3	8.6	7.6
Total	48.4	46.8	45.5	45.1	45.3	45.2	46.8	45.9	46.5	45.5	43.4
Indirect taxes	28.3	28.6	29.6	29.5	29.0	28.7	27.8	27.5	27.2	27.7	29.2
Taxes on capital	1.0	1.2	0.9	0.8	0.8	0.8	0.8	0.8	0.8	1.0	0.9
Social security contributions	22.3	23.4	24.0	24.6	24.9	25.3	24.6	25.8	25.5	25.8	26.5
of which: paid by employers	11.8	12.3	12.7	13.3	13.0	13.1	12.6	13.1	12.7	12.9	13.2

1 All minor discrepancies in total direct taxes are due to rounding.
2 Fiscal years beginning on 1 July of year indicated.
3 Households include unincorporated businesses.
4 Unincorporated businesses are included with corporations not households.
5 Former SNA.
6 Components of direct taxation were not separately identified

Source: Data derived from OECD statistics

5 Direct taxes on households[1], community charge and social security contributions as a percentage of total personal income in 1981, 1986 and 1991

Percentages

	Direct taxes			Community charge	Social security contributions			Total		
	1981	1986	1991	1991	1981	1986	1991	1981	1986	1991
a. Including employers' contributions										
Australia[2]	15.6	16.7	13.9		..	..	..	15.6	16.7	..
Austria	12.7	13.1	12.4		13.7	13.0	12.9	26.4	26.2	25.3
Belgium	13.7	14.1	12.1		11.8	13.9	13.8	25.5	28.0	25.9
Canada	13.8	15.0	17.2		4.7	5.4	5.8	18.5	20.4	23.0
Finland	16.6	18.2	16.2		5.3	5.9	6.1	21.9	24.1	22.3
France	6.0	6.5	6.8		17.3	18.7	19.1	23.4	25.2	25.9
Germany[1]	10.4	10.5	10.8		16.1	16.8	16.7	26.5	27.3	27.5
Greece	3.7	4.7	4.2		9.2	11.1	10.6	12.9	15.8	14.8
Italy	8.7	9.7	10.6		10.5	11.6	12.0	19.2	21.3	22.6
Japan	6.9	7.3	8.9		8.2	8.8	9.8	15.1	16.2	18.7
Netherlands[1]	11.4	9.7	12.2		17.9	19.1	16.4	29.3	28.9	28.6
Norway	15.4	13.7	15.0		15.0	15.6	13.8	30.4	29.3	28.8
Spain	5.5	6.4	..		12.2	12.6	..	17.7	19.0	..
Sweden	19.6	20.7	18.6		14.5	13.6	15.0	34.1	34.2	33.5
Switzerland[3]	13.3	14.0	13.4		9.7	10.5	10.6	23.0	24.5	23.9
United Kingdom	12.8	11.7	11.1	1.5	7.0	7.6	6.7	19.8	19.3	19.3
United States	12.5	11.2	11.1		7.1	7.8	8.2	19.6	19.0	19.4
b. Excluding employers' contributions										
Australia[2]	15.6	16.7	..		..	..	..	15.6	16.7	..
Austria	..	..	..							
Belgium	14.8	15.4	..		4.9	6.1	..	19.7	21.5	..
Canada	14.2	15.5	17.8		1.9	2.2	2.6	16.1	17.7	20.3
France	6.8	7.4	7.7		6.5	7.8	8.3	13.4	15.1	16.0
Finland	..	..	..							
Germany[1]	11.3	11.4	11.7		9.2	9.6	9.6	20.5	21.1	21.3
Greece	..	..	..							
Italy	9.4	10.6	..		2.9	3.7	..	12.3	14.2	..
Japan	7.2	7.7	9.4		4.2	4.4	4.9	11.4	12.1	14.4
Netherlands[1]	12.5	10.7	12.6		10.0	11.4	13.5	22.6	22.1	26.1
Norway	17.0	15.0	16.4		6.2	7.2	5.6	23.2	22.3	22.0
Spain	6.2	7.3	..		..	..	..	6.2	7.3	..
Sweden	22.7	23.8	21.7		0.6	0.7	0.6	23.4	24.4	22.3
Switzerland[3]	13.8	14.5	13.9		6.5	7.3	7.4	20.3	21.8	21.2
United Kingdom	13.3	12.1	11.6	1.6	3.3	3.8	2.9	16.6	16.0	16.1
United States	13.0	11.7	11.6		3.5	3.9	4.3	16.5	15.6	15.9

1 Households include unincorporated businesses, except for the Germany and the Netherlands.
2 Fiscal years beginning on 1 July of year indicated.
3 Former SNA.
4 Luxembourg and the Irish republic are excluded as data is not compiled

Source: Data derived from OECD statistics

TESTING FOR BIAS IN INITIAL ESTIMATES OF THE COMPONENTS OF GDP

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Introduction

This article updates the results published in February 1993 and continues the series of articles analyzing the revisions data to test for bias in the initial estimates of main economic indicators. The last article published in May 1993 suggested that quarterly estimates of year on year growth rates of gross domestic product (GDP) published in the 10 years ending Q4 1992, showed some evidence of bias in initial estimates produced three years earlier. The present article analyses the revisions to growth rates of the components of GDP, when examined in terms of income, expenditure, and output in order to identify which of the individual components contributed to the bias in the aggregated measure of GDP.

It should, however, be stressed that since this article is looking at long term revisions the latest figures which can be covered relate to estimates of growth rates into 1989. The analysis in this article, therefore, could not take full account of some significant recent improvements made particularly to the methodology and in the identification of new data sources, incorporated into the initial estimates of quarterly growths from 1989 onwards. The expected improvements in the results due to these measures and also from the statutory requirements on the respondents to supply the relevant data to CSO, would only be seen in the short term revisions, which are not covered in this article.

Estimates of the components of expenditure, income and output are published in a quarterly article on national accounts in *Economic Trends*. The data for the first to the thirteenth estimate of each item and for each of the 40 quarters, analyzed in this article, have been taken from successive quarterly issues. The analysis covers published data for the 10 years from 1983 to end 1992, as in the May 1993 article. The dates refer to the publication of the thirteenth estimate, as before.

Methods of Testing for Bias

The methods used for the present analysis are the same as described in the articles published in the earlier issues of *Economic Trends*. Revisions series for each item were arrived at by taking the difference between the first and the thirteenth estimates of percentage growth rates over four quarters. The same definition of bias is used here as in the last article; an indicator is considered to be biased if its mean revision is significantly (in a statistical sense) different from zero. The following procedure was adopted.

a) To test the hypothesis of mean revision equals zero, the Student's t-test was applied, in the first instance, to each series. A 'significant' t-value would indicate bias. However, this test requires the revisions to follow a normal (Gaussian) distribution. The Wilcoxon signed-rank test, which is a non parametric test and which requires no assumption about the underlying distribution, was also applied to all the series. Strictly speaking this test examines whether the median (rather than the mean) is different from zero.

b) All series were tested for serial correlation. Where a significant coefficient for correlation was associated with a significant t-value, a Cochrane-Orcutt transformation was performed before re-applying the t-test.

c) As in the last article, all the series were examined for the effect of business cycles. The series of revisions were regressed on a dummy variable with 1 denoting the expansion and -1 denoting the contraction phase of the economy.

Conclusions

The main purpose of this article is to update last year's analysis by adding the data for 1992 and to examine the results to see if any improvements have been made to the revision practices. This is done for the whole 10 and the recent 5 year periods.

Although results based on just one year of new data cannot be conclusive, the analysis in this article shows that the average revisions were smaller in a majority of cases examined over both the two periods ending in December 1992.

Despite the lowering of the average revisions to the growth rates of total GDP expenditure components and of consumers' expenditure, the t-value in each case remained significant[1]. The average revisions to the growth rates of GDFCF were higher and t-values significant for both the 10 and recent 5 year periods. Similarly total GDP income components and other income showed significant t-values for both periods. The components of output that showed significant t-values were total output, output of AFF, manufacturing, distribution and other services, but for the 10 year period only. This showed that a tendency to bias still exists in the initial estimates of these variables and all of which, except the output of distribution industry, on average were revised upwards.

Significant serial correlation was observed in consumers' expenditure and GDFCF, in total GDP income components and other income and in total output components, AFF, distribution and other services. A Cochrane- Orcutt transformation reduced the significant t-value to non significant levels in all these cases except for consumers' expenditure in current prices, total expenditure in constant prices and total output.

The regression of initial estimates on economic cycles showed that during the ten year period to 1989, when there were two expansion (Q4'81 to Q2'84 and Q3'86 to Q2'89) and two contraction (Q1'80 to Q3'81 and Q3'84 to Q2'86) periods, the phase of business cycles in the expansion phases has significant effect on the underestimation of the growth rates relating to total expenditure, consumers' expenditure and GDFCF in current and constant prices. The same phase effect was identified for total income, income from employment, other income, total output and the output of manufacturing industry. The contraction phase had no effect on the under or overestimation of any of the variables. The business cycle effect on the underestimation of all these variables was more pronounced in the expansion phase of the recent 5 year period 1985 to 1989.

1 The significance level of a test for bias is a measure of how unlikely the test results would be if the process were really unbiased. For example when we say that the 10 year mean revision to GDP (0.43) is highly significantly different from zero we mean that if the long-run average revision were really zero, the chance that a sample of 40 revisions would have a mean differing from zero by 0.43 or more is 1% or less.

It must be emphasised again that because of the long term nature of the revisions the recent improvements made to the methodology would not have affected the initial estimates made before 1988, but have influenced the revisions. The total effect of the new methodology would not be apparent for some years.

Results and Discussion of individual items

The results are summarised in Tables 1 to 6 in the annex. First the total of the relevant components is examined, e.g. the total of the GDP expenditure components. Then the components are examined separately. Also included in the annex are separate graphs for each indicator, showing the magnitude of individual revisions over the whole ten year period.

Components of Total Expenditure

Mean revision to the growth rates of total GDP expenditure components at current prices was down to 0.9 percent compared to 1.1 per cent over the previous 10 year period ending December 1991. However, it remained at 1.3 percent for the latter 5 year periods. The corresponding figures in constant prices were 0.70 from 0.78 in the 10 year period but up to 1.17 from 1.08 percent in the recent 5 year period. The t-values for all four means remained highly significant. However, the serial correlations were also significant and after Cochrane-Orcutt transformation on the 10 year data the t-values were reduced; falling to non significant levels at current prices but remaining significant, at constant prices.

A regression on the business cycle variable showed significant upward revisions to the initial estimates made particularly in the expansion phase of the recent 5 year period (publication dates: 1988 to 1992).

The components which contributed most to the revisions to the total expenditure were, as in the previous 10 year analysis, **consumers' expenditure and gross domestic fixed capital formation (GDFCF)**. These two items together account for more than 60% of total GDP expenditure components. The t-values for the mean revisions over the 10 year period, for the two items, were still highly significant in both current and constant prices. The same results were obtained by the Wilcoxon test. In all cases these revisions increased the initial estimates. The main reason for these significantly upward mean revisions were some very large and consistently positive changes to consumers' expenditure, and higher revisions still to GDFCF during the recent years of the 10 year period.

The mean revision to consumers' expenditure in current prices was an increase of 0.7 percentage points in the whole 10 year period but rising to 1.07 per cent in the second 5 year span. At constant prices these upward revisions were 0.39 and 0.69 percentage points respectively. The corresponding figures for GDFCF were 2.38 and 3.84 at current prices and 2.16 and 3.78 percentage points at constant prices.

The serial correlation was significant for both consumers' expenditure and GDFCF. A Cochrane-Orcutt transformation over the 10 year period reduced the t-values for GDFCF, in both current and constant prices, to non-significant levels. The t-value for consumers' expenditure remained significant in current prices but was reduced to a non-significant level for constant prices.

A regression on the business cycle variable showed a non-significant effect of the phase of the cycle for consumers' expenditure for the 10 year and the first 5 year periods in both price measures. However, in the second 5 year period, the initial estimates of consumers' expenditure indicated a downward bias in the expansion phase of the business cycle. There were significant phase effects for GDFCF in both price measures and for all time spans. The main contributing factor to the significant effects in the final 5 years is the number of high positive revisions to both consumers' expenditure and GDFCF in this period. Of the 20 observations of the revisions to consumers' expenditure in this 5 year period, which contains 8 contraction and 12 expansion quarters of the economic cycles, only 3 revision in current prices and 5 in constant prices were negative and the other 17 and 15 respectively were positive. For GDFCF, which was prone to very high revisions, the range of revisions in this period was -4.24 to 9.73 per cent (4 negative and 16 positive) in current prices and -2.29 to 8.88 per cent (3 negative and 17 positive) in constant prices.

General government final consumption (GGFC) represents the total of Local Authority and Central Government current expenditure on goods and services. The average revisions to the year on year growth of GGFC at current prices were reduced from 0.65 and 0.53 percentage points for the 10 year and the latter 5 year periods to 0.28 and 0.25 respectively. The corresponding revisions at constant prices were changed from -0.11 and 0.11 to -0.17 and 0.07 for the 10 and 5 year periods respectively. The t-values in all four cases were not significant. A regression on the business cycle variable showed a non-significant effect of the economic phases in each case.

Exports are added to the total domestic expenditure to get total final expenditure, while **imports** are subtracted from the final expenditure to arrive at the GDP estimate. The t-values for the average revisions to the growth rates of both exports and imports remained non significant for both the current and constant price measures. However, a regression on the business cycle variable showed a slightly significant effect in the expansion phase for the current price measure of imports in the 10 year and the first 5 year periods but not for the latter 5 year period.

Components of Total Incomes

The mean revision to the year on year growth rate of **total GDP income components** was an increase of .42 percentage points over the 10 year period and an increase of 0.75 per cent in the latter 5 year period. The t-values were significant in both periods. The indication of the downward bias in the initial estimates, was more pronounced during the expansion phases of the business cycles.

The components which contributed most to the overall mean revision were **other income (sum of income from self employment and rent)** and **gross trading profits of companies**. However, the t-values were significant only for the revisions to other incomes and not for company profits. The non-significant t-value in the latter case was due to a high standard deviation which was in turn the result of a very wide range of revisions, mostly made in the latter 5 years of the ten year period. The range of revisions to the growth rates of company profit in the latter 5 years was between -8.82 and 19.74 (6 negative and 14 positive).

Both components showed high serial correlation. A Cochrane-Orcutt analysis reduced the t-value for other income to a non-significant level.

A regression on the business cycle variable over the 10 year data showed a significant phase effect for other income but not for company profits.

The mean revision to **income from employment** over the 10 year period was not significant. This result was confirmed by the Wilcoxon signed-rank test. However, during the expansion phases of the

business cycles the average revisions to the growth rates were higher and significant; 0.54 (standard error, 0.18) and 0.64 (standard error, 0.26) percentage points respectively for the 10 year and the latter 5 year periods.

The other total GDP income components are **gross trading surpluses of public corporations and general government** and **non trading capital consumption** along with **stock appreciation** which is a negative item. These components have not been included in this study.

Components of Output

Output by industry is measured and published only as index numbers, at constant prices. The mean revision over the 10 years to the annual growth rates of the **aggregate output** of all industries was reduced from 0.63 in the last 10 year span to the current average of 0.49 percentage points. However the t-value remained significant, and this was confirmed by the Wilcoxon test to show that an element of bias still exists.

The average over the latter 5 year period was also reduced to 0.12 percentage points with the t-value remaining non-significant. The data showed high serial correlation over the 10 year period but small and non-significant correlation in the latter 5 year period. A Cochrane-Orcutt analysis reduced the level of significance over the 10 year period but it still remained significant.

The regression on the business cycle variable showed that there was a tendency to underestimate the growth rates during the expansion phases in the 10 and the first 5 year periods. No phase effects were observed in the latter 5 years.

The components of output which contributed most to the overall mean revision were, as in the Feb 93 article, **agriculture, forestry and fishing, manufacturing and other services**). The t-values for all these components were highly significant. AFF and other services showed high serial correlations, but a Cochrane-Orcutt analysis reduced the t-values for both these components to non-significant levels.

A regression of data on the business cycle variable showed significant effect in the expansion phase for manufacturing over the 10 and the first 5 year periods, for AFF and other services over the first 5 year period and for none of these components in the latter 5 years.

Among the other component of output - **construction, distribution hotels and catering, and transport and communications** - only distribution showed a slightly significant t-value, i.e a small indication of bias. But distribution data showed a high serial correlation and when a Cochrane-Orcutt transformation was applied to adjust for the serial correlation the t-value became non-significant.

There was phase effects in the contraction period over the 10 year period for distribution, hotels and catering (overestimation) and for other services (underestimation). Over the first 5 year period, significant phase effect in the contraction phase was also observed for AFF, manufacturing, construction and other services - all underestimation and for distribution, hotel and catering (overestimation).

The analysis covered data of initial estimates made up to 1989. The recent improvements made to the methodology of compiling the national accounts should reduce these biases. Further monitoring to verify this will be reported in July this year in an update to this article. In addition an analysis which will update the results of the article published in May 1993 will be published in the April 1994 issue of *Economic Trends*.

TABLE 1: REVISIONS ANALYSIS: EXPENDITURE COMPONENTS AT CURRENT PRICES 1983 - 1992
REVISION REFERENCE: THREE YEARS AFTER THE FIRST PUBLICATION
YEAR ON YEAR GROWTH RATE (PER CENT)

Indicator	No. of yrs	No. of obs.	Mean rev.	Std dev.	SE of Mean	t-value	Wilcoxon Z	% of + rev	% of - rev	Coefficient of serial correlation	Range of revision values
Total GDP expenditure components	10	40	0.92	1.68	0.27	3.40 **	3.22 **	72.5	27.5	0.53 **	4.91 to -2.86
	5	20	1.30	1.61	0.36	3.51 **		85	15	0.43 **	4.76 to -2.86
Consumer expenditure	10	40	0.72	1.04	0.17	4.32 **	3.69 **	70	30	0.46 **	3.38 to -0.85
	5	20	1.07	1.02	0.23	4.55 **		85	15	0.46 **	2.98 to -0.85
General govmnt final consumption	10	40	0.28	1.50	0.24	1.18	1.34	55	45	0.32 *	3.01 to -3.84
	5	20	0.25	1.37	0.31	0.80		55	45	0.39 *	3.01 to -1.93
Gross domestic fixed capital formation	10	40	2.38	3.92	0.62	3.79 **	3.23 **	67.5	32.5	0.62 **	9.73 to -4.24
	5	20	3.84	3.62	0.81	4.62 **		80	20	0.52 **	9.73 to -4.24
Exports	10	40	-0.05	0.82	0.13	-0.37	0.65	45	55	0.11	2.28 to -1.54
	5	20	-0.25	0.79	0.18	-1.37		30	70	-0.18	1.51 to -1.54
Imports	10	40	0.27	1.07	0.17	1.60	1.43	57.5	42.5	0.25	2.91 to -2.56
	5	20	0.20	1.03	0.23	0.85		60	40	0.08	2.08 to -2.56

NOTE: Ten year period runs from April '83 to Jan '93.
Five year period runs from April '88 to Jan '93.
These dates relate to the publication dates; e.g. revision published in Q4 1992 would relate to Q3 1992.

Wilcoxon Z is the equivalent normal score of the Wilcoxon test.

* = significant at the 5% level; ** = significant at the 1% level.

TABLE 2: REVISIONS ANALYSIS: EXPENDITURE COMPONENTS AT CONSTANT PRICES 1983 - 1992
REVISION REFERENCE: THREE YEARS AFTER THE FIRST PUBLICATION
YEAR ON YEAR GROWTH RATE (PER CENT)

Indicator	No. of yrs	No. of obs.	Mean rev.	Std dev.	SE of Mean	t-value	Wilcoxon Z	% of + rev	% of + rev	Coefficient of serial correlation	Range of revision values
Total GDP expenditure components	10	40	0.70	1.19	0.19	3.66 **	3.42 **	75	25	0.24	4.39 to -1.96
	5	20	1.17	1.17	0.26	4.38 **		85	15	0.14	4.39 to -0.71
Consumer expenditure	10	40	0.39	0.92	0.14	2.63 *	2.40 *	65	35	0.38 *	2.85 to -1.25
	5	20	0.69	0.99	0.22	3.01 **		75	25	0.29	2.85 to -1.25
General govmnt final consumption	10	40	-0.17	1.11	0.18	-0.94	1.09	35	65	0.10	2.56 to -2.06
	5	20	0.07	1.32	0.30	0.23		40	60	0.18	2.56 to -2.06
Gross domestic fixed capital formation	10	40	2.16	4.03	0.64	3.35 **	2.98 **	70	30	0.61 **	8.88 to -5.09
	5	20	3.78	3.31	0.74	4.98 **		85	15	0.39 *	8.88 to -2.29
Exports	10	40	-0.00	1.17	0.18	-0.00	0.25	50	50	0.33 *	3.17 to -2.37
	5	20	0.01	1.26	0.28	0.05		45	55	0.29	3.17 to -2.29
Imports	10	40	-0.26	1.59	0.25	-1.01	0.81	45	55	0.51 **	2.46 to -4.12
	5	20	0.01	1.28	0.29	0.03		45	55	0.22	2.46 to -2.87

NOTE: Ten year period runs from April '83 to Jan '93.
Five year period runs from April '88 to Jan '93.
These dates relate to the publication dates; e.g. revision published in Q4 1992 would relate to Q3 1992.

Wilcoxon Z is the equivalent normal score of the Wilcoxon test.

* = significant at the 5% level; ** = significant at the 1% level.

TABLE 3: REVISIONS ANALYSIS: INCOME COMPONENTS AT CURRENT PRICES 1983 - 1992
REVISION REFERENCE: THREE YEARS AFTER THE FIRST PUBLICATION
YEAR ON YEAR GROWTH RATE (PER CENT)

Indicator	No. of yrs	No. of obs.	Mean rev.	Std dev.	SE of Mean	t-value	Wilcoxon Z	% of + rev	% of - rev	Coefficient of serial correlation	Range of revision values
Total GDP income components	10	40	0.42	1.26	0.20	2.06 *	2.24 *	62.5	37.5	0.34 *	3.98 to -2.40
	5	20	0.75	0.93	0.21	3.54 **		75.0	25.0	0.25	2.45 to -0.91
Income from employment	10	40	0.22	0.89	0.14	1.51	1.22	55.0	45.0	0.62 **	1.95 to -1.47
	5	20	0.24	0.93	0.21	1.10		45.0	55.0	0.65 **	1.95 to -0.89
Gross trading profits of companies	10	40	1.39	7.35	1.16	1.18	0.84	55.0	45.0	0.26	22.82 to -12.34
	5	20	3.06	6.84	1.53	1.95		70.0	30.0	0.31 *	19.47 to -8.82
Other income	10	40	1.40	2.41	0.38	3.63 **	3.22 **	70.0	30.0	0.63 **	6.89 to -3.26
	5	20	1.83	2.63	0.59	3.03 **		75.0	25.0	0.66 **	6.89 to -3.26

NOTE: Ten year period runs from April '83 to Jan '93.
Five year period runs from April '88 to Jan '93.
These dates relate to the publication dates; e.g. revision published in Q4 1992 would relate to Q3 1992.

Wilcoxon Z is the equivalent normal score of the Wilcoxon test.

* = significant at the 5% level; ** = significant at the 1% level.

TABLE 4: REVISIONS ANALYSIS: OUTPUT COMPONENTS AT CONSTANT PRICES 1983 - 1992
REVISION REFERENCE: THREE YEARS AFTER THE FIRST PUBLICATION
YEAR ON YEAR GROWTH RATE (PER CENT)

Indicator	No. of yrs	No. of obs.	Mean rev.	Std dev.	SE of Mean	t-value	Wilcoxon Z	% of + rev	% of - rev	Coefficient of serial correlation	Range of revision values
Total GDP output components	10	40	0.49	0.64	0.10	4.81 **	3.97 **	80	20	0.66 **	1.39 to -1.24
	5	20	0.12	0.51	0.11	0.99		70	30	0.21	0.81 to -1.24
Agriculture, forestry and fishing	10	40	2.12	5.75	0.91	2.30 *	1.98	62.5	37.5	0.77 **	16.96 to -8.33
	5	20	-1.07	4.30	0.96	-1.08		40	60	0.86 **	6.56 to -8.33
Manufacturing	10	40	0.62	1.01	0.16	3.82 **	3.71 **	80	20	0.22	2.76 to -2.35
	5	20	0.30	0.98	0.22	1.34		70.0	30.0	0.16	2.07 to -2.35
Construction	10	40	0.43	1.88	0.30	1.44	1.28	57.5	42.5	0.33 *	3.96 to -4.23
	5	20	0.02	2.17	0.49	0.03		45	55	0.49 **	3.96 to -4.23
Distribution, hotels and catering	10	40	-0.67	2.06	0.33	-2.01 *	1.32	45.0	52.5	0.70 **	1.90 to -7.57
	5	20	0.03	1.22	0.27	0.10		55	40	0.29	1.77 to -2.54
Transport and communication	10	40	0.11	2.00	0.32	0.34	0.55	55.0	42.5	0.25	4.24 to -5.34
	5	20	0.52	2.16	0.48	1.06		65.0	35.0	0.11	4.24 to -3.61
Other services	10	40	0.79	1.32	0.21	3.73 **	3.49 **	77.5	22.5	0.68 **	3.86 to -1.87
	5	20	-0.20	0.84	0.19	-1.05		55.0	45.0	0.32 *	0.93 to -1.87

NOTE: Ten year period runs from April '83 to Jan '93.
Five year period runs from April '88 to Jan '93.
These dates relate to the publication dates; e.g. revision published in Q4 1992 would relate to Q3 1992.

Wilcoxon Z is the equivalent normal score of the Wilcoxon test.

* = significant at the 5% level; ** = significant at the 1% level.

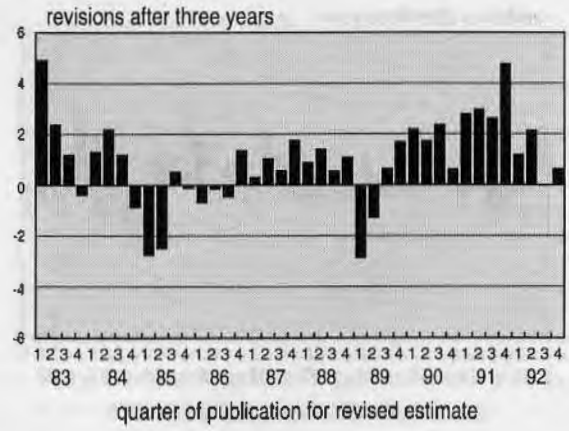
TABLE 5: RESULTS OF STUDENT'S T-TEST AFTER COCHRANE-ORCUTT TRANSFORMATION
(Revisions after 3 Years to growth rates - 1983 to 1992)

	Before transformation		After transformation	
	t-value	ρ	t-value	ρ
Expenditure (current prices)				
Total	3.40	0.53	1.49	-0.05
Consumer expenditure	4.32	0.46	2.20	-0.05
Gross domestic fixed capital formation	3.79	0.62	1.62	0.03
Expenditure (constant prices)				
Total	3.66	0.24	2.64	-0.02
Consumer expenditure	2.63	0.38	1.32	0.06
Gross domestic fixed capital formation	3.35	0.61	1.36	0.00
Income (current prices)				
Total	2.06	0.34	1.65	-0.00
Other income	3.63	0.63	1.45	0.01
Output (constant prices)				
Total	4.81	0.66	2.36	0.06
Agriculture, forestry and fishing	2.30	0.77	0.43	0.12
Distributions, hotels and catering	-2.01	0.70	-0.90	0.13
Other services	3.73	0.68	1.42	-0.05

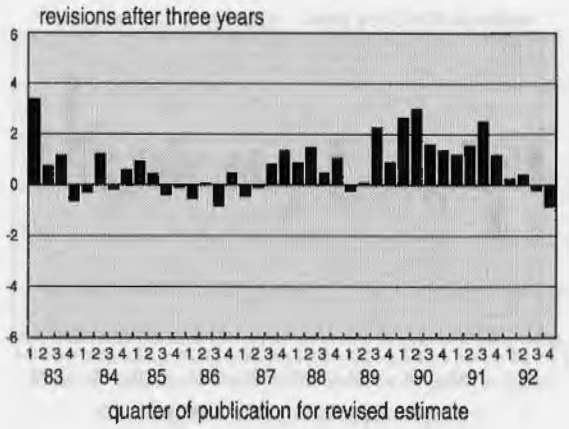
TABLE 6: SUMMARY OF TESTS FOR CYCLICAL VARIATION

Series	1983 to 1992 Overall mean	Expansion phase mean	Expansion phase t-value	Contraction phase mean	Contraction phase t-value	1983 to 1987 Overall mean	Expansion phase mean	Expansion phase t-value	Contraction phase mean	Contraction phase t-value	1988 to 1992 Overall mean	Expansion phase mean	Expansion phase t-value	Contraction phase mean	Contraction phase t-value
Expenditure (current prices)															
Total	0.92	1.12	2.92	0.61	1.58	0.53	0.16	0.30	1.09	2.00	1.30	2.08	4.90	0.13	0.30
Consumer expenditure	0.72	0.83	3.46	0.56	2.36	0.38	0.30	0.94	0.49	1.54	1.07	1.36	4.27	0.64	2.01
General government final consumption	0.28	0.42	1.23	0.07	0.21	0.31	0.51	0.94	0.02	0.04	0.25	0.34	0.74	0.12	0.27
Gross domestic fixed capital formation	2.38	4.01	5.18	-0.08	-0.10	0.91	2.26	2.06	-1.12	-1.02	3.84	5.76	6.43	0.96	1.08
Exports	-0.05	0.08	0.43	-0.24	-1.30	0.15	0.44	1.77	-0.28	-1.15	-0.25	-0.28	-1.06	-0.20	-0.78
Imports	0.27	0.57	2.45	-0.17	-0.72	0.35	0.74	2.20	-0.24	-0.71	0.20	0.40	1.20	-0.10	-0.29
Expenditure (constant prices)															
Total	0.70	0.94	3.49	0.35	1.29	0.23	0.27	0.77	0.17	0.48	1.17	1.60	4.68	0.52	1.53
Consumer expenditure	0.39	0.52	2.49	0.19	0.89	0.09	0.31	1.37	-0.25	-1.11	0.69	0.73	2.21	0.62	1.89
General government final consumption	-0.17	-0.20	-0.79	-0.11	-0.44	-0.40	-0.42	-1.58	-0.37	-1.39	0.07	0.02	0.04	0.15	0.34
Gross domestic fixed capital formation	2.16	3.89	4.94	-0.43	-0.55	0.54	2.33	2.05	-2.13	-1.88	3.78	5.46	6.43	1.27	1.50
Exports	-0.00	0.19	0.73	-0.29	-1.10	-0.01	0.42	1.35	-0.67	-2.13	0.01	-0.04	-0.09	0.09	0.22
Imports	-0.26	0.22	0.66	-0.98	-2.88	-0.52	0.14	0.27	-1.53	-2.80	0.01	0.30	0.75	-0.44	-1.08
Income (current prices)															
Total	0.42	0.73	2.63	-0.05	-0.20	0.08	0.44	0.94	-0.46	-0.99	0.75	1.02	3.56	0.35	1.23
Income from employment	0.22	0.54	2.96	-0.28	-1.51	0.20	0.45	1.66	-0.19	-0.69	0.24	0.64	2.47	-0.37	-1.43
Gross trading profits of companies	1.39	1.54	0.91	1.17	0.69	-0.27	1.23	0.50	-2.52	-1.03	3.06	1.86	0.84	4.86	2.20
Other income	1.40	2.27	4.58	0.09	0.18	0.97	1.27	1.82	0.52	0.74	1.83	3.27	5.19	-0.34	-0.54
Output (constant prices)															
Total	0.49	0.51	3.44	0.47	3.17	0.87	1.05	6.47	0.61	3.77	0.12	-0.03	-0.18	0.33	2.11
Agriculture, forestry and fishing	2.12	2.51	1.89	1.54	1.16	5.31	5.04	2.88	5.71	3.26	-1.07	-0.03	-0.02	-2.63	-1.94
Manufacturing	0.62	0.73	3.17	0.45	1.93	0.94	1.10	3.55	0.68	2.20	0.30	0.46	0.26	0.00	0.00
Construction	0.43	0.55	1.26	0.27	0.62	0.85	0.72	1.49	1.05	2.16	0.02	0.37	0.52	-0.51	-0.73
Distribution, hotels and catering	-0.67	-0.28	-0.59	-1.25	-2.70	-1.36	-0.26	-0.37	-3.02	-4.37	0.03	-0.29	-0.77	0.51	1.34
Transport and communications	0.11	0.42	0.94	-0.37	-0.81	-0.31	-0.29	-0.48	-0.34	-0.58	0.52	1.13	1.69	-0.39	-0.59
Other services	0.79	0.59	1.96	1.09	3.63	1.78	1.54	5.55	2.14	7.70	-0.20	-0.37	-1.35	0.04	0.15

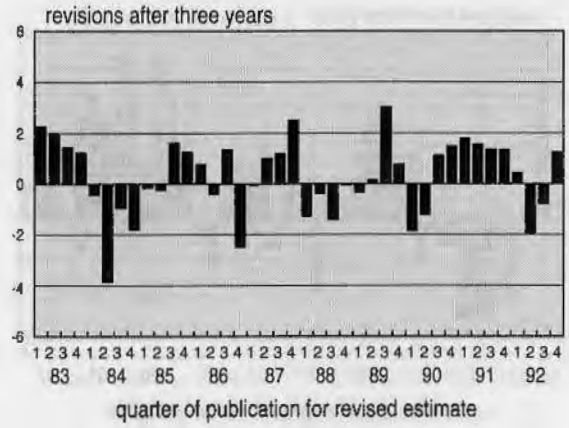
Total GDP expenditure components at current prices
four quarter per cent change



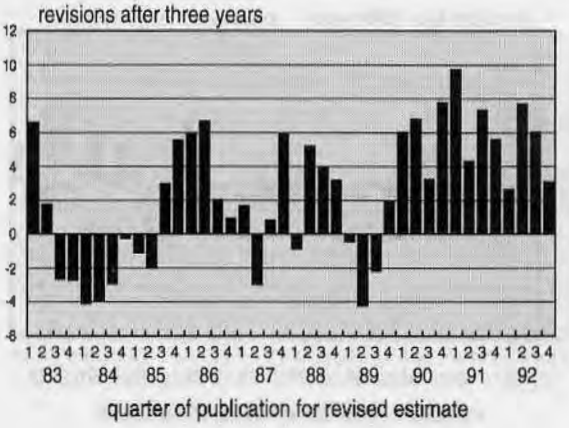
Consumer expenditure at current prices
four quarter per cent change



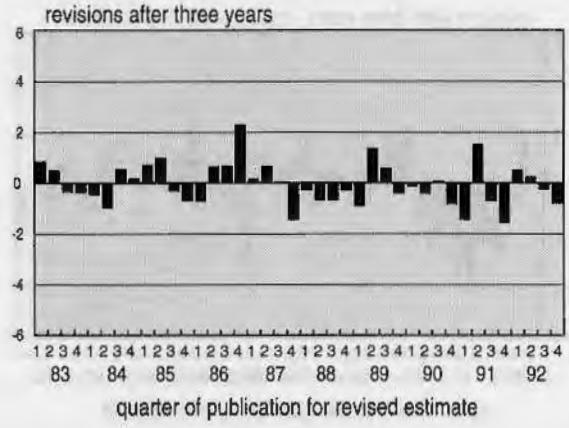
Government final consumption at current prices
four quarter per cent change



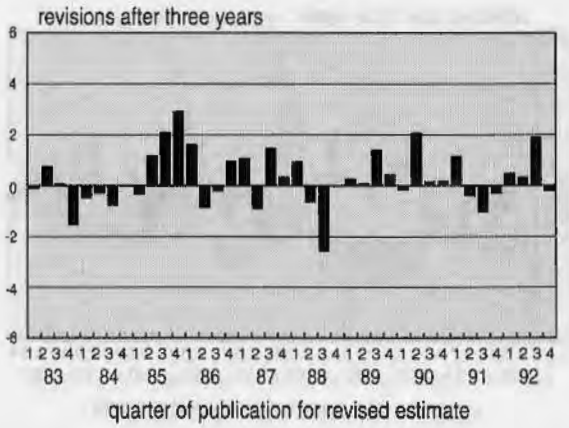
GDFCF at current prices
four quarter per cent change



Exports at current prices
four quarter per cent change

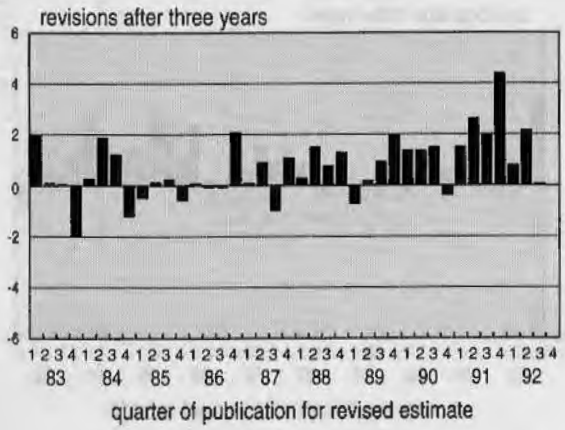


Imports at current prices
four quarter per cent change



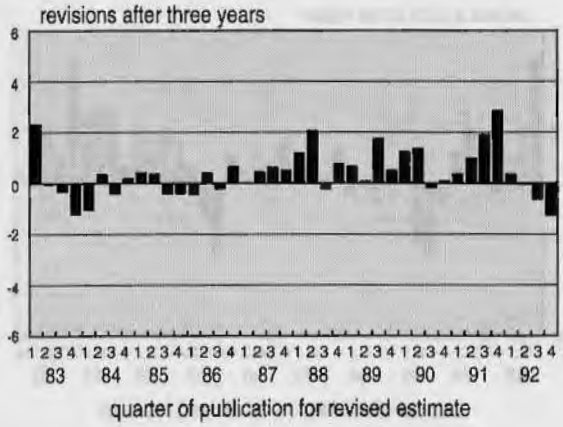
Total GDP expenditure components at constant prices

four quarter per cent change



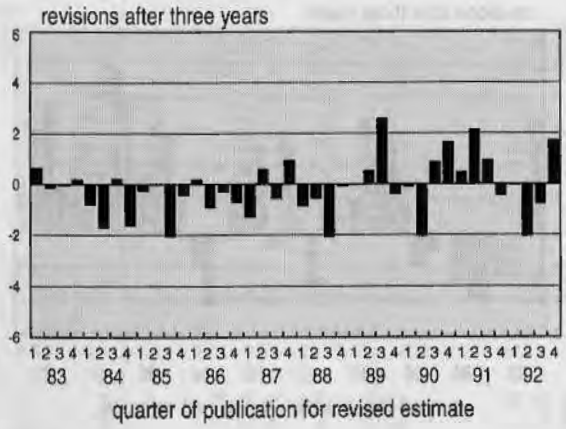
Consumers' expenditure at constant prices

four quarter per cent change



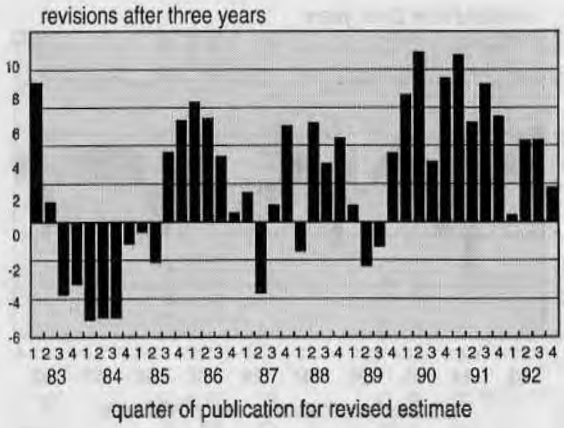
Government final consumption at constant prices

four quarter per cent change



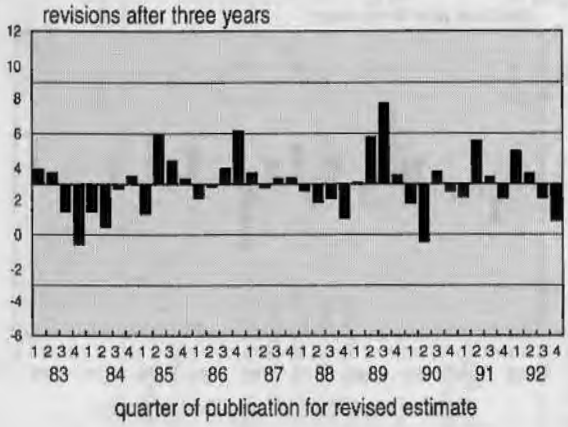
GDFCF at constant prices

four quarter per cent change



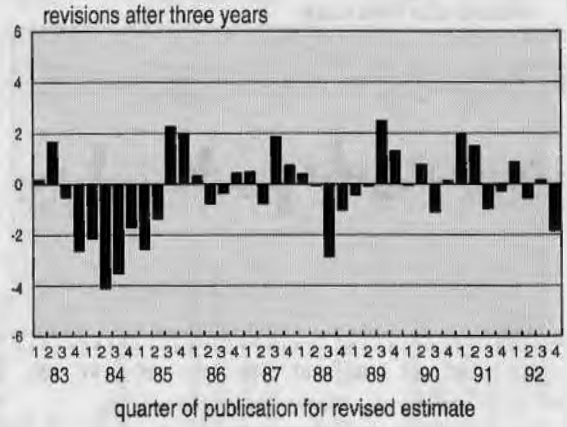
Exports at constant prices

four quarter per cent change



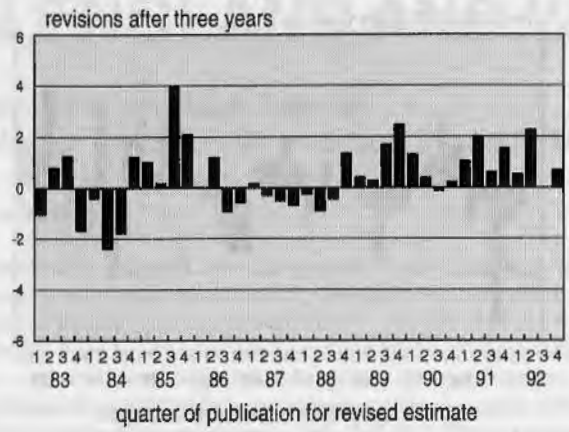
Imports at constant prices

four quarter per cent change



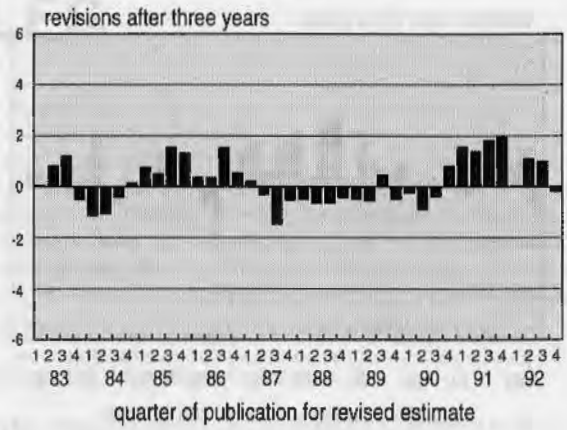
Total GDP income components at current prices

four quarter per cent change



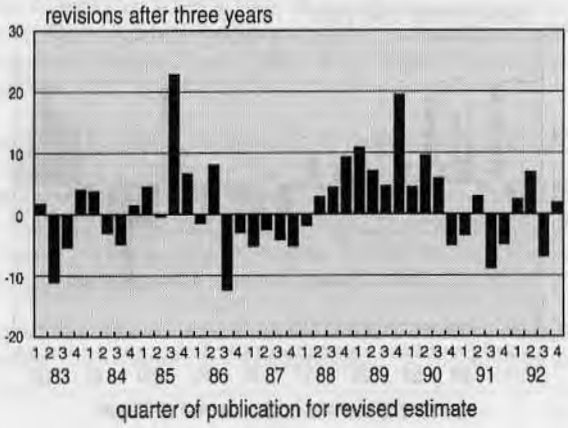
Income from employment

four quarter per cent change



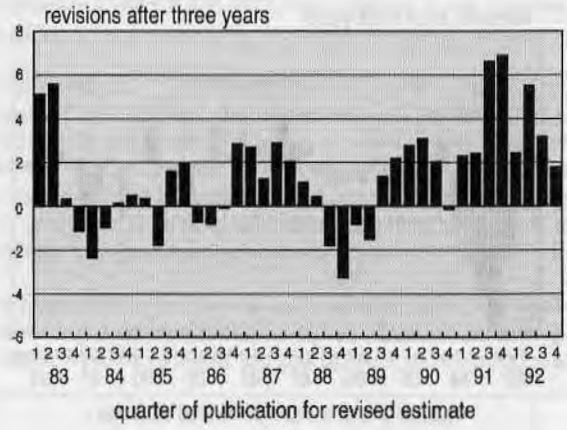
Gross trading profits of companies

four quarter per cent change



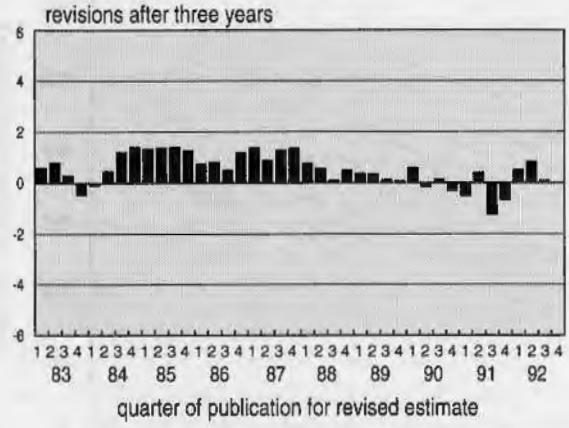
Other income

four quarter per cent change



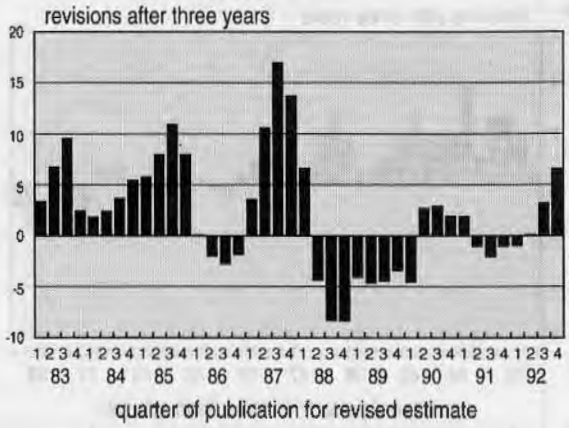
Total GDP output components at constant prices

four quarter per cent change



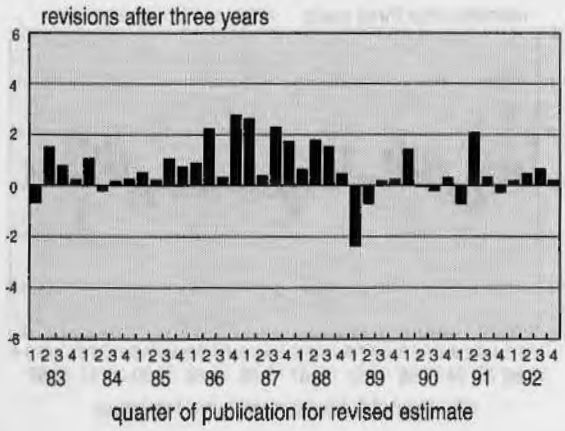
Agriculture, forestry and fishing

four quarter per cent change



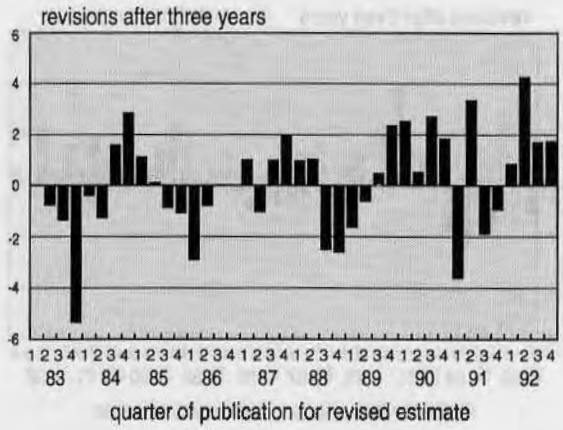
Manufacturing

four quarter per cent change



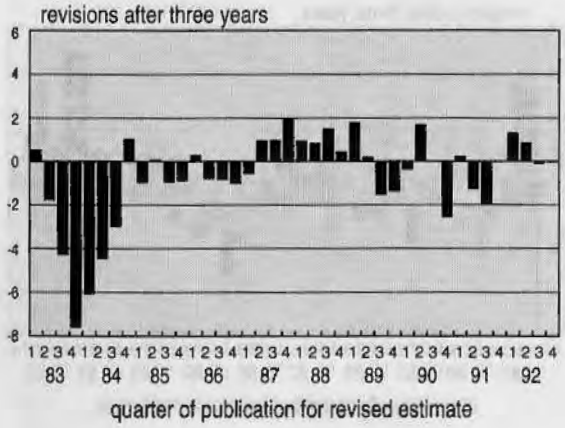
Transport and communication

four quarter per cent change



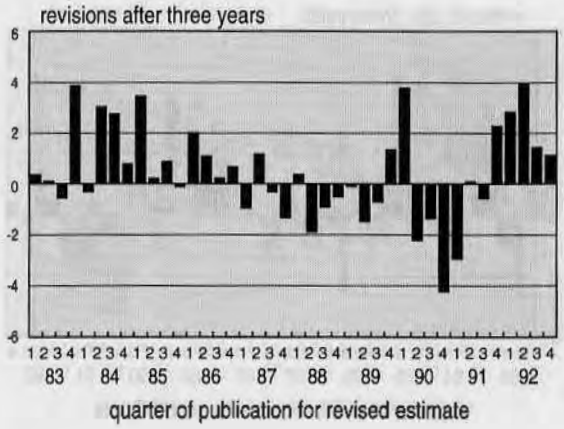
Distribution, hotels and catering

four quarter per cent change



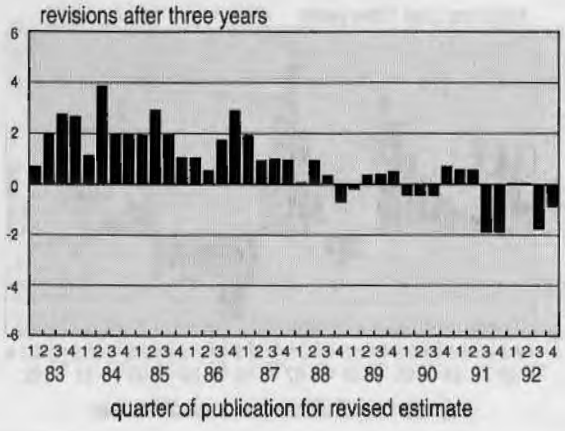
Construction

four quarter per cent change



Other services

four quarter per cent change



SEASONAL ADJUSTMENT OF THE NUMBER OF PROPERTY TRANSACTIONS IN ENGLAND AND WALES

Frank Kane and Mark Wardell,
Statistics and Economics Office, Inland Revenue

Introduction

The seasonally adjusted series of property transactions was first introduced into *'Economic Trends'* in the June 1991 edition in an article by Paul Heggs and Alan Holmans(1). Since that article was published, there have been a number of potential distortions to the series. An obvious example is the temporary raising of the stamp duty threshold to £250,000 from December 1991 to August 1992, sometimes referred to as the stamp duty 'holiday'; other examples are given later in the article. It was therefore necessary to investigate the methodology to check whether these potential distortions had had an adverse effect upon the seasonal adjustment of the series.

Particulars Delivered (PDs)

A PD form must be completed on any transaction involving freehold land or property or when a lease of greater than seven years is granted. The series is based upon a count of the numbers of PDs processed by either the Stamp Office or the District Land Registry each month.

The series is an important indicator of the state of the property market, since it covers the majority of transactions and not just properties purchased with a mortgage. The PD series lags completions by an average of one month so, for example, the September number refers mainly to completions in August. Further details of PDs can be found in the original *'Economic Trends'* article.

The property market is very seasonal. It tends to be at its peak in the second and third quarters of the calendar year, i.e. in the spring and summer. Publication of only the unadjusted series would not, therefore, give a clear indication of the state of the market. The seasonal adjustment of the series is an attempt to analyse past monthly changes in order to separate changes due to the seasonality of the series and changes due to the underlying trend.

Seasonal Adjustment of Series

The program used to make the seasonal adjustment is X-11, which was devised by the US Bureau of Census. It assumes that in any time series, data is composed of three elements - a trend cycle (C), a seasonal component (S) and an irregular component (I). For economic time series it is common to assume a multiplicative relationship, i.e. CxSxI. By using a sequence of moving averages the three components can be estimated. Full details of the methodology of X-11 are available from Mr M A Baxter, SMQ Branch, Central Statistical Office, Room 54/2, Great George Street, London SW1P 3AQ.

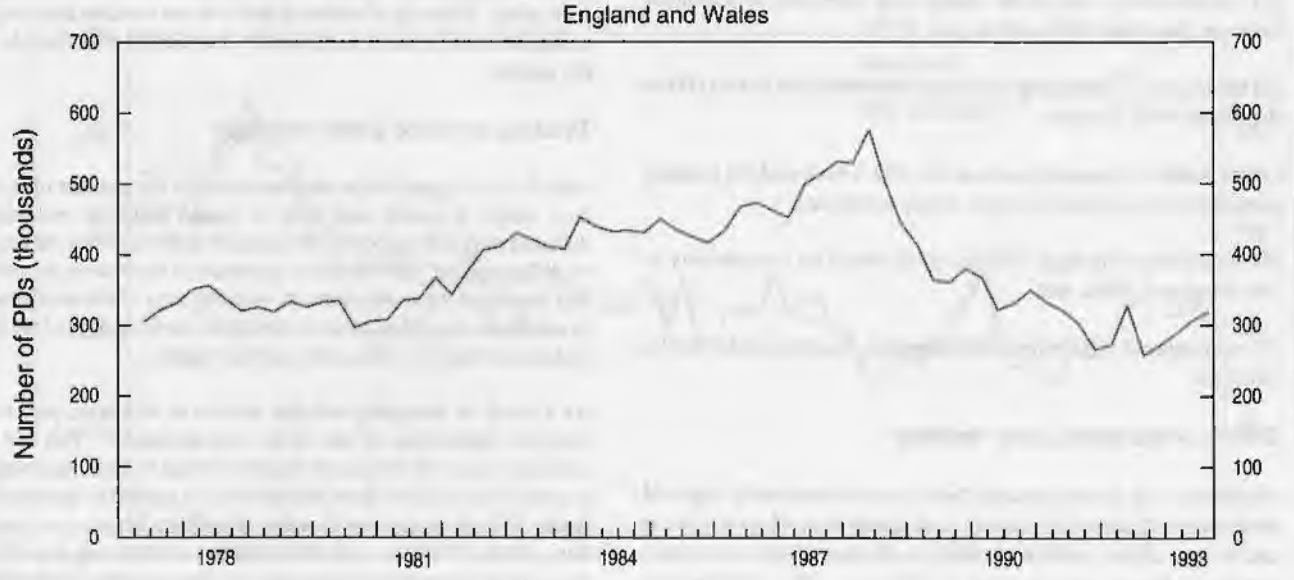
During the process, extreme high or low values of the product of the seasonal and irregular components are averaged out so that unusual figures do not unduly influence the calculation of the seasonal factors. The set of seasonal factors for each month (the S values) are constructed in order to estimate and take out the seasonal component in the series. High seasonal factors for a particular month indicate that the unadjusted series is usually high.

Examination of the old seasonally adjusted series in Chart 1 shows how the property market has fluctuated since 1977. From the early 1980s, it shows a gradual increase in property transactions as home

Chart 1

Quarterly old adjusted series 1977 to 1993

England and Wales



ownership increased followed by the boom of the mid to late 1980s, which peaked in mid 1988. Property transactions fell off rapidly at the end of the 1980s and the early 1990s. There was a concentration of activity in mid 1992 around the end of the temporary raising of the stamp duty threshold. This has been followed by a moderate increase in transactions in 1993.

Problems with the series

When X-11 is run it produces a number of measurements and statistical tests that help to determine how effective the estimated seasonal adjustment is. One problem that was identified with the old adjustment process was moving seasonality. This occurs when the estimated seasonal factors change very rapidly over time for particular months. The X-11 analysis of variance F-test for moving seasonality was significant. The main problem with moving seasonality is that it can result in large revisions to seasonal factors in the recent past. From an examination of the seasonal factors in table 1, which shows the change in factors between 1988 and 1993, it can be seen that the seasonal factors for January, August and September changed by 9%, 7% and 6% respectively. It is worth noting that prior to this period there was no sign of significant moving seasonality.

Another problem was the months to cyclical dominance (MCD). This measures the length of time in months that it takes the trend component to dominate the irregular component. It shows how many months it takes to get a clear indication of the trend. In the old adjustment the MCD was 6 months. This in effect meant that to ascertain the recent trend correctly it was necessary to compare the seasonally adjusted series of the latest six months with the previous six months. A smaller MCD is desirable in that a measure of the trend is available for a more recent period and turning points are more quickly estimated.

It was also noticed that, particularly for 1992, there were a number of values that were being flagged as extreme, in addition to January, August and September. These are likely to have also been caused by the stamp duty 'holiday'.

Analysis of the adjustment

The problems with the MCD and moving seasonality in the adjustment were thought to have been caused by a number of events in the property market. These were:

(1) the temporary rise in the stamp duty threshold to £250,000 between December 1991 and August 1992;

(2) the impact of increasing the stamp duty threshold to £60,000 in the March 1993 Budget;

(3) the Autumn Statement package of 1992, which enabled housing associations to purchase suitable empty properties;

(4) the ending of multiple MIRAS applications for one property in the summer of 1988; and

(5) more generally, the effect of trading days, Easter and other public holidays.

Effects of the stamp duty 'holiday'

Examination of the old seasonal factors and the seasonally adjusted series shows that for some months, particularly those at the beginning and the end of the 'holiday', January, August and September, there appears to be a certain amount of distortion. This problem was identified as significant moving seasonality. This means that the seasonally adjusted series had become a less reliable indicator of trends in the property market.

This problem of moving seasonality suggests that further adjustments, in addition to the averaging out of extreme values discussed earlier are required. One option within X-11 is to replace the unusual values with interpolated values. This option ignores the irregular component in calculating the seasonal and trend cycle for the flagged months. The three most extreme values in 1992, January, August and September were interpolated. This had the effect of reducing the moving seasonality from the series caused by the 'holiday', as shown by a non-significant F-test.

Other events

The raising of the stamp duty threshold to £60,000 in the March 1993 Budget does not seem to have had a significant impact upon the seasonal factors. This is backed up by the fact that there was no significant evidence of moving seasonality after allowance for the 'holiday'. If the unadjusted series had become unusually high for some months, as occurred with the 'holiday', then there could have been an impact on the seasonal factors. However, this was not apparent in the months following the change.

The Autumn Statement package of 1992 increased the money that was available to housing associations to purchase properties. It is likely that this boosted transactions by about 23,000. However, as with the raising of the threshold, it is likely that this effect was spread over a number of months and not just concentrated in a few. Hence, there is no ascertainable impact on the seasonality of the series.

The ending of multiple MIRAS relief for one property at the beginning of August 1988, which coincided with the top of the boom, does not seem to be having any significant impact on the seasonal pattern of the current series. Interpolation of the August 1988 figure has no noticeable effect on the current series. This is due to the fact that in the seasonal adjustment for the current year greater weight is placed upon data for the previous two years than on earlier data.

The above analysis of past events shows that interpolation of the most extreme 1992 values has led to an alignment of the seasonal factors with their historical values and a reduction in the moving seasonality caused by the 'holiday'. None of the other potential distortions outlined above have had a significant impact on the seasonal adjustment process. However, the MCD was still high at six months. One way of reducing this is to see whether the irregular component can be partly explained by the number of trading days in the month.

Trading days and public holidays

With X-11 it is possible to take into account the number of trading days within a month and even to assign different weights for different days if it is known that there are differing levels of activity on different days. The PD series is a count of documents processed, and as processing is only done on working days of the week and not at weekends, assigning positive weights to working days of the week and zero weights to weekends seemed logical.

As a result of assigning weights to days in this way, part of the irregular component of the series was explained. This led to a reduction in the MCD from six months to three months, meaning that a comparison of only three months data is needed to ascertain the trend. With the inclusion of trading day effects, an extra trading day component (TD) enters the multiplicative relationship described at the start of the article and the series is represented as CxSxIxTD.

Public holidays do not have an effect on the adjustment process since they are fixed and are automatically taken account of by X-11. However, Easter is a potential problem, since the date changes each year and can fall in either March or April. According to the Stamp Office if Easter falls at the beginning or middle of the month then the work can be caught up and there would be no significant effect upon the series. The only problem would be if Easter fell at the end of the month. However, examination of Easter dates for the past few years shows that only 1991 had an Easter date at the end of the month and in this case only one day. This does not seem to have had a significant impact upon the adjustment as the seasonal factor for March 1991 is little different from the value in surrounding years.

Extreme values

Another measure to improve the adjustment process was to raise the upper limit that determines how many of the extreme values are replaced by averages. It was felt that after using the interpolation option, the upper limit could be increased so that more of the actual data for recent years is used. This had the effect of reducing the MCD slightly.

New seasonal adjustment process

The analysis of the PD series described above has led to a number of changes to be made to the adjustment process. The new adjustment process incorporates interpolated values for the most affected 'holiday' months in 1992, a trading day adjustment and a higher limit to deal with other outliers. The revised seasonal factors are given in table 2, the complete new seasonally adjusted series can be seen in table 3 and the latest figures in table 43 of this edition of 'Economic Trends'. It can be seen that the revised seasonal factors are more stable, the large changes in the old adjustment factors for January, August and September (see table 1) have been eliminated.

Chart 2 gives a comparison between the new seasonally adjusted series and the unadjusted series since 1988. Chart 3 shows the old and the new seasonally adjusted series for 1992 and 1993. Both show the effect of the 'holiday' in 1992 and the most recent trend of a modest pick up in 1993. However, the line of the new adjusted series is smoother than the old and allows the underlying trend to be seen more clearly. Because of the lower MCD and the reduction of moving seasonality, future changes in the trend can be detected much earlier by the new adjustment process.

Summary

The count of the PDs takes into account all land and property transactions in England and Wales, apart from short term leases. It therefore provides a good indicator of the state of the property market, bearing in mind that on average, the series lags completion dates by a month.

A review of the methodology underlying the seasonal adjustment process was prompted by recent events such as the stamp duty 'holiday'.

Interpolation of the months most affected by the 'holiday' has led to the seasonal factors moving more in line with their historical values and the reduction of the moving seasonality caused by the 'holiday'.

The months to cyclical dominance (MCD) has been decreased from six to three months, after taking into account trading day effects. This means that direct three month upon three month comparisons can now be made to detect changes in the underlying trend.

As a result of these changes, the seasonal factors used to adjust the series have become more stable and the revised adjusted series allows the underlying trend to be detected more quickly.

Reference

(1) P Heggs and A Holmans, 'Number of Property Transactions in England and Wales', *Economic Trends* June 1991

Chart 2

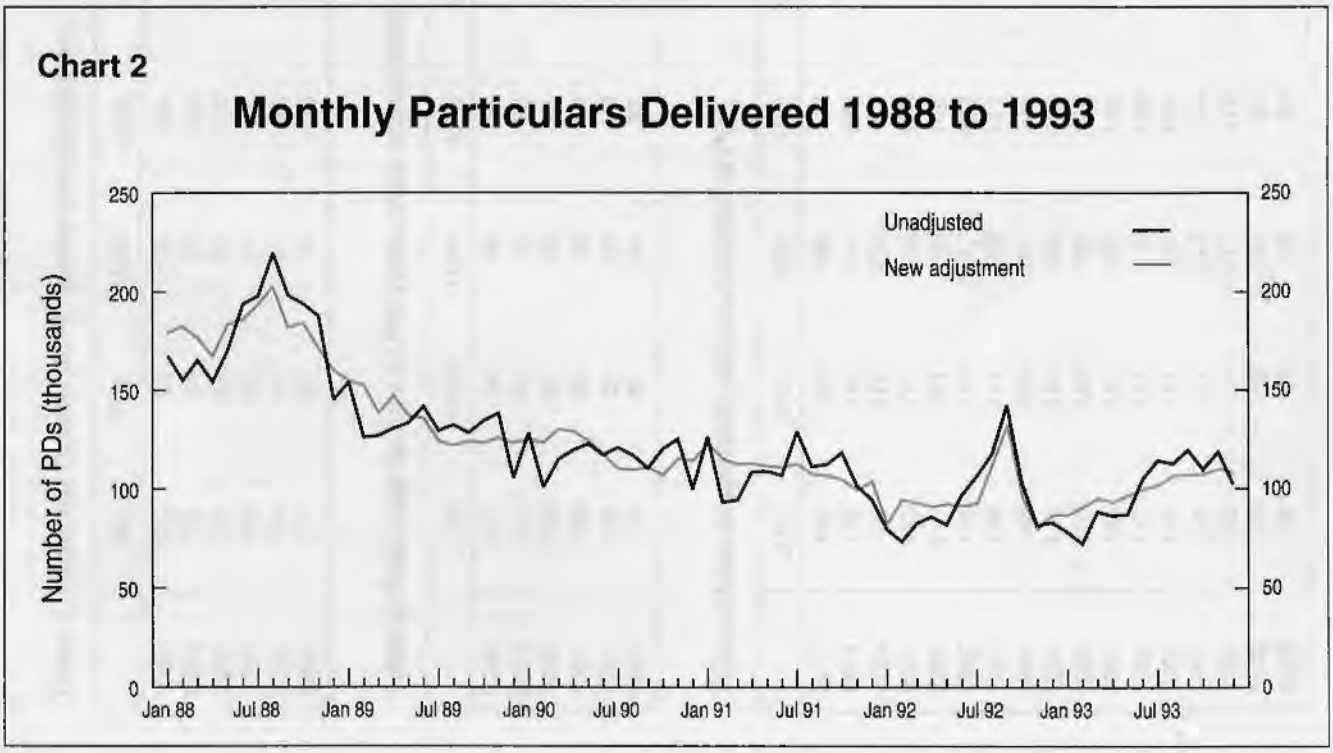
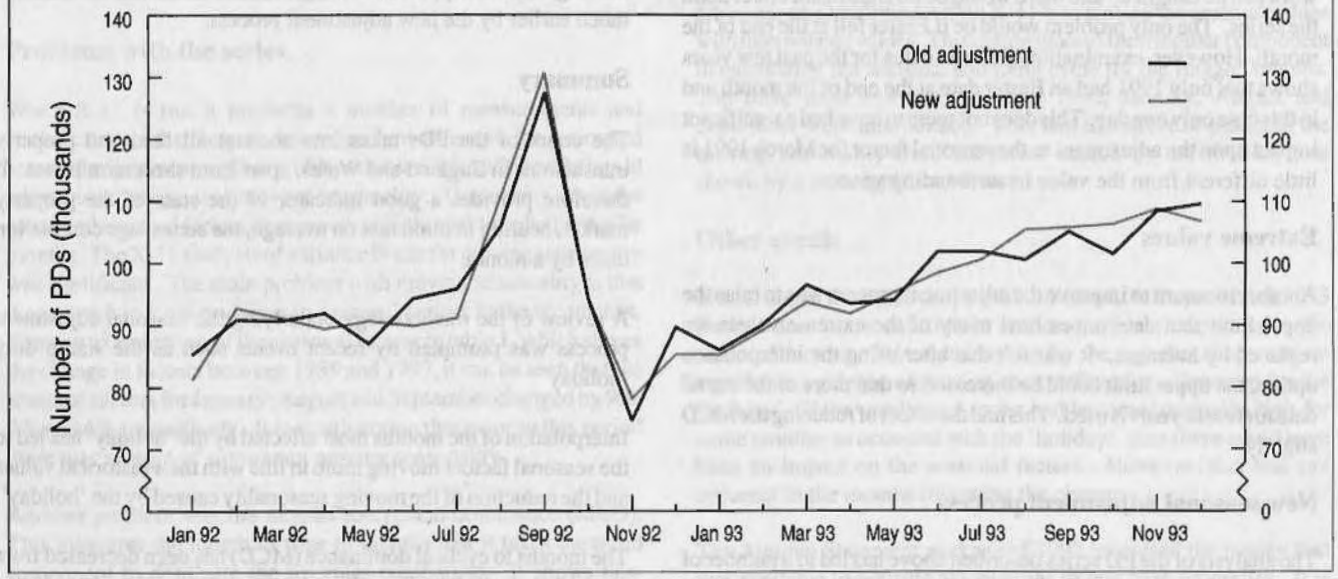


Chart 3

Monthly Seasonally adjusted series 1992-1993



Seasonal adjustment of Particulars Delivered series for England and Wales

Table 1:Seasonal factors of PD series-old adjustment

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1988	100	85	91	94	95	103	108	105	108	113	109	92
1989	99	84	91	94	96	103	107	106	108	112	110	91
1990	97	83	91	95	96	103	108	108	108	112	110	91
1991	95	82	91	94	96	103	110	110	110	110	110	92
1992	94	81	91	94	94	103	111	111	112	110	110	93
1993	91	81	92	93	93	103	112	112	114	108	109	93

Table 2:Seasonal factors of PD series-new adjustment

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1988	101	84	90	96	94	102	110	105	107	111	108	92
1989	101	83	90	96	95	103	111	105	107	111	108	92
1990	100	83	90	95	96	104	111	105	108	110	107	93
1991	99	82	90	94	96	104	112	105	109	110	107	93
1992	99	81	91	93	96	104	113	106	109	110	106	93
1993	98	81	91	92	96	104	114	107	110	110	106	93

Table 3:New seasonally adjusted series of PDs

Number: thousands

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1977	n/a	n/a	n/a	97	104	99	107	108	109	109	111	117	960
1978	116	118	115	123	113	114	117	115	110	107	112	107	1369
1979	106	110	108	87	115	111	107	110	123	114	107	105	1303
1980	113	112	109	123	98	107	102	96	99	102	100	105	1266
1981	102	101	106	106	112	112	108	119	113	116	128	121	1344
1982	115	113	117	123	124	126	140	132	133	135	138	139	1536
1983	136	141	153	143	141	136	138	138	137	139	133	140	1674
1984	148	154	151	142	144	154	145	146	146	144	146	143	1763
1985	142	146	146	150	153	149	145	144	143	140	142	143	1742
1986	150	145	125	147	142	145	148	155	160	161	158	157	1793
1987	155	153	157	140	157	157	168	163	165	168	170	175	1928
1988	177	181	175	166	182	184	192	201	180	183	170	159	2149
1989	153	151	137	146	136	134	123	121	123	122	125	122	1592
1990	124	122	129	128	123	116	109	108	109	106	114	113	1401
1991	122	114	111	112	110	110	111	106	105	103	98	102	1305
1992	81	93	92	90	91	90	91	111	131	94	78	86	1128
1993	85	89	94	92	95	99	101	106	106	106	109	107	1189