Economic Trends

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Technical Editor: MICHAEL BYRNE
Production Team: PHIL LEWIN
KAY JOSELAND

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Introduction

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

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

Articles on international economic indicators and the final expenditure prices index appear monthly and an article on regional economic indicators appears every January, April, July and October. Occasional articles comment on and analyse economic statistics and introduce new series, new analyses and new methodology.

Quarterly information on the national accounts and the balance of payments appears in *UK Economic Accounts* which is published every January, April, July and October by The Stationery Office.

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

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

Notes on the tables

1. All data in the tables and accompanying charts is current, as far as possible, to 27 October 1997.

2. The four letter identification code at the top of each column of data (eg, DJDD) is ONS's own reference to this series of data on our database. Please quote the relevant code if you contact us requiring any further information about the data.

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

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

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

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

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

8. 'Billion' denotes one thousand million.

9. There is no single correct definition of *money*. The Government has set monitoring ranges for two aggregates:

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

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

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

10. Symbols used:

.. not available

- nil or less than half the final digit shown

+ alongside a heading indicates a series for which measures of variability are given in the table on page T77

† indicates that the data has been revised since the last edition; the period marked is the earliest in the table to have been revised

* average (or total) of five weeks.

If you have any comments or suggestions about *Economic Trends*, please write to Michael Byrne, Technical Editor, ONS, Zone D4/16, 1 Drummond Gate, London, SW1V 2QQ or e-mail Michael.Byrne@ONS.Gov.UK

Office for National Statistics
November 1997

In brief

Articles

This month we feature three articles.

Nicholas Oulton of the National Institute of Economic and Social Research describes the ABI Respondents Database (where ABI stands for Annual Business Inquiry). This is a new longitudinal database of the individual returns made to the Annual Census of Production (ACOP) which is known as ABI (Production) (page 46).

Quarterly alignment adjustments in the UK national accounts are described by Ted Snowdon. The background, methods of calculation and allocation are all described and an illustrative example of the adjustment mechanism to constant price expenditure is included (page 23).

Finally, Philip Gooding introduces the concept of Globalisation. Trends in trade and investment are examined, including the role of transnational companies. The process of Globalisation is reviewed from an economic and statistical view point, including the problems of measurement with existing statistical sources (page 28).

Fifty years of the Retail Prices Index

To mark the fiftieth anniversary of the RPI, ONS have produced a commemorative fold-out leaflet including, amongst other items, a history of the index, the highs and lows of inflation, the internal purchasing power of the pound and examples of how the 'basket' of goods and services used to calculate the index has changed, between 1947 and today. Copies of this leaflet are available free of charge from the ONS London library on 0171-533 6262.

Recent National Statistics publications

New Earnings Survey 1997, part B: analyses by agreement; analyses of pension categories. The Stationery Office, ISBN 0 11 620936 4, price £22.

New Earnings Survey 1997, part C: analyses by industry. The Stationery Office, ISBN 0 11 620937 2, price £22.

New Earnings Survey 1997, part D: analyses by occupation. The Stationery Office, ISBN 0 11 620938 0, price £22.

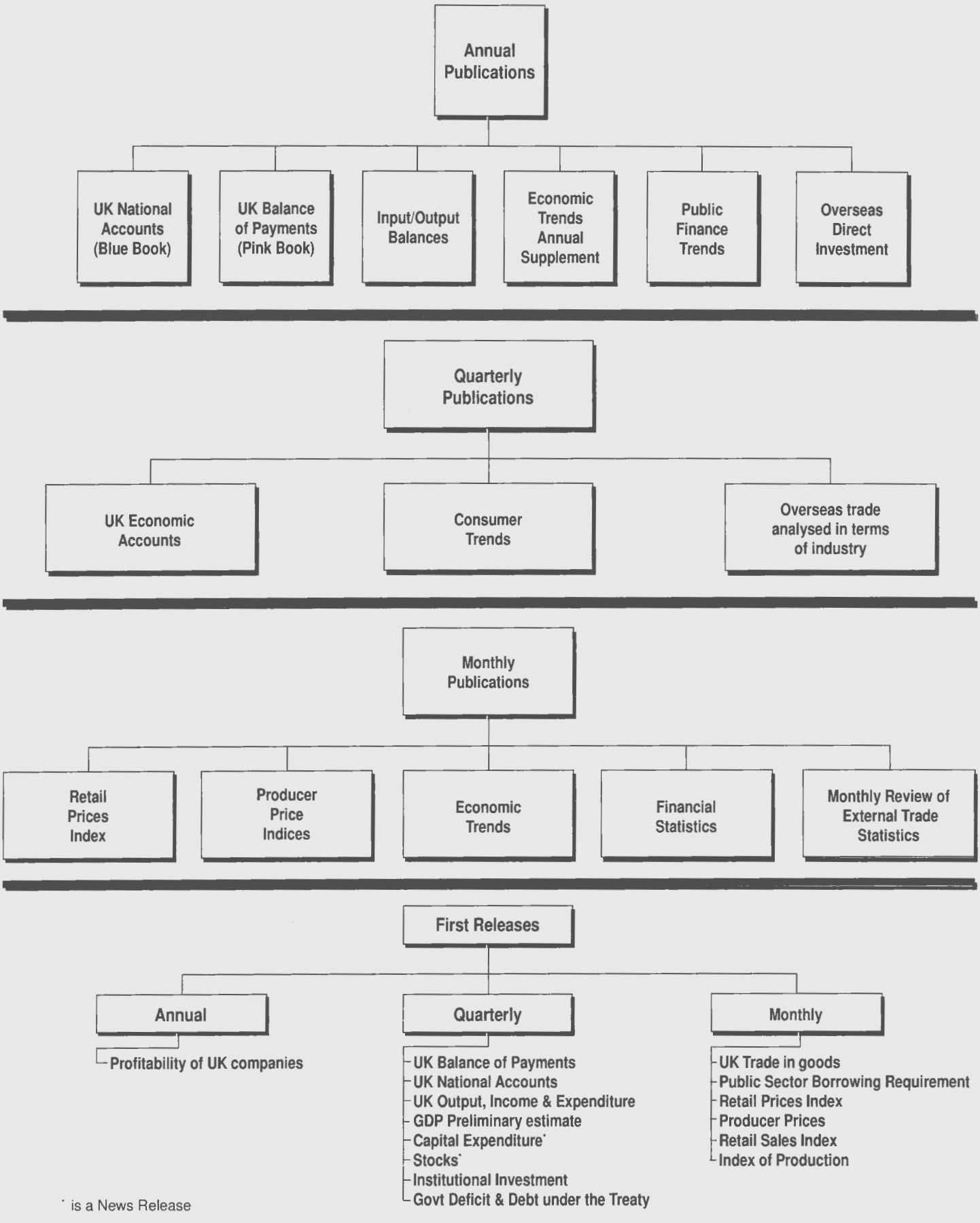
Family Spending: a report on the 1996-97 Family Expenditure Survey. The Stationery Office, ISBN 0 11 620947 X, price £37.50.
The annual analysis of all aspects of household expenditure and income.

Input-Output Balances for the United Kingdom 1992 1993 1994 1995. National Statistics, ISBN 1 85774 241 9, price £45.00.
The revised input-output balances for 1992, 1993 and 1994 plus a provisional balance for 1995, as compiled for the 1997 National Statistics *Blue Book*. The analyses give a picture of the flows of products in the economy for the year.

UK Economic Accounts: 1997 quarter 2. The Stationery Office, ISBN 0 11 620857 0, price £22.50.
Consumer Trends: 1997 quarter 2. The Stationery Office, ISBN 0 11 620926 7, price £45.
Labour Market Trends, November 1997. The Stationery Office, ISBN 0 11 620892 9, price £6.00.
Financial Statistics, October 1997. The Stationery Office, ISBN 0 11 620879 1, price £22.50.

All of these publications are available from the National Statistics Sales Office, Zone B1/06, 1 Drummond Gate, London, SW1V 2QQ. Telephone 0171-533 5678 or fax 0171-533 5689. Subscriptions are available from The Stationery Office Publications Centre, telephone 0171-873 9090.

United Kingdom Macro-Economic Statistics Publications



* is a News Release

Other publications: - Retail Prices 1914-1990 - Input/Output Tables - Labour Market Statistics - Family Spending - Sector Classification Guide - Share Ownership - Financial Statistics Explanatory Handbook

Articles

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Articles published in *Economic Trends*

International economic indicators. Commentary, figures and charts are published monthly.

Final expenditure prices index. Commentary and figures are published monthly.

Regional economic indicators. Commentary, figures and charts are published every January, April, July and October.

United Kingdom national accounts and **balance of payments** quarterly figures are published in *UK Economic Accounts* every January, April, July and October.

Other Articles

1996

December	Revisions to the United Kingdom Balance of Payments.
	Developments in United Kingdom company securities statistics.
	How far should economic theory and economic policy affect the design of national accounts?

1997

January & February	Regional Accounts 1995: Part 1.
	Balancing GDP: United Kingdom annual input-output balances.
	The Budget: 26 November 1996.
	The economy: recent developments and prospects.
	ONS plans to extend publication of service sector statistics.
	The president's task force on service sector statistics.
March	Employment in the public and private sectors.
	The effects of taxes and benefits upon household income 1995-1996.
	Quarterly integrated economic accounts: the United Kingdom approach.
	International comparisons of GDP per head over time.
April	Methodology series for United Kingdom national accounts.
	Deflation of trade in goods statistics.
June	Regional Accounts 1995: Part 2.
	Competitiveness in manufactures.
August	Research and experimental development (R & D) statistics 1995.
	The Budget: 2 July 1997.
	The economy: developments and prospects.
September	Geographical breakdown of the balance of payments current account.
	Development of a final expenditure prices index.
	Overseas trade in services: publication of monthly estimates.
October	Environmental input-output tables for the United Kingdom.
	Implications of the US Boskin report for the UK retail prices index.
	A household satellite account for the United Kingdom.

For articles published in earlier issues see the list in issue 509 (March 1996) of *Economic Trends*. Copies of articles may be obtained from the Publications Unit, Marketing and Customer Service Division, Office for National Statistics, Zone B1/12, 1 Drummond Gate, London SW1V 2QQ, on payment of £2.00 per copy for articles within the last year, and £4.00 per copy for articles prior to this. The appropriate remittance should accompany each order. Cheques, etc, should be made payable to Office for National Statistics.

Economic update - November 1997

By Adrian Richards, Economic Assessment - Office for National Statistics
Address: D4/20, 1 Drummond Gate, London, SW1V 2QQ Tel: 0171 533 5923 Email: adrian.richards@ons.gov.uk

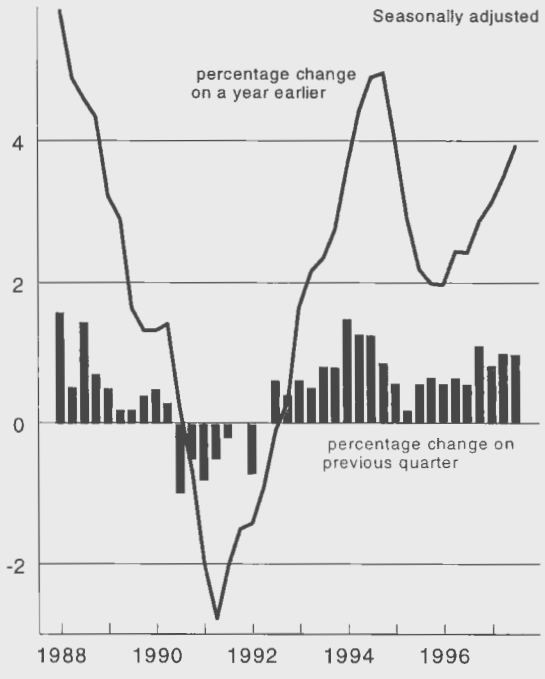
Overview

Preliminary estimates show that activity continued to grow rapidly in the third quarter, resulting in further demand for labour. However the strong growth has not yet led to much evidence of inflationary pressure. Although overall growth has remained stable the components of growth have changed with stronger growth in manufacturing and lower growth in services and construction. One factor that might could have been expected to have reduce growth is the appreciation of sterling. This has had little impact on growth as export volumes have continued to grow. Higher exports has improved the trade deficit, although the trade balance with Non-EU countries widened in September. This is unlikely to be related to the exchange rate as most of the appreciation was against European currencies. Also the pace of reduction in unemployment on both measures has decelerated. Underlying average earnings growth remained stable although higher than at the start of the year. Underlying cost pressures also seem low with producer price inflation subdued. Headline retail price inflation has increased, but excluding mortgage interest rates, prices have edged lower. Monthly indicators show that demand fell in September after strong growth in earlier months. The closure of shops on the day of the Funeral of Princess Diana and the above normal temperatures reduced retail sales sharply in September.

GDP Activity

As chart 1 shows, the economy continued to grow strongly - 1% up between the second and third quarters and accelerated to 3.9% when compared with the same quarter a year earlier. Excluding oil and gas extraction, which tends to be volatile, growth was slightly lower on the previous quarter but slightly higher relative to the same period last year. The economy has now grown for 21 successive quarters with rapid growth within the last 4 quarters.

Chart 1
Growth in GDP at factor cost

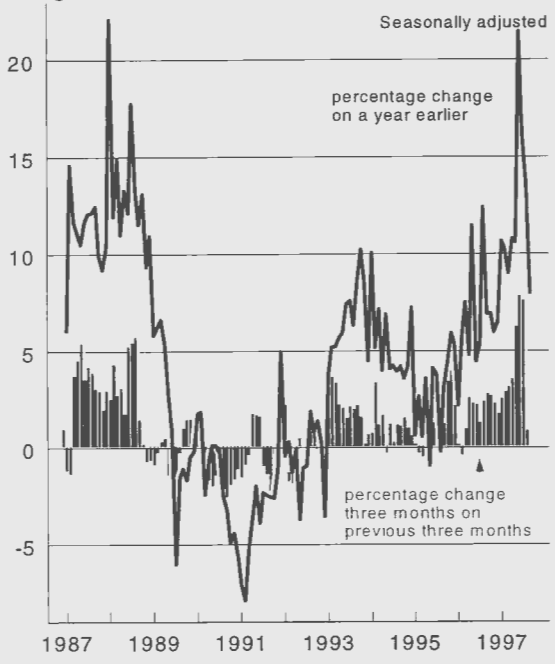


Domestic demand

Retail sales showed a sharp fall in demand in September, down 1.9% on August reducing the quarterly growth to 0.8% in the third quarter from 1.8% in the second quarter. There were a number of factors which reduced growth - the death of Princess Diana resulted in a number of shops closing for varying lengths on Saturday 6th September and reduced sales in the week leading up to the Saturday. Warmer weather also reduced demand for new season clothing. Falls were across most categories of shop although shops selling household goods showed the sharpest fall, after exceptionally strong growth in May and June. Chart 2 shows the rapid fall in the growth in sales for household goods stores.

Consumer confidence remained positive in October for the sixth consecutive month. The EC/Gfk survey shows that confidence has reached a peak in August at which it has stabilised. These levels are similar to those reached at the peak of growth in consumer spending in the late 1980s.

Chart 2
Growth in sales volumes of household goods stores



Consumer credit growth rebounded in September from a fall in July. With the exception of July 1997, net consumer credit has remained around £1 billion since July 1996. Net consumer credit was lower in July as consumers' repaid debts. Gross borrowing remained close to £5 billion, the same as it has been since March 1997. Net borrowing secured on dwellings fell back slightly in September, but remained above £2 billion for the fourth consecutive month. The overall effect was that total net borrowing continued to oscillate around £3 billion where it has been since February 1997.

The Society of Motor Manufacturers and Traders (SMMT) estimate that new car registrations, seasonally adjusted, rose in September to take the quarterly growth rate to 1.5% in the third quarter, down from 5.5% in the second quarter. New vehicles are split between consumers' expenditure and capital formation.

External demand and supply

The trade deficit improved slightly in August 1997 despite the rapid appreciation of sterling which has risen consistently from August 1996 - 21% higher over that period despite a slight fall in August 1997. The reason for the fall in the trade deficit was that that the value of imports fell faster than exports. Trade was boosted by the continued recovery in oil exports and the reduction of oil imports. Exports of oil were cut back in June partly due to maintenance work. Imports and exports of erratic items were also substantially reduced on July when the export of an oil rig boosted exports significantly. The underlying position, excluding oil and erratics, also improved.

A comparison of trade by country shows that trade with European Union countries boosted the balance in August. A combination of higher exports and lower imports reduced the balance substantially after a large deficit in July. France was one of the main countries with which the deficit in trade fell. However the deficit against non-EU countries widened as the trade balance with non-OECD countries who do not export oil widened.

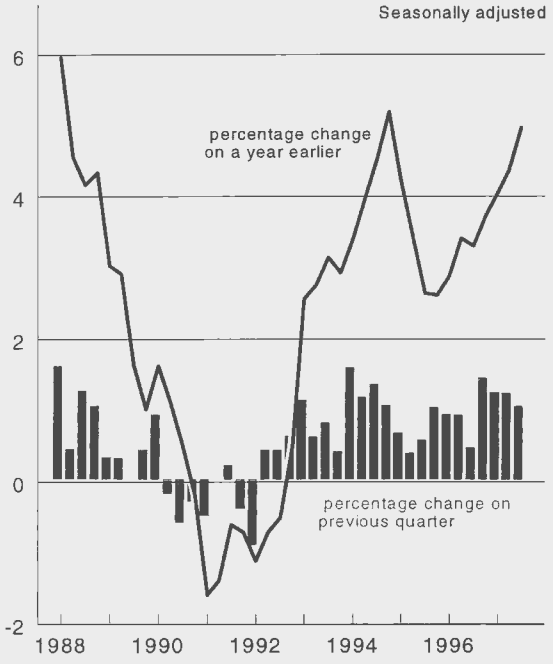
Exports and imports volumes also fell in August. Volumes growth is volatile from month to month and falls have occurred in other months recently. Looking at a three month average compared with a year earlier shows that trade has grown strongly with export growth exceeding that of imports including or excluding oil and erratics. Export volumes increased to EU countries whereas they fell against non-EU countries. Excluding oil and erratics, exports rose both to EU and Non-EU countries, whereas imports fell. The main exports have been finished manufactures and basic materials whereas import growth has been concentrated on finished manufactures. One of the main areas of growth in finished manufactures for both exports and imports have been cars. Trade prices (not seasonally adjusted) rose in August. Prices rose both with EU and Non-EU countries. Given the earlier appreciation of sterling, expectations are that prices in sterling terms would fall. However, prices have fallen over a longer period and non-EU trade shows that trade price fell back slightly in September.

Initial data for non-EU trade in September shows that the deficit widened substantially as exports fell further and imports rebounded. The trade surplus with oil exporting countries fell after two months of a higher balance. Import volumes rebounded after a fall in August.

Output

There has been a slight change in the industrial breakdown of growth. Services growth has moderated recently, but remains strong while production has increased growth with a pick up in manufacturing output. Chart 3 shows how quarterly growth has moderated recently. As stated earlier, the change in the exchange rate does not appear to have reduced demand for UK manufactures. Lower growth in retail sales in the quarter reduced growth of distributive trades. Growth in construction also appears to have fallen back.

Chart 3
Growth in output of services



Industrial production accelerated in the three month to August by 2% - the highest growth rate since September 1988, despite a small fall back between June and August. This was in part due to strong growth in the energy sector - both in mining and quarrying and in energy and water supply. Output was also boosted by an acceleration in growth of manufacturing after relatively slow growth in the second quarter. The split by market sectors shows that growth has been concentrated in those producing intermediate and investment goods. Investment goods has erratically recovered from its low point seen in March 1996. Output of the consumer goods industries have been falling after reaching a peak in January for durable goods and February for non-durable goods.

The CBI Quarterly Industrial Trends Inquiry in Manufacturing reported that orders remained flat in the 4 months from October, seasonally adjusted by the ONS, up on the negative balances in the second quarter. Manufacturers continue to report falling export orders, despite the strong growth in UK exports of manufactures reported by ONS. The CBI export orders balance, not seasonally adjusted, remained at -8 in October the same as in July.

Demand for construction decelerated in the three months to August. The volume of new construction orders in Great Britain, seasonally adjusted, rose by 7% in the three months to August compared with the three months to May. Construction orders were down across all categories except Private New Housing. Compared with the same period a year earlier, public & housing association housing and infrastructure saw substantially lower orders, reflecting the low level of public investment.

Prices and wages

Both input prices and output prices have accelerated since April but remain relatively subdued. Input prices continued to fall in the 12 months to September although the rate of fall decelerated to 7.8%. Producer prices have grown in the last two months with growth in fuels and home food materials driving prices up between August and September. The output price index fell slightly between August and September. Excluding excise duties, output prices (SA) remained stable and subdued.

Expectations of rising prices from manufacturers rose slightly in October but remained subdued. The CBI Monthly Trends Inquiry for manufacturing showed that on balance, seasonally adjusted by the ONS, only a few manufacturers expect to raise prices in the next four months.

The headline rate of annual retail price inflation edged higher, by 0.1 percentage points, between August and September. However this was due to the effects of higher mortgage interest rates - excluding these (RPIX) and further excluding indirect taxes (RPIY) the rates continued to decline gradually from their recent peaks in July. Growth in the price of housing, tobacco, leisure services and motoring were offset by falls in prices of fuel and light, relatively stable prices for leisure goods and subdued inflation for food, clothing and footwear and household goods. Fuel prices were lowered by the implementation of the reduction in VAT on household fuel bills from 8% to 5% that took effect in September. The overall result is that service inflation exceeds that of goods although both inflation rates are falling.

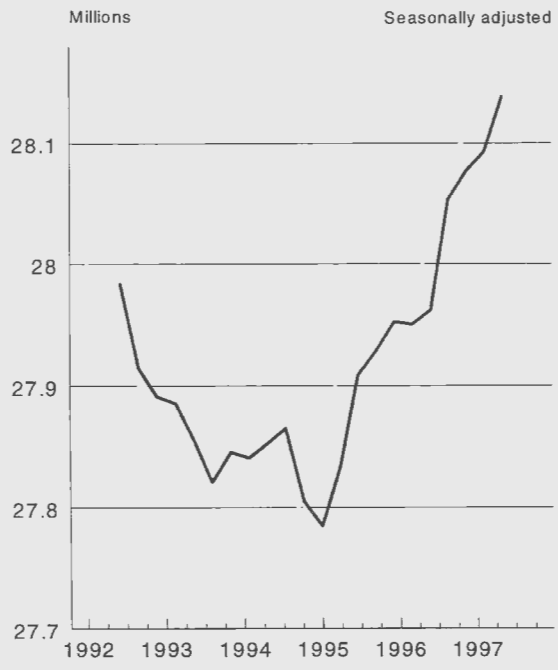
Underlying average earnings growth remained unchanged in September. Earnings growth by sector has converged in 1997 - earnings growth vary from 4½% for the whole economy and services to 4¼% for manufacturing and production industries. Service industries have closed the differential with manufacturing which had reached 2½% by March 1995. Earnings growth in services have fallen back from the peak of 5% in February when they were boosted by bonus payments.

Labour Market

The labour market continues to show demand for labour increasing as activity continues to grow at 1% as well as an increase in supply, as those previously not looking for employment enter the labour market.

The labour force survey shows that employment growth and falling unemployment continued into the summer of 1997. The LFS measure of employment rose by 86,000 in the Summer (June to September). Although growth in employment slowed from the over a 130,000 averaged per quarter in the autumn and winter surveys, employment growth has remained strong. The survey shows that the strong growth in private sector services has been the main source of additional employment. The jobs created have been mainly in full time professional/technical areas. A substantial part of the additional employment has been met by people entering the labour market as opportunities have increased - 365,000 more people have entered the labour market since the low in the winter of 1994. Chart 4 shows the increase in the numbers economically active. ILO unemployment fell by 40,000 over the period - down on the falls in the previous two quarters when JSA was affecting both unemployment measures. ILO unemployment has now fallen below 2 million to 7.1% of the workforce. The rate of fall in the claimant count slowed to 27,800 between August and September - well below the falls of around fifty thousand the previous two months. Claimant unemployment has now fallen to under 1.468 million or 5.2% of the workforce - the lowest rate since July 1980.

Chart 4
Labour force economically active



Employment in manufacturing has fallen back after recent growth. Employment fell by seven thousand in September after a fall of two thousand in July. This follows a period of persistent growth in manufacturing employment despite subdued output. This has been reversed recently with output growth accelerating and employment falling in manufacturing with the net result that productivity has increased and unit wage costs fallen.

Monetary indicators & Government finances

The annual growth of narrow money (M0), seasonally adjusted, rose from 5.0% in August to 6.1% in September 1997. Meanwhile, annual growth of broad money (M4), seasonally adjusted, accelerated from 11.6% to 11.8% over the same period to continue the strong growth in broad money seen in the last two years.

The Public sector's financial position continued to improve in September. The public sector borrowing requirement (PSBR) was £3.1 billion in September, down from £3.4 billion recorded in September 1996. For the first half of the financial year 1997-98, the PSBR was £8.6 billion, significantly lower than the £15.7 billion in the financial year 1996-97. The PSBR has been boosted by higher tax receipts and lower cumulative net departmental outlays. The PSBR has improved despite lower privitisation proceeds, £2 billion lower than in 1996.

Special Focus: Recent developments in personal income growth and implications for consumers' expenditure

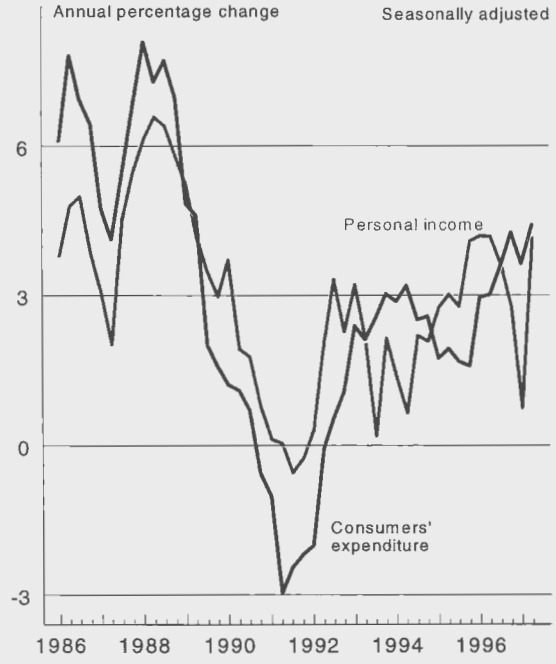
Economic models of consumption include as a central part the relationship with household income. This is usually defined in terms such as:

$$E = f(Y)$$

Where E is expenditure and Y is income. The relationship between the variable involves a stable long run relationship with a short term dynamic functions showing how quickly expenditure adapts to income changes. This varies in models as do the additional factors like wealth, demographics etc.

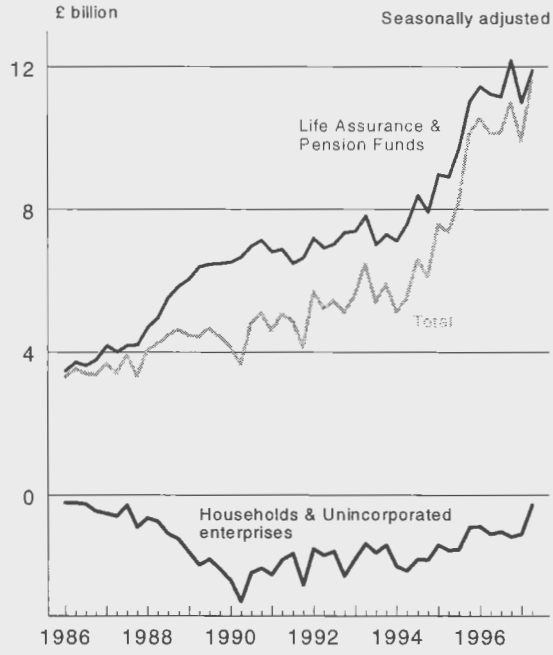
As chart 5 shows, annual growth in personal income growth accelerated from the fourth quarter of 1995. Many commentators have become concerned at the potential implications for higher consumers' expenditures and possible . Added to this is the historically high level of the savings ratio - as consumers' expenditure fell more sharply than personal income during the recession has grown at a similar rate since. One aspect not considered in some models is the proportion of **personal** disposable income that is not available to **households** for use in consumption.

Chart 5
Personal income and consumers' expenditure



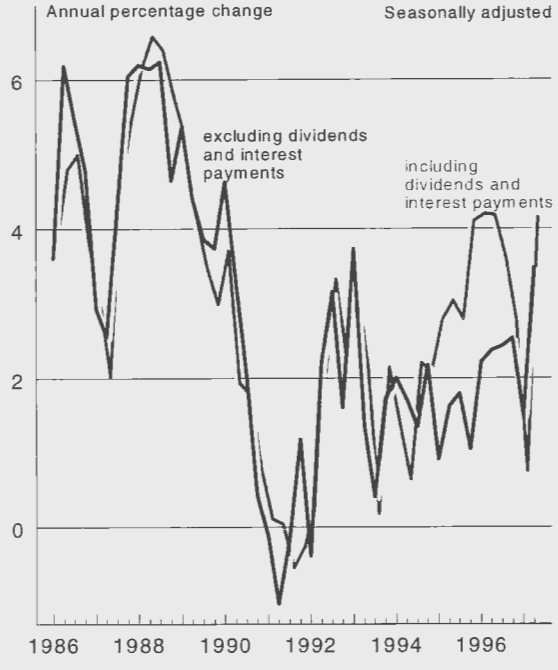
One of the main areas of growth of personal income has been in Other personal income. This is a broad category of income generally not paid by firms as wages or direct contributions or transfers from government. One of the strongest areas of growth within this has been in dividends and interest receipts. Chart 6 shows the rapid growth in dividends and interest receipts of the personal sector. In calculating receipts, ONS uses the holdings of shares etc to allocate the income between the different sub-sectors. The chart shows that after allocation to the sub-sectors of the personal sector, net dividends and interest receipts have gone to Life Assurance and Pension Funds. Income received by life assurance and pension funds is unlikely to be used for current consumption. It is more likely to be reinvested by pension funds in additional assets to provide income streams in the future. Households are unlikely to increase consumption in the short run as a result of their wealthier pension funds. There may be some additional impacts, such as if firms are given contribution holidays which would give firms extra revenue which could feed through to demand for factors of production.

Chart 6
Dividend & Interest Receipts of the Personal Sector



As chart 7 shows, excluding dividends and interest receipts has a dramatic effect on the recent growth of personal income. The impact of dividends and interest receipts has been a recent development - it has risen as a proportion of personal income from 5%, around which it has oscillated between 1986 and 1994 to approximately 8% in 1997.

Chart 7
Real Disposable income growth



Forecast for the UK Economy

A comparison of independent forecasts, October 1997

The tables below are extracted from HM Treasury's "FORECASTS FOR THE UK ECONOMY" and summarise the average and range of independent forecasts for 1997 and 1998, updated monthly.

	Independent Forecasts for 1997		
	Average	Lowest	Highest
GDP growth (per cent)	3.4	3.0	3.9
Inflation rate (Q4) - RPI - RPI excl MIPS	 3.3 2.5	 2.5 2.0	 4.7 3.6
Unemployment (Q4,mn)	1.47	1.30	1.70
Current Account (£,bn)	-2.0	-8.8	2.4
PSBR (1997-98,£ ,bn)	10.7	4.4	19.0

	Independent Forecasts for 1998		
	Average	Lowest	Highest
GDP growth (per cent)	2.5	1.7	3.6
Inflation rate (Q4) - RPI - RPI excl MIPS	 3.1 2.9	 1.8 2.1	 4.4 3.8
Unemployment (Q4, mn)	1.33	0.78	1.59
Current Account (£,bn)	-9.6	-16.3	-3.9
PSBR (1998-99,£,bn)	4.9	0.9	10.5

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

International Economic Indicators - November 1997

by Sue Holloway, Economic Assessment - Office for National Statistics

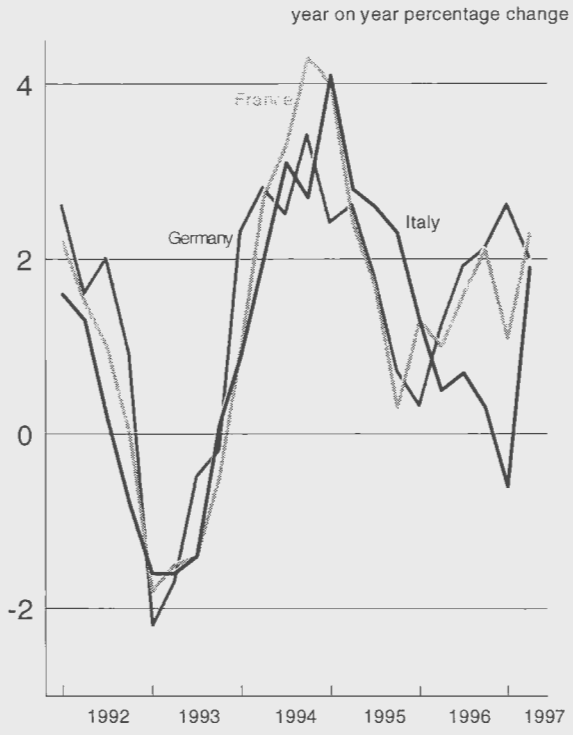
Address: D4/20, 1 Drummond Gate, London SW1V 2QQ Tel: 0171 533 5975

Overview

The German and French economies grew strongly in the second quarter of 1997, following more modest quarterly growth in the previous two quarters, while Italy experienced strong growth in production after eighteen months of falling output . Japan's GDP fell back in the second quarter, influenced by a sharp fall in consumers' expenditure. Latest data shows little significant movement on inflation or employment.

Activity

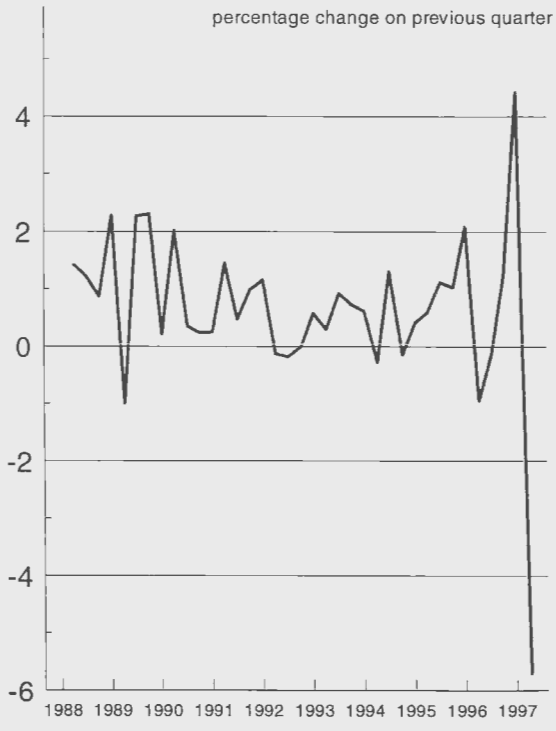
GDP at constant market prices



In Germany, France and Italy, **gross domestic product** (GDP) increased year on year by 2%, 2.3% and 1.9% respectively in the second quarter of 1997. As the chart above shows, this represents a slight deceleration for Germany, but an acceleration for France and Italy. In France, net exports were the major component of the increase almost doubling between 1996Q4 and 1997Q2- with increases in exports well ahead of imports. An increase in final private consumption in Germany was counteracted by a fall in stocks, but net exports grew strongly. An increase in exports - up 3.7% quarter on quarter - combined with minimal growth in imports. In Italy, a small increase in private final consumption was counteracted by a continued fall in net exports from their 1996 peak. The major component of Italian GDP growth was a positive change in stocks.

Japanese GDP fell in the second quarter, due to a large fall in private final consumption, after an exceptionally high first quarter, prior to the increase in sales tax in April. It fell by 2.9% quarter on quarter, and 0.3% year on year.

Japanese private final consumption



Quarterly growth of **industrial production** in Japan, was flat in the second quarter, although well up on the previous year at

6.5%. German and French industrial output grew strongly in Q2 (3.5% and 3.1% respectively year on year), and Italian output recovered, to show strong quarterly growth of 2.5%, after falling throughout 1996.

Demand

Retail sales volumes continued to move erratically in July and August. New US data for the second quarter shows a decrease of 0.5% on the previous quarter, but a year on year increase of 2.9% - well down on the rapid growth in the first quarter.

Inflation

Consumer price inflation picked up slightly in the year to August in the UK and Germany - by 0.2 percentage points - but rose more sharply in France - by 0.5 percentage points. It remained constant in the US and Canada, but rebounded in Japan, and fell back slightly in Italy in the year to August and September. **Producer price inflation** picked up slightly in Europe in the year to August, remained constant in Canada and fell back a little in Japan. Prices continued to fall in the US for the third consecutive month.

Labour Market

Total employment increased in all the G7 countries in Q2, compared with the previous quarter. However, when compared with a year earlier, employment fell in Germany, and remained virtually unchanged in France and Italy. Third quarter data for the US shows continuing strong growth year on year, although decelerating from the high rate at the beginning of the year. Latest **unemployment** data for July and August show very little movement from Q2 levels.

Notes

The series presented here are taken from the OECD's Main Economic Indicators, except for the United Kingdom. They are shown for each of the G7 economies and for the European Union (EU) and OECD countries in aggregate.

Comparisons of indicators over the same period should be treated with caution, as the length and timing of the economic cycles varies across countries.

1 Gross domestic product at constant market prices

	United Kingdom	Germany[1]	France	Italy	EU	United States	Japan	Canada	Major 7	OECD
Percentage change on a year earlier										
	ILFX	ILFY	ILFZ	ILGA	ILGB	ILGC	ILGD	ILGE	ILGF	ILGG
1989	2.2	..	4.3	2.9	3.5	3.4	4.8	2.4	3.5	3.5
1990	0.4	..	2.5	2.2	3.0	1.2	5.2	–0.2	2.4	2.6
1991	–2.0	..	0.8	1.1	3.0	–0.9	3.8	–1.8	1.3	1.3
1992	–0.5	1.8	1.2	0.6	0.9	2.7	1.0	0.8	1.7	1.7
1993	2.1	–1.2	–1.3	–1.2	–0.5	2.3	0.3	2.2	1.0	1.1
1994	4.3	2.8	2.8	2.2	3.0	3.5	0.7	4.1	2.9	2.8
1995	2.7	1.9	2.1	2.9	2.5	2.0	1.3	2.3	2.0	1.9
1996	2.3	1.4	1.5	0.7	1.7	2.8	3.7	1.5	2.4	2.6
1996 Q2	2.2	1.2	1.0	0.5	1.4	3.2	3.4	1.2	2.5	2.7
Q3	2.2	1.9	1.6	0.7	1.9	2.7	3.5	1.8	2.5	2.7
Q4	2.8	2.1	2.1	0.3	2.2	3.3	3.0	2.3	2.7	3.0
1997 Q1	3.1	2.6	1.1	–0.6	2.0	4.0	2.4	2.8	3.0	3.0
Q2	3.6	2.0	2.3	1.9	..	3.4	–0.3	3.7	..	..
Percentage change, latest quarter on previous quarter										
	ILGH	ILGI	ILGJ	ILGK	ILGL	ILGM	ILGN	ILGO	ILGP	ILGQ
1995 Q2	0.5	0.8	0.1	–0.1	0.4	0.1	1.0	–0.3	0.3	0.2
Q3	0.5	–0.2	0.2	0.6	0.3	0.8	0.3	0.3	0.5	0.6
Q4	0.5	–0.1	–0.3	0.2	–	0.6	1.3	0.2	0.5	0.5
1996 Q1	0.6	–0.2	1.3	0.6	0.6	0.4	2.0	0.3	0.7	0.9
Q2	0.6	1.6	–0.2	–0.9	0.5	1.5	–0.3	0.4	0.8	0.8
Q3	0.6	0.5	0.8	0.7	0.7	0.3	0.3	0.8	0.4	0.5
Q4	1.1	0.2	0.2	–0.2	0.3	1.1	0.9	0.7	0.8	0.8
1997 Q1	0.9	0.3	0.2	–0.3	0.4	1.2	1.4	0.9	1.0	0.9
Q2	1.0	1.0	1.0	1.6	..	0.8	–2.9	1.2	..	..

1 Data available for unified Germany since 1991

2 Total industrial production

	United Kingdom	Germany[1]	France	Italy	EU	United States	Japan[2]	Canada[3]	Major 7	OECD[4]
Percentage change on a year earlier										
	ILGR	ILGS	ILGT	ILGU	ILGV	ILGW	ILGX	ILGY	ILGZ	ILHA
1989	2.1	4.8	3.7	3.1	3.9	1.8	5.7	–0.2	3.1	3.4
1990	–0.3	5.2	1.5	–	2.1	–0.2	4.2	–3.3	1.4	1.7
1991	–3.3	3.7	–1.2	–0.7	–0.1	–2.0	1.9	–4.2	–0.5	–0.4
1992	0.3	–2.6	–1.2	–0.3	–1.2	3.2	–5.7	1.1	–0.4	–0.3
1993	2.2	–7.2	–3.9	–2.3	–3.1	3.4	–4.3	4.4	–0.6	–0.6
1994	5.3	3.5	3.9	5.2	4.7	5.0	1.2	7.0	4.2	4.4
1995	2.2	2.1	2.0	5.4	3.6	3.3	3.3	3.4	3.2	3.0
1996	1.1	0.5	0.4	–1.7	0.5	2.7	2.7	1.7	1.8	2.1
1997 Q1	1.3	3.6	1.0	–1.3	1.9	4.5	6.0	3.6	3.8	3.8
Q2	1.6	3.5	3.1	1.6	3.5	4.1	6.5	5.1	4.2	4.5
Percentage change, latest quarter on previous quarter										
	ILHB	ILHC	ILHD	ILHE	ILHF	ILHG	ILHH	ILHI	ILHJ	ILHK
1995 Q4	–0.1	–1.3	–2.0	0.9	–0.3	0.3	2.0	–0.3	0.3	0.4
1996 Q1	0.2	0.5	1.2	–2.4	–0.3	0.4	0.7	0.6	0.3	0.4
Q2	0.3	1.0	0.4	–0.5	0.5	1.5	–0.4	0.2	0.7	0.7
Q3	0.7	1.2	1.0	–0.8	0.8	0.8	1.8	2.1	1.0	1.1
Q4	0.4	–0.3	–0.6	–1.0	0.1	1.1	2.2	0.5	0.8	0.8
1997 Q1	–	1.6	0.2	0.9	0.6	1.1	2.3	0.7	1.2	1.1
Q2	0.6	1.0	2.5	2.5	2.0	1.1	–	1.6	1.1	1.4
Percentage change: latest month on previous month										
	ILKB	ILKC	ILKD	ILKE	ILKF	ILKG	ILKH	ILKI	ILKJ	ILKK
1997 May	–0.9	–1.0	–1.3	–0.5	–1.8	0.2	4.1	0.3	0.6	0.2
Jun	1.8	2.7	–0.1	0.7	1.3	0.3	–2.8	–0.2	–	0.2
Jul	1.0	4.0	..	0.2	2.8	0.4	1.3	2.0	1.1	1.4
Aug	–0.4	–2.8	..	..	..	0.7	–2.2	..	..	..

1 Data available for Unified Germany from 1991
2 Not adjusted for unequal number of working days in a month
3 GDP in industry at factor cost and 1986 prices
4 Some countries excluded from area total

3 Retail Sales (volume)

	United Kingdom	Germany	France	Italy	EU	United States	Japan	Canada	Major 7	OECD
Percentage change on a year earlier										
	ILHL	ILHM	ILHN	ILHO	ILHP	ILHQ	ILHR	ILHS	ILHT	ILHU
1989	2.1	3.5	1.5	8.4	3.7	2.2	3.9	–0.4	2.8	2.9
1990	0.7	8.0	0.7	–2.2	1.9	0.6	4.9	–1.9	1.5	1.5
1991	–1.3	5.8	–0.2	–3.0	0.5	–2.5	2.3	–4.4	–0.8	–0.8
1992	0.7	–2.3	0.3	5.4	0.5	3.2	–1.0	2.5	1.8	1.7
1993	3.0	–4.2	0.2	–2.5	–1.0	4.5	–3.0	3.4	1.3	1.3
1994	3.7	–1.4	–0.2	–6.0	–0.6	5.7	0.2	6.3	3.1	2.7
1995	1.2	1.2	0.1	–4.6	–0.2	2.6	0.2	0.1	1.2	1.3
1996	2.9	–0.2	–0.3	..	–0.7	3.7	1.0	0.8	1.8	1.6
1997 Q1	4.8	–	–1.3	..	–0.7	4.4	5.3	4.6	2.8	3.1
Q2	5.4	1.3	0.9	..	0.7	2.9	–5.1	6.1	1.3	1.6
Percentage change, latest quarter on previous quarter										
	ILHV	ILHW	ILHX	ILHY	ILHZ	ILIA	ILIB	ILIC	ILID	ILIE
1995 Q3	0.2	–2.0	1.4	0.8	0.7	1.0	0.7	1.1	0.3	1.2
Q4	0.7	–1.0	–3.1	–8.2	–2.3	0.7	–	–0.8	–0.7	–0.7
1996 Q1	0.4	1.0	2.7	..	1.3	1.4	2.0	0.2	1.9	1.3
Q2	1.3	1.7	–1.8	..	0.3	1.0	–1.7	–0.2	–	0.3
Q3	0.9	–0.7	–0.2	..	–1.0	0.4	–0.7	1.2	0.4	–
Q4	1.2	–2.3	0.4	..	–1.3	0.8	1.7	1.5	–	–
1997 Q1	1.3	1.3	0.3	..	1.3	2.2	6.0	2.0	2.4	2.8
Q2	1.8	3.1	0.4	..	1.7	–0.5	–11.3	1.3	–1.4	–1.2
Percentage change, latest month on previous month										
	ILKL	ILKM	ILKN	ILKO	ILKP	ILKQ	ILKR	ILKS	ILKT	ILKU
1997 Jun	0.8	5.2	–3.9	..	1.0	0.9	–1.1	–0.4	0.9	0.9
Jul	0.4	–2.0	3.9	..	..	0.9	–	1.4	0.9	–
Aug	0.4	..	0.4	..	..	..	2.1	..	..	..

4 Consumer prices[1]

	United Kingdom	Germany[2]	France	Italy	EU	United States	Japan	Canada	Major 7	OECD[3]
Percentage change on a year earlier										
	FRAN	HVLL	HXAA	HYAA	HYAB	ILAA	ILAB	ILAC	ILAD	ILAE
1989	7.8	2.8	3.5	6.5	5.3	4.8	2.2	5.0	4.5	6.3
1990	9.5	2.8	3.5	6.1	5.7	5.4	3.1	4.8	5.0	6.8
1991	5.9	3.7	3.2	6.5	5.2	4.3	3.3	5.6	4.3	6.1
1992	3.7	5.1	2.3	5.3	4.5	3.0	1.7	1.5	3.2	4.9
1993	1.6	4.4	2.1	4.2	3.5	3.0	1.2	1.9	2.7	4.3
1994	2.4	2.7	1.7	3.9	3.0	2.5	0.8	0.2	2.3	4.4
1995	3.5	1.9	1.7	5.4	3.2	2.8	–0.1	2.2	2.4	5.5
1996	2.4	1.5	2.1	3.8	2.5	3.0	0.1	1.5	2.2	5.1
1995 Q3	3.7	1.7	1.8	5.8	3.1	2.6	0.1	2.4	2.4	5.7
Q4	3.2	1.8	1.9	5.9	3.0	2.7	–0.6	2.0	2.2	5.7
1996 Q1	2.8	1.5	2.1	5.0	2.8	2.8	–0.4	1.4	2.3	5.5
Q2	2.2	1.5	2.4	4.2	2.6	2.8	0.1	1.5	2.2	5.0
Q3	2.1	1.5	1.8	3.5	2.3	3.0	0.2	1.3	2.2	4.8
Q4	2.6	1.4	1.7	2.7	2.3	3.1	0.5	2.0	2.4	4.8
1997 Q1	2.7	1.7	1.5	2.4	2.1	2.9	0.6	2.1	2.2	4.5
Q2	2.7	1.6	0.9	1.6	1.7	2.3	2.1	1.6	2.0	4.2
1997 Mar	2.6	1.5	1.1	2.2	1.9	2.8	0.5	2.0	2.0	4.3
Apr	2.4	1.4	0.9	1.7	1.6	2.5	1.9	1.7	2.1	4.2
May	2.6	1.7	0.9	1.6	1.8	2.2	2.0	1.5	1.9	4.1
Jun	2.9	1.7	1.0	1.4	1.8	2.3	2.2	1.8	2.1	4.2
Jul	3.3	1.8	1.0	1.6	1.9	2.2	1.9	1.8	2.0	4.2
Aug	3.5	2.0	1.5	1.5	2.1	2.2	2.1	1.8	2.1	4.3
Sep	3.6	..	..	1.4	..	..	..	..	..	..

1 Components and coverage not uniform across countries
2 Data available for Unified Germany from 1991
3 OECD data includes 'higher inflation' countries (Mexico and Turkey)

5 Producer prices (manufacturing)

	United Kingdom	Germany[1]	France[2]	Italy	EU	United States	Japan	Canada	Major 7	OECD[3]
Percentage change on a year earlier										
	EUAA	ILAF	ILAG	ILAH	ILAI	ILAJ	ILAK	ILAL	ILAM	ILAN
1989	5.0	3.5	5.0	5.8	4.9	5.2	2.1	1.8	4.3	5.8
1990	5.8	1.4	–0.9	4.2	2.5	4.9	1.6	0.3	3.3	4.7
1991	4.8	2.2	–1.2	3.3	2.2	2.1	1.1	–1.0	1.9	3.3
1992	2.3	1.6	–1.1	1.9	1.4	1.3	–1.0	0.5	0.9	2.3
1993	2.6	0.1	–2.1	3.7	1.3	1.3	–1.6	3.3	0.8	2.1
1994	2.3	0.8	1.2	3.8	2.2	0.6	–1.7	5.6	0.8	3.3
1995	4.4	2.1	5.2	7.9	4.5	2.0	–0.7	8.1	2.5	6.1
1996	2.0	0.2	–2.7	1.9	0.7	2.6	–0.7	0.5	1.3	3.9
1995 Q3	5.0	2.4	5.4	8.9	4.8	1.6	–0.7	7.7	2.6	6.1
Q4	4.6	1.6	2.4	7.2	3.6	2.2	–0.7	5.8	2.3	5.8
1996 Q1	3.5	0.8	–0.8	4.8	1.9	2.2	–0.9	1.7	1.6	4.7
Q2	2.4	0.1	–2.7	1.6	0.6	2.4	–0.9	0.4	1.1	3.7
Q3	1.2	–0.2	–3.8	0.4	–0.1	2.8	–0.7	–	1.0	3.6
Q4	0.8	0.2	–3.1	0.8	0.2	3.1	–0.6	–0.2	1.2	3.7
1997 Q1	0.5	0.3	–2.3	0.9	0.3	2.0	–0.3	0.2	0.8	3.1
Q2	..	0.7	–0.9	1.2	0.7	0.4	1.8	1.1	0.7	2.8
1997 May	0.6	0.6	–1.0	1.1	0.7	0.3	1.7	0.8	0.6	2.8
Jun	0.6	0.8	–0.3	1.6	1.1	–0.1	1.8	0.9	0.6	2.8
Jul	0.6	0.9	0.1	1.7	1.3	–0.1	1.9	0.9	0.6	2.9
Aug	0.7	1.2	0.4	..	1.5	–0.2	1.7	0.9	0.6	2.9

1 Data available for Unified Germany from 1991
2 Producer prices in intermediate goods
3 OECD includes 'higher inflation' countries (Mexico and Turkey)

6 Average wage earnings in manufacturing[1]

	United Kingdom[2]	Germany[3]	France	Italy	EU	United States	Japan[4]	Canada	Major 7	OECD
Percentage change on a year earlier										
	ILAY	ILAO	ILAP	ILAQ	ILAR	ILAS	ILAT	ILAU	ILAV	ILAW
1989	8.76	3.9	3.9	6.0	5.6	3.2	5.6	5.4	4.3	4.4
1990	9.50	4.2	4.9	7.3	6.4	3.1	5.1	4.7	4.2	5.3
1991	7.75	6.6	4.7	9.8	7.0	3.0	3.5	4.8	5.0	6.0
1992	5.50	7.1	4.0	5.4	5.6	2.9	1.3	3.4	2.9	2.8
1993	4.25	5.4	2.5	3.7	4.4	1.9	0.4	2.1	3.7	3.7
1994	5.00	2.9	1.9	3.3	4.2	2.8	2.2	1.6	2.7	2.7
1995	4.00	3.3	2.4	3.1	3.3	2.7	3.0	1.4	2.6	3.4
1996	4.75	5.2	2.4	1.8	..	3.5	2.6	3.2	3.4	3.3
1995 Q2	4.50	2.6	2.4	2.3	3.3	2.7	2.4	0.9	3.5	2.6
Q3	4.00	3.5	2.5	3.5	4.1	3.6	3.2	2.4	2.6	3.4
Q4	4.00	5.2	2.5	3.9	4.0	2.7	2.4	2.0	3.4	3.4
1996 Q1	4.25	7.1	2.3	1.9	..	2.7	1.7	1.8	3.4	3.4
Q2	4.25	6.7	2.3	2.1	..	3.5	1.6	3.0	2.5	3.4
Q3	4.50	4.3	2.6	1.7	..	2.6	4.9	3.8	3.4	3.3
Q4	4.75	2.9	2.6	1.6	..	3.5	2.3	4.1	3.3	3.3
1997 Q1	4.50	0.8	3.0	4.0	..	3.4	5.2	3.3	3.3	3.3
Q2	4.25	..	2.7	3.8	..	2.5	2.7	1.7	3.3	3.3
1997 Mar	4.50	..	..	4.0	..	4.3	2.7	3.3	..	..
Apr	4.25	1.5	2.7	3.9	..	2.5	2.7	3.0	..	..
May	4.25	..	..	3.8	..	3.4	2.8	2.9	..	..
Jun	4.25	..	..	3.7	..	2.5	2.8	–0.6	..	..
Jul	4.25	..	..	..	..	2.5	4.2	..	..	..

1 Definitions of coverage and treatment vary among countries
2 Figures for Great Britain refer to underlying weekly earnings;others hourly
3 Western Germany (Federal Republic of Germany before unification)
4 Figures for Japan monthly and seasonally adjusted

7 Total employment [1]

	United Kingdom	Germany[2,3]	France[3]	Italy	EU	United States[3]	Japan	Canada[3]	Major 7	OECD
Percentage change on a year earlier										
	ILIF	ILIG	ILIH	ILII	ILIJ	ILIK	ILIL	ILIM	ILIN	ILIO
1989	2.9	1.5	1.6	–0.5	1.7	2.1	2.0	2.1	1.8	1.9
1990	0.6	2.8	0.8	1.4	1.6	0.5	1.9	0.6	1.2	1.2
1991	–2.9	2.0	0.1	1.3	0.1	–0.9	1.9	–1.9	–	–
1992	–2.6	–1.4	–0.6	–1.1	–1.7	0.6	1.1	–0.5	–	–0.4
1993	–1.1	–1.1	–1.3	–4.2	–2.0	1.5	0.2	1.3	–	–0.2
1994	0.9	–0.4	0.1	–1.6	–0.2	3.2	0.1	2.1	1.3	1.2
1995	0.8	–0.3	1.0	–0.6	0.5	1.4	–	1.6	0.8	0.9
1996	1.3	–1.2	–0.2	0.4	0.2	1.4	0.5	1.3	0.7	0.9
1997 Q1	1.7	–1.5	–0.3	–0.1	0.2	2.5	1.7	1.0	1.3	1.3
Q2	1.9	–1.5	–0.1	0.1	0.3	2.4	1.4	1.8	1.4	1.4
Q3	..	..	..	–	..	2.1	..	..	..	..
Percentage change,latest quarter on quarter										
	ILIP	ILIQ	ILIR	ILIS	ILIT	ILIU	ILIV	ILIW	ILIX	ILIY
1995 Q4	0.4	0.1	–0.1	–0.7	–	–0.3	–1.2	–2.5	–0.4	–0.4
1996 Q1	0.3	–2.0	–0.1	–1.3	–1.0	–1.2	–1.6	–1.8	–1.3	–1.2
Q2	0.1	0.6	–0.1	1.2	0.8	2.0	3.2	3.5	1.8	1.7
Q3	0.7	0.2	–0.2	1.2	0.5	1.2	0.5	2.0	0.9	0.9
Q4	0.5	–0.2	–	–0.8	–0.1	0.1	–1.0	–2.3	–0.3	–0.3
1997 Q1	0.3	–2.1	–	–1.6	–1.0	–0.8	–0.9	–2.1	–1.1	–1.0
Q2	0.3	0.6	0.1	1.4	0.9	1.9	2.9	4.3	1.9	1.8
Q3	..	..	..	1.1	..	0.9	..	..	..	..
Percentage change, latest month on previous month										
	ILKV	ILKW	ILKX	ILKY	ILKZ	ILLA	ILLB	ILLC	ILLD	ILLE
1997 Jun	..	..	..	..	..	0.6	0.8	2.4	..	..
Jul	..	..	..	..	..	0.7	–0.5	0.5	..	..
Aug	..	..	..	..	..	–0.4	–0.9	0.3	..	..
Sep	..	..	..	..	..	–0.7	..	..	..	..

1 Not seasonally adjusted except for the United Kingdom
2 Data available for Unified Germany from 1991
3 Excludes members of armed forces

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

	United Kingdom	Germany[2]	France	Italy	EU	United States	Japan	Canada	Major 7	OECD
	GABF	GABD	GABC	GABE	GADR	GADO	GADP	GADN	GAEQ	GADQ
1989	7.3	5.6	9.3	10.0	8.7	5.3	2.3	7.5	5.7	6.3
1990	7.0	4.8	9.0	9.1	8.1	5.6	2.1	8.1	5.6	6.1
1991	8.8	4.2	9.5	8.8	8.4	6.9	2.1	10.4	6.4	6.8
1992	10.1	4.6	10.4	9.0	9.1	7.5	2.2	11.3	6.9	7.4
1993	10.5	7.9	11.7	10.3	10.8	6.9	2.5	11.2	7.2	8.0
1994	9.6	8.4	12.3	11.4	11.1	6.1	2.9	10.4	7.1	7.9
1995	8.7	8.2	11.7	11.9	10.7	5.6	3.1	9.5	6.8	7.6
1996	8.2	8.9	12.4	12.0	10.9	5.4	3.3	9.7	6.8	7.6
1995 Q3	8.7	8.2	11.6	11.9	10.7	5.7	3.2	9.4	6.8	7.6
Q4	8.5	8.4	12.0	11.9	10.8	5.6	3.3	9.4	6.8	7.6
1996 Q1	8.4	8.7	12.3	12.0	10.9	5.6	3.3	9.5	6.9	7.6
Q2	8.3	8.8	12.4	12.0	10.9	5.4	3.5	9.6	6.8	7.6
Q3	8.2	8.9	12.5	12.0	10.9	5.3	3.3	9.8	6.8	7.5
Q4	7.8	9.1	12.6	12.0	10.8	5.3	3.3	9.9	6.8	7.5
1997 Q1	7.5	9.5	12.5	12.2	10.8	5.3	3.3	9.6	6.8	7.5
Q2	7.2	9.6	12.6	..	10.8	4.9	3.5	9.4	6.6	7.3
1997 May	7.2	9.6	12.6	..	10.8	4.8	3.6	9.5	6.6	7.4
Jun	7.0	9.7	12.6	..	10.7	5.0	3.5	9.1	6.7	7.3
Jul	6.9	9.7	12.6	..	10.6	4.8	3.4	9.0	6.6	7.2
Aug	..	..	..	..	..	4.9	3.4	9.0	..	..
Sep	..	..	..	..	..	4.9	..	..	..	..

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 Data available on Unified Germany from January 1993

9 Balance of payments current account as percentage of GDP

	United Kingdom	Germany[1,2]	France	Italy	United States[1]	Japan[1]	Canada
	ILAZ	ILBA	ILBB	ILBC	ILBD	ILBE	ILBF
1985	0.6	0.6	–	–0.3	–3.1	3.6	–1.3
1990	–3.4	3.2	–0.8	–1.5	–1.6	1.2	–3.4
1991	–1.4	–1.0	–0.5	–2.1	–0.1	2.1	–3.8
1992	–1.7	–0.9	0.3	–2.4	–1.0	3.0	–3.6
1993	–1.7	–0.8	0.7	1.0	–1.5	3.1	–3.9
1994	–0.4	–1.0	0.6	1.4	–2.1	2.8	–2.7
1995	–0.5	–1.0	0.7	2.5	–1.8	2.1	–0.9
1996	–	–0.6	1.3	3.3	–1.9	1.4	0.5
1995 Q1	0.2	–1.2	1.2	1.7	–1.9	2.2	–0.8
Q2	–0.8	–0.6	0.9	2.9	–2.0	2.3	–2.3
Q3	–0.8	–0.8	0.1	3.1	–1.8	2.2	–1.0
Q4	–0.7	–1.4	0.6	2.2	–1.4	1.9	0.3
1996 Q1	–0.7	–0.6	1.7	2.1	–1.8	1.4	0.2
Q2	0.4	–0.8	0.8	3.6	–1.9	1.4	1.2
Q3	–0.2	–0.4	1.4	4.7	–2.2	1.4	0.8
Q4	0.3	–0.5	1.4	3.0	–1.9	1.5	–0.3
1997 Q1	0.8	–1.2	3.0	3.0	–2.1	1.5	–0.4
Q2	..	..	..	..	..	..	–1.5

1 Balance as percentage of GNP
2 Data available for Unified Germany from July 1990

10 World trade in goods[1]

	Export of manufactures			Import of manufactures			Export of goods			Import of goods			Total trade	
	Total	OECD	Other	Total	OECD	Other	Total	OECD	Other	Total	OECD	Other	manufactures	goods
Percentage change on a year earlier														
	ILIZ	ILJA	ILJB	ILJC	ILJD	ILJE	ILJF	ILJG	ILJH	ILJI	ILJJ	ILJK	ILJL	ILJM
1985	5.0	5.5	2.5	4.1	7.1	–1.9	3.9	3.9	4.9	1.0	3.5	5.6	4.5	3.7
1990	4.8	5.1	4.1	5.7	5.7	6.1	4.6	4.8	4.0	4.5	5.1	2.9	5.3	4.6
1991	3.3	2.5	6.9	5.5	3.8	10.8	3.8	3.3	5.1	4.8	3.4	9.2	4.4	4.3
1992	4.8	3.3	10.4	5.4	4.5	8.2	4.0	3.7	5.0	5.1	4.2	7.6	5.1	4.5
1993	3.8	1.7	11.6	3.8	1.1	11.1	4.6	2.3	10.8	3.9	1.6	10.3	3.8	4.3
1994	10.1	10.2	9.8	10.3	11.9	6.4	8.5	9.1	6.9	8.9	10.0	5.9	10.3	8.7
1995	8.0	8.3	7.2	8.1	8.9	6.2	7.1	7.1	7.0	6.7	6.7	6.6	8.0	6.8
1996 Q1	7.6	5.6	14.6	8.5	6.4	14.2	6.9	5.0	12.1	7.6	5.1	14.3	8.1	7.3
Q2	7.7	5.9	13.8	7.7	5.4	13.8	7.1	5.3	11.7	7.2	4.7	13.8	7.7	7.1
Q3	8.2	7.1	12.0	8.3	6.5	12.9	8.2	6.9	11.3	7.8	5.8	12.9	8.3	8.0
Q4	7.9	6.7	11.8	..	..	..	..	..	..	..	..	..	..	..
Percentage change, latest quarter on previous quarter														
	ILJN	ILJO	ILJP	ILJQ	ILJR	ILJS	ILJT	ILJU	ILJV	ILJW	ILJX	ILJY	ILJZ	ILKA
1995 Q1	1.1	1.6	–0.4	0.7	0.9	0.1	1.2	1.2	1.0	0.6	0.6	0.7	0.9	0.9
Q2	0.9	0.9	0.9	0.9	1.1	0.5	0.6	0.6	0.6	0.9	1.0	0.6	0.9	0.7
Q3	2.4	1.3	6.3	2.3	1.2	5.2	2.1	1.2	4.7	2.0	0.9	4.9	2.3	2.1
Q4	1.1	1.4	0.2	1.0	1.5	–0.2	0.8	1.1	0.1	0.5	0.7	–0.1	1.1	0.6
1996 Q1	3.0	1.8	6.6	4.1	2.5	8.3	3.2	2.0	6.3	4.1	2.5	8.3	3.5	3.7
Q2	1.0	1.3	0.2	0.2	0.2	0.1	0.7	0.9	0.2	0.5	0.6	0.2	0.6	0.6
Q3	2.9	2.4	4.7	2.9	2.3	4.3	3.2	2.7	4.3	2.5	1.9	4.1	2.9	2.9
Q4	0.8	1.1	–	..	..	..	..	..	..	..	..	..	..	..

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

Final Expenditure Prices Index (Experimental) - September 1997

Contact: David Wall Tel: 0171 533 5823/5827; e-mail: david.wall@ons.gov.uk

Note that further development work, including the adjustment of the Index of Government Prices for productivity change, is ongoing and the FEPI will be available only as an experimental index until this work has been completed.

Summary

The Final Expenditure Prices Index (FEPI) for September shows an annual rate of 2.2 per cent, the same as it was in August. The annual rate of the FEPI reflects decreases in the annual rates of the Index of Consumer Prices (ICP) and the Index of Government Prices (IGP), and a rise in the annual rate of the Index of Investment Prices (IIP).

The FEPI annual percentage change

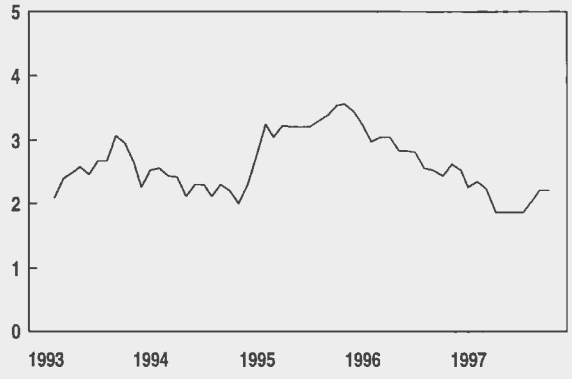


Table A

Final Expenditure Prices Index and components (January 1992=100 and annual percentage change)

		Index of Consumer Prices (ICP)		Index of Investment Prices (IIP)		Index of Government Prices (IGP)		Final Expenditure Prices Index (FEPI)	
		Index	Annual percentage change	Index	Annual percentage change	Index	Annual percentage change	Index	Annual percentage change
1997	Apr	116.6	2.2	110.7	0.4	114.1	1.9	114.8	1.9
	May	117.0	2.3	110.8	0.6	114.6	2.0	115.1	1.9
	Jun	117.2	2.3	110.8	0.6	114.6	1.6	115.3	1.9
	Jul	116.7	2.5	111.1	0.9	114.4	1.9	115.0	2.0
	Aug	117.5	2.6	111.4	0.7	115.2	2.3	115.7	2.2
	Sep	117.9	2.3	112.1	1.5	114.8	2.2	116.0	2.2

The Index of Consumer Prices (ICP)

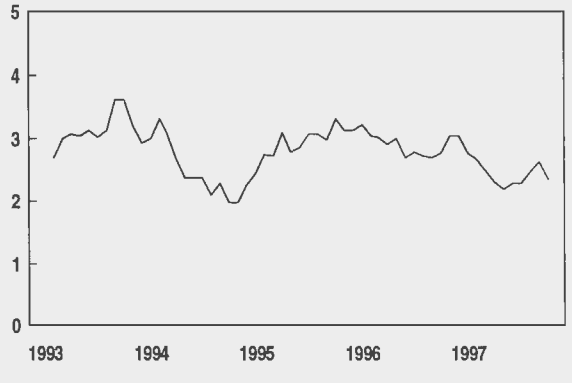
Consumer price inflation, as measured by the ICP, was 2.3 per cent over the 12 months to September, down from 2.6 per cent in August.

Downward pressure came mainly from prices for:

- Clothing and footwear, for which the 12-month rate fell from 1.8 per cent in August to 0.9 per cent in September;
- Fuel and power, whose 12-month rate fell from -2.7 per cent to -5.5 per cent;
- Transport and communication, whose 12-month rate fell from 4.3 per cent to 3.5 per cent.

Upward pressure on the 12-month rate came mainly from prices for food, for which the 12-month rate rose from 0.7 per cent in August to 1.3 per cent in September.

The ICP annual percentage change



The Index of Investment Prices (IIP)

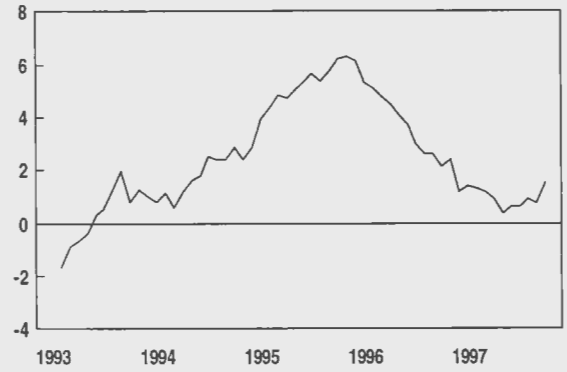
Investment price inflation, as measured by the IIP, was 1.5 per cent over the 12 months to September, up from 0.7 per cent in August.

Upward pressure on the 12-month rate came mainly from:

- New buildings and works, whose 12-month rate rose from 4.0 per cent in August to 4.5 per cent in September;
- Plant and machinery whose 12-month rate rose from -5.6 per cent in August to -4.1 per cent in September.

  Note, the annual rate has been negative since June 1996, reflecting the impact of Sterling's strength on import prices;
- Transfer costs of land and buildings whose 12-month rate rose from 7.6 per cent to 8.6 per cent.

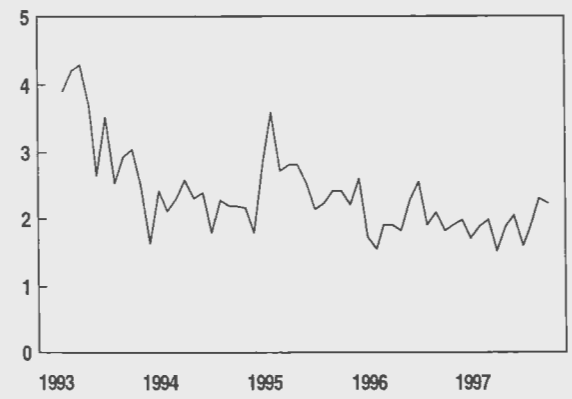
The IIP annual percentage change



The Index of Government Prices (IGP)

Inflation affecting Government expenditure, as measured by the IGP, was 2.2 per cent over the 12 months to September, down from 2.3 per cent in August. This should not be interpreted as being of particular significance - see note 7

The IGP annual percentage change



Comparison between the FEPI and other inflation measures

Table B

Measures of Inflation (annual percentage changes)

		FEPI	RPIX	PPI
1997	Apr	1.9	2.5	0.8
	May	1.9	2.5	1.0
	Jun	1.9	2.7	1.1
	Jul	2.0	3.0	1.3
	Aug	2.2	2.8	1.5
	Sep	2.2	2.7	1.4

NOTES

1. The headline measure of inflation is the Retail Prices Index (RPI). The RPI should be used as the main indicator of inflation affecting average households.

2. The Final Expenditure Prices Index (FEPI) is a measure of the change in the prices paid by UK consumers, business and Government for final purchases of goods and services. Intermediate purchases by business are excluded. The FEPI is made up of three components:

   The Index of Consumer Prices (ICP)
   The Index of Investment Prices (IIP)
   The Index of Government Prices (IGP).

3. The ICP measures inflation affecting all consumers in the UK. The price indicators used in the ICP are taken mainly from the Retail Prices Index (RPI).

4. The IIP is a measure of the change in the prices paid for capital goods by business and by Government. It also covers new construction projects and dwellings built for consumers, business and government. The price indicators used are mainly Producer Price Indices (PPIs), Construction Output Price Indices and an average house price indicator.

5. The IGP measures inflation affecting Government. It covers expenditure by Central and Local Government on pay and on procurement. The price indicators used are mainly Average Earnings Indices (to reflect labour costs), PPIs and RPIs (to reflect the cost of goods consumed by Government).

6. The FEPI and its components are subject to revision for up to six months after they are first published.

7. Care should be taken when trying to interpret monthly movements in the IGP. This index is particularly volatile on a month-to-month basis, so that a fall one month is often offset by a rise the next and vice-versa. The data are of greatest value if trends rather than individual monthly movements are observed.

8. An article describing the development and composition of the FEPI is included in *Economic Trends*, No 526, September 1997.

9. Longer runs of the FEPI back to January 1992, are available in computer readable form from the ONS Sales Office (telephone 0171 533 5670) or on paper from David Wall.

1 Final Expenditure Prices Index (Experimental)

	Index of Consumer Prices ICP	Index of Investment Prices IIP	Index of Government Prices IGP	Final Expenditure Prices Index FEPI	Annual percentage changes ICP	IIP	IGP	FEPI
January 1992=100								
Weights								
1995	601	162	237	1000				
1996	604	164	232	1000				
1997	605	165	230	1000				
	CUSE	CUSK	CUSO	CUSP				
1995 Sep	112.1	108.1	110.3	110.8	*3.3*	*6.2*	*2.4*	*3.6*
Oct	111.8	108.0	110.6	110.7	*3.1*	*6.3*	*2.2*	*3.6*
Nov	111.9	108.4	110.9	110.8	*3.1*	*6.2*	*2.6*	*3.5*
Dec	112.5	108.6	111.4	111.4	*3.2*	*5.3*	*1.7*	*3.2*
1996 Jan	112.3	109.0	111.6	111.3	*3.0*	*5.1*	*1.5*	*3.0*
Feb	112.9	109.3	111.6	111.7	*3.0*	*4.8*	*1.9*	*3.0*
Mar	113.4	109.6	112.2	112.3	*2.9*	*4.5*	*1.9*	*3.0*
Apr	114.1	110.3	112.0	112.7	*3.0*	*4.1*	*1.8*	*2.8*
May	114.4	110.1	112.3	113.0	*2.7*	*3.7*	*2.3*	*2.8*
Jun	114.6	110.1	112.8	113.2	*2.8*	*3.0*	*2.5*	*2.8*
Jul	113.9	110.1	112.3	112.7	*2.7*	*2.6*	*1.9*	*2.5*
Aug	114.5	110.6	112.6	113.2	*2.7*	*2.6*	*2.1*	*2.5*
Sep	115.2	110.4	112.3	113.5	*2.8*	*2.1*	*1.8*	*2.4*
Oct	115.2	110.6	112.7	113.6	*3.0*	*2.4*	*1.9*	*2.6*
Nov	115.3	109.7	113.1	113.6	*3.0*	*1.2*	*2.0*	*2.5*
Dec	115.6	110.1	113.3	113.9	*2.8*	*1.4*	*1.7*	*2.2*
1997 Jan	115.3	110.4	113.7	113.9	*2.7*	*1.3*	*1.9*	*2.3*
Feb	115.7	110.6	113.8	114.2	*2.5*	*1.2*	*2.0*	*2.2*
Mar	116.0	110.6	113.9	114.4	*2.3*	*0.9*	*1.5*	*1.9*
Apr	116.6	110.7	114.1	114.8	*2.2*	*0.4*	*1.9*	*1.9*
May	117.0	110.8	114.6	115.1	*2.3*	*0.6*	*2.0*	*1.9*
Jun	117.2	110.8	114.6	115.3	*2.3*	*0.6*	*1.6*	*1.9*
Jul	116.7	111.1	114.4	115.0	*2.5*	*0.9*	*1.9*	*2.0*
Aug	117.5	111.4	115.2	115.7	*2.6*	*0.7*	*2.3*	*2.2*
Sep	117.9	112.1	114.8	116.0	*2.3*	*1.5*	*2.2*	*2.2*

2 FEPI - Index of Consumer Prices (Experimental)

	Food	Alcoholic Drink	Tobacco	Clothing and Footwear	Housing	Fuel and Power	Household Goods and Services	Transport and Communi-cation	Recreation, Entertain-ment and Education	Other Goods and Services	Index of Consumer Prices ICP
January 1992=100											
Weights											
1995	132	69	31	66	84	42	73	185	111	207	1000
1996	128	70	30	67	85	40	72	190	113	205	1000
1997	126	68	30	67	90	39	71	189	119	201	1000
	CURU	CURV	CURW	CURX	CURY	CURZ	CUSA	CUSB	CUSC	CUSD	CUSE
1995 Sep	108.5	115.4	131.0	105.9	118.1	105.5	108.8	111.6	107.9	115.8	112.1
Oct	107.3	116.0	131.0	105.7	118.0	105.4	108.3	110.9	107.9	115.9	111.8
Nov	107.5	115.3	131.0	106.3	118.1	105.4	109.3	110.3	107.9	116.1	111.9
Dec	108.4	114.2	134.2	106.4	118.1	105.5	110.4	111.8	108.3	116.6	112.5
1996 Jan	109.0	115.2	136.8	100.3	118.5	105.6	107.1	112.8	108.2	116.7	112.3
Feb	110.1	116.0	137.4	101.3	118.6	105.6	108.8	113.0	108.6	117.3	112.9
Mar	111.1	116.3	137.5	102.7	118.7	105.7	110.3	113.2	108.8	117.7	113.4
Apr	111.2	116.8	138.7	104.2	120.8	105.7	109.7	113.9	109.3	118.4	114.1
May	112.1	117.2	139.6	104.4	121.0	105.6	110.5	114.3	109.3	118.7	114.4
Jun	112.1	117.8	139.8	104.3	121.3	105.8	110.6	114.4	109.3	118.9	114.6
Jul	110.7	118.4	139.6	99.2	121.9	105.9	108.8	114.3	108.9	118.9	113.9
Aug	111.8	118.3	139.8	100.5	122.0	105.7	110.1	115.1	109.2	119.4	114.5
Sep	110.8	118.5	140.1	105.4	122.1	105.8	110.8	116.3	109.6	119.9	115.2
Oct	110.1	118.8	140.2	105.5	122.2	105.6	110.4	116.4	109.8	120.3	115.2
Nov	109.7	118.6	140.0	106.6	122.4	105.0	111.4	116.0	110.1	120.4	115.3
Dec	109.7	118.0	142.8	106.6	122.5	104.8	112.3	116.7	110.1	120.7	115.6
1997 Jan	110.6	118.6	145.6	100.5	123.4	104.2	108.8	117.5	109.9	120.7	115.3
Feb	110.3	119.3	146.2	102.0	123.6	104.3	109.7	118.1	110.1	121.2	115.7
Mar	109.8	119.2	146.6	104.0	123.9	104.4	111.7	118.0	109.9	121.6	116.0
Apr	110.2	119.7	148.3	105.5	125.8	104.2	111.1	118.0	110.3	122.4	116.6
May	110.9	120.4	148.9	106.0	126.0	103.7	111.6	118.1	110.5	123.0	117.0
Jun	111.8	120.6	149.2	105.4	126.2	103.3	111.4	118.5	110.5	123.3	117.2
Jul	111.3	121.1	149.3	100.3	126.2	102.8	109.6	119.4	110.3	123.4	116.7
Aug	112.6	121.3	151.2	102.3	126.4	102.8	110.8	120.0	110.2	124.0	117.5
Sep	112.2	121.4	151.5	106.3	126.6	100.0	111.6	120.4	110.7	124.4	117.9

Annual Percentage Changes

	Food	Alcoholic Drink	Tobacco	Clothing and Footwear	Housing	Fuel and Power	Household Goods and Services	Transport and Communi-cation	Recreation Entertain-ment and Education	Other Goods and Services	Index of Consumer Prices ICP
1995 Sep	*5.6*	*4.0*	*6.8*	*0.3*	*4.0*	*0.4*	*3.4*	*2.0*	*2.1*	*4.1*	*3.3*
Oct	*4.7*	*4.4*	*6.9*	*0.2*	*3.8*	*0.5*	*3.1*	*2.0*	*2.0*	*4.3*	*3.1*
Nov	*4.5*	*4.1*	*7.1*	*0.3*	*3.7*	*0.6*	*3.2*	*1.8*	*1.9*	*4.2*	*3.1*
Dec	*4.5*	*3.4*	*7.9*	*0.3*	*3.4*	*0.7*	*3.7*	*2.3*	*2.2*	*4.1*	*3.2*
1996 Jan	*4.1*	*2.8*	*7.0*	*−0.7*	*3.8*	*0.5*	*2.8*	*2.6*	*2.0*	*4.1*	*3.0*
Feb	*4.6*	*2.7*	*6.5*	*−1.0*	*3.7*	*0.4*	*2.9*	*2.4*	*2.2*	*4.3*	*3.0*
Mar	*4.9*	*2.6*	*6.5*	*−1.0*	*3.6*	*0.4*	*3.2*	*2.0*	*2.3*	*4.1*	*2.9*
Apr	*5.0*	*2.9*	*6.4*	*−1.0*	*2.7*	*0.2*	*2.7*	*2.2*	*2.4*	*4.0*	*3.0*
May	*4.2*	*2.7*	*6.6*	*−1.0*	*2.8*	*0.4*	*2.4*	*2.3*	*2.2*	*3.7*	*2.7*
Jun	*4.7*	*2.8*	*6.6*	*−0.9*	*2.9*	*0.6*	*2.7*	*2.0*	*2.1*	*3.8*	*2.8*
Jul	*3.9*	*2.9*	*6.5*	*−1.1*	*3.7*	*0.6*	*2.4*	*2.2*	*1.8*	*3.6*	*2.7*
Aug	*3.2*	*2.8*	*6.6*	*−1.3*	*3.4*	*0.4*	*2.4*	*3.0*	*1.9*	*3.6*	*2.7*
Sep	*2.1*	*2.7*	*6.9*	*−0.5*	*3.4*	*0.3*	*1.8*	*4.2*	*1.6*	*3.5*	*2.8*
Oct	*2.6*	*2.4*	*7.0*	*−0.2*	*3.6*	*0.2*	*1.9*	*5.0*	*1.8*	*3.8*	*3.0*
Nov	*2.0*	*2.9*	*6.9*	*0.3*	*3.6*	*−0.4*	*1.9*	*5.2*	*2.0*	*3.7*	*3.0*
Dec	*1.2*	*3.3*	*6.4*	*0.2*	*3.7*	*−0.7*	*1.7*	*4.4*	*1.7*	*3.5*	*2.8*
1997 Jan	*1.5*	*3.0*	*6.4*	*0.2*	*4.1*	*−1.3*	*1.6*	*4.2*	*1.6*	*3.4*	*2.7*
Feb	*0.2*	*2.8*	*6.4*	*0.7*	*4.2*	*−1.2*	*0.8*	*4.5*	*1.4*	*3.3*	*2.5*
Mar	*−1.2*	*2.5*	*6.6*	*1.3*	*4.4*	*−1.2*	*1.3*	*4.2*	*1.0*	*3.3*	*2.3*
Apr	*−0.9*	*2.5*	*6.9*	*1.2*	*4.1*	*−1.4*	*1.3*	*3.6*	*0.9*	*3.4*	*2.2*
May	*−1.1*	*2.7*	*6.7*	*1.5*	*4.1*	*−1.8*	*1.0*	*3.3*	*1.1*	*3.6*	*2.3*
Jun	*−0.3*	*2.4*	*6.7*	*1.1*	*4.0*	*−2.4*	*0.7*	*3.6*	*1.1*	*3.7*	*2.3*
Jul	*0.5*	*2.3*	*6.9*	*1.1*	*3.5*	*−2.9*	*0.7*	*4.5*	*1.3*	*3.8*	*2.5*
Aug	*0.7*	*2.5*	*8.2*	*1.8*	*3.6*	*−2.7*	*0.6*	*4.3*	*0.9*	*3.9*	*2.6*
Sep	*1.3*	*2.4*	*8.1*	*0.9*	*3.7*	*−5.5*	*0.7*	*3.5*	*1.0*	*3.8*	*2.3*

3 FEPI - Index of Investment Prices (Experimental)

	New Buildings and Works	Plant and Machinery	Vehicles, etc	Transfer Costs of Land and Buildings	New Dwellings	Index of Investment Prices IIP
January 1992=100						
Weights						
1995	276	376	106	37	206	1000
1996	266	378	108	38	209	1000
1997	267	390	103	33	207	1000
	CUSF	CUSG	CUSH	CUSI	CUSJ	CUSK
1995 Sep	100.8	116.5	117.1	130.3	98.1	108.1
Oct	101.6	115.7	117.1	129.7	97.9	108.0
Nov	102.4	116.2	117.3	130.0	97.6	108.4
Dec	103.2	116.2	117.8	128.6	97.4	108.6
1996 Jan	103.7	116.7	118.5	127.1	97.5	109.0
Feb	104.2	116.3	118.7	129.8	98.2	109.3
Mar	104.8	116.0	118.8	130.5	99.3	109.6
Apr	105.2	116.7	119.2	135.7	100.1	110.3
May	105.7	115.4	119.1	135.8	100.5	110.1
Jun	106.1	114.7	118.9	135.5	101.1	110.1
Jul	106.5	113.5	119.0	138.1	102.0	110.1
Aug	106.9	114.0	119.6	139.2	102.7	110.6
Sep	107.3	113.1	119.7	139.3	102.7	110.4
Oct	107.7	113.0	119.2	140.9	102.8	110.6
Nov	108.1	110.6	117.6	140.9	103.0	109.7
Dec	108.5	111.0	117.5	141.0	103.8	110.1
1997 Jan	108.8	111.1	118.2	139.3	104.3	110.4
Feb	109.1	111.2	118.7	141.8	104.4	110.6
Mar	109.4	110.1	118.9	142.2	105.6	110.6
Apr	109.5	109.8	118.5	142.8	106.9	110.7
May	109.5	109.5	118.5	144.8	107.5	110.8
Jun	109.5	108.9	118.3	144.9	108.5	110.8
Jul	110.4	108.1	118.0	148.8	109.8	111.1
Aug	111.2	107.6	118.5	149.8	110.4	111.4
Sep	112.1	108.5	119.4	151.3	110.5	112.1

Annual Percentage Changes

	New Buildings and Works	Plant and Machinery	Vehicles, etc	Transfer Costs of Land and Buildings	New Dwellings	Index of Investment Prices IIP
1995 Sep	*13.3*	*5.0*	*5.0*	*0.2*	*0.3*	*6.2*
Oct	*13.0*	*5.1*	*5.4*	*2.9*	*0.5*	*6.3*
Nov	*12.9*	*5.1*	*5.2*	*3.6*	*0.1*	*6.2*
Dec	*12.8*	*3.4*	*4.8*	*1.7*	*–0.1*	*5.3*
1996 Jan	*12.2*	*2.6*	*4.3*	*1.6*	*0.7*	*5.1*
Feb	*11.8*	*1.5*	*4.0*	*3.7*	*1.9*	*4.8*
Mar	*11.4*	*1.0*	*4.2*	*4.9*	*1.7*	*4.5*
Apr	*10.3*	*0.9*	*3.8*	*5.5*	*1.5*	*4.1*
May	*9.5*	*0.0*	*3.3*	*6.3*	*2.3*	*3.7*
Jun	*8.6*	*–1.2*	*2.9*	*5.1*	*2.8*	*3.0*
Jul	*7.9*	*–2.2*	*2.8*	*6.3*	*3.6*	*2.6*
Aug	*7.1*	*–2.0*	*2.2*	*7.1*	*4.4*	*2.6*
Sep	*6.4*	*–2.9*	*2.2*	*6.9*	*4.7*	*2.1*
Oct	*6.0*	*–2.3*	*1.8*	*8.6*	*5.0*	*2.4*
Nov	*5.6*	*–4.8*	*0.3*	*8.4*	*5.5*	*1.2*
Dec	*5.1*	*–4.5*	*–0.3*	*9.6*	*6.6*	*1.4*
1997 Jan	*4.9*	*–4.8*	*–0.3*	*9.6*	*7.0*	*1.3*
Feb	*4.7*	*–4.4*	*0.0*	*9.2*	*6.3*	*1.2*
Mar	*4.4*	*–5.1*	*0.1*	*9.0*	*6.3*	*0.9*
Apr	*4.1*	*–5.9*	*–0.6*	*5.2*	*6.8*	*0.4*
May	*3.6*	*–5.1*	*–0.5*	*6.6*	*7.0*	*0.6*
Jun	*3.2*	*–5.1*	*–0.5*	*6.9*	*7.3*	*0.6*
Jul	*3.7*	*–4.8*	*–0.8*	*7.7*	*7.6*	*0.9*
Aug	*4.0*	*–5.6*	*–0.9*	*7.6*	*7.5*	*0.7*
Sep	*4.5*	*–4.1*	*–0.3*	*8.6*	*7.6*	*1.5*

4 FEPI - Index of Government Prices (Experimental)

	Local Government Total	Central Government Total	Education Grants	Index of Government Prices IGP	Annual percentage changes: Local Government Total	Central Government Total	Education Grants	Index of Government Prices IGP
January 1992=100								
Weights								
1995	347	588	65	1000				
1996	344	597	59	1000				
1997	347	589	64	1000				
	CUSL	CUSM	CUSN	CUSO				
1995 Sep	111.8	109.1	112.6	110.3	*2.6*	*2.2*	*2.9*	*2.4*
Oct	112.1	109.6	112.6	110.6	*1.9*	*2.4*	*2.9*	*2.2*
Nov	112.5	109.7	112.6	110.9	*2.3*	*2.6*	*2.9*	*2.6*
Dec	112.7	110.5	112.7	111.4	*0.5*	*2.5*	*3.0*	*1.7*
1996 Jan	112.7	110.8	113.4	111.6	*1.7*	*1.4*	*3.0*	*1.5*
Feb	112.8	110.8	113.3	111.6	*1.8*	*2.0*	*2.9*	*1.9*
Mar	113.0	111.6	113.3	112.2	*1.2*	*2.3*	*2.9*	*1.9*
Apr	112.8	111.4	113.3	112.0	*1.7*	*1.8*	*2.9*	*1.8*
May	114.3	111.0	114.3	112.3	*2.5*	*2.2*	*3.1*	*2.3*
Jun	114.8	111.5	114.3	112.8	*2.7*	*2.4*	*3.1*	*2.5*
Jul	114.3	110.9	114.5	112.3	*2.0*	*1.9*	*1.7*	*1.9*
Aug	114.1	111.5	114.6	112.6	*1.8*	*2.3*	*1.8*	*2.1*
Sep	114.1	110.9	114.6	112.3	*2.1*	*1.6*	*1.8*	*1.8*
Oct	114.5	111.5	114.6	112.7	*2.1*	*1.7*	*1.8*	*1.9*
Nov	115.2	111.6	114.8	113.1	*2.4*	*1.7*	*2.0*	*2.0*
Dec	114.9	112.3	114.9	113.3	*2.0*	*1.6*	*2.0*	*1.7*
1997 Jan	115.4	112.6	115.5	113.7	*2.4*	*1.6*	*1.9*	*1.9*
Feb	115.5	112.7	115.5	113.8	*2.4*	*1.7*	*1.9*	*2.0*
Mar	116.0	112.6	115.5	113.9	*2.7*	*0.9*	*1.9*	*1.5*
Apr	115.7	112.9	115.5	114.1	*2.6*	*1.3*	*1.9*	*1.9*
May	116.5	113.2	116.5	114.6	*1.9*	*2.0*	*1.9*	*2.0*
Jun	117.0	112.9	116.5	114.6	*1.9*	*1.3*	*1.9*	*1.6*
Jul	116.5	112.7	118.5	114.4	*1.9*	*1.6*	*3.5*	*1.9*
Aug	118.8	112.7	118.5	115.2	*4.1*	*1.1*	*3.4*	*2.3*
Sep	117.2	113.1	118.5	114.8	*2.7*	*2.0*	*3.4*	*2.2*

Quarterly alignment adjustments in the UK National Accounts

Ted Snowdon, Office for National Statistics

Address: B2/08, 1 Drummond Gate, London SW1V 2QQ
E-mail: ted.snowdon@ons.gov.uk

Introduction

The Office for National Statistics (ONS) aims to compile credible, timely and integrated quarterly national accounts in order to present a coherent picture of the UK economy. Within the accounts, quarterly Gross Domestic Product (GDP) is one of the more important aggregates. The ONS produces, each quarter, a single estimate of GDP with its income, output and expenditure components. The UK approach to compiling these three measures has been outlined by Cope (1995), and the processes involved are covered in more detail by Caplan and Lambert (1995).

Of the three measures, that for output is taken as the best short-term estimate of volume change (real growth in GDP). The output measure is the most timely and the least subject to revisions. Adjustments are made to the quarterly paths of the expenditure and income measures to ensure that these measures of GDP move in line with the output measure. These "quarterly alignment adjustments" have a neutral effect within each calendar year. They have been applied to the estimates of GDP for the quarters since the first quarter of 1983, to ensure that all the three measures of GDP reflect a consistent picture of economic growth.

This article describes how the quarterly alignment adjustments are calculated and allocated. It also presents a detailed example of the mechanism of the adjustment to constant price expenditure to illustrate the behaviour of the adjustments.

Background

The three measures of Gross Domestic Product are based upon different survey and administrative data sources. The three approaches to measuring GDP should, in theory, produce the same result. However, because of measurement errors, it is inevitable that the three approaches yield results which often differ. Before 1993, the then Central Statistical Office (CSO) averaged the three estimates to give one measure which was labelled GDP(A). Attempts to reconcile the three measures or analyse the nature of the discrepancies had been limited. This practice changed following the Pickford Review and the Chancellor's Initiatives, (see Wroe 1993), through which considerable efforts and extra resources were put into improving economic statistics. In particular, resources were allocated to strengthening the short-term output (turnover) inquiries, and a decision was made to adjust the measures of income and expenditure to reflect the quarter to quarter movements in the output measure of GDP.

More specifically the output measure of GDP is considered to be the best indicator of quarterly path for years where the annual levels have been balanced through the input-output framework, and for the most recent quarterly path where no input-output balance is available.

One significant development, not specifically required under the auspices of the Pickford Review or Chancellor's Initiatives, was the introduction of the quarterly alignment adjustments to the income and expenditure measures, designed to modify the quarterly paths of income and expenditure measures to reflect the path of the output measure. These quarterly alignment adjustments were introduced in a press notice in September 1989.

> *These adjustments ..... have been attributed to the stock building component of the expenditure measure of GDP and to gross trading profits of companies in the income measure, because it is believed these are the components for which accurate measurement is most difficult. These quarterly adjustments are aimed at ensuring that the quarterly paths of the expenditure and income measures of GDP move more closely in line with the output measure, which CSO has always indicated is the best short term indicator of GDP movements.*

The alignment adjustments are made to the aggregates of income and expenditure, and are applied specifically to the stock building and gross trading profits components, because these were considered to be the weakest components of expenditure and income respectively. Because of improvements in the collection of data for these components, recent internal studies have been examining whether some of the alignment adjustments should be applied to other components of expenditure and income, rather than being applied wholly to the stock building and profits components, which are in themselves important economic indicators.

Mechanics of the adjustments

The first step to understanding the mechanics of the quarterly alignment adjustments is to appreciate that the main focus of interest is on quarter on quarter growth rates. The objective is to align the growth rates (or quarterly paths) rather than the quarterly flows themselves.

We can denote the quarterly growth rate in output by the following formula;

$$\frac{Q_2(O) - Q_1(O)}{Q_1(O)} \quad or \quad \frac{Q_2(O)}{Q_1(O)} - 1$$

where Q_i (O) denotes the constant price level of GDP (O) in period 'i'. Using the same notation for expenditure, we can show that if the growth rates are the same, then

$$\frac{Q_2(O)}{Q_1(O)} - 1 = \frac{Q_2(E)}{Q_1(E)} - 1 \quad or \quad \frac{Q_2(O)}{Q_2(E)} = \frac{Q_1(O)}{Q_1(E)}$$

It follows that if we adjust expenditure to ensure that the ratio is constant then we will be aligning growth in expenditure to growth in output. The two are wholly equivalent.

The annual input-output analyses eliminate discrepancies between the three measures of GDP at current prices, and thus ensure that the annual growth in output and expenditure at constant prices are close together before we start calculating the quarterly alignment adjustments. Therefore it would be a relatively simple matter to just set the quarterly growth rates for expenditure to the quarterly growth rate of output. The ratio of output and expenditure would be the same for each quarter and for the year as a whole.

However there is a danger that if we simply constrain the quarters to have the same ratio as the annual, then we will have large steps or jumps between adjacent years. For example, if the output measure is slightly above the expenditure measure in one year and slightly below it in the next year, a large step will occur at the join between the two years. Therefore the quarterly ratio is smoothed rather than fixed.

A combination of two types of smoothing have been used, namely quadratic and cubic (spline) interpolation. The quadratic method is described here because it is simpler to explain than the cubic method, yet still demonstrates the nature of the alignment adjustments. Moreover it is used for the most recent periods, with the cubic spline (which smooths over a five year period) being used for earlier periods. Finally the quadratic method is not described in many texts, unlike the cubic spline method [see Press et al 1993 for example].

The quadratic method interpolates a quarterly ratio from the annual ratios for the previous, current and following years. For each quarter, a different weighted average of the three annual ratios is used. The weights are given in Table 1.

Table 1 The coefficients used for the quadratic method of smoothing.

	Ratio of annual output to expenditure		
	Previous year	Current year	Following year
Q1	$^{7}/_{32}$	$^{30}/_{32}$	$^{-5}/_{32}$
Q2	$^{1}/_{32}$	$^{34}/_{32}$	$^{-3}/_{32}$
Q3	$^{-3}/_{32}$	$^{34}/_{32}$	$^{1}/_{32}$
Q4	$^{-5}/_{32}$	$^{30}/_{32}$	$^{7}/_{32}$

In Chart 1 below, the quadratic method has been applied to four randomly generated 'raw' data series. It clearly shows how the quadratic method provides effective smoothing even for highly variable input values. A similar procedure is used for the cubic method, although as cubic splines are fitted over successive five year periods more coefficients are involved.

After having derived a smoothed ratio, the next step is to re-scale this ratio back to the original annual series. As the original ratio was calculated as expenditure divided by output, we then multiply the smoothed ratio by the quarterly output series to give a smoothed expenditure series.

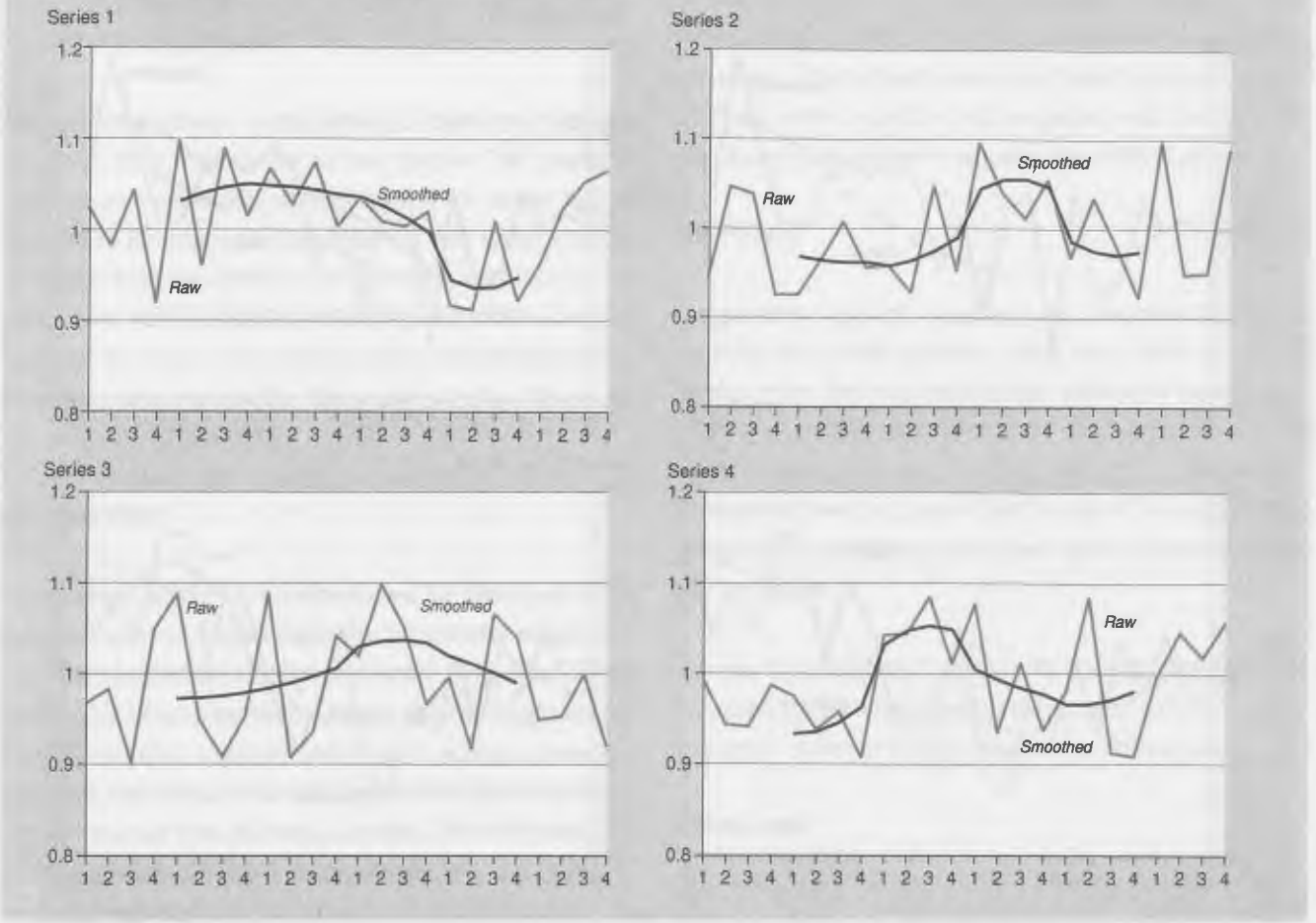
The final stage is to constrain the smoothed expenditure series to the known annual estimate of expenditure to ensure that the alignment adjustments sum to zero over the year. This stage is important because it means that for the year as a whole we have not added or removed any expenditure.

The published alignment adjustment for a given quarter is calculated as the difference between the aligned and unaligned expenditure series. By convention if the aligned series is higher, the adjustment is shown as positive.

In Chart 2, two pairs of charts show examples of the alignment process applied to randomly generated data. In the first of each pair two series are shown, output and unaligned expenditure. In

Chart 1

Smoothing raw data using the quadratic method



the second of each pair the new aligned expenditure series is also shown. The charts show even under artificially erratic conditions, the mechanical process can provide an aligned series.

The graphical representation of the alignment adjustment process, gives the clearest picture of what effects the adjustments are having. Nonetheless a tabular representation (see Table 2 below), gives the clearest representation of the stages involved in the calculation. The data are the first part of the first series from Chart 2.

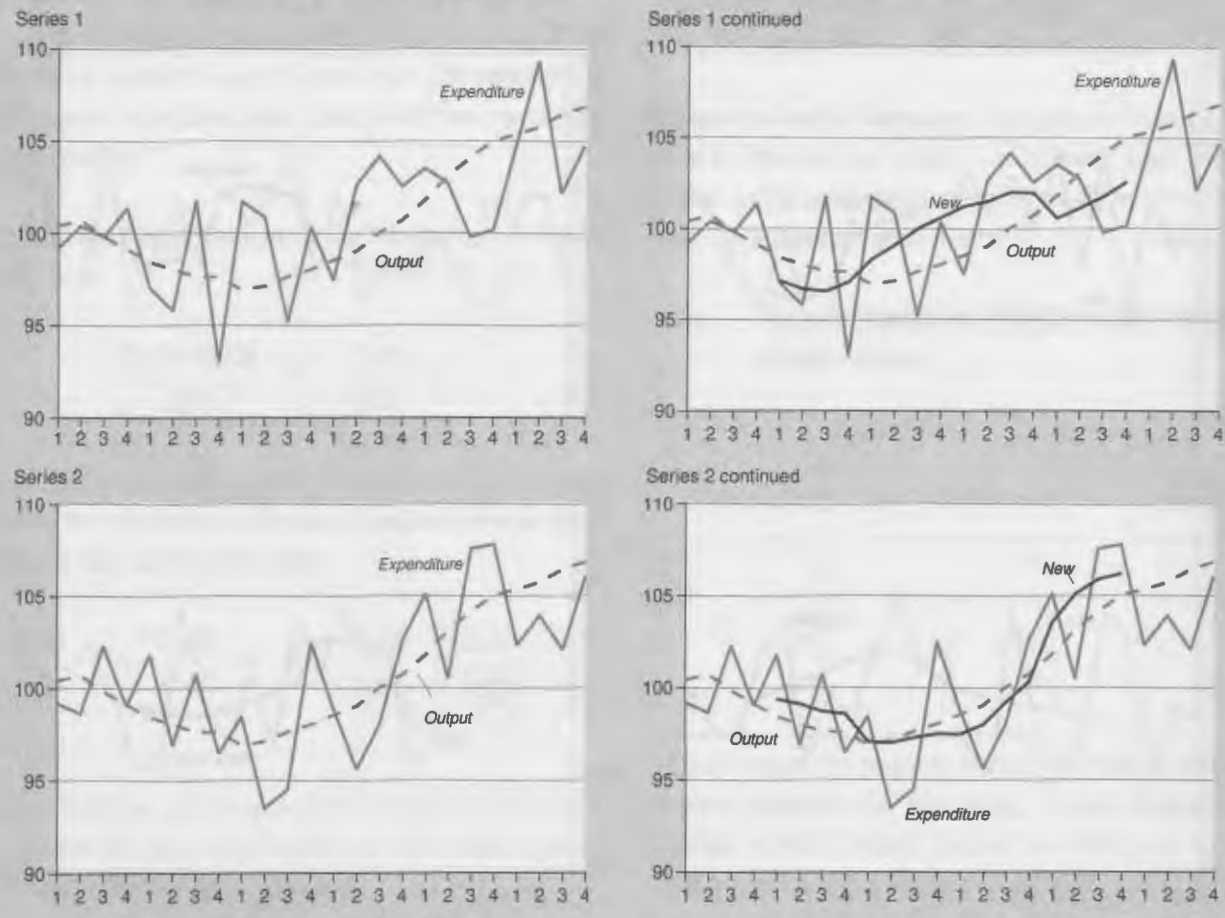
The table can be easily reproduced in a spreadsheet using the weights for the previous, current and following year annual ratios that were given in Table 1. In Table 2, the constraining stage does not appear to be contributing to the process; in practice it is essential to ensure that everything adds up but generally has only a small effect.

Table 2 A numerical example of the quadratic method of calculating the quarterly alignment adjustments to constant price expenditure.

	Output	Expenditure	Ratio	Interpolate	Rescale	Constrain	Adjustments
Previous year	400	400.8	1.002				
Quarter 1	98.4	97.0	0.986	0.987	97.1	97.1	0.127
Quarter 2	98.0	95.7	0.977	0.987	96.7	96.7	0.994
Quarter 3	97.6	101.8	1.043	0.989	96.5	96.5	-5.265
Quarter 4	97.6	92.9	0.952	0.994	97.0	97.0	4.144
Current year	391.6	387.4	0.989		387.4	387.4	0
Following year	389.6	397.9	1.021				

Chart 2

Comparing the output, original expenditure and new aligned expenditure series



The process described so far is of a robust solution to resolving differences in the quarterly paths of expenditure (and income) and output. Even under extreme conditions the alignment process has been shown to yield a more coherent view of the economy. There are however some complications, both in terms of the mechanics and in terms of the interpretation of these adjustments.

Mechanical complications

An immediate mechanical problem of implementing the procedures is that for the most recent year, there will be no following year from which to derive an annual ratio. The treatment used is to take the most recent annual ratio as an estimate of the ratio for the following year. The solution is considered to be suitable for the current purposes, although consideration is being given to more sophisticated methods, notably extrapolation using the Kalman filter. The method of extrapolation has not been found to be critical, which is not surprising as the extrapolated ratio is subsequently smoothed and constrained.

The treatment described in the paragraph above, is applied in the situation when all four quarters' estimates are available to derive the annual ratio for the current year. Different procedures are used for cases where data are available for fewer than the four quarters of the current year.

It might be thought possible to interpolate the path for the ratio for incomplete years in blocks of four quarters rather than calendar years. However in practice this would leave problems in constraining the sum of the adjustments to zero for calendar years, and in joining the last full calendar year (ie Q4) interpolation to the incomplete year interpolation.

The method actually used is as follows. If the most recent quarter is the first or second quarter of the year, then the estimates used in the calculation of the alignment adjustments are those for the previous full year. Neither figure is explicitly forecast. In the third quarter, annual totals for output and expenditure are estimated, in order to provide estimates of the annual ratios and of the annual

constraining factor. This is a compromise solution. For the first two quarters we are wary about estimating an annual figure, whereas for the third quarter we are more confident about estimating an annual value.

As mentioned earlier, a combination of cubic and quadratic interpolation is used in the current system. The quadratic interpolation method requires estimates of the annual ratio of expenditure (or income) to output for one year earlier and one year later than the current year. The cubic method requires estimates for two years earlier and two years later than the current year. As the cubic method requires revisions further back and projections further forward than the quadratic method, the latter is used for the most recent data.

Interpretation

The quarterly alignment adjustments are the final stage in the balancing process, and are made after judgemental adjustments have been applied to individual component series (Caplan and Lambert ibid.) From a mechanical point of view it will be appreciated that the quarterly alignment adjustments provide an elegant solution to apparent discrepancies between the different measures of GDP. However there remains a problem of how they should be interpreted, and there is no simple answer to this question. As might be expected the interpretation should depend on the question which is under investigation. If the focus is on quarterly movements in the economy as a whole, clearly the aligned estimates are to be preferred. They are the most coherent estimates that arise from the integrated accounts, and should be used when attempting to relate stock building with supply estimated through the output measure. On the other hand, the focus might be narrower. For example, if the analyst were interested in market reaction through stock building or a component of stock building, then the unaligned series would be preferred. Equally it should be said, that in the latter case a series that is not seasonally adjusted might be more relevant.

The quarterly alignment adjustments are published with the full UK National Accounts twelve weeks after the end of the most recent quarter to which they refer. Four weeks earlier a provisional estimate of stock building is published including but not disclosing the alignment adjustment. The constraint that the alignment adjustments should sum to zero over a four quarter period, has led some commentators to conclude that the fourth quarter alignment adjustment is calculable, when the provisional estimate for the fourth quarter is published (ie in February of the following year). This is not so. In the process of calculating the fourth quarter alignment adjustment, the alignment adjustments for the first three quarters are recalculated but these revised adjustments are not published. Therefore the alignment adjustments implicit in the stock building estimates published at this time will not necessarily sum to zero. The more accurate the estimate of the fourth quarter ratio made at the time of the third quarter estimate, the closer the implicit sum of the alignment adjustments will be to zero.

The Future

The quarterly alignment adjustments are considered to improve the coherence of the accounts. While there are a number of developments which may effect directly or indirectly the system of quarterly alignment adjustments, there are currently no plans to amend either how they are calculated or where they are allocated. Nonetheless there is concern that the size of the adjustments should remain within the error margins of the components to which they are applied.

The use of the alignment adjustments depends directly on our judgement that the output measure is the best short-term indicator of quarterly movements in the volume of economic activity.

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Globalisation: scope, issues and statistics

Gordon Duffus, Department of Trade and Industry
Address: Room 321, Kingsgate House, 66-74 Victoria Street, London SW1E 6SW Tel: 0171 215 4225

Philip Gooding, Office for National Statistics
Address: Room 1066, Government Buildings, Cardiff Road, Newport NP9 1XG Tel: 01633 812793
E-mail: philip.gooding@ons.gov.uk

Section 1: Background and historical trends

Introduction

Much has been written in the recent past about the concept known as globalisation. It is a term used in many different ways, without an agreed definition. The general sense, however, is that there are areas of economic activity which are increasingly being pursued internationally as part of a process towards globally integrated markets, a process which is being encouraged by increasing liberalisation. When all markets are liberalised, goods, services, labour and capital will be able to move freely and international investors will be treated as if they are nationals of all countries.

This paper looks at trends in trade and investment and explores evidence of their complementary nature. The role of transnationally organised companies in conducting such trade and investment is also examined. So is the role of intra-firm trade. The purpose of this article is to review, from an economic and statistical viewpoint, how far the process of globalisation has progressed to-date, and to assess the statistical basis for understanding the role played by the UK in this process. In doing so, we hope that readers will be able to form some views on areas of work which they would like to see developed further.

The paper is divided into four main sections. This first section provides some detailed information on world trade and investment trends, and discusses the UK's role in the expanding global market. A number of issues which influence thinking about liberalisation and globalisation are outlined in Section 2. These include a discussion of the relationship between cross-border trade and direct investment and the growth of intra-firm trade. For any particular country, a substantial statistical base is required if the concept of globalisation and its impact on national economies is to be properly discussed and assessed. To aid this process in the UK, a review of existing statistical sources is presented in Section 3. Comparing sections 2 and 3, it is clear that there are gaps in the statistical information needed to study various aspects of globalisation. These gaps are highlighted in Section 4, together with future UK and international work programmes, designed to improve the statistical information base.

Dimensions of globalisation in the world

Trade in goods and services

In 1995, the value of cross border trade in goods and commercial services totalled about $6,200 billion, up 266 per cent from 1985. In 1995, trade was equivalent to 20 per cent of world Gross Domestic Product (GDP). Around 60 per cent of total world trade

Table 1 Intra- and inter-regional exports of goods as a percentage of total world exports of goods: 1995

	Destination							
Origin	North America	Latin America	Western Europe	CEECS	Africa	Middle East	Asia	World
North America	**5.7**	2.0	3.0	0.1	0.2	0.4	4.3	15.9
Latin America	2.2	**1.0**	0.8	0.0	0.1	0.0	0.5	4.6
Western Europe	3.3	1.1	**30.9**	2.0	1.2	1.2	4.3	44.8
CEECS	0.2	0.1	1.8	**0.6**	0.0	0.1	0.4	3.1
Africa	0.3	0.0	1.1	0.0	**0.2**	0.0	0.3	2.1
Middle East	0.3	0.1	0.7	0.0	0.1	**0.2**	1.4	2.9
Asia	6.3	0.6	4.4	0.3	0.4	0.6	**13.5**	26.6
World	18.4	4.8	42.7	3.1	2.3	2.6	24.7	**100.0**

Source: International Trade ; WTO (1996)

is currently undertaken by countries in Western Europe and North America, although Asian countries are increasingly integrating their economies with the rest of the world. Their share of total world trade has increased from 20 per cent in 1991 to 26 per cent in1995.

One important feature of world trade is the amount which is conducted within regions. Intra-regional trade in goods is most apparent in Western Europe and Asia, and least evident in Africa and the Middle East (see Table 1). In total, intra-regional trade in goods accounts for 52 per cent of total world trade in goods. However, despite increased intra-regional trade in goods associated with deeper economic integration, trade between regions continues to be very significant.

The world's top 10 traders in both goods and services can be found in Western Europe, North America and Asia. The USA has traditionally been the world's largest exporter of both goods (12 per cent of total in 1995) and services (17 per cent), while the next five places are held by Germany (10,5), France (6, 9), Italy (5,6), the UK (5,6) and Japan (9,6). Trade is highly concentrated, with the top 10 exporters accounting for around 60 per cent of total world goods and services exports.

Over the past decade, percentage growth in world trade of goods and services has generally exceeded world output growth by a factor of 2.5 to 3. The rapid growth of trade in goods has generally been concentrated in manufactures where the value shares for chemicals, machinery and transport equipment and consumer goods have recorded healthy increases. These trade growth trends, however, are not repeated in either the agricultural or mining sectors. This is, in part, due to the numerous restrictions to trade which still apply to products in these sectors. Unfortunately, it is only possible to provide a limited sectoral breakdown for services due to the lack of detailed world-wide data.

Despite the dominance of the developed countries in world trade patterns, there has been sustained above world average annual growth in exports from, and imports to, the developing countries. This is largely explained by the implementation of domestic policies in developing countries which are conducive to growth, and by the liberalising commitments undertaken in the context of the multilateral trading system. This increased degree of openness in developing economies is reflected in the fact that their average ratio of trade to GDP has risen from 10 per cent in 1970 to around 25 per cent in 1995. This compares with an average ratio of 15 per cent for the developed countries in 1995.

Foreign direct investment (FDI)

A large proportion of the literature on globalisation is inspired by the role of multinational companies and FDI. The United Nations[1] reports that stocks of outward FDI have risen from $68 bn in 1960 to $2.73 tr in 1995, equivalent to an annual compound growth rate of 16 per cent. Much of this growth is attributable to either an increase in the number of corporations operating transnationally, or to an expansion of existing transnational operations. This type of activity has followed on from the gradual removal of barriers to investment (and foreign ownership), liberalisation in many developing countries and the privatisation of former state-owned business. The role of transnational companies - estimated to number some 40,000 parent firms with 270,000 foreign affiliates - has, on some measures, a greater influence in integrating the world economy than conventional trade.

The developed countries are the principal sources of outward FDI: in 1995 they were responsible for $2.51 tr or 92 per cent of total world outward stocks of FDI. The principal outward investors are the USA, with $706 bn (or 26 per cent of total world outward stocks), the UK $319 bn (12 per cent), Japan $306 bn (11 per cent) and Germany $235 bn (9 per cent). Reflecting the significant growth in investment, the ratio of stocks of outward FDI to world GDP has risen from just under 5 per cent in 1980 to around 10 per cent in 1995. Although originally dominated by the primary sector (especially oil and mining), the sectoral composition of FDI has broadened in recent times, and now reflects a more even balance between the primary, secondary and tertiary sectors.

The developed countries are also the principal recipients of inward FDI: at the end of 1995, they were hosts to 73 per cent of a total of $2.66 tr of inward FDI stocks. Amongst the developing countries, only China, with $129 bn at the end of 1995 (or 5 per cent of world inward stocks) has attracted the attention of international investors in a significant way. Time series data on FDI inflows, however, show that developing countries are now receiving a significantly higher proportion of FDI than they were in the early 1980s (see Table 2). Currently, about 40 per cent of FDI inflows are destined for developing countries, compared with only 20 to 25 per cent during the 1980s. Apart from China, other developing countries to attract significant FDI inflows in 1995 included Mexico $7.0 bn, Malaysia $5.8 bn and Brazil $4.9 bn.

[1] The World Investment Report 1996

Table 2 FDI inflows: Share of total (per cent): 1983-95

Year	Developed	Developing	Total ($bn)
1983-87	76	24	77.1
1988-92	78	22	177.3
1993-95	62	38	748.5
1993	62	38	207.9
1994	59	41	225.7
1995	65	35	314.9

Source: World Investment Report: UN (1996)

The UK's position in the world

Trade in goods and services

The UK's prosperity is heavily reliant on trade and investment. The export of goods and services is equivalent to about a quarter of the UK's national income. Adding in returns from foreign direct investment increases the reliance of UK jobs and income on overseas activity. Relative to GDP, the UK (at 28 per cent in 1995) exports more goods and services than all of its G7 competitors.

After many years of decline, the UK's **value** share of world goods exports stabilised during the early 1970s at around 5 per cent. Since then, our share has remained within a relatively narrow band of 4.7 to 5.7 per cent. A similar trend exists for the UK's share of world exports of manufactures, although, in this case, stabilisation did not occur until the mid-1980s[2]. The impact of oil on UK trade accounts was principally responsible for differences in the timing of stabilisation of market share.

In 1995, the UK earned £153.8 bn from exports of goods (up 13 per cent on 1994) and imported goods to the value of £168.3 bn (up 15 per cent)[3]. This means that the UK is the world's fifth largest exporter and importer of goods. Manufactures account for slightly more than 80 per cent of total UK exports of goods in 1995, up from 71 per cent in 1980. Products in which the UK has a revealed comparative advantage include electrical machinery, road vehicles and office machinery.

The UK has historically traded with developed country markets in the EU and North America, and with traditional Commonwealth markets. However, over the past twenty years, the UK has looked increasingly to Europe as the principal destination for its exports. As a result, the share of UK's exports of goods to the EU has increased by 16 percentage points (see Table 3) and market concentration levels have risen[4]. Similar trends exist for imports.

Table 3 UK Exports of goods: Geographical analysis: 1975, 1988 & 1995 (Percentage of UK total)

Region	1975	1988	1995
EU (14)	42	55	58
Other Western Eur.	6	4	4
NAFTA	13	16	13
Other OECD	9	4	4
Oil exporting	12	6	4
Rest of World	19	14	16
Total (£M)	19,330	82,073	153,761

Source: ONS

One reason for the concentration of UK exports on Western European and North American markets is because of demand. In 1995, these two regional blocs accounted for 60 per cent of world goods imports. A second reason is European integration encourages specialisation and trade. Another reason is that it is in traditional markets (ie European, North American, Commonwealth) that UK exporters do best, with market shares above our world market average. In Asian and Latin American markets, weaker UK performance is reflected in country market shares below our world average.

In nearly all respects, the key features of UK exports are no different from those of our European competitors. However, trade patterns are quite different for the USA and Japan, with both countries exporting a much larger percentage of their goods to developing country markets (the USA 43 per cent and Japan 52 per cent in 1995). Whilst UK performance in developing markets is, generally, relatively poor, export success in these markets is becoming more dependent on FDI. This is because market demand can be serviced through exports or investment, or a combination of both. Hence, any assessment of UK trade performance in particular markets needs to take account of investment performance.

In 1995, the UK according to the IMF, was the world's fourth largest exporter of services with a 5.8 per cent share of the world market. Although UK services credits rose by over 70 per cent between 1988 and 1995[5], our share of world services credits fell from 7.3 per cent over the same period. This is principally due to competitive pressures. As for exports of goods, our service exports are

[2] Volume shares follow similar trends in the longer term.
[3] Preliminary figures for 1996 show exports rising 8.3 per cent to £166.6 bn while imports are up 9.3 per cent to £183.9 bn.
[4] Around 80 per cent of the UK's exports go to the top 20 markets.
[5] Preliminary figures for 1996 show services credits rising by 9 per cent to £50.8 bn.

concentrated in industrialised countries. The EU remains the largest market, although NAFTA and Asia are also important regions (see Table 4). The UK is also one of the world's largest importers of services, with a 4.9 per cent share of the world market for 1995.

Table 4 UK services credits: Geographical analysis: 1988, 1995 (Percentage of total)

Region	1988	1995
EU (14)	35	36
Other Europe	7	8
NAFTA	26	24
Rest of America	3	3
Asia	20	22
Africa	5	4
Oceania	4	3
Total (£M)	26,927	46,598

Source: ONS
Note: Geographical analysis not available prior to 1988

The UK has a comparative advantage in the provision of financial and various business services and this is reflected in the fact that this sector accounted for about 51 per cent of total service credits in 1995. Travel with 26 per cent of total service credits, civil aviation with 12 per cent and sea transport with 10 per cent are other major sectors. According to the ONS, exports of services were equivalent to about 6.6 per cent of GDP in 1995 and contributed a net £6.9 bn to the UK's current account.

Foreign direct investment

According to UN data, at the end of 1995, the UK was the world's second largest outward direct investor with a 12 per cent share of world stocks of outward FDI. The UK's share of world outward FDI, both in terms of flows and stocks, has been two to three times its share of the world market in goods during the whole of the 1990s.

Historically, the bulk of UK outward investment is in OECD countries with the EU and the USA predominating. At the end of 1995, for example, these two regions accounted for 70 per cent of total UK outward **stocks** of FDI. Since joining the EU, the UK has looked increasingly to the Union as the principal destination for outward investment. As a result, the share of UK stock of outward FDI increased by 19 percentage points between 1984 and 1995, mainly at the expense of NAFTA countries, Africa and Oceania (see Table 5).

Table 5 UK outward FDI: Geographical analysis: stocks: 1984, 1988 and 1995 (Percentage of total)

Region	1984	1988	1995
EU (14)	17	23	36
Other Western Europe	3	3	2
NAFTA	45	48	34
Asia	9	7	9
Africa	7	3	2
Oceania	12	9	7
Rest of World	8	7	9
Total (£M)	71,772	102,215	195,385

Source: ONS

Despite rapid economic growth in many developing countries, recent **flows** of FDI from the UK continue to be destined for traditional, developed country markets. This is in distinct contrast with the rest of the world. On average, 35 per cent of world outward direct investment flows between 1993-95 went to developing countries. This compares with only 15 per cent of UK outflows.

Just under half of the total stock of UK outward direct investment is in manufacturing (principally food, drink and tobacco, chemicals and paper) while slightly over a third is in services and a seventh in energy. However, in respect of developing countries, only a third of UK outward direct investment stock (worth £35 bn in 1995) is in manufacturing, whilst a third is in services and a quarter in energy.

The UK is also the world's second largest host of inward direct investment with a 9 per cent share of total world stocks in 1995 (the USA is the largest). The largest investors in the UK are NAFTA (45 per cent) and the EU (35 per cent). In total, around 96 per cent of total stocks of inward direct investment in the UK come from developed countries. At the end of 1995, non-manufacturing represented 69 per cent of the stock of inward direct investment, with the energy sector (25 per cent) being the single largest component.

The UK's external performance: impact on the balance of payments

The UK's external performance is best summarised in the balance of payments (BOP). The BOP account consists of three main sub-groups: the current account, the capital account (transactions in UK external assets and liabilities) and the international investment position (levels of UK external assets and liabilities).

Table 6 Summary of UK Balance of Payments: Current account 1991-96 (£m)

	1991	1992	1993	1994	1995	1996
Current Account						
Trade in goods	-10,284	-13,104	-13,460	-11,129	-11,582	-12,598
Trade in services	3,564	4,950	5,516	4,776	6,877	7,142
Trade in goods & services	-6,720	-8,154	-7,944	-6,353	-4,705	-5,456
Investment income	150	3,124	2,595	9,667	7,920	9,652
Transfers	-1,383	-5,102	-4,946	-4,969	-6,887	-4,631
Current Account Balance	**-7,954**	**-10,133**	**-10,295**	**-1,655**	**-3,672**	**-435**

Source: ONS First Release: Balance of Payments (23 September 1997)
Note: all figures shown represent balances for each heading (ie credits less debits).

Although all components of the BOP are important to the UK, changes in the UK's trade and investment performance will impact most on the current account. This account comprises four categories: (1) trade in goods, (2) trade in services, (3) investment income (comprising mainly direct and portfolio investment) and (4) transfers (see Table 6). The key points to note about the UK's current account include:

- a persistent deficit in the goods account; although as a percentage of total trade this deficit is falling;
- consistent surpluses in services (financial) and investment (especially direct) accounts which, in 1995, were the highest in the G7 group relative to GDP; and
- a much smaller deficit in the current account in 1996, principally due to improved balances for investment income and transfers.

Section 2: Globalisation : What are some of the issues?

How does a country benefit from FDI?

International investment is now an important factor in promoting integration of the global economy. Opening markets to international capital means that funds should flow to where returns are highest. Thus the world's resources are used more efficiently. The continuing globalisation of the world economy puts greater and greater emphasis on ability to exploit expertise, and encourages producers to specialise in what they are good at, wherever that market may be. Businesses also have access to capital at the lowest possible cost and incomes in the investors' home countries rise as higher returns are realised. Compared to other major economies, the UK is disproportionately involved in inward and outward direct investment and current trends suggest that this heavy involvement will continue.

Gains from outward FDI can arise in a number of ways. Businesses often see direct investment as an effective means of delivering goods and services to that market. Many services, for example, including those that accompany trade in goods, require local delivery because provision has to be close to the centres of demand. In this way, outward FDI complements direct exports. Overseas investment also allows firms to exploit their own specialist expertise where this can not be effectively exploited through exporting. The gains from inward investment in the UK can include higher living standards resulting from lower prices, improved quality and wider choice, together with spillovers from new production techniques, management ideas and training opportunities for the workforce.

What is the relationship between cross-border trade and direct investment?

Following the recent rapid growth in FDI world-wide, and because of the UK's major role as a provider of and host for direct investment, researchers and policy advisers have focused on trying to explain the inter-relationship between trade and investment. The focus of some of these empirical and econometric studies has been the relationship between exports and outward direct investment. One of the key questions being asked is does outward

direct investment displace exports? The general consensus among researchers appears to be that inward and outward direct investments are both complements to more conventional trade. Although there may be some adjustment and distributional consequences, there appear to be positive benefits to both sides from investment activities.

In principle, the economy-wide effects of direct investment are determined principally by the motivation for this investment. Where investments are driven by market demand related influences, outward direct investment and exports are more likely to be complements than substitutes. In part, this is because it is neither feasible nor economic to export many goods or services. In these circumstances, outward direct investment simply cannot replace exports, and is also unlikely to reduce domestic production and employment. Investments driven by the cost or availability of inputs are also more likely to increase, rather than decrease, domestic economic activity. However, if the motivation for outward direct investment is purely one of cost reduction (that is, cheaper labour), then some displacement of exports and jobs might occur.

One of the empirical studies which addressed the issue of the inter-relationship between cross border-trade and direct investment was undertaken by KPMG and Harris Market Research for the DTI (Competitiveness White Paper: Study on Outward Investment: HMSO 5/96). This study, which involved a survey of 900 exporting and outward investing UK firms, found that the overwhelming driver for outward direct investment was to gain new customers and increase market share. Only 3 per cent of firms making productive investments indicated that reducing costs to improve profits was the major objective of their investment. In addition, the majority of respondents to the DTI survey reported that the wider effects of their offshore investment on UK employment and production levels, marketing efforts elsewhere, quality of service etc were neutral, with a minority reporting positive effects.

Two other studies (one Australian and one Danish) produced similar conclusions to the DTI research. When commenting on economy-wide effects, the authors of the Australian study[6] concluded that offshore direct investment by Australian firms produced short and long term benefits. For the majority of firms, outward direct investment complements exports and, in aggregate, enhances net export performance. And, although the effects of outward direct investment on Australian production and employment levels will reflect the effects on domestic investment and net exports, the impact is likely to be positive. The authors of the other study, Statistics Denmark, did not assess economy-wide effects, but they did look at the factors which motivated firms to invest. Their study involved a survey on the internationalisation of Danish enterprises which included 3,000 firms with more than 20 employees in all sectors except agriculture and financial services[7]. The authors concluded that, in general, the main reasons for Danish investments abroad were the wish to secure increased long-term growth - especially for the service sector - and to gain access to new markets and distribution chains. Cost savings were only important for a few firms.

Pain and Wakelin (1997)[8] discuss the results of other empirical studies. They report that many of the cross-sectional and panel studies with a limited time dimension (for example, Lipsey and Weiss (1981, 1984)[9], Blomstrom et al (1988)[10], Veugelers (1991)[11] and Hufbauer et al (1994)[12]) find a complementary relationship between exports and outward FDI, after controlling for other determinants of exports. However, results from other studies with a greater time dimension obtain evidence that the two might be substitutes. For example, using data for 1990, Svensson (1996)[13] concluded that the more mature the investment, the more likely it is to substitute for domestic exports.

Pain and Wakelin's own research explores the relationship between the location of production and **trade performance**[14] for twelve OECD countries over time. They find that a significant negative relationship between exports and FDI for large outward direct investing countries like the USA, the UK, Germany and France may help to account for the extent to which outward direct investment has been accompanied by concerns over "the exporting of jobs". However, Pain and Wakelin offer reasons why concerns about the "exporting of jobs" may be misplaced. In particular, they argue that for only three countries (the USA, Spain and Italy) are the influences of FDI on export shares significantly higher than the effect from product quality. For the other nine OECD countries included in the study, other factors are explaining changes in export shares.

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13 Effects of Overseas Production on Home Country Exports: Evidence Based on Swedish Multinationals, Weltwirtschaftliches Archiv, 132.

14 We have emphasised trade performance, because, although market share might fall, export volumes and values could still increase

Intra-firm trade

Over the past two decades, intra-firm trade across national boundaries has become an essential feature of all international production (through FDI) and has reached considerable proportions relative to countries' trade. This is hardly surprising given the dramatic increase in the number of parent multi-national corporations (MNCs). The UN estimates that the number of MNCs with headquarters in the 15 major developed countries rose from 7,000 in 1970 to 27,000 in 1993. For the world, the UN estimates that there are some 40,000 MNCs with some 270,000 foreign affiliates[15]. The internationalisation of production by MNCs typically creates (closed) internal markets for flows of goods and services, variously estimated to approach 35 per cent of total world trade. These figures, however, are only preliminary and, as they involve a high degree of extrapolation, will be subject to error.

The internal market created by the geographic spread of the operations of the MNCs, generates three types of transactions: sales by the parent firm to its foreign affiliate; sales by the foreign affiliates to the parent firm; and, more recently in greater volumes, sales by affiliates in one country to affiliates in another country. According to the UN, in simple integration strategies, the direction of intra-firm trade is affected by the positioning of foreign affiliates in the value chain of the MNC's international production operation. If foreign affiliates are located downstream, intra-firm trade consists mainly of parent firms' exports to affiliates. If, on the other hand, the foreign affiliates are upstream suppliers, then they will generate intra-firm imports for parent firms. It is less clear how intra-affiliate flows can be categorised although their existence and/or patterns signal the emergence of true international corporate systems.

The UN provides data on trade by US parent firms and their affiliates abroad which illustrates the high and growing importance of intra-firm trade for MNCs. This information is reproduced in Table 7. Of significance in this table, is the increase in the share of intra-firm exports in total exports of US parent firms over the period 1983-93 from 34 per cent to 44 per cent, while the share of intra-firm imports to total imports rose from 38 per cent to almost half. Similar, but smaller increases are noted for the foreign affiliates. For manufacturing alone, the shares are generally higher than for all industries, and still increasing.

Data for MNCs in other major developed countries confirm the importance of intra-firm trade in several manufacturing industries, especially those characterised by high research and development intensities and firm-level economies of scale. In a survey of Swedish *Manufacturing Industries* which was undertaken by the Research Institute of Industrial Economics (IUI), the share of exports of parent companies of Swedish MNCs to their foreign affiliates rose from 34 per cent in 1970 to 60 per cent in 1994. The information collected by the IUI also showed that (a) the share of exports from parent companies to sales affiliates increased significantly in 1978-86 and 1990-94, two periods characterised by a major fall in the value of the krona; and (b) the share of intra-firm exports to manufacturing affiliates has grown over time. The IUI research also calculated intra-firm trade by industry group and noticed some considerable fluctuations between years, and distinct differences between industries.

Relatively similar results have been found in studies of trading patterns of French MNCs. A substantial share of France's international trade is intra-firm trade, since trade between firms in the same group accounts for roughly 34 per cent of both French exports and imports. Foreign groups established in France account for 84 per cent and 40 per cent respectively of total intra-group imports and exports, while French groups that have set up firms abroad account for the rest. Intra-group trade accounts for a substantial share of French exports and imports of some products, notably motor vehicles and equipment (70 per cent of both imports and exports).

The emerging global labour market

To-date, there appears to have been far less globalisation with respect to labour movement. Despite fears in the West about millions of actual or potential immigrants, and the creation of new ethnic minorities in Western Europe, at most only 2 per cent of the world's population live outside their country of origin. The only concentrated attempt to create "national treatment" for migrant workers has been within the EU single market. But realisation of free movement has been very slow and limited, despite cross-border rights to benefits, freedom from controls, some mutual recognition of qualifications and substantial wage differences.

The overall effect of international migration is much smaller than that of capital or trade. In the world as a whole, migrants send home about $75 billion a year, about one-third the volume of net capital flows. Some 2-3 million new migrants now leave developing countries, legally and illegally, each year, about half of whom go to developed countries. These developed countries are generally within the home region of the migrant. Currently, migration from developing to developed countries translates into 1.5 new immigrants per thousand inhabitants (1995), the same as in 1970. Migration between industrial countries has fallen since 1970 from 2.5 per thousand inhabitants to 1.5 per thousand in 1990 (source:

[15] World Investment Report, UNCTAD, 1996.

World Bank). Migrants from industrial countries also tend to stay within their own region. The main exception to this is the USA which accepts immigrants from all regions, especially Asia.

Given the changes occurring in trade and investment, is the current trend in labour migration also likely to change, particularly if markets are liberalised further? Intuitively, one might expect the answer to be yes. However, a number of important factors are working in the other direction. For example, expected supply-side improvements in countries hosting inward investment may result in larger pools of higher skilled labour. Average wage rates could rise - reflecting increases in skills - thus compressing international wage differentials. In addition, further liberalisation of markets should promote increased specialisation in activities in which countries have comparative advantages. This will, in all probability, reduce the level of work opportunities available for potential immigrants. However, to the extent that liberalisation promotes a more efficient use of resources - and labour is an important part of this equation - then further migration can be expected.

Regulatory change and liberalisation

A prominent feature of the ongoing global economic change is that the developing countries are active participants, as both agents and beneficiaries. The outward-oriented reforms being embraced by a growing number of developing countries contribute to globalisation and allow them to share its benefits. In contrast to developed countries who see reform as being a continuation, or perhaps a deepening of their historically liberal approach to trade and FDI, for many developing countries the liberalisation of trade and investment policies is a dramatic change from a more interventionist approach. And, despite the difficulties, many have made significant progress on economic reform.

It has been noticeable that the pace of liberalisation and economic reform has varied dramatically between the developing regions. Those who have opened up their economies the earliest and the quickest - like East Asia - have already enjoyed benefits from this action and are best placed to continue to exploit rapidly expanding global trade and investment opportunities. According to the World Bank, the contrast in the pace of economic reform, and its impact on recent economic performance, is best highlighted by observing what has happened in Europe and Central Asia. Early-reforming countries in Eastern and Central Europe achieved positive growth because of rising private sector activity and private capital flows, more effective policy implementation, and recovery in Europe. While officially recorded growth during the 1990s ranged from 3 per cent in the Czech Republic to 5 per cent or more in Poland and the Baltics, measured output in countries of the Former Soviet Union - generally slow reformers - has continued to fall.

Table 7 Percentage shares of intra-firm trade in total international trade of the US parent companies and their foreign affiliates, by industry, 1993 (and 1983)

Sector & Industry	Parent firms		Foreign affiliates	
	Share of intra-firm exports in total exports	Share of intra-firm imports in total imports	Share of intra-firm exports in total exports	Share of intra-firm imports in total imports
Petroleum	32.1 (13.8)	30.5 (21.8)	47.3 (47.8)	54.8 (75.8)
Manufacturing	48.5 (43.0)	63.4 (60.6)	74.2 (70.3)	82.5 (83.4)
of which:				
General machinery	74.9 (61.5)	75.8 (74.9)	84.3 (76.1)	87.0 (92.7)
Electronics	39.2 (32.6)	45.2 (54.1)	76.6 (73.1)	93.2 (89.2)
Transport equipment	45.9 (49.3)	77.0 (84.5)	87.9 (89.3)	76.1 (81.3)
Wholesale trade	13.9 (9.2)	10.3 (6.2)	57.0 (37.5)	93.4 (88.6)
All industries	44.4 (33.8)	48.6 (37.9)	64.0 (55.2)	85.5 (82.8)

Source: UNCTAD, based on US Dept of Commerce (1986, 1995)
Note: data relate to non-bank majority-owned foreign affiliates of non-bank US parent firms.

To illustrate the influence of the developing countries in the reform process, in the first seven years after the launch of the Uruguay round in 1986, developing countries were responsible for 58 of the 72 autonomous liberalisation actions reported to GATT. The developing countries have also contributed significantly to more open regimes for investment. According to UNCTAD, for developed and developing economies combined over 60 countries made a total of 112 changes to their investment regimes in 1995, with 95 per cent of these changes being directed at liberalisation or promotion, and only 5 per cent involving direct controls.

Information Technology (IT)

The globalisation of industrial activity has been aided and abetted by the rapid development of the IT industry. With access to modern telecommunications, faxes, the internet and other data and information sources, it is possible to establish businesses virtually anywhere in the world. With increased competition, the costs of information processing and long-distance telecommunications have declined dramatically. For example, the real price of microcomputers fell by an average 28 per cent a year between 1982 and 1988. At the same time, the quality of services delivered by IT applications has improved significantly.

The convergence of computer and communication technologies has promoted the development of computer-mediated (or electronic) networks. These networks are formed by systems of computers and communication hardware and software that allows users to communicate and transmit data and other types of information. The world now possesses an increasingly perfect market for business-oriented information. This is particularly true for International Financial Markets which now operate continuously on a 24 hour basis. With the major financial centres being linked electronically, it is now possible for banks and/or businesses to deal directly with each other, regardless of their actual geographic location. Costs have fallen as competition between electronically based systems has increased.

Coming on top of the WTO agreement to liberalise world trade in telecoms (14/2/97), the recent signing of the Information Technology Agreement (ITA) will further reduce the costs of operating a global business by ensuring that tariffs on almost all trade in IT products will be phased out by the year 2000. The agreement which covers, amongst other items, computers, telecommunications equipment, semiconductors, software products and scientific instruments, could increase world income by over $70 million.

Section 3: Existing UK statistical sources

Problems with existing sources in measuring globalisation

The term "globalisation" has been used by economists, governments and the press for some years. Despite the keen interest of many, it is often a vague and imprecise concept, frequently not associated with indicators that show its main characteristics. One of the problems is that it has many diverse aspects and the precise issues for observation are not always clear. Apart from these definitional issues, statistical systems often do not deal well with the subject.

Perhaps the main reason for this relates to the geographical coverage of statistical systems. The statistics of any nation are generally geared to the considerations of that nation and traditionally these have related primarily to internal economies and trade, mostly in goods, across boundaries. The latter have been measured only as flows of goods or payments across borders. As markets have become more global, traditional statistical considerations have become less relevant. Linked to this is the tendency for statistical systems to be backwards looking from a concern for continuity, so that changes over a period of time can be accurately assessed.

This has contributed to the way in which statistical systems generally have recorded manufacturing activity in detail in comparison to activity in the services sector. In recent years, the UK has made substantial progress in improving services statistics to reflect the shift in the economy (see the February 1997 edition of Economic Trends for articles by Bill Cave and Derek Baskerville) although users continue to press for further services detail.

One of the aims of the ONS is to improve the quality and relevance of the statistics produced to help illuminate and clarify issues. There are constraints however on this,one of which is to strike a balance between the needs of users and the cost to business of supplying the raw data on which aggregates are produced. The compliance costs imposed on business are strictly controlled within the published ONS Compliance Plan.

Of the existing portfolio of statistics, a number reflect some of the broader aspects of globalisation and these are now discussed.

Current publications

Some of these existing statistical sources are well known and have already been referred to earlier in the article. The balance of payments (BOP) is probably the most high profile and certainly the most comprehensive. It is one of the main outputs of the ONS, published in a quarterly First Release and the annual BOP Pink Book in addition to being included in various other compendia. Geographical breakdowns are produced and published, for example, in the October 1996 edition of Economic Trends.

Behind the BOP information, many of the detailed components are published separately and in more detail. As has already been pointed out, one aspect of globalisation relates to the role of multinational companies and FDI. Estimates of foreign direct investment both by UK business abroad and foreign business in the UK are published by ONS in an annual First Release and a detailed business monitor (MA4: Overseas Direct Investment). The publications include geographical, industrial and component breakdowns of investment flows, the stock of accumulated investment and resulting earnings.

Overseas trade in **goods** is published in, amongst other forms, a monthly First Release and a monthly business monitor MM24. Overseas trade in **services** figures are not currently published to any great extent separately from BOP but there are plans to introduce a publication. In order to meet IMF requirements, which specify that data should be produced for a standard list of 30 services products, a pilot survey was conducted during 1995 in which a breakdown of imports and exports for different services products was sought. The results were encouraging and data collection on a regular basis began in respect of 1996. The 1996 inquiries were also extended to enable the production of a geographical breakdown into around 40 countries. Publication of the results from both initiatives is planned for next year.

Data collected by the ONS also feed into international publications of Eurostat, OECD and UNCTAD. Eurostat publish BOP information quarterly for member states and some other countries such as USA and Japan. UNCTAD produce their annual World Investment Report from which some of the information used in this article has been drawn.

Register analyses of foreign owned businesses

The basis for statistical surveys of business is the register of businesses from which samples are designed and mailing lists drawn. The implications of globalisation for statistical systems begin with the effect on these registers. Within the EU, a regulation on drawing up business registers is helping to standardise the units used and data held throughout member states. This helps to ensure consistency across the EU and in turn, for example, helps to prevent activity being double counted or missed across national borders.

The work arguably only goes part of the way even within the EU, however, and there are questions over whether an international register should be set up containing information on transnational concerns. The international register would be used to coordinate the collection of information on the concerns, maintain ownership structures across national boundaries and provide core information on the demography of company groups which are essentially pushing forward the globalisation process. Any such initiative would require much coordination and also significant resources and, as such, has to compete with other priorities; issues regarding the sharing of confidential information would also need resolving.

The main register used by the ONS for business inquiries (the interdepartmental business register) contains information on enterprise group structures and foreign ownership. The principal source of this information is the commercial organisation, Dun and Bradstreet, which collates information lodged at Companies House with its own market intelligence. ONS' own inquiries, particularly a voluntary inquiry into acquisitions and mergers, provide additional ownership information for the interdepartmental business register.

Table 8 Analysis of foreign owned businesses in the UK: agriculture, manufacturing and distribution sectors.

			As a percentage of all UK enterprises	
	1996	1997	1996	1997
Number of enterprises	4919	4989	0.7	0.6
Employment (thousand)	1038	1087	10.4	11.0
Turnover (£billion)	252	308	19.9	23.0

Source: ONS interdepartmental business register.

Table 8 shows an analysis of foreign owned businesses on the main ONS register in the agriculture, manufacturing and distribution sectors. There are obviously lags in receiving information from the different sources, so that the VAT turnover information held in early 1997 for example reflects a variety of earlier periods. The analysis is also affected by any changes in the classification of

Table 9 **Analysis of foreign owned businesses in the UK - data sourced from the interdepartmental business register 1997:Agriculture, Manufacturing and Distribution**

Country of Ownership	Count	Employment	Turnover £m
Austria	37	1,623	305
Belgium	62	7,732	2,847
Denmark	130	25,772	4,255
Finland	88	9,147	2,406
France	376	81,752	19,432
Germany	709	120,984	26,591
Ireland	205	35,454	4,090
Italy	82	17,116	4,595
Luxembourg	23	4,100	344
Netherlands	332	60,359	9,651
Sweden	234	32,504	5,995
Other EU (Greece, Portugal, Spain)	18	917	217
EU Sub-total	2,296	397,460	80,728
Australia	95	11,565	2,846
Canada	113	32,801	5,147
Japan	364	87,657	58,896
Norway	93	12,096	2,014
Switzerland	262	55,386	35,183
USA	1,555	457,443	114,418
Other	211	32,451	9126
Non EU Sub-total	2,693	689,399	227,630
TOTAL	**4,989**	**108,6859**	**308,358**

businesses between years - this particularly impacts on turnover here - and, as such, the results should be interpreted with caution. A more detailed analysis by country for 1997 is shown in Table 9. In terms of employment and turnover, US owned businesses are the single largest grouping accounting for around 42 per cent of the employment and 37 per cent of the turnover of foreign owned businesses. Employment in European Union owned businesses represents around 37 percent of the total.

The activity of foreign owned businesses in the UK service trades

Since globalisation is, by definition, an international phenomenon, much of the work in studying it statistically has to be coordinated at the international level. The ONS is currently participating in a pilot survey to identify the activity of foreign owned service businesses in countries throughout the European Union. The work is being funded by Eurostat - the European Statistical Office - and the UK is one of nine countries participating in the pilot.

The background to this work lies in the signing of the General Agreement on Trade in Services. The Agreement is intended to achieve a liberalisation in trade in services and in order to monitor its implementation improvements in the quality of statistics are desirable. The Agreement covers various methods of supplying services but the pilot work with Eurostat is concerned with one - services provided locally through a commercial presence. In many

Table 10 Estimated activity of foreign owned business in the service trades,1994

Number of enterprises

NACE Rev.1	Foreign owned enterprises Intra EU	Extra EU	Total	UK owned	Total	Foreign owned as % of total
Vehicle sale/repair	99	83	182	76 551	76 733	0.2
Wholesale trade	771	1 342	2 113	106 066	108 179	2.0
Retail trade	109	208	317	196 246	196 563	0.2
Hotels and restaurants	25	21	46	110 149	110 195	0.0
Supporting and auxiliary transport activities	88	143	231	9 742	9 973	2.3
Telecommunications	7	21	28	1 495	1 523	1.8
Computer and related activities	35	150	185	43 275	43 460	0.4
Research and development	11	34	45	2 223	2 268	2.0
Legal activities, market research, accounts	12	35	47	80 146	80 193	0.1
Architecture, technical activities	56	137	193	55 493	55 686	0.3
Advertising	37	105	142	8 147	8 289	1.7
Labour recruitment	12	38	50	6 488	6 538	0.8
Security activities, industrial cleaning	17	28	45	7 474	7 519	0.6
Other business services	116	287	403	38 968	39 371	1.0
Total	1 395	2 632	4 027	742 463	746 490	0.5
Area as % of total	0.2	0.4	0.5	99.5		

Table 11 Estimated activity of foreign owned business in the service trades,1994

Turnover - £m

NACE Rev.1	Foreign owned enterprises Intra EU	Extra EU	Total	UK owned	Total	Foreign owned as % of total
Vehicle sale/repair	9 956	7 121	17 077	83 588	100 665	17.0
Wholesale trade	16 189	58 606	74 795	217 422	292 218	25.6
Retail trade	2 738	8 430	11 168	145 481	156 649	7.1
Hotels and restaurants	167	371	538	35 834	36 371	1.5
Supporting and auxiliary transport activities	2 006	6 199	8 205	10 019	18 224	45.0
Telecommunications	274	610	884	18 575	19 459	4.5
Computer and related activities	463	2 157	2 620	9 692	12 312	21.3
Research and development	128	272	401	2 193	2 594	15.5
Legal activities, market research, accounts	32	158	189	20 786	20 975	0.9
Architecture, technical activities	1 348	2 529	3 877	11 481	15 358	25.2
Advertising	548	2 018	2 566	8 036	10 602	24.2
Labour recruitment	152	603	755	5 572	6 327	11.9
Security activities, industrial cleaning	488	316	805	2 920	3 725	21.6
Other business services	425	2 130	2 555	13 173	15 728	16.2
Total	34 914	91 521	126 436	584 772	711 207	17.8
Area as % of total	4.9	12.9	17.8	82.2		

Table 12 Estimated activity of foreign owned business in the service trades,1994

Number of persons employed - thousands

NACE Rev.1	Foreign owned enterprises Intra EU	Extra EU	Total	UK owned	Total	Foreign owned as % of total
Vehicle sale/repair	33.9	41.1	75.0	756.7	831.7	9.0
Wholesale trade	82.8	99.1	181.9	1 074.0	1 256.0	14.5
Retail trade	13.6	74.2	87.9	1 852.5	1 940.3	4.5
Hotels and restaurants	2.9	26.3	29.2	639.6	668.8	4.4
Supporting and auxiliary transport activities	17.7	22.7	40.4	319.5	359.9	11.2
Telecommunications	5.3	4.8	10.1	238.6	248.7	4.1
Computer and related activities	5.0	38.6	43.6	180.2	223.8	19.5
Research and development	1.3	6.2	7.5	53.3	60.8	12.4
Legal activities, market research, accounts	38.4	155.5	193.9	623.9	817.8	23.7
Architecture, technical activities	8.6	19.9	28.5	247.9	276.4	10.3
Advertising	4.4	13.7	18.1	84.1	102.2	17.7
Labour recruitment	3.4	22.9	26.3	109.6	135.9	19.3
Security activities, industrial cleaning	30.7	5.0	35.7	363.9	399.6	8.9
Other business services	8.2	23.6	31.7	830.2	861.9	3.7
Total	256.1	553.7	809.8	7 374.0	8 183.8	9.9
Area as % of total	3.1	6.8	9.9	90.1		

countries, there is a complete absence of data on this whilst in others, information is of poor quality. Even where there is reliable information, its use is limited because the different definitions used by countries prevent sensible comparison. The purpose of the pilot then is twofold: to test the feasibility of producing consistent aggregates based on common definitions and to produce preliminary information.

Work on UK data for 1994 has recently been completed. This work, like that of some other participating nations, has not involved any additional data collection. Instead results have been produced by combining information from different sources.

In the UK, information on service trades activity is collected by the ONS in its annual service trades inquiry. This includes data on, for example, turnover and capital expenditure. The inquiry does not partition results according to ownership. However, the inquiry register holds information on foreign ownership. By matching the two sources, aggregates have been produced of foreign owned business activity. The sectors covered in this work differ from those in the previous register analysis. The latter analysis includes distribution, hotels and restaurants, and some services: in terms of the 1992 version of the Standard Industrial Classification (SIC(92)), these are sections G, H and parts of I and K.

Some of the results by sector are shown in Tables 10, 11 and 12. Overall, the number of foreign owned enterprises in the sectors covered is small, around half of one per cent. The highest proportion of foreign owned businesses was just over 2 per cent in Supporting and auxiliary transport activities, division 63 of SIC(92). Much more significant, as to be expected, is foreign owned businesses' proportion of turnover. Over all sectors, this was around 18 per cent ranging from around 1 per cent in Hotels and restaurants to 45 per cent in Supporting and auxiliary transport activities.

Within the total, the turnover of businesses whose parent companies are located in the European Union (EU) represent 5 per cent of the total compared to 13 per cent for enterprises whose parent companies are located outside the EU. The turnover of extra-EU owned businesses is greater than that of EU owned businesses in most sectors, one exception being distribution and repair of motor vehicles (SIC(92) division 50).

The number of persons employed by foreign owned service businesses is 10 per cent of the total employment for the sectors covered. Intra-EU owned businesses account for 3 per cent of the total compared to 7 per cent for extra-EU owned businesses.

Further information covering both UK and other participating countries will be published by Eurostat later this year.

The activity of foreign owned businesses in UK manufacturing

Similar information has previously been produced for the manufacturing sector as part of the Annual Census of Production conducted by ONS. Summary information for 1994 based on section D of the 1992 Standard Industrial Classification is shown in Table 13.

Table 13 Foreign owned enterprises in manufacturing, 1994

	All enterprises	Foreign owned enterprises	Percent
Number of businesses	156,941	2,633	1.7
Employment (thousand)	4,249.8	789.0	18.6
Wages and salaries (£bn)	64.3	14.5	22.5
Total sales and work done (£bn)	377.8	116.4	30.8
Gross output (£bn)	380.3	116.9	30.7
Net output (£bn)	159.5	40.9	25.6

As with the service sector information, foreign owned businesses were more significant when measured in terms of economic variables rather than number of foreign owned businesses. Within the foreign owned total, businesses involved in the manufacture of motor vehicles etc. had the largest employment figures (126 thousand) and contributed most to gross output (£23.1 billion). Further details are given in Table 14. In percentage terms, the employment of foreign owned businesses was most significant in the manufacturing of office machinery and computers (56 per cent of total employment in the industry) and the manufacturing of motor vehicles etc. (also 56 per cent).

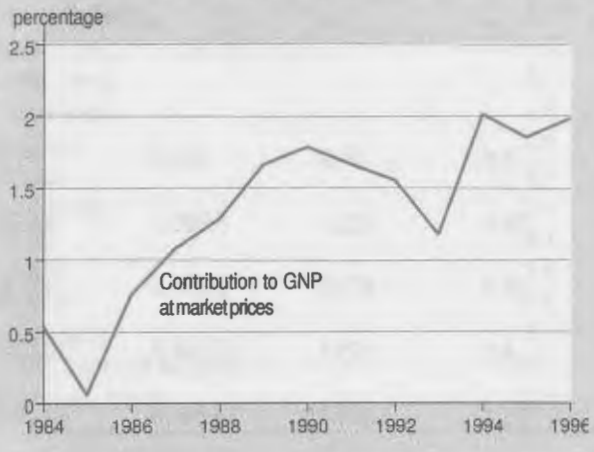
The latest available geographical information based on country of ownership was produced for 1992 and is shown in Table 15. Coverage here is different to Table 14 which broke down 1994 results by SIC(92): Table 15 analyses 1992 information by the 1980 version of the Standard Industrial Classification. The table shows that just under 2 per cent of businesses were foreign owned. Of these, 40 per cent had American parents, 9 per cent German and 8 per cent French. American owned businesses were not surprisingly also the most significant measured by employment and economic variables: 48 per cent of the employment of foreign owned businesses, 54 per cent of gross output, and 52 per cent of end year stocks.

Rates of return from foreign direct investment

Since FDI typifies the globalisation phenomenon, it is interesting to consider the importance of FDI to the economy as a whole and the rates of return from investing in this way. Earnings from direct investment contribute to gross national product (GNP), that is, the income attributable to residents of an economy from both domestic and overseas activity. Chart 1 shows the contribution of net earnings (earnings from overseas attributable to UK companies less earnings in the UK attributable to overseas companies) to the UK's GNP.

Chart 1

Net contribution of overseas direct investment earnings to UK gross national product (GNP)

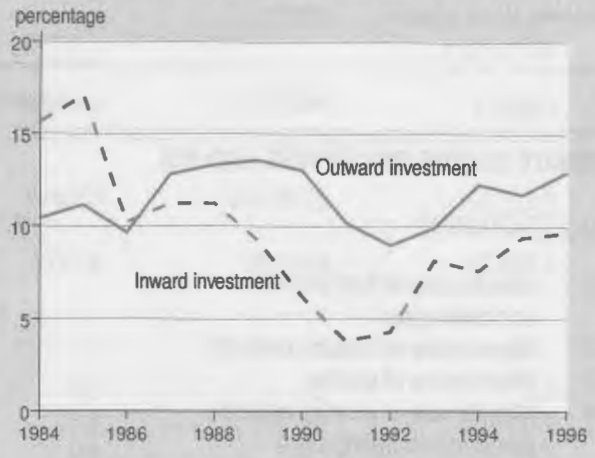


Over the period 1984 to 1990, the contribution rose significantly from 0.5 per cent (£1.5 bn) to 1.8 per cent (£8.6 bn). It then fell back to 1.2 per cent (£6.4 bn) in 1993 before climbing again to 2.0 per cent (£12.9 bn) in 1996. Without any close analysis, the growing importance in the 1980s appears to reflect the increased liberalisation of markets and growth of multinational companies, leading to increased investment and earnings capacity. With the economic downturn in the early 1990s in most economies, investment both overseas and into the UK tended to decline. Since 1993, outward investment in particular has picked up as UK companies have had more money to invest.

The increased net contribution to GNP partly reflects the fact that outward investment flows have been greater than inward investment in almost every year during the 1980s and 1990s. With the increasing difference between the stock of direct investment abroad and direct investment into the UK, earnings from overseas investment have outstripped those from inward investment, generally by increasing amounts since 1980. The difference is not just dependent on the levels of investment, however, as shown in chart 2.

Chart 2

UK rate of return on overseas direct investment



Note: Rate of return is defined as earnings after tax as a % of book value of direct investment assets

The rates of return are the earnings, after tax and depreciation, attributable to overseas investors as a percentage of the book value[16] of attributable direct investment assets. The chart shows that the rate of return on outward investment has remained relatively constant, around 11 per cent, whereas the rate of return on inward investment fell significantly from 17 per cent in 1985 to 4 per cent in 1991 before rising again to 10 per cent in 1996.

A detailed analysis of the factors underlying the different paths in the period 1984 to 1993 was published in Economic Trends in September 1994. In short, the rate of return from inward investment appears to reflect a combination of the strength of the UK economy generally at the time together with special factors which affected the financial sector and the North Sea oil industry in the mid to late 1980s. The relative stability of rates of return from outward investment may reflect the differing economic cycles of a wide range of economies, together with the ability to choose between a range of investment opportunities in various countries.

Research and development patterns

A further aspect of globalisation highlighted by existing statistics relates to research and development (R&D) patterns and, in particular, to the funding of research. Information on R&D spending in the UK is collected via a variety of means including business surveys conducted by the ONS and information collected by the Higher Education Funding Councils and Higher Education Statistics Agency. The latest results were published in the August edition of Economic Trends.

[16] Ideally the rate of return would be based on the market value of direct investment assets since earnings are recorded at market prices. However, the information is not available so the rates of return in the chart are likely to be higher than if they were based solely on market prices

Table 14 UK private sector, foreign owned, manufacturing enterprises by SIC(92) Divisions 15-37, 1994

SIC(92) Division		Businesses	Employment	Wages and salaries	Total sales and work done	Gross output
		Number	Thousand	£ million	£ million	£ million
PRIVATE SECTOR ENTERPRISE GROUPS						
MANUFACTURING		2,633	789.0	14,462.7	116,362.6	116,853.4
15	Manufacture of food products and beverages	146	75.6	1,325.6	12,071.7	12,134.4
16	Manufacture of tobacco products	*	*	*	*	*
17	Manufacture of textiles	46	9.6	135.0	762.0	766.5
18	Manufacture of wearing apparel; dressing and dyeing of fur	22	9.9	100.4	517.2	521.4
19	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear	*	*	*	*	*
20	Manufacture of wood and products of wood and cork; manufacture of articles of straw and plaiting materials	31	3.3	54.2	472.8	474.8
21	Manufacture of pulp, paper and paper products	159	35.8	652.7	3,965.1	3,995.5
22	Publishing, printing and reproduction of recorded media	171	28.0	577.5	2,998.0	3,014.3
23	Manufacture of coke, refined petroleum products and nuclear fuel	20	4.6	125.3	10,254.8	10,268.3
24	Manufacture of chemicals and chemical products	308	95.1	1,959.9	15,546.4	15,567.4
25	Manufacture of rubber and plastic products	175	39.9	693.0	3,551.9	3,562.4
26	Manufacture of other non-metallic mineral products	79	19.1	303.0	1,515.5	1,514.0
27	Manufacture of basic metals	101	22.7	404.6	3,730.9	3,740.6
28	Manufacture of fabricated metal products, except machinery and equipment	213	35.5	590.1	3,221.1	3,230.4
29	Manufacture of machinery and equipment not elsewhere classified	403	86.1	1,489.3	8,028.3	8,060.8
30	Manufacture of office machinery and computers	40	38.0	856.0	8,426.0	8,212.8
31	Manufacture of electrical machinery and apparatus not elsewhere classified	144	39.8	629.8	3,050.7	3,061.0
32	Manufacture of radio, television and communication equipment and apparatus	112	45.0	747.2	6,576.2	6,615.9
33	Manufacture of medical, precision and optical instruments, watches and clocks	177	24.1	409.3	2,031.1	2,039.7
34	Manufacture of motor vehicles, trailers and semi-trailers	122	126.3	2,496.6	22,728.8	23,101.6
35	Manufacture of other transport equipment	56	32.6	581.1	2,329.1	2,381.1
36	Manufacture of furniture; manufacturing not elsewhere classified	87	11.8	165.2	799.6	804.4
37	Recycling	7	0.6	11.7	212.7	213.6

(a) Foreign enterprise groups are defined as those controlled by companies incorporated overseas.

Table 15 UK private sector manufacturing enterprises by nationality of enterprise, SIC(80) Divisions 2-4, 1992.

PRIVATE SECTOR ENTERPRISES	Businesses	Employment	Gross output	End of year stocks and work in progress
	Number	Thousand	£ million	£ million
TOTAL ALL ENTERPRISES IN UK	139,893	4,341.3	318,360.8	50,012.0
TOTAL ALL FOREIGN OWNED ENTERPRISES	2,523	784.2	86,104.8	12,435.4
PERCENTAGE OF FOREIGN OWNED TOTAL				
Belgium	0.9	0.6	0.5	0.5
Denmark	2.4	1.2	1.2	0.7
France	8.2	9.4	8.1	10.3
Germany	8.6	5.0	3.8	5.1
Irish Republic	4.7	2.3	1.7	1.2
Greece, Italy, Portugal and Spain	1.0	1.1	1.2	0.9
Luxembourg	0.2	0.2	0.1	0.1
Netherlands	4.8	4.5	3.6	2.9
Australia	2.4	2.2	2.6	1.6
Canada	5.7	6.7	5.6	7.3
Hong Kong	0.5	0.1	0.1	0.1
Japan	5.1	7.4	7.2	7.1
Norway	1.4	0.7	0.7	1.2
Sweden	5.5	3.2	2.2	2.3
Switzerland	5.1	5.5	4.9	5.2
United States of America	40.1	47.8	54.2	51.9
Rest of the World	3.5	2.2	2.2	1.6

Table 16 Gross expenditure on R&D in the UK by source of funds 1988 to 1995

	1988	1989	1990	1991	1992	1993	1994	1995
Expenditure in real terms (1995=100)[1] (£m):								
Funded by:								
Government	5041	5182	5074	4753	4676	4719	4827	4777
Higher education	106	104	100	101	105	105	117	117
Business enterprise	7103	7198	7081	6735	6898	7239	7176	6877
Private non-profit	278	303	342	376	404	406	497	505
From abroad	1276	1442	1680	1610	1541	1662	1784	2052
TOTAL £million	13802	14231	14276	13574	13624	14130	14402	14328
From abroad as a percentage of the total	9.2	10.1	11.7	11.8	11.3	11.7	12.3	14.3

[1] Using the GDP deflator adjusted for the abolition of domestic rates.

Table 17 International comparison of gross expenditure on R&D by source of funding 1995

Percentage

	UK	Germany	France[3]	Italy(p)	Japan[1,3](p)	Canada(p)	USA[2] (p)
By source of funds							
Government	33.3	37.1	41.6	47.4	19.5	37.9	36.1
Business enterprise	48.0	60.8	48.7	48.7	73.4	46.7	59.9
From abroad	14.3	1.8	8.3	3.9	0.1	10.5	-
Other	4.3	0.3	1.4	-	6.9	4.9	4.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Data for Japan are OECD estimates.

[2] Excludes most or all capital expenditure.

[3] Data for France and Japan are for 1994.

(p) = PROVISIONAL

The funding of R&D activity in the UK directly from abroad[17] is a relatively small proportion of the total, around 14 per cent in 1995. However this proportion of funding has risen from 9 per cent in 1988 (see Table 16). Foreign funding was also more significant in UK R&D activity in 1995 than it was in Germany, France and the USA (see Table 17).

Section 4: Gaps and future work

The adequacy of the UK's statistical system

It is clear from comparing sections 2 and 3 of this article that there are gaps in the statistical information needed to study various aspects of globalisation. Part of the problem, as has already been mentioned, is in determining the statistics needed to support the economic analyses which in turn depend on the policy issues at stake.

Taking the key dimensions and issues discussed in Sections 1 and 2, and the exploitation of existing sources in Section 3, how does the UK's statistical system match up to needs? There is already a wealth of information on FDI, published in detail. On total trade, there are detailed data available for goods and improvements are in train for services. However, there is no information available for intra-firm trade. Whilst it would be relatively straightforward to collect such information on FDI inquiries, this would of course impose additional form filling on business.

In terms of the importance of foreign owned businesses in the UK (ie. inward investors), analysis of existing data sources can be further exploited, and the work funded by Eurostat for services described in Section 3 is a welcome initiative.

There is a range of statistical information on sales of IT equipment, both from official government statistics and private sector market research. Among ONS sources, the "Prodcom" inquiry collects information on the manufacture of individual IT products. This is published together with related trade information in the "Product Sales and Trade" series of ONS publications. However, information regarding the use of IT in the context of increasingly globalised markets is less easily found.

The gaps in statistical systems are not of course confined to the UK but are repeated in nearly all countries throughout the world and work needed to improve the range of statistics has, to some extent, to be carried out at the international level. There are a number of international groups working specifically on globalisation issues and a number of factors acting to increase the amount of information available.

International groups

The OECD holds annual meetings on globalisation. The sessions include the presentation of papers on specific aspects such as the quantitative links between FDI and trade, globalisation of

[17] Direct funds from abroad include those from overseas parent companies, contracts for R&D projects, support for R&D provided through European Union schemes and international collaborative projects typically for aerospace or defence projects. They do not include own funding by UK foreign owned businesses.

information technology industries, effects of globalisation on industrial performance and the globalisation of research and development. The subjects are presented in a variety of ways from the analysis of existing, sometimes limited, information to the description of new statistical surveys.

One of the main aims of the group is to produce a manual on globalisation indicators. The intention of this is, firstly, to identify pertinent indicators for policy makers and propose a selection of these for a systematic monitoring of the process and, secondly, to provide methodological and statistical guidelines to construct the indicators on a consistent international basis. Initial proposals for reference indicators include foreign penetration rates (imports plus direct investment), intra-firm trade, and outward direct investment compared with gross fixed capital formation in each country.

The third meeting of Eurostat's "Globalisation Reflection Group" took place in June 1997. The main remit of the Group is to prepare a report on the effects of globalisation on statistical indicators. The objectives of the report are to provide an inventory of the possible effects of globalisation, to evaluate the impacts on the quality and relevance of the main indicators, to review the adequacy of existing concepts and data collection systems and to propose possible supplementary indicators. When complete, the report will probably cover seven themes: demography of enterprises; production, intermediate consumption and value added; international transactions (including trade and FDI); prices; information technology and R&D; labour markets; competitiveness.

Work on the pilot study investigating the activity of foreign owned businesses in the service trades was described in the previous section. This study is being coordinated by a Eurostat "task force" which comprises Eurostat officials and representatives of countries supplying data as part of the pilot. The plan is to publish the results later this year and there is the potential for further pilots involving more nations and designed to improve the processes and definitions used in each country.

Other international work

Apart from groups working specifically on globalisation, other international factors impinge on the amount of relevant information which might become available in the next few years. The first of these is the EU regulation introduced earlier this year on the collection of structural business statistics. Part of this regulation includes a series of studies on the collection of information on imports and exports. If this information were to subsequently be added to the main statistical surveys covered by the regulation then there is the possibility of analysing trade by foreign ownership. If introduced, this (together with the analysis of foreign owned businesses' activity in the service trades described earlier) would be produced as part of an Annual Business Inquiry currently being developed by the ONS to replace existing annual structural surveys.

At perhaps a more basic level, international agreement and co-operation are also important in trying to standardise the definitions used for information already collected by national statistical offices. A good example of the problem is FDI where the different definitions used make comparison across nations difficult. As a result of work led by the IMF and OECD, a new benchmark definition of FDI has been developed and should be implemented across nations over the next few years.

Section 5: Conclusion

The intention of this article has been, firstly, to discuss aspects of globalisation and some of the issues arising from the phenomenon and, secondly, to outline the availability (and in some cases, absence) of statistics needed to support relevant economic analysis. It is hoped that it will help to stimulate thinking and debate on the subject of globalisation.

If you would like to comment, please contact either:

On economic issues: Gordon Duffus, DTI, Room 321, Kingsgate House, 66-74 Victoria Street, London SW1E 6SW; tel: 0171 215 4225
On statistical issues: Philip Gooding, Room 1.066, ONS, Cardiff Road, Newport NP9 1XG; tel: 01633 812793.

GLOSSARY OF TERMS

BOP - balance of payments
CEECS - Central and Eastern European countries
FDI - foreign direct investment
GATT - General Agreement on Tariffs and Trade
IMF - International Monetary Fund
NAFTA - North American Free Trade Area
NIESR - National Institute of Economic and Social Research
ONS - Office for National Statistics
OECD - Organisation for Economic Co-operation and Development
UNCTAD - United Nations Conference on Trade andDevelopement
WTO - World Trade Organization

The ABI respondents database: A new resource for industrial economics research

Nicholas Oulton, National Institute of Economic and Social Research

Address: 2 Dean Trench Street, London SW1P 3HE Tel: 0171-222 7665 ext. 216 Fax: 0171-222 1435
E-mail: m.oulton@NIESR.AC.UK

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ABSTRACT

The ABI Respondents Database or ARD is a new longitudinal database of the individual returns to the Annual Census of Production (ACOP). ACOP is now called ABI (Production) where ABI stands for Annual Business Inquiry. Created by the Office for National Statistics (ONS), the ARD contains essentially all the data in the individual ACOP returns for the years 1970-94. The ONS plans to add later years as they become available. The database is longitudinal since the individual units (establishments and local units) are uniquely identified by reference numbers. This paper describes ACOP and the structure of the ARD. It details the circumstances under which the data have been collected and the variables contained in the ARD. Some limitations and pitfalls for analysts are also discussed. Illustrations of the range of research possible with the new database are given.

Introduction[1]

The purpose of this paper is to describe the new longitudinal database which has been constructed by the Office for National Statistics (ONS) from the individual returns to the Annual Census of Production (ACOP). This database is known as the ABI Respondents Database or ARD. The database is so named since ACOP has itself been renamed ABI (Production) where ABI stands for Annual Business Inquiry.[2] It is a major new resource for researchers in industrial economics. For legal reasons involving confidentiality, access to the individual returns to ACOP has always been very limited. Just as important, the computer systems operated by the ONS have up till now made it extremely difficult to link up a unit's returns in one year to its returns in another. The advent of the ARD will transform this situation, even though the same confidentiality restrictions will remain.

The ARD consists of a set of computer files in SAS format covering (at the moment) the years 1970-94 and containing essentially all the information in the ACOP returns for these years. It is a longitudinal database, rather than a set of cross sections like the Family Expenditure Survey, since each unit surveyed has a unique reference number enabling data for one year to be linked with data for any other year. As each additional ACOP becomes available, it is planned to add it to the database.

Prior to the ARD, ACOP returns were stored on a mainframe computer. It was possible for outsiders to have special tabulations made or even regressions run but this required programs in COBOL being written and run by Central Statistical Office (CSO) staff members and was very expensive by the standard of most research projects. Linking one year's data with another was

1 Financial support from the ESRC under research grant H501265018 is gratefully acknowledged. The ARD has been created as a result of a partnership between myself as representative of the academic community and the ONS. I owe a great debt of thanks to my former colleague David Mayes. He has been a long term advocate of a longitudinal database of the Census of Production and he was the moving spirit in getting this project off the ground. I would also like to thank Graeme Walker and his colleagues at the ONS for many helpful discussions. Graeme Walker has managed the project of creating the ARD. All future researchers will owe a debt of gratitude to him. They will also owe a great debt of gratitude to the late Neil McLeod who tragically died as this paper was being completed: Neil provided the computing expertise which created the ARD. I would also like to thank Robert McGuckin, then of the Center for Economic Studies of the U.S. Bureau of the Census, for a most illuminating visit in which he explained the workings of the LRD, the U.S. equivalent of the ARD. All views expressed here are my own and should not be taken as necessarily representing the views of the ONS or of any of its officials. Responsibility for any errors is mine.

2 Because the new name is not yet familiar and because the old names applied when most of the data in the ARD were collected, I shall continue to refer to ACOP and the Census of Production.

complex and time-consuming. Furthermore, researchers were not allowed to see the individual data they were analysing, not even say the residuals from a regression, since this would have contravened the 1947 Statistics of Trade Act.

The ARD solves the technical problems of analysing the data. The 1994 Deregulation and Contracting Out Act solves the legal problem of access to the data. The 1947 Act has not been repealed so *publishing* or *transmitting* data about individual respondents is still an offence, but the new Act enables the Office for National Statistics to allow research contractors employed by the ONS to have access to the database.

The development of the ARD brings the UK into line with a number of other countries which have already created longitudinal databases from their own equivalents of the Census of Production. These latter include the United States, historically the first, and Canada. The US database is described in McGuckin (1995) who also makes the case for the use of microdata in industrial research. The US database has been the subject of numerous academic studies, particularly of the process of job creation and job destruction (Baily *et al.* 1996; Davis *et al.* 1996) Similar work for Canada is reported by Baldwin (1992) and by Baldwin *et al.* (1994). For the UK, some researchers have been able to overcome the practical and legal difficulties previously prevailing in the UK and have exploited microdata from the Census (e.g. Geroski 1991; Mayes and Green 1992; Lansbury and Mayes 1996a and 1996b). But in the absence of a true longitudinal database, they have not been able to link up data for individual units for successive years.

The next section gives some background on the Census of Production and describes some important administrative features such as the definition of an "establishment" and a "local unit", the register of businesses and the use of sampling. It also discusses which variables are and which are not obtainable from the Census. Section 3 then goes on to discuss the structure of the ARD. Section 4 looks at the conditions under which outside researchers will have access to the ARD. Section 5 will hopefully wet the appetites of would be researchers by examples of the kind of analyses which the ARD will make possible.

The Annual Census of Production (ACOP)

The Census of Production: background[3]

Though the first Census of Production was for 1907, the framework of the modern Census was established by the 1947 Statistics of Trade Act; under which the 1948 Census was the first to be carried out. The Census was made annual from 1970, hence the acronym "ACOP".

The dating of Censuses can give rise to confusion. A Census is dated by the year to which the returns in the main refer. Thus the returns to the 1970 Census refer only in the main to 1970 since a firm's return may be for a business year which does not coincide with the calendar year. In fact firms are allowed to make a return for a business year ending on any date from 6 April in the Census year to 5 April in the following year.

The Census of Production covers the whole of the United Kingdom including Northern Ireland, though not the Isle of Man or the Channel Islands. Under the 1947 Act, selected firms cannot legally refuse to respond. Although the smallest firms are not required to fill in a Census form at all and other size classes are only sampled (see below), the published figures relate to all firms in scope to the Census, with non-selected firms having values imputed to them.[4] The Census is published in the form of a report for each industry and a summary volume.

The publication of individual returns or of any information which could lead to the identification of a respondent has always been forbidden. The extent to which individual data can be transmitted even within the government is quite limited. The 1947 Statistics of Trade Act prescribes stringent penalties – up to 2 years in prison and an unlimited fine – for breaches of these prohibitions. Perhaps for this reason, there was no obligation under the 1947 Act to preserve Census returns for longer than 12 years (subsequently reduced to three). Sadly, all paper records of the individual returns for years prior to 1968 have now been destroyed.[5] Fortunately, the records of the Censuses from 1970 onwards have been preserved in electronic form and these constitute the basis for the ARD, as will be described below.

Administrative features of ACOP

The lowest unit of ACOP is the "local unit" which is defined as a plant or office at a single geographical location. Each local unit has a unique local unit reference number. (If a local unit were dismantled and reassembled on another site it would not be the

3 See Business Statistics Office (1978) for a more detailed account. This source is also a very useful compendium of results from the post second world war Censuses converted to a common industrial classification, the 1968 SIC.

4 Recently, a grossing up procedure has been substituted for imputation.

5 This situation forms an odd contrast with the Census of Population whose records are required by law to be preserved in perpetuity. The records of the Census of Population become available to researchers after 100 years. By contrast, the confidentiality of the Census of Production records must be preserved forever. The destruction of the records for years prior to 1968 ensures that for these years at least this legal requirement will never be breached!

6 Those familiar with the U.S. Census of Manufactures should note immediately that the British term "establishment" is quite different from the American usage. The American establishment is a plant and therefore corresponds more or less to the British local unit. However prior to 1968 when the definition was changed, the British usage was similar to the American.

same local unit and it would be given a different reference number). Some local units are also "establishments," defined as the smallest unit within a firm which possesses the data necessary to answer the questions on the Census form.[6] From the 1987 ACOP onwards, the system of reporting was changed from establishments to companies. The exact meaning of this change will be discussed later. Despite this change the term "establishment" is still in common use in documentation about ACOP and the ARD and for convenience will be retained here since it applies to most of the years of the ARD.

A local unit is defined to be a "parent" if it may be required to report on other local units under its control as well as on itself; otherwise it is defined to be a "single." It is helpful to define a local unit as a "child" if it has a parent. In brief, all establishments are also local units but not all local units are establishments. Every establishment has a unique establishment reference number (as well as a unique local unit reference number). Parents and children can be linked through the establishment and local unit reference numbers. Thus for each parent one can trace the other local units to which it is linked and for each child one can identify a parent establishment.

Establishments are the potential respondents to ACOP. However, not all potential respondents are in fact required to fill out a Census form. Establishments with employment (i.e. the total for all local units in the establishment) below a certain size are not sent a form at all. Since 1972, this minimum size has been 20 employees. Those in an intermediate size class are only sampled. Only establishments above a certain size are sent a form in every case (see Table 1 below).

Table 1 Sampling in ACOP, 1970-94

Census year	Employment size group	Sampling fraction	Comments
1970-71	<25	0 (exempt)	In some industries, <11
	25 or more	All	In some industries, 11 was lower limit
1972-77	<20	0 (exempt)	
	20 or more	All	
1978-79	<20	0 (exempt (a))	All industries
	20-49	1/2	In 68 industries
	50 or more	All	In 68 industries
	20 or more	All	In all other industries
1980-83, 1985-88, 1990-94 (b)	<20	0 (exempt)	All industries
	20-49	1/4 (c)	In most industries
	50-99	1/2	In most industries
	100 or more	All	All industries
1984 & 1989	<20	0 (exempt)	All industries
	20-49	1/2	England only
	50 or more	All	20 or more outside England

Source: *Introduction to Report on the Census of Production: Summary Volume [PA1002], Central Statistical Office and Office for National Statistics, various years.*

Note: *The sampling fractions are minima; in industries where the sample size would have been small, a larger sample has generally been employed.*

a. In 1978, a small sample of establishments employing less than 20 was also drawn.
b. In 1994 the minimum cut-off was 10 (not 20) and in some industries 200 (not 100) was the lower cut-off for a full census.
c. 1/5 in 1993.

Most of the questions on the Census form have to be answered at the level of the establishment. For example, "Sales" or "Gross value added" are aggregates for the establishment as a whole. Similarly, industrial classification refers to the establishment as a whole and does not necessarily apply to all local units attached to the establishment. However, two items of information were (up till and including 1992) reported for each local unit: employment and capital expenditure. The main reason these items were collected at the local unit level was because of their importance for regional analysis. The region to which an establishment is assigned is the region in which the reporting unit is located and may not be appropriate for all units in the group. Therefore a regional analysis of employment based on data at the establishment level could be seriously misleading.

Above the establishment is the "enterprise group", defined as one or more establishments under common ownership or control. Enterprise groups are also identified by unique reference numbers.

The changeover from establishment-based to company-based reporting

This change is described in the Introduction to each Summary Volume from 1987 onwards:

> "From the earliest censuses of production until that of 1986 the reporting unit to the census was the establishment. This was defined as the smallest unit which could provide the full range of data required for an economic census. Establishments were asked, where possible, to exclude from their returns to the census any non-production activity [i.e. any activity not in scope to ACOP].
>
> "In 1987, for a number of administrative and statistical reasons, a new system of company based reporting was introduced. Under the new system the reporting unit to the census is, generally, the company, but there are some exceptions. These arise for example for large mixed activity companies which are asked to make separate returns to the census for each of their production activities on an establishment basis. ...this mixture of reporting units is referred to as "businesses". *These businesses are no longer asked to exclude non-production activities.*
>
> "In practice, since most businesses, both before and after the change, reported for the company as a whole, little difference to the main economic series has resulted from the change." [PA 1002, 1990, p. 3. Emphasis added].

Even if the changeover had no effect on the main, published economic series, which are sums over reporting units, the same may not be true for any study which employs the individual data. However, the database itself contains variables which can be used to check for any effects of the changeover.

The register

Throughout the relevant period, the CSO has held a register of businesses which has provided the basis for ACOP. The Department of Employment (most of whose statistical functions were taken over by the CSO in July 1995) operated a second, independent register on which the Census of Employment was based. In consequence, estimates of employment in the production sector derived from the Census of Employment have differed substantially from the ACOP estimates. These two separate registers have now been amalgamated into one, the Inter-Departmental Business Register or IDBR (Perry 1995). The first ACOP to use the IDBR was that of 1994.

The following applies to the situation before the IDBR came into use. Before an establishment was sent a Census form to complete, it had to be ascertained (a) whether it was in scope to the Census, i.e. engaged in production in Divisions 1-4 of SIC80 and (b) which employment size band it fell into. VAT returns, evidence from other inquiries (such as the Quarterly and Annual Sales Inquiries) and previous returns to ACOP (if available) helped to establish industrial classification. Ascertaining the employment size band was not altogether straightforward since until the advent of the IDBR the business register had no direct information about employment, except from any previous returns to ACOP. The earlier business register was derived from the VAT register which provided information only on turnover (Perry 1985). For establishments which had previously made no returns to ACOP or other inquiries, employment was imputed from VAT turnover. If imputed employment was 10 or more, the business was sent a "register proving" form and the response to this decided whether or not the business was sent a Census form.

The merging of the old Department of Employment register with the CSO one to create the IDBR has improved the situation in some ways. Employment is now known from the Employment Census (recently renamed the Annual Employment Survey), so there is a better basis for selecting firms for ACOP. But the introduction of the new register may have resulted in some discontinuities, since the two previous registers may have recorded different numbers of local units as forming part of a given business.

A more important problem for researchers is that in 1994 the local unit and establishment reference numbers were changed. In the case of establishments (reporting units), a lookup table was created so that it should be possible to trace the history of establishments across the 1993/1994 divide. No lookup table was created for local units. This is unfortunate since some types of analysis, e.g. of job creation and destruction (see below), are most naturally done at the local unit level. It may however be possible for researchers to create their own lookup table using postcodes.

This was not the only change in the register which may have affected its inter-temporal consistency in the period of interest here. In 1984 a new register based on the VAT register was adopted and this resulted in a very large number of smaller businesses being added to the register: in manufacturing there were 34 thousand more enterprises and 33 thousand more establishments in 1984 than in 1983.[7]

Sampling

Despite the name, ACOP is not in fact a census, even of all establishments engaged in manufacturing. Establishments employing less than a minimum number (from 1972, 20) have always been excluded from ACOP, in the sense that they have never been required to fill in a Census form. However, values for such establishments have been imputed and included in published totals. Establishments employing 20-99 people have been sampled, with the sampling fractions varying somewhat from year to year. For example, in 1990 1 in 4 samples were drawn for establishments employing 20-49 and 1 in 2 samples for those employing 50-99. Values have also been imputed for non-sampled establishments and included in published totals. Only in the case of establishments employing 100 or more has a complete census been taken in every year from 1970 onwards. The sampling schemes in the years covered by the ARD were as in Table1. The exact sampling fractions in every industry can be deduced from the data in the ARD itself.

Because the great majority of businesses employ fewer than 20 people, only a minority are required to respond to ACOP and hence get included in the ARD. But since the employment size distribution is highly skew, the included business cover a high percentage of total employment. In 1993, there were 147,549 businesses engaged in manufacturing, of whom 120,956 employed fewer than 20 people. The latter accounted for 11.9% of total employment in manufacturing.[8] Given the sampling fractions in 1993 one can calculate that only around 13,000 manufacturing businesses were required to respond. In earlier years the figure was somewhat higher (e.g. 14,700 in 1980).

Questions asked in the Census

Core questions

There are some core questions which have always been asked and which relate to output, employment and investment. The output of establishments is given according to a simple accounting framework:

Gross output = Sales and work done + Increase during the year, work in progress and goods on hand for sale

Net output = Gross output – Purchases + Increase during the year, stocks of materials, stores and fuel – Cost of industrial services received

Gross value added at factor cost = Net output – Cost of non-industrial services received

Gross value added is gross of depreciation and also gross of stock appreciation. It can be summed across establishments without double-counting. Aggregating up to the sectoral level or the level of manufacturing as a whole, it corresponds in principle to the sum of income from employment and gross profits as given in the national accounts.[9] After netting off stock appreciation (which is not recorded or estimated in ACOP), this is the contribution of each sector to GDP at factor cost.

Note that both sales and purchases can be between establishments in the same industry, though sales and purchases within the same establishment are excluded. So even within a given industry it is not possible to aggregate either sales or gross output or purchases across establishments without an element of double-counting, which varies appreciably between industries.

"Purchases" cover all purchases of goods, materials and fuel (but not services) whether from domestic or foreign sources. "Cost of non-industrial services received" is broken down into:

Rents, hire of plant, machinery and vehicles (*not* including financial leasing)

7 Three additional Activity Headings (AH 4121, 4126 and 4930) were covered for the first time in the 1984 Census. But the addition of these industries can only account for some 1,300 additional enterprises and establishments (source: 1984 Summary Report, Tables 1 and 1a). See Perry (1985) for the background to this change.

8 Mining and quarrying had another 1,099 businesses. Source: *Annual Censuses of Production and Construction: Summary Volume 1993* [PA1002] (ONS 1997), Tables 1 and 6.

9 In recent years it corresponds in practice as well, though for the 1970s there are considerable differences.

Commercial insurance premiums
Bank charges
Licensing of motor vehicles
Rates (excluding water rates)
Other

Unfortunately, in practice much the largest category here is "Other" which includes transport, postal and telecommunications services, and all kinds of business services. Until the 1996 Census, there was no more detailed breakdown of this catch-all category.

Under the heading of employment, ACOP distinguished until 1996 between "operatives" (blue collar workers), "administrative, technical and clerical" workers (white collar workers) and "working proprietors" (the self-employed, unpaid family members, and directors not paid a salary), the latter a small group. The numbers of each group, the respective wage bills of the first two groups (pre-tax and inclusive of employees' National Insurance contributions), and the total of employers' National Insurance contributions and contributions to pension schemes are recorded.

Under the heading of investment, ACOP distinguished four categories: (1) new building work; (2) land & existing buildings; (3) plant & machinery; and (4) vehicles. For the last three categories, both acquisitions and disposals are recorded separately. From 1992, only total acquisitions and total disposals are recorded and the breakdown by type is no longer available at the establishment level. The breakdown by type is still published in the summary volume but it is now estimated. Investment is recorded gross of depreciation. From 1988, investment includes assets acquired under financial leasing. Prior to 1988, financial leasing was omitted.

In addition to recording changes in the value of stocks (inventories) as noted above, ACOP also recorded separately the value of stocks of (a) "materials, stores and fuel"; (b) "work in progress" and (c) "goods on hand for sale", in current prices, both for the beginning and the end of the year. From 1992, this breakdown has no longer been required and only the total of all types of stocks is asked for. The breakdown published in the summary volume is estimated.

Occasional questions

There have been a number of changes, both additions and deletions, to the questions asked.

1984: Additional questions on road transport, postal and telecommunications costs were asked of larger establishments.

1986, 1988 and 1989: Additional questions on the number of computer-related employees and the costs of computer equipment purchased, hired or leased.

1988 onwards: The costs of leased assets were added to the standard questions about capital expenditure.

1991-1994: Additional questions on capital and current costs associated with pollution prevention and solid waste management.

1992 and 1993: An additional question on whether businesses had employees engaged in R&D work.

1992 onwards: The breakdown of capital expenditure and of stocks by type is now excluded from the questions asked. The breakdowns by type continue to be published but are now partly based on estimates.

1996: The breakdown of employees into "operatives" and "administrative, technical and clerical" is no longer required. Instead, a breakdown into full time and part time employees is asked for. There was an additional question on trade in overseas services. Under purchases, separate figures are now required for purchases of the following services: telecommunications, road transport, computer and related (excluding hardware and software), and advertising & marketing.

Limitations of Census data

It is just as important to know what ACOP and consequently the ARD does not contain as what it does.

All values are nominal. In other words, the database contains no price variables. In the case of output, producer price indexes (PPIs) at the 4-digit level are readily available from other sources. But problems arise when the nominal output of a firm or establishment is deflated by an industry price index, not a firm or establishment price index (Griliches and Mairesse 1995).[10] Producer price indexes are also available at the 4-digit level for purchased materials and fuels. In principle, these cover imports as well as purchases from domestic sources. But import price indexes are limited to materials, fuels and semi-processed manufactures. In the case of the increasingly important category of finished intermediate goods (e.g. carburettors), no import price indexes are available and the official indexes use domestic prices as proxies. In addition, there are no PPIs covering purchased *services.*[11]

Employment. The data on employment is limited. There is no information on hours worked and until 1996 no breakdown into

10 They show that when estimating a production function it is necessary to add a term involving the industry demand elasticity. The latter can be proxied by aggregate output.

11 The ONS has just started estimating PPIs for a small range of business services, such as contract cleaning.

full time and part time employees. Also, the employment question has always invited an imprecise answer, since unlike the Census of Employment (now renamed the Annual Employment Survey) it asks about the average number employed during the year, not the actual number on a particular date.[12] Since the two Censuses now use the same register, it is likely that at some point in the future the employment questions will be effectively merged.

Capital stocks. ACOP and therefore the ARD contain no balance sheet data except for stocks (inventories). So there is no information on financial assets and liabilities and no information on stocks of fixed capital. It is possible to estimate stocks of buildings and land, of plant & machinery, and of vehicles by cumulating the corresponding investment flows but for this a number of assumptions must be made. First, investment must be deflated and the number of deflators available is limited. Second, assumptions must be made about asset lives and third, assumptions must be made about economic depreciation (ACOP does not ask for even accounting measures of depreciation). It is important to note that though asset disposals are given as well as acquisitions, "the figures for disposals exclude amounts written off for capital assets which are scrapped" (Introduction to the *Summary Volume*). In other words, scrapping is not recorded. On all this, see Oulton and O'Mahony (1994, chapter 3).

R&D. Prior to 1992, ACOP contained no question on R&D. In 1992 only, respondents were asked whether they employed anyone for R&D purposes on a regular basis (yes or no). However, the ONS conducts a separate R&D inquiry using the same register so in principle it will be possible to merge the results from the latter into the ARD.

The ABI Respondents Database (ARD)

Origin of the ARD

Beginning with the 1970 Census, the paper records of each Census were transferred to magnetic tapes for analysis on a mainframe computer. These tapes were retained beyond the 5 year limit even though there was no legal obligation to do so. Recently, the CSO (as it then was) decided to decommission its mainframe in order to go over to a client-server system and the question arose as to what to do with the magnetic tapes which were about to become unreadable. Fortunately for economic analysis, the CSO transferred the data on the tapes to files readable on the new system. At the same time, it decided to take the opportunity presented by the changeover to the new system to set up a longitudinal database of the individual returns collected under ACOP.

The ABI Respondents Database (ARD) consists of two files for each available year, currently 1970-1994. The two files relate to "selected" and "non-selected" respondents respectively (these terms are explained below). It is intended to add each successive ACOP to the database as it becomes available; 1995 will be added shortly. It would be technically possible to add 1968 to the database since the paper records of this Census still exist, but there are no plans at the moment for doing so. As just mentioned, the records of all earlier Censuses have been destroyed.

The material in the database relates to mining and quarrying, manufacturing, gas, electricity, and water (Orders II-XIX and XXI of the 1968 SIC; Divisions 1-4 of the 1980 SIC; Sections C, D and E of the 1992 SIC). Construction (Order XX of the 1968 SIC; Division 5 of the 1980 SIC; Section F of the 1992 SIC) is also part of ACOP but technically this is a separate inquiry with a different questionnaire and a different register of businesses. Returns for construction have been included in the ARD only from 1994.

Two versions of each of the two sets of files exist. The first version consists of ASCII files which transcribe essentially all the information preserved on the original magnetic tapes. It is intended that these files will never be edited. They are stored archivally and so the ACOP returns (at least from 1970 onwards) are now safe for the foreseeable future. The second version of each file is a SAS file. Here an attempt has been made to make the data more intertemporally comparable. This attempt is necessarily incomplete since the questions or the way the answers were coded vary from one Census to another. It is these SAS files which will be available to researchers (subject to confidentiality requirements). The SAS files can be analysed by of course SAS itself and also by any econometric package which is capable of reading SAS files (e.g. Stata in conjunction with Stat/Transfer).

Structure of the database

The administrative features of ACOP discussed above have influenced the structure of the ARD. There are two types of information available. First, there is information from the business register, referred to as "indicative data", and secondly there is information from the ACOP inquiry itself, referred to as "returned data". Indicative data include an estimate of employment ("register employment"), industrial classification and postcode or other address marker. For each year there are two files: "selected" and "non-selected". The "selected" file holds both indicative and

12 The "Notes" for respondents suggest that employment could be estimated from the average for the last week of each calendar month.

returned data on establishments which were selected as respondents. Each establishment is recorded as either a parent or a single. The "non-selected" file holds only indicative data. It includes non-selected parents, non-selected singles, the children of non-selected parents and the children of selected parents, but not the selected parents themselves who are in the other, "selected" file. However, the data in the two files can be linked through the establishment and local unit reference numbers.

As mentioned above, employment and capital expenditure were collected at the local unit level as well as at the establishment level up till and including 1992. For the children of selected parents, returned employment is in the ARD as is the less accurate register employment. But for practical reasons capital expenditure for selected local units is at the moment in the ARD only for 1984, 1989 and 1992.

From 1994 onwards, employment at the local unit level has been collected under the Annual Employment Survey, though using a somewhat different question. It is possible in principle to merge these employment figures into the ARD. However, as mentioned above (section 2.4), the local unit reference numbers were changed in 1994 when the IDBR was introduced and there is no lookup table relating old and new numbers, though it may be possible for researchers to create their own using postcodes. Unless this can be done, studies of the job creation and destruction process at local unit level will suffer from a hiatus between 1992 and 1994.

Because of sampling and the exemption of smaller establishments, the number of selected establishments is only a fraction of the number of businesses. In 1993, there were 16,979 selected establishments, compared with around 149,000 businesses in scope to the Census (excluding construction). The number selected has tended to fall over time mainly because of the greater use of sampling. In 1972 for example there are 25,311 selected establishments in the ARD and in 1980 15,108.

Industrial classification

Census data have been *published* at different times under various versions of the SIC. But the situation with regard to the SIC under which the establishment returns are *classified* in the ARD is more complicated. From 1970 to 1979 establishments were classified under SIC68 only. From 1980 to 1983 they were classified under both SIC68 and SIC80. From 1984 to 1991 they were classified under SIC80 only. In 1992 they were classified under both SIC80 and SIC92 and from 1993 onwards under SIC92 only. However, from 1986 to 1993 the VAT Trade Classification is also known from the register and included in the ARD and this is highly compatible with SIC68. So for 1970-83 and 1986-93, 22 years in all, a consistent if somewhat antiquated classification is available, namely SIC68.

In principle, an establishment is classified by reference to what its principal product is. In practice, classification has been done in two ways. For firms included in the Monthly, Quarterly or Annual Sales Inquiries, the latter now known as PRODCOM, it is done on the basis of their reported commodity sales. For other firms it is based on their VAT Trade Classification, recorded in the VAT register. So for the latter group of firms, the VAT Trade Classification is the primary one since the SIC80 and SIC92 codes in the ARD are the result of a *reclassification* done within the ONS of questionnaire answers coded under the VAT Trade Classification. Since the advent of the IDBR in 1984, additional sources for classification include the Annual Employment Survey and PAYE data.

Other characteristics of establishments

Apart from industrial classification, the ARD includes a large number of other markers describing local units and establishments. Some of these are of mainly administrative concern, e.g. late returns, but many are of value to researchers. They include the following types:

1 *Structural.* Whether a local unit is a single, a parent or a local unit belonging to an establishment is recorded. In the case of parents, the number of local units included in the establishment is recorded.
2 *Activity.* A local unit may be engaged in production, in transport, be a head office or other office, or be not yet in production. For singles and parents, the activity is always production since this is a condition of selection for the Census. Activity information is available from 1980 onwards.
3 *Geographical.* Region, local authority area, and (from 1984) postcode.
4 *Organisational.* An establishment may belong to one of 10 types, including company, partnership, sole proprietor, central or local government body, or nationalised.
5 *Foreign ownership.* The country of the parent is recorded in the case of foreign-owned establishments. For 1970-83, 48 country codes are given, with many more for more recent years.

Conditions of access to the ARD

As noted above, the publication or transmission to a third party of information contained in an individual establishment's return to ACOP is prohibited by the Statistics of Trade Act 1947. This prohibition extends to information which could be used to identify

an individual return (disclosive information). Until recently, there was no legal provision for outside researchers even to have access to the original returns, except where the contributors of the data gave legal consent. This situation has been transformed by the 1994 Deregulation and Contracting Out Act. Under this Act it has become permissible for an external contractor working for ONS to be allowed controlled access to confidential data in pursuance of a contract which involves the contractor in the exercise of non-statutory duties. (Collecting data under ACOP is a statutory duty of the ONS; analysing the data is not).

An outside researcher could therefore be appointed as a contractor by the ONS to carry out a research project under which he or she would have access to the individual returns (in practice, the SAS files comprising the ARD). The contractor must be an individual or organisation that can be bound by UK contract law. Before entering into a contract, the ONS would need to consider the credibility of the researcher and the purpose of their proposed project.[NO4] The project must be in line with the strategic aims of the ONS.

As a contractor, the researcher would have the same absolute duty of care as binds civil servants to preserve confidentiality. It would be unlawful to use confidential information for the researcher's own purposes or for any purpose not in pursuance of the contract. These conditions would apply indefinitely after the contract has ended and any breach would be a criminal offence.

The ONS would expect the contractor to produce a report and might require that an article describing the research be submitted for publication in (for example) *Economic Trends*. However the ONS has indicated that it does not seek a monopoly on publication. Researchers will still be able to submit papers to academic journals though any paper will have to be vetted for possibly disclosive information.

It is clear that under these arrangements there is no general right of access for outside researchers. Access will always be at the discretion of the ONS. Nevertheless, the ONS has indicated that it wishes to follow a liberal policy. It seems likely that bona fide researchers at universities or research institutes who wish to carry out projects of an econometric nature will be able to satisfy the conditions and gain access to the ARD, while retaining the necessary academic freedom to publish their conclusions. Physically, access will be provided to a contractor via a PC located at Newport.

The other mode of access which has always existed and under which people can ask the ONS to carry out special analyses (for which a charge is made) will still continue. This mode will also utilise the ARD and so should be simpler and it is hoped cheaper than in the past. It is the preferred mode for small scale analyses.

Illustrative analyses using the ARD

Two examples of the uses to which the ARD can be put will be given. The first example looks at the variation in labour productivity across establishments. Labour productivity is measured as either value added per employee or as gross output per employee. Moments of the distribution of the log of productivity (standard deviation, skewness and kurtosis) for total manufacturing are shown in Table 2 for the years 1980-1992. The growth rate of real manufacturing output is also shown as an indicator of the state of the cycle.

Despite the roller coaster ride and associated deep structural change which manufacturing underwent over this period, the dispersion of productivity was remarkably constant and shows no tendency to move with the cycle (Chart 1). If the 1979-81 recession led to the closure of low productivity plants as many have argued, we might have expected dispersion to narrow in the early 1980s but in fact it rises, though not by much.

The degree of dispersion is much the same on either measure with no strong tendency for one measure to exceed the other. This is again surprising. Since the extent of outsourcing (the value added/gross output ratio) may differ both between businesses in a given sector and between sectors, we might expect the gross output measure to be systematically larger but such is not the case.

The extent of dispersion, as measured by the standard deviation, is high. The standard deviation of the log of gross weekly wages of all full time workers (male and female, manual and non-manual) was 0.54 in 1993.[13] So the dispersion of productivity is substantially higher than the dispersion of wages. Since wages are believed to be related to marginal productivity and firms employ workers with a range of wage rates, one might have expected an averaging effect to make productivity dispersion across firms lower than wage dispersion across workers. But in fact we find the opposite is the case.

We might also ask to what extent productivity dispersion is due to differences between sectors in productivity levels and to what

13 Estimated from the mean and median earnings given in the 1993 New Earnings Survey, on the assumption that earnings are lognormal.

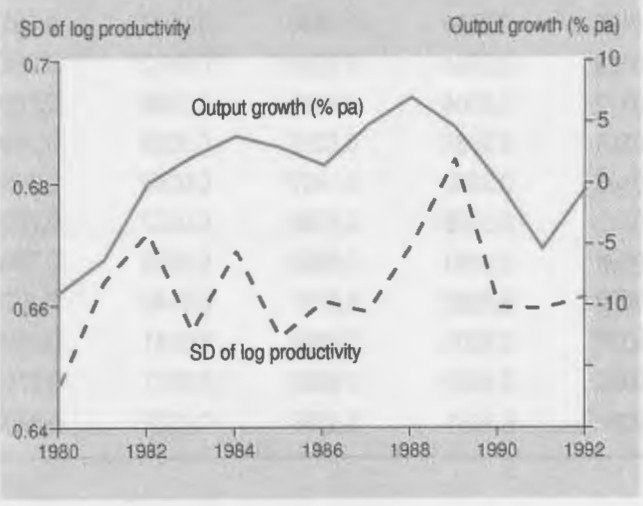
Table 2 Moments of log labour productivity distribution and output growth: all ACOP contributors in manufacturing, 1980-1992[G2LU6]

		Log productivity						
		Standard deviation		Skewness		Kurtosis		Output growth
Year	Number of contributors	Value added	Gross output	Value added	Gross output	Value added	Gross output	% p.a.
1980	14,714	0.6469	0.6692	-0.8613	0.6269	5.8328	1.5080	-9.00
1981	14,483	0.6637	0.6716	-1.0814	0.6318	8.7992	1.4738	-6.36
1982	14,253	0.6717	0.6726	-1.0018	0.6111	6.2686	1.5627	-0.13
1983	13,893	0.6557	0.6775	-0.6966	0.6798	6.2507	1.3780	2.04
1984	18,123	0.6687	0.6904	-0.5601	0.6862	4.2208	1.3338	3.72
1985	13,643	0.6547	0.6853	-0.6593	0.6843	5.9222	1.4670	2.76
1986	13,056	0.6605	0.6845	-0.6945	0.5508	6.0689	1.6686	1.29
1987	13,179	0.6588	0.6720	-0.6399	0.5189	4.7559	1.1292	4.57
1988	13,315	0.6696	0.6761	-0.8902	0.5047	6.3762	1.1768	6.80
1989	18,754	0.6836	0.6690	-0.8419	0.4666	5.5418	1.1585	4.39
1990	13,881	0.6595	0.6615	-0.8558	0.4683	6.4123	1.2969	-0.20
1991	13,666	0.6593	0.6484	-0.8394	0.4658	5.5710	1.4013	-5.55
1992	13,222	0.6611	0.6430	-0.7369	0.4757	4.5263	1.4379	-0.64

Source: ARD. Manufacturing output growth from Economic Trends Annual Supplement: 1996 Edition (ONS 1995), Table 4.1, calculated as 100 x first difference of natural logs. Skewness and kurtosis are calculated after subtraction of mean.

extent it is due to differences between establishments in the same sector. Dividing manufacturing up into the 22 Classes of SIC80, we find that in 1992 only a small part of the overall variance can be explained by inter-sectoral differences in productivity: 11% on the value added measure and 20% on the gross output one.[14]

Chart 1
Productivity dispersion and output growth: all manufacturing, 1980-1992



If the distribution of productivity were lognormal then the skewness and the kurtosis should both equal zero. However, Table 2 shows that neither of these is the case and on the Jarque-Bera test the deviation from lognormality is highly significant. Using value added productivity is negatively skew, using gross output it is positively skew. Kurtosis is substantially larger using value added. However, the finding of non-normality may be affected by the exclusion of smaller establishments from the Census.

The second example exploits the longitudinal nature of the ARD. Since we have found that productivity dispersion is very high, it is interesting to see whether there is any tendency to convergence or regression towards the mean. Do establishments with high productivity levels tend to have lower productivity growth than those with low productivity levels? A test for this is a simple autoregressive or Galton-Markov model:

$$y_t = \alpha + \beta y_{t-1} + \varepsilon_t$$

14 These findings are consistent with those of Oulton (1996) based on company accounts. See also Lansbury and Mayes (1996a).

where y_t is the log of productivity at time t and ε_t is a white noise error term. If $\beta = 1$, log productivity is a random walk with drift α. If $0 < \beta < 1$, there is regression towards the mean, i.e. growth is inversely related to the initial productivity level. By substitution we find that:

$$y_t = \alpha(1 + \beta + ... + \beta^{s-1}) + \beta^s y_{t-s} + (\varepsilon_t + \beta\varepsilon_{t-1} + ... + \beta^s\varepsilon_{t-s}), \quad s>0.$$

According to this model, if $0 < \beta < 1$ the coefficient on lagged productivity should decline geometrically as the lag length increases.

Estimates of the model by OLS appear in Table 3. We note immediately that there is much more persistence in the gross output measure of productivity than in the value added one. In both cases the coefficient on lagged productivity declines but not in a geometric fashion. After around seven lags the coefficient declines very slowly. If decline were geometric we would expect a coefficient on 1980 productivity of 0.64 on the gross output measure and of 0.08 on the value added one, compared with the estimated values of 0.82 and 0.55 respectively.

The two findings, that dispersion is constant over time and that there is regression to the mean in productivity levels, are not in conflict with each other. In the absence of further shocks, productivity levels would converge. But shocks do occur and these were sufficient over this period to keep dispersion from falling.

The other point to note from Table 3 is the sharply shrinking sample size as the lag length rises. This reflects primarily establishment closures but also the fact that establishments sampled in one year may not be sampled in another, that establishments may sink below the exemption level of employment, and finally that establishments may be transferred out of manufacturing and cease to be in scope to the Census.

Concluding remarks

This paper has described the ABI Respondents Database, a longitudinal database containing virtually all the information in the individual returns to the Census of Production for (so far) the years 1970 to 1994. It is likely to constitute a major new resource for research in industrial economics. Because the history of the units surveyed (establishments and local units) can be traced over time, wholly new possibilities for research are opened up. Studies of productivity, of technical efficiency, of the job creation and destruction process, of structural change, of regional growth and decline, will all benefit enormously from access to the ARD.

Table 3 Galton-Markov model of productivity for different lag lengths: dependent variable is log of productivity in all manufacturing in 1992

Independent variable —	Value added per person employed				Gross output per person employed		
log of productivity in:	N	Coefficient	s.e.	R^2	Coefficient	s.e.	R^2
1980	5,562	0.5498	0.0134	0.2319	0.8165	0.0082	0.6433
1981	5,828	0.5436	0.0122	0.2554	0.8249	0.0077	0.6652
1982	6,093	0.5792	0.0118	0.2834	0.8325	0.0072	0.6888
1983	6,235	0.5773	0.0112	0.3004	0.8265	0.0068	0.7050
1984	7,487	0.5762	0.0103	0.2962	0.8268	0.0059	0.7256
1985	6,587	0.6024	0.0108	0.3202	0.8457	0.0060	0.7485
1986	6,745	0.6154	0.0102	0.3489	0.8598	0.0057	0.7699
1987	7,006	0.6293	0.0098	0.3690	0.8668	0.0053	0.7908
1988	7,594	0.6352	0.0092	0.3832	0.8767	0.0049	0.8074
1989	9,491	0.6592	0.0079	0.4206	0.8862	0.0041	0.8295
1990	8,739	0.7163	0.0080	0.4809	0.9230	0.0037	0.8763
1991	9,412	0.7909	0.0067	0.5934	0.9598	0.0029	0.9228

Source ARD. Constant included but not reported. Estimated by OLS.

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