Economic Trends

No 463
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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.

'Latest developments' presents the most up-to-date statistical information available during the month. It is important to note that data included in this section may not be wholly consistent with other sections which have gone to press earlier. All data in this section are seasonally adjusted unless otherwise stated. In most cases estimates are provisional and subject to revision.

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

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

In addition, quarterly articles on the national accounts appear in the January, April, July and October issues, and on the balance of payments in the March, June, September and December issues. Occasional articles comment on and analyse economic statistics and introduce new series, new analyses and new methodology.

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

Notes on the tables

1. Some data, particularly for the latest time period, are provisional and may be subject to revisions in later issues.
2. The statistics relate mainly to the United Kingdom; where figures are for Great Britain only, this is shown on the table.
3. Almost all quarterly data are seasonally adjusted; those not seasonally adjusted are indicated by NSA.
4. Rounding may lead to inconsistencies between the sum of constituent parts and the total in some tables.
5. 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.
6. 'Billion' denotes one thousand million.

7. There may sometimes be an inconsistency between a table and the corresponding chart, because the data may be received too late to update the chart. In such cases it should be assumed that the table is correct.
8. There is no single correct definition of *money* and there are many liquid assets which are not included in any of the UK monetary aggregates but which nevertheless need to be taken into account on occasions when interpreting monetary conditions. Consequently, many definitions of money stock are widely used:
M0 the narrowest measure consists of notes and coin in circulation outside the Bank of England and bankers' operational deposits at the Bank.
M2 comprises notes and coin in circulation with the public *plus* sterling retail deposits held by the UK private sector with UK banks, with building societies and in the National Savings Bank ordinary account.
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.
9. Symbols used:
   .. not available
   - nil or less than half the final digit shown
   + alongside a heading indicates a series for which measures of variability are given in the table on page 76
   † 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.

The Editor would welcome readers' suggestions for improvements to *Economic Trends*.

Central Statistical Office, 26 May 1992

Advancement of 'Economic Trends' publication date

As part of our continuing programme to improve the timeliness of the information that *'Economic Trends'* provides to its customers, CSO are progressively advancing the book's publication date each month, until the book is actually published at the end of the month listed upon the cover. It is hoped to complete this process by the end of July.

The tighter deadlines set for this purpose might mean that some regular monthly updated information may not be available for inclusion in one particular issue, until this process is complete. However, the average effect across the whole publication will be that information is more up to date. CSO thanks its customers for bearing with us during this period.

As a result of this process, the regular Cyclical Indicators by timing classification charts which were previously published in the February, May, August and November editions will from now on appear in the March, June, September and December editions.

CSO Databank
Virtually all the series in *Economic Trends* and the Quarterly Articles may be obtained as part of the CSO Databank Service on tape or disk. The appropriate four digit identifier is included at the top of the column or start of a row of figures. This enables users to obtain (in computer-readable form) a much more comprehensive and up-to-date set of long run macro-economic time series data than can be included in this publication. The tape format, unlabelled EBCDIC, is the same for all datasets. The disks, either $3^1/_2$" or $5^1/_4$" are written in ASCII text which can be loaded as spreadsheets and viewed using standard spreadsheet packages, such as LOTUS or SMART.

Details of the service offered and the schedule of charges may be obtained from the Databank Manager, CSO Information Systems Branch, Room 52/4, Government Offices, Great George Street, London, SW1P 3AQ (telephone 071-270 6386). CSO does not offer direct on-line access for these data but a list of host bureaux offering such a facility is available on request from CSO.

Contents

Latest developments in the economy

Data available at 27 May 1992

DATA PUBLISHED BY CSO

Output

In the three months to March, the output of the production industries is provisionally estimated to have decreased by 1.0 per cent compared with the previous quarter, and by 1.5 per cent compared with the same period a year earlier. The provisional index of production figure for March is 104.7 (1985=100). The index covers the manufacturing and energy industries, and all figures are seasonally adjusted.

Manufacturing output rose by 0.3 per cent in the three months to March compared with the previous three months, but fell by 2.0 per cent on the same period a year earlier. Within manufacturing, between the latest three month periods, the output of the metals industry rose by 1.1 per cent, chemicals rose by 0.1 per cent, engineering and allied industries fell by 0.3 per cent, "other manufacturing" rose by 1.4 per cent, "other minerals" fell by 0.3 per cent, textiles and clothing fell by 0.1 per cent, and food, drink and tobacco rose by 1.0 per cent.

The output of the energy sector was 4.3 per cent lower than in the preceding three months, and 0.2 per cent lower than in the same period a year earlier.

By market sector, between the latest three month periods, the output of the investment goods industries fell by 1.4 per cent, the output of the consumer goods industries rose by 1.3 per cent, and the output of the intermediate goods industries fell by 1.8 per cent.

Producer prices

The input price index for materials and fuel purchased by manufacturing industry fell by 0.6 per cent in the twelve months to April, following a fall of 0.2 per cent in the twelve months to March. Between March and April, the unadjusted index rose by 0.8 per cent, and the seasonally adjusted index rose by 0.2 per cent.

The increase over twelve months in the output price index for home sales of manufactured products was 3.8 per cent in April, compared with an increase of 4.5 per cent in March. The index rose by 0.4 per cent between March and April.

Retail prices

The general index of retail prices for 14 April was 138.8 (January 1987=100), an increase of 1.5 per cent on March and of 4.3 per cent since April 1991.

Between March and April higher prices for tobacco, alcoholic drink, petrol and vehicle licences reflected the Budget increases in excise duties. There were also increases in Community Charges, rents, water charges and prices for leisure and various other services including insurance. Clothing was dearer but food prices fell, and there was also a small fall in mortgage interest rates.

The tax and price index for April was 129.6 (January 1987=100), an increase of 3.3 per cent over the previous twelve months.

Retail sales

The provisional, seasonally adjusted estimate of retail sales volume in April was 119.8 (1985=100). In February to April sales were 0.3 per cent down on the previous three months, and 0.5 per cent down on the same period a year earlier. Sales by food retailers rose by 0.2 per cent compared with the previous three months, those by mixed businesses rose by 0.1 per cent, whereas those of specialist non-food retailers fell by 0.6 per cent.

Based on non-seasonally adjusted data, retail sales value in current prices in April was 4 per cent higher than in April 1991.

Balance of payments

Information on visible trade in April and recent trends in invisibles imply a current account deficit of £1.1 billion, £0.5 billion more than in March. In the latest three months the implied deficit was £2.4 billion, compared with £1.3 billion in the previous three months.

The visible deficit in April was £1.4 billion, compared with £0.9 billion in March. In the three months to April the visible deficit was £3.3 billion, compared with £2.8 billion in the preceding three months.

In April the value of exports was £8.8 billion, 1.5 per cent lower than in March. In the three months to April, the value of exports was 3 per cent higher than in the previous three months and 6 per cent higher than a year earlier. On a volume basis, excluding oil and the erratic items, exports in the three months to April were 2.5 per cent higher than in the previous three months, and 4 per cent higher than a year earlier.

Imports in April were valued at £10.2 billion, 3.5 per cent higher than in March. In the three months to April, the value of imports was 4 per cent higher than in the previous three months, and 8.5 per cent higher than a year earlier. Excluding oil and erratics, import volume in the three months to April was 4.5 per cent higher than in the previous three months, and 7.5 per cent higher than a year earlier.

Estimates of invisibles are not available monthly. Based on recent trends and limited information on EC transfers, invisibles in April are projected to be in surplus by £0.3 billion. Revisions to these projections can be substantial.

Public sector borrowing requirement

Provisional estimates put the public sector borrowing requirement at £3.6 billion in April, with privatisation proceeds amounting to £0.6 billion. The PSBR excluding privatisation proceeds was £4.2 billion.

DATA PUBLISHED BY OTHER DEPARTMENTS

Official reserves
The overall level of the UK's official reserves rose by $748 million in April, bringing the end of April reserves to $45,775 million (£25,822 million), compared with $45,027 million (£25,952 million) at the end of March.

The underlying change in the reserves during April was an increase of $63 million.

The underlying change excludes a number of factors that are included in the total change. Proceeds from this month's tender of UK ECU Treasury Bills amounted to $1,210 million and maturing UK ECU Treasury Bills of $1,208 million. The underlying change also excludes repayments of borrowing under the exchange cover scheme of $200 million. There was no new borrowing under the exchange cover scheme.

Exchange rate
The sterling exchange rate index (1985=100) was 91.1 in April, compared with 90.7 in March.

Unemployment and vacancies
In April, the seasonally adjusted level of claimant unemployment in the UK increased by 42,600 to 2.695 million, 9.5 per cent of the workforce. Over the past six months, unemployment has risen by 36,400 per month on average.

The stock of unfilled vacancies at jobcentres decreased by 7,900 to a seasonally adjusted 119,600 in the month to April. Over the three months to April, vacancies have decreased on average by 800 a month.

Employment
The number of employees in employment in manufacturing industries in Great Britain stood at 4,548,000 in March, a fall of 26,000 since February. Employment has fallen by 297,000 since March 1991, compared with a fall of 239,000 in the previous year.

The UK workforce in employment (employees in employment, the self-employed, HM Forces and participants in work related government training programmes) stood at 25,597,000 in December, a fall of 226,000 in the quarter. Employment over the year to December 1991 fell by 997,000.

Earnings
The underlying increase in average weekly earnings in the year to March was about 7.5 per cent, the same as the increase in the year to February which has been revised up from 7.25 per cent. The actual increase in the year to March, at 8.4 per cent, was above the underlying increase because of timing adjustments for bonuses paid in different months in 1991 and for some workers who have received two pay increases.

In the production industries, the underlying increase in average weekly earnings in the year to March was about 8.25 per cent, the same as the increase in the year to February, which has been revised up from 7.75 per cent. Within this sector, the underlying increase in manufacturing industries in the year to March was about 8.25 per cent, the same as the increase in the year to February, which has also been revised up from 7.75 per cent. The actual increases for production and manufacturing in the year to March were 10.5 per cent and 10.4 per cent respectively (the seasonally adjusted increase for both sectors was 10.4 per cent).

In the service industries, the underlying increase in average weekly earnings in the year to March was about 7 per cent, 0.25 per cent lower than the increase in the year to February, which has been revised up from 7 per cent. The actual increase in the service industries in March was 7.4 per cent.

Productivity
Manufacturing output per head in the three months to February was 0.5 per cent higher than in the three months ending November and was 2.9 per cent higher than in the same period a year earlier. Output per head in the whole economy was about 0.6 per cent higher in the fourth quarter of 1991 than in the previous quarter, and 1.8 per cent higher than in the same quarter a year earlier.

Unit wage and salary costs
In the three months ending March 1992, wages and salaries per unit of output in manufacturing were 4.5 per cent above the corresponding period a year earlier. This increase was below the rise in average earnings in manufacturing as there was a rise of 4.0 per cent in productivity over this period. In the fourth quarter of 1991, wages and salaries per unit of output in the whole economy were 5.7 per cent above the corresponding period a year earlier. This increase was below the rise in average earnings because of the rise of about 1.8 per cent in productivity.

Monetary aggregates
Provisional information suggests that in the 12 months to April, and before seasonal adjustment, M0 increased by 3.0 per cent, and M4 by 5.7 per cent. In April, again before seasonal adjustment, M0 increased by 2.9 per cent, and M4 increased by 0.4 per cent. After seasonal adjustment, M0 rose by 0.4 per cent, and M4 rose by 0.8 per cent.

TESTING FOR BIAS IN INITIAL ESTIMATES OF ECONOMIC INDICATORS

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Introduction

As an Executive Agency, the Central Statistical Office (CSO) now has a number of explicit performance indicators. These include targets for limiting the revisions of a set of key indicator variables. The targets are generally expressed in the form: "The change in indicator I between first publication and n months later, **without regard to sign,** shall be less than x." With the emphasised phrase, it is possible to meet the target with revisions which are always positive but less than x, but this would obviously be regarded as unsatisfactory and indicating bias in the first estimate.

In fact all the indicators have a mixture of positive and negative revisions. Nevertheless, it is possible that there is a tendency for more revisions to be upward than downward, or for upward revisions to be larger; either case could be regarded as evidence of bias. The CSO's framework document therefore includes a requirement to test all the revisions indicators for evidence of bias. Unlike the revisions targets, which are monitored annually, testing for bias is a longer-term process, since it requires some years to accumulate a large enough set of observations.

This article reports the results of the first analysis of potential bias, covering data published up to the end of 1991. It will be updated annually to keep track of any changes.

Methods of Testing for Bias

All the key indicators are defined as percentage growth rates or percentages of GDP or of some other appropriate denominator, so that they are comparable in all periods regardless of changes in the size of the economy. We can therefore consider a simple definition of bias; we consider an indicator to be biased if its mean revision is different from zero. However, we have to allow for the fact that revisions to successive monthly or quarterly values generally behave like a random series, and hence it is possible that the observed average revision over some period may be non-zero simply through random effects. We need a test of whether an observed mean differs from zero by more than could be expected due to random effects; in statistical terminology, we wish to test whether the mean revision is significantly different from zero.

The most common statistical test of this kind is known as the t-test, which is based on the ratio of the mean revision to an estimated standard error of the mean. There are standard tables to show how large a value of t is likely due to random variation only, taking account of the number of values used in calculating the mean. For most purposes a t-test based on all the revisions may be considered adequate, but in this context it has three potential weaknesses.

a. The standard t-test tables are strictly applicable only if the revisions follow a normal (Gaussian) distribution. Examination of the individual revisions shows that, for some variables, there are rather more very large revisions than would be expected with a normal distribution. There is evidence that the t-test is fairly robust against moderate deviations from normality. There is however an alternative test, known as the Wilcoxon signed rank test, which requires no assumption about the underlying distribution. Strictly speaking the Wilcoxon test examines whether the **median** is different from zero, not the mean, but this should not be a practical problem here since the distribution of revisions is usually fairly symmetrical about its mean.

b. The t-test also assumes that the revisions to successive values are independent. For some indicators there is evidence that successive revisions are positively correlated. In these circumstances the t-test is likely to overstate the significance of the results. (The Wilcoxon test is likely to be affected in the same way.) There is a procedure to allow for serial correlation in a t-test, based on Cochrane-Orcutt regression.

c. Earlier analyses of GDP revisions have shown a tendency for the size of the revision to be associated with the stage of the economic cycle, with a greater tendency towards upward revisions in the expansion phase of the cycle. If this is true, the significance of the mean revision observed over a given period will depend on how much of the period lies in the expansion phase and how much in the contraction phase. A separate analysis is for each phase is required.

As well as considering which tests to apply, it is necessary to consider over which periods to apply them. The general rule is that the greater the number of values on which a test is based the more sensitive is the test. However, since the methods of compiling the national accounts have been changed in many respects as the data sources and the structure of the economy have changed, testing over a long period means that the implicit assumption that any bias is constant may be invalid. For quarterly observations this is a particular problem, since even ten years of data will give only forty observations, which is a rather small sample, while ten years will certainly span many important changes in the methods used to construct the accounts. It may be necessary to carry out analyses over different periods to explore the effect of changes in method.

Methods used in this Analysis

The general procedure has been to assemble data covering the ten years 1982-1991 inclusive. The dating here refers to publication of the revised data. Hence for example for the long term GDP targets, where the reference revision is three years after first publication, the final value included is that relating to 1988 Q3, for which the twelfth revision appeared in the quarterly GDP Press Notice in December 1991. There are some indicators for which it is not possible to assemble a run of this length; for these the longest possible run was included. Such cases are mentioned individually below.

To meet the point made above about changes in the method of compilation, tests for bias were carried out over the latest ten years, five years and three years. Where fewer than ten years were available, the first test covered the longest possible span; all series covered at least five years. The results are shown in the table. The first test applied in all cases is the t-test. The mean revision and its standard error are shown, together with their ratio, which is t. As a check on whether the t-test assumptions are valid, a serial correlation

coefficient was calculated for all the ten-year runs. A Wilcoxon signed rank test was also carried out for the ten-year runs. As a simple indicator, the percentages of observations for which the revisions are positive, zero and negative are shown. Finally, for the long-term constant price GDP indicator, regression on a dummy variable which is +1 in the expansion phase of the cycle and -1 in the contraction phase was used to test for cyclical effects. All these results are discussed below in the section relating to each indicator.

Discussion of Individual Indicators

Visible Trade

The visible trade balance is the difference between the values of exports and imports on a balance of payments basis. Monthly estimates are published in Table 16.2 of *Monthly Digest*. The export and import figures are seasonally adjusted separately and revisions over three months are taken as a percentage of total trade (Exports + Imports). All the three periods covered end December 1991 which is the publication date for the revised estimates for August 1991.

The revisions range from 2.34 to -1.50. The positive and negative revisions are almost evenly distributed over each of the three periods covered. Seventy five per cent of the revisions range between the values of 0.58 to -.58. The t-values for all three periods are not significant. The Wilcoxon test is also not significant.

Index of Production

The index of production is for all industries (SIC Divisions 1-4) other than construction. The monthly index is published in Table 7.1 of *Monthly Digest*. Revisions to the three months on three months growth rate are taken as the difference between the fourth and the first estimate. The figure published in the December 1991 issue, consequently, relates to the third revised estimate for July 1991.

The range of revisions is from 1.1 to -0.9 percentage points with 75% of revisions occurring within 0.4 to -0.5 percentage points. The revisions are slightly more negative than positive. The t-values for all three periods are non-significant.

Producer Price Index (PPI)

The revisions relate to the index numbers of producer prices for the output of manufactured products (SIC Div 1 to 4). The index is published in Table 18.6 of *Monthly Digest*. Revision over two months to percentage annual growth is taken and the last reading for December 1991 refers to the revision for growth in September 1991.

Mean revisions are higher as we progress down the table from 10 to 5 to 3 years. The t-tests for all the three means are significant. These results are also supported by the observation of significantly more positive than negative revisions. There is also significant serial correlation over all three periods.

However, the large means are mainly due to larger than normal revisions during six consecutive months spanning 1989 and 1990. These were due to late receipt of some data. Steps have now been taken to improve collection of data, in particular through making this a statutory inquiry.

Retail Sales

The index numbers of retail sales volumes are published in Table 14.1 of *Monthly Digest*. The revision analysis is based on three months on three months percent growth as revised three months after first publication. The reading for December 1991 refers to the revision made to the latest three month on three month percentage growth for August 1991.

The t-values for all three periods are not significant.

GDP(O)

The difference between 10 weeks estimates, published in quarterly GDP Press Notices and in *Economic Trends*, and 6 weeks estimates, released through CSO's Press Notices, for the quarterly changes in GDP(O), has been taken as the revision for this analysis. The last figure for Q4 1991 relates to the ten weeks estimate for Q3 1991 published in the quarterly GDP Press Notice in December 1991.

Over the ten year period the t-test for the mean revision is just significant at 5% level. However, the means for the latest 5 and 3 years are not significant. The Wilcoxon test over 10 years is just below the 5% significance level. A very high proportion of revisions are positive with 75% range from 0.36 to -0.16 percentage points.

GDP (short term, constant prices)

Quarterly estimates are published in quarterly GDP Press Notices and in *Economic Trends*. Revisions for quarter to quarter growth in GDP(A) is taken from the first estimate and the estimate six months later. Consequently the figure shown for Q4 1991 relates to the 2nd revision to Q1 1991 published in the quarterly GDP Press Notice in December 1991.

The 75% revision range is from .45 to -.31 with positive and negative revisions very evenly distributed over the 10 year period. The t-values for all the three periods are not significant, which is also confirmed by Wilcoxon test.

GDP (longer term, constant prices)

Revisions to the four quarter growth of GDP(A) are taken from the initial estimate and three years later. The last revision taken in the analysis relates, therefore, to the 12th revision to Q3 1988 published in the quarterly GDP Press Notice in December 1991. The 75% range is from 1.10 to -0.13. All three periods show a very high proportion of positive revisions. The t-values for all the three periods are highly significant, which is also the result of the Wilcoxon test. The serial correlation is also significant over the 10 year period. A Cochrane-Orcutt analysis reduced the t-value from 4.04 to 2.79, which remains highly significant.

Out of the 40 observations 25 fall in the expansion phase of the economic cycle. The t-value for these revisions is highly significant and 75% range is between 1.36 to -0.13. The analysis of the 15 observations in the contraction phase gives a non significant t-value with 75% range lying between 0.64 and 0.02.

This shows that during the expansion phases revisions tend to be positive and larger than in the contraction phases.

A regression of all 10 years of data on the business cycle variable showed a non-significant effect of the phase of the cycle. The 10 years includes two contraction phases, a strong one in 1979-81 and a less marked one in 1984-86. Dividing the 10 years into two five-year spans meant that each span contained one of these contraction phases. When the regression was repeated for these two spans separately, the first span, containing the strong contraction, showed a significant cycle effect, while the second span, containing the weaker contraction, had no such effect.

Summary of tests for cyclical variation
GDP(A) - Constant prices

1982 - 1986

Overall mean revision	0.37	(s.e. = 0.17)
expansion phase	0.63	(s.e. = 0.23)
contraction phase	-0.11	(s.e. = 0.23)

1987 - 1991

Overall mean revision	0.53	(s.e. = 0.13)
expansion phase	0.55	(s.e. = 0.18)
contraction phase	0.49	(s.e. = 0.18)

GDP (longer term, current prices)

Estimates for GDP(A) in current prices have been made only from Q1 1982, and therefore the longest period of available data is only 6 years (26 observations). Revisions are taken over twelve quarters for the four-quarter percentage growth rate. The last figure for each period relates to the 12th revision to Q3 1988 published in the quarterly GDP Press Notice in December 1991.

The means over all three periods are highly significant. Out of 27 observations 23 (85%) revisions have been positive with 75% range from 1.20 to 0.0 over this period. The serial correlation over 10 years is not significant, though close to the 5% significance level. A Cochrane-Orcutt analysis reduced the 10-year t-value from 5.25 to 3.84, which is still highly significant.

Current Balance (short term)

The current balance is the difference between exports and imports of visible trade and invisible (services, transport and interest, profits and dividends). The figures are published in the balance of payments quarterly Press Notices. For this analysis revisions over six months are taken for the current balance as a percentage of GDP(A) at factor cost. The last reading for Q4 1991 relates to the second revision to Q1 1991. There are only 39 observations for the 10 year period because the data for Q1 82 were not published due to a civil service dispute.

The t-values for all three periods are not significant. However, there are more positive revisions than negative particularly over the last three years where the positive revisions are more than 80%. The 75% range is from 0.43 to -0.45 percentage points.

Current Balance (longer term)

Longer term revisions to the current balance are taken, as a percentage of GDP(A), over three years. The last figure for Q4 1991, therefore, relates to the revision to Q3 1988. Due to a civil service dispute the data for Q1,2,3 of 1981 are not available. The total number of observations over the ten year period is, therefore, reduced to 37.

The t-value is just significant over the 10 year period but not for the other two periods. The Wilcoxon test over 10 years is just below the 5% significance level. There are more negative revisions over the latest 5 and 3 year periods. The 75% range is from 0.87 to -0.44 percentage points.

Public Sector Borrowing Requirement (PSBR)

Monthly estimates of PSBR are published in *Financial Statistics*. Revisions over three months are taken for PSBR (not seasonally adjusted) as a percentage of GDP(A) at market prices. The last figure published in December 1991, therefore, relates to the third revision to August 1991. Monthly figures for PSBR have been published only since late 1983 and therefore, the analysis is based on the maximum of 95 observations (revisions published in Feb 1984 to Dec 1991).

The t-values for all three periods are not significant. The Wilcoxon test gives the same result. There are more negative than positive revisions and the 75% range is from 0.33 to -0.30 percentage points.

Conclusion

The principal area in which this study has shown evidence of bias is in the long-term revisions to the four-quarter growth rate of GDP, both at constant and at current prices. The average revision of the constant price measure after three years is an increase of about 0.6 percentage points in the expansion phase of the cycle and a decrease of about 0.1 percentage points in the contraction of 1979-81; the weaker contraction of 1984-86 showed no difference from the expansion phase. The average revision of the current price measure is an increase of about 0.7 percentage points; this measure is not available in a consistent form for the period of the 1979-81 contraction, so its effect cannot be tested. These averages are broadly consistent with those produced in earlier studies of GDP revisions. There is no indication that the average revision has changed in recent years.

The indicator which at first sight has the next most significant evidence of bias is the producer price index for industrial output. As mentioned above, this indicator is affected by a few larger than usual revisions. Excluding these, the average revision of the twelve-month growth rate is about 0.02 percentage points upwards, with no indication of any change in recent years. This revision is just significant statistically, meaning that there is only a 5% chance that an average this large would be produced by random fluctuations. The practical significance of such a mean, given that the growth rate is quoted to an accuracy of 0.1 of a percentage point, is doubtful. Since the inquiry producing this information has recently been restructured and put on a statutory basis, past experience is unlikely to be a good guide to future revisions.

There are two other indicators which have statistically significant average revisions measured over ten years, though not over shorter periods:

a. The revision to the output-based measure of GDP growth between the provisional (six-week) stage and the firm (ten-week) stage; this has an average of about 0.1 percentage points upwards, which is just significant at the 5% level. The averages over five and three years are still positive but not significant; the average for the latest three years is lower than for the earlier years.

b. The revision to the current balance of payments, as a percentage of GDP, between first publication and three years later. Over the whole period the average revision is 0.24% of GDP upwards, which is just significant at the 5% level. Over the recent periods the average is negative, though not significant. This clearly suggests that any problems are in the early data.

Apart from these indicators, the remaining six target variables have no indication of bias.

TABLE : PERFORMANCE INDICATOR: REVISIONS ANALYSIS

Key Targets No.	Indicator	Revision reference	No. of yrs	No. of obs.	Mean rev.	Stdd dev.	SE of Mean	t-value	Wilcoxon Z	% of + rev	% of - rev	Coeff. of serial corr.	Range of revision values
2	Visible Trade:	Three months	10	120	0.03	0.68	0.06	0.52	-0.16	51	48	-0.01	2.34 to -1.5
	monthly balance as	after the first	5	60	0.00	0.61	0.08	0.00		48	52	-0.15	1.67 to -1.5
	% of total trade	publication	3	36	-0.01	0.65	0.11	-0.09		44	56	-0.4	1.67 to -1.5
3	Index of Production:	Three months	10	120	-0.03	0.39	0.04	-0.92	-1.11	44	53	0.32*	1.06 to -0.91
	3-month on 3-month	after the first	5	60	0.01	0.35	0.05	0.21		42	50	0.23*	1.00 to -0.6
	% growth	publication	3	36	-0.07	0.29	0.05	-1.39		28	61	0.04	0.92 to -0.63
4	Producer Price Index:	Two months	10	120	0.03	0.09	0.01	3.09**	2.50**	42	27	0.29*	0.26 to -0.16
	Percentage annual	after the first	5	60	0.05	0.1	0.01	3.51**		48	18	0.32*	0.26 to -0.09
	Growth Rate	publication	3	36	0.06	0.11	0.02	3.32**		53	17	0.37*	0.26 to -0.09
5	Retail Sales:	Three months	10	120	0.02	0.27	0.02	0.76	1.34	41	39	0.16*	0.40 to -1.2
	3-month on 3-month	after the first	5	60	0.03	0.19	0.02	1.31		50	28	0.14	0.6 to -0.5
	% growth	publication	3	36	0.02	0.21	0.04	0.56		44	33	0.13	0.60 to -0.5
6(a)i	GDP(O):	Ten weeks est.	10	40	0.08	0.25	0.04	2.03*	1.90	60	35	0.04	0.52 to -0.44
	Quarter on Quarter	from six weeks	5	20	0.08	0.27	0.06	1.23		65	25	0.12	0.52 to -0.44
	Quarterly growth %	estimates	3	12	0.05	0.27	0.08	0.57		75	25	0.01	0.36 to -0.44
6(a)ii	GDP(A) cons. prices:	Six months	10	40	0.05	0.38	0.06	0.76	0.14	53	45	-0.07	1.17 to -1.12
	Quarter on Quarter	after the first	5	20	0.03	0.46	0.1	0.26		50	50	-0.09	1.17 to -1.12
	Quarterly growth %	publication	3	12	-0.06	0.42	0.12	-0.49		42	58	0.1	0.48 to -1.12
6b	GDP(A) cons. prices:	Three years	10	40	0.44	0.68	0.11	4.04**	3.47**	80	20	0.30*	1.67 to -1.8
	Year on Year growth	after the first	5	20	0.49	0.56	0.13	3.77**		85	10	0.2	1.67 to -0.59
	Annual growth %	publication	3	12	0.61	0.61	0.18	3.30**		92	8	0.25	1.67 to -0.43
6c	GDP(A) Current Prices	Three years	7	27	0.72	0.7	0.13	5.25**	3.75**	85	12	0.24	2.0 to -1.2
	Year on Year growth	after the first	5	20	0.75	0.76	0.17	4.35**		85	15	0.36	2.00 to -1.2
	Annual growth %	publication	3	12	0.85	0.94	0.27	3.02*		83	17	0.55*	2.0 to -1.2
7(a)	Current Balance:	Six months	10	39	0.07	0.48	0.08	0.91	0.837	56	44	0.09	1.30 to -0.87
	Qrly Balance as % of	after the first	5	20	0.07	0.51	0.11	0.6		60	40	-0.04	1.30 to -0.87
	GDP(A) at factor cost	publication	3	12	0.25	0.56	0.16	1.47		83	17	-0.21	1.30 to -0.87
7(b)	Current Balance:	Three years	10	37	0.24	0.7	0.12	2.04*	1.95	62	38	0.21	2.57 to -1.25
	Qrly Balance as % of	after the first	5	20	-0.04	0.46	0.1	-0.35		45	55	0.31	0.64 to -1.21
	GDP(A) at factor cost	publication	3	12	-0.21	0.47	0.14	-1.49		33	67	0.23	0.56 to -1.21
8	PSBR:	Three months	10	96	-0.02	0.47	0.05	-0.4	-0.864	45	54	0.16	1.93 to -1.64
	Mthly PSB as 1/3rd of	after the first	5	60	-0.04	0.32	0.04	-1.04		45	55	0.17	0.63 to -1.02
	GDP(A) at mkt prices	publication	3	36	-0.05	0.31	0.05	-0.88		44	56	0.19	0.63 to -1.02

NOTE: All periods end in Dec (for monthly data) or in Q4 (for quarterly figures) of 1991.
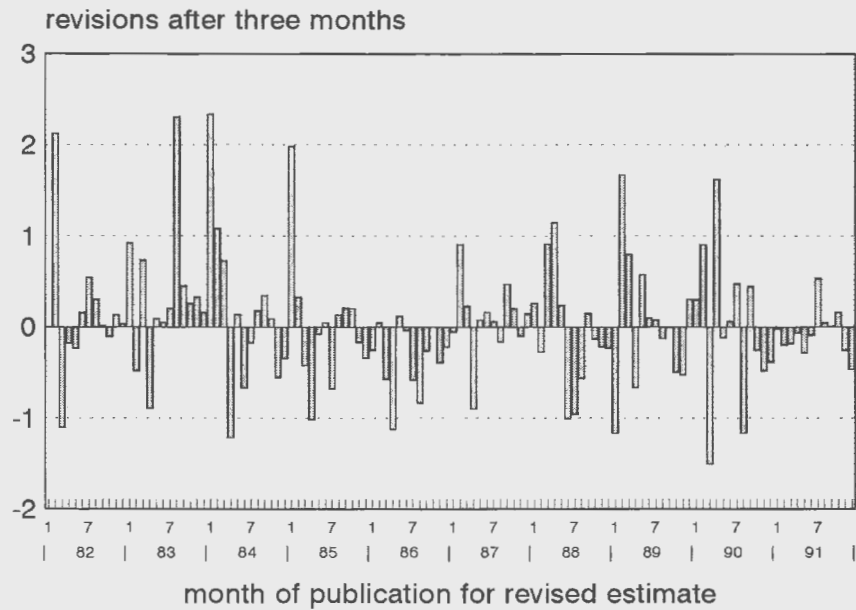   Therefore 10 year period starts in Jan '82, 5 year in Jan' 87 and 3 year in Jan' 89.
    These dates relate to the publication dates; e.g. revision published in Q4 1991 for GDP(A) would relate to Q3 1991.
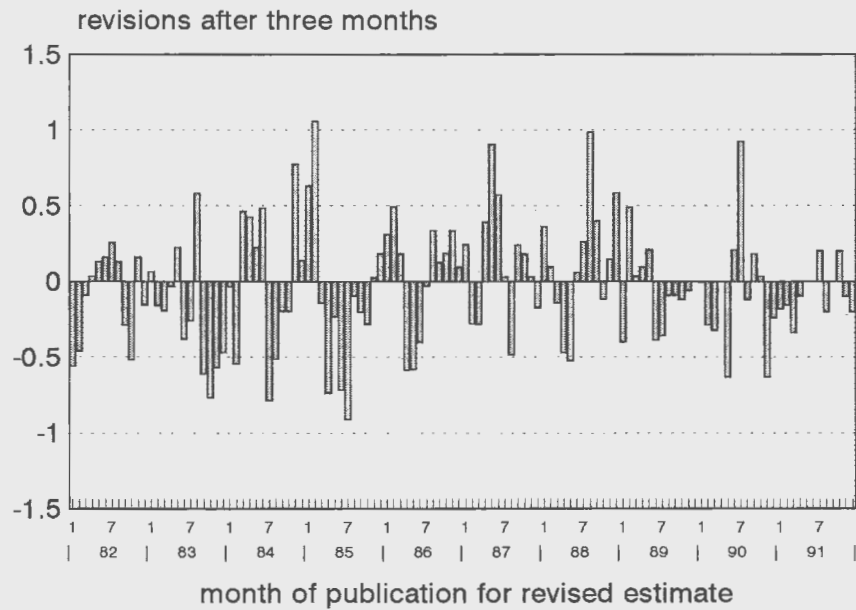
Wilcoxon Z is the equivalent normal score of the Wilcoxon test.

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

ANNEX 1

Visible Trade Balance
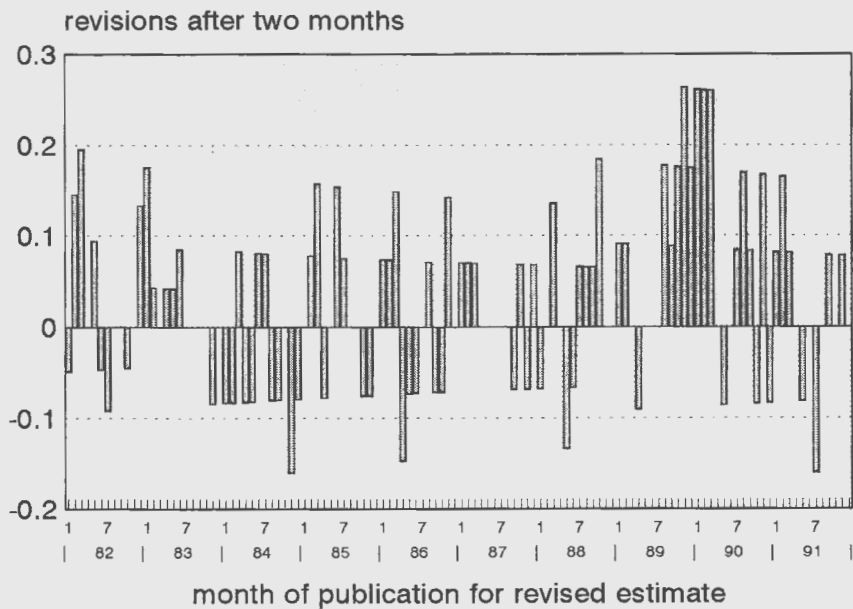### revisions as per cent of total trade

revisions after three months

month of publication for revised estimate

Index of Production
three month on three month per cent change

revisions after three months

month of publication for revised estimate

Producer Price Index
12 month per cent change

revisions after two months

month of publication for revised estimate

Retail Sales
three month on three month per cent change

revisions after three months

month of publication for revised estimate

GDP(O)
quarter on quarter per cent change

first revision to six weeks estimate

quarter of publication for revised estimate
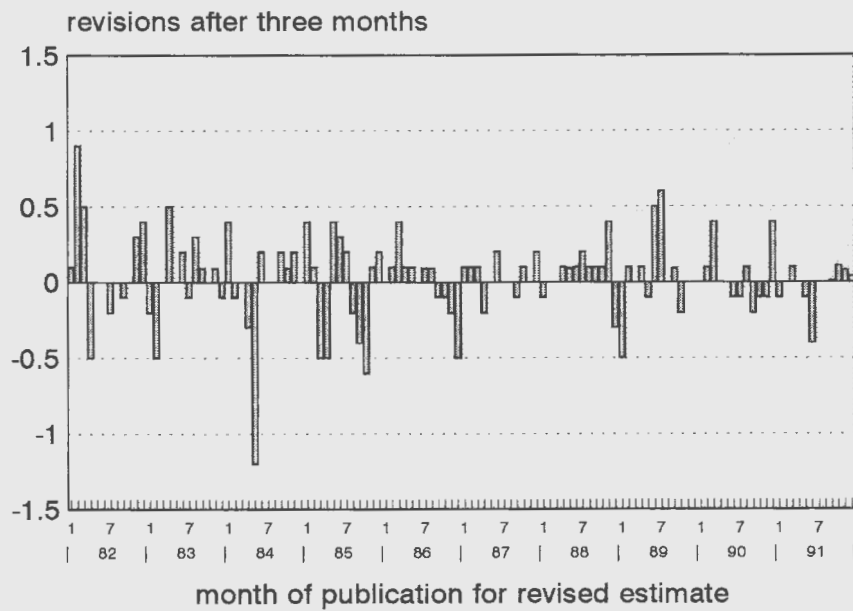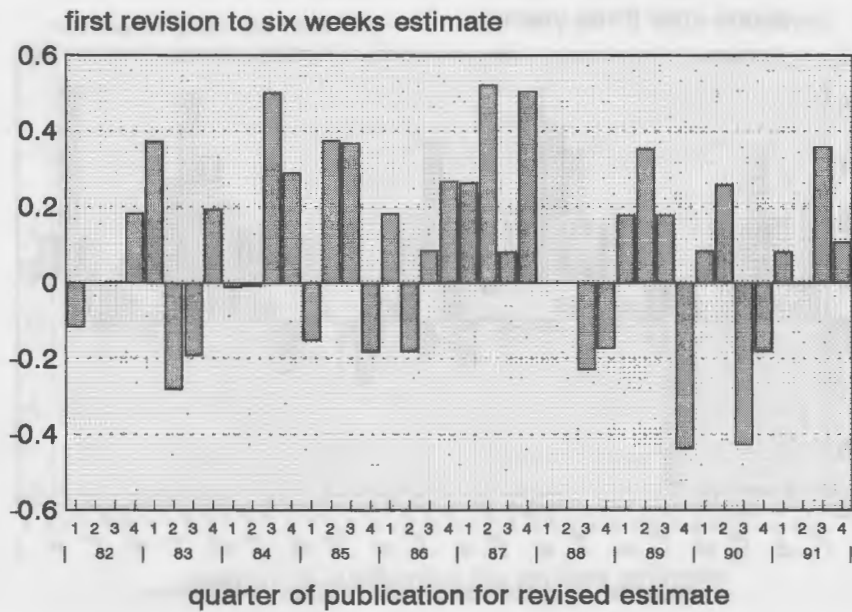
GDP(A) constant prices
quarter on quarter per cent change

revisions after six months

quarter of publication for revised estimate
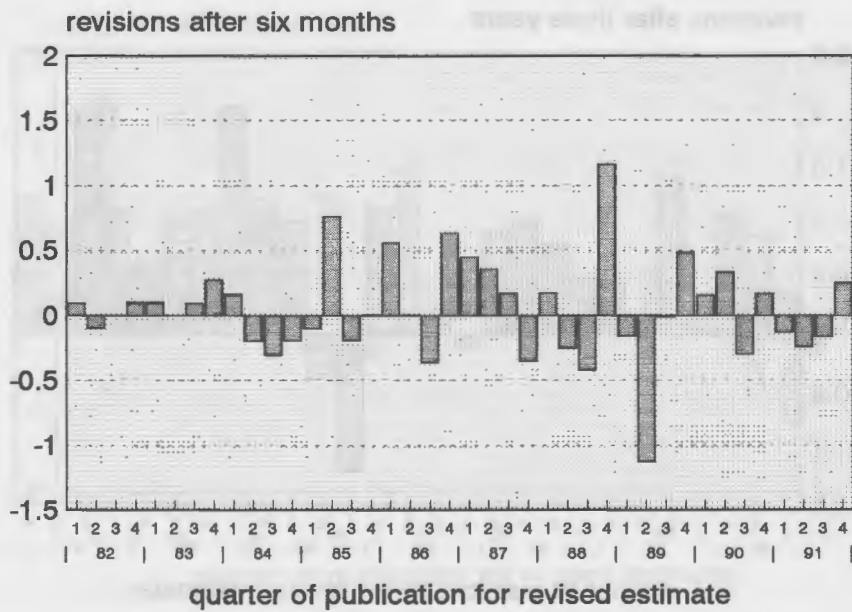
GDP(A) Constant Prices
four quarter per cent change

revisions after three years

quarter of publication for revised estimate
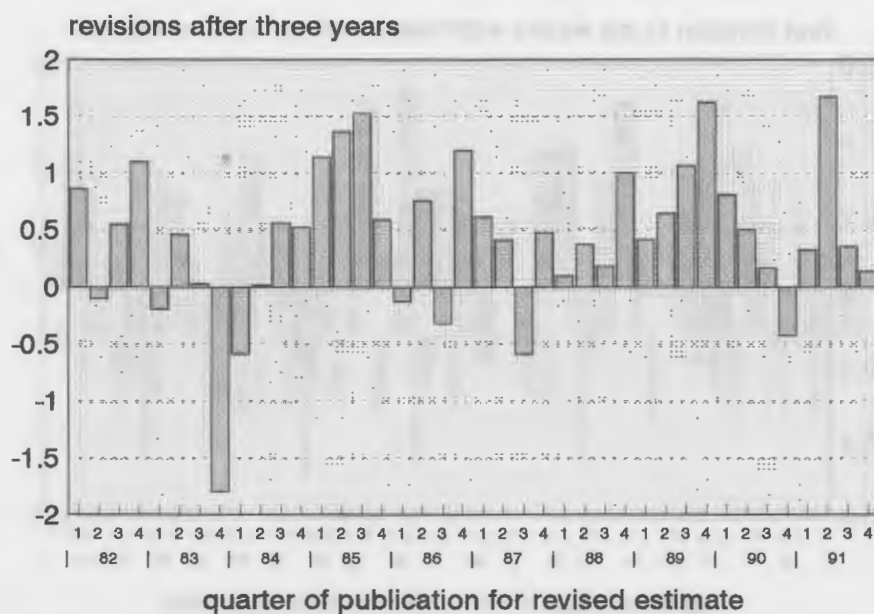
GDP(A) Current prices
four quarter per cent change

revisions after three years

quarter of publication for revised estimate

84
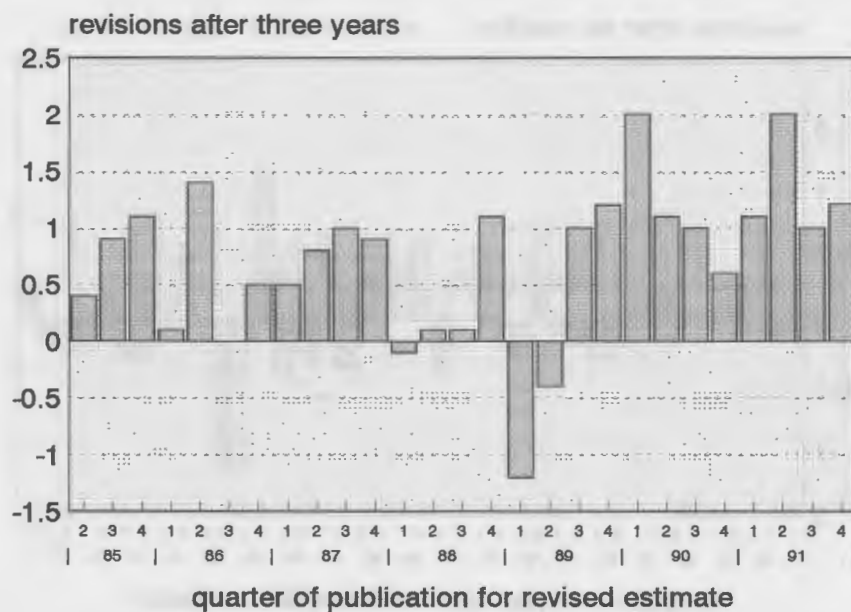
Current Balance (short term)
revisions as per cent of GDP(A) at factor cost

revisions after six months

quarter of publication for revised estimate
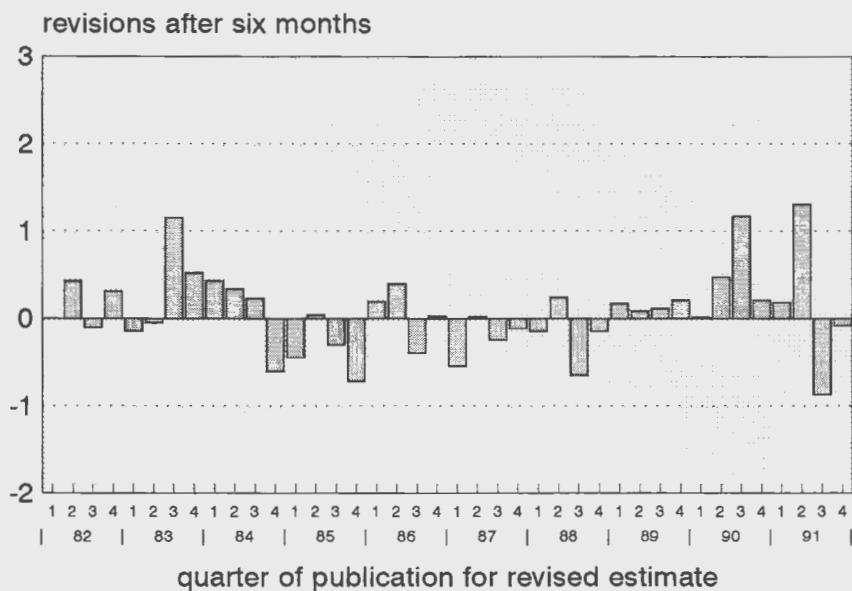
Note: data for Q1 82 are not available due to a civil service dispute

Current Balance (long term)
revisions as per cent of GDP(A) at factor cost

revisions after three years

quarter of publication for revised estimate
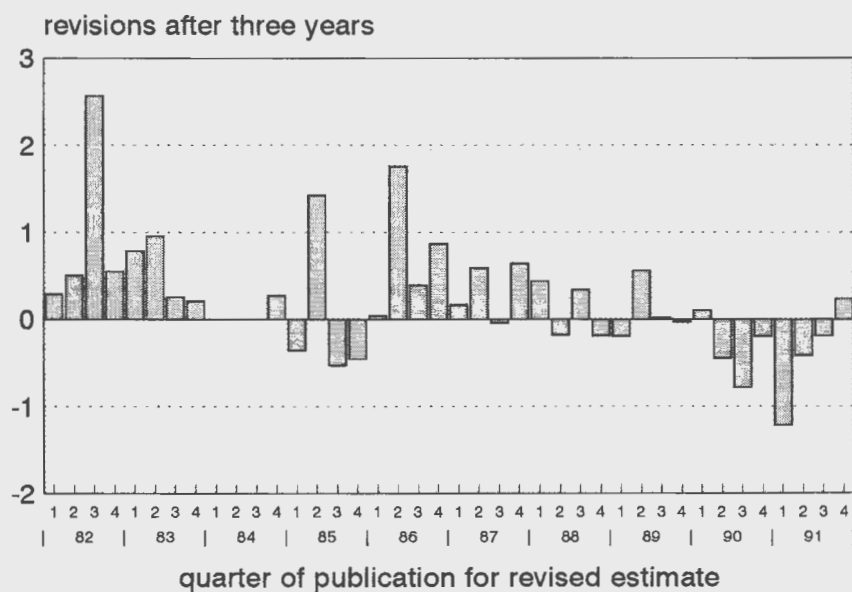
Note: data for Q1 to Q3 1984 are not available due to a civil service dispute

Public Sector Borrowing Requirement
revisions as per cent of GDP(A) at market prices

revisions after three months

month of publication for revised estimate
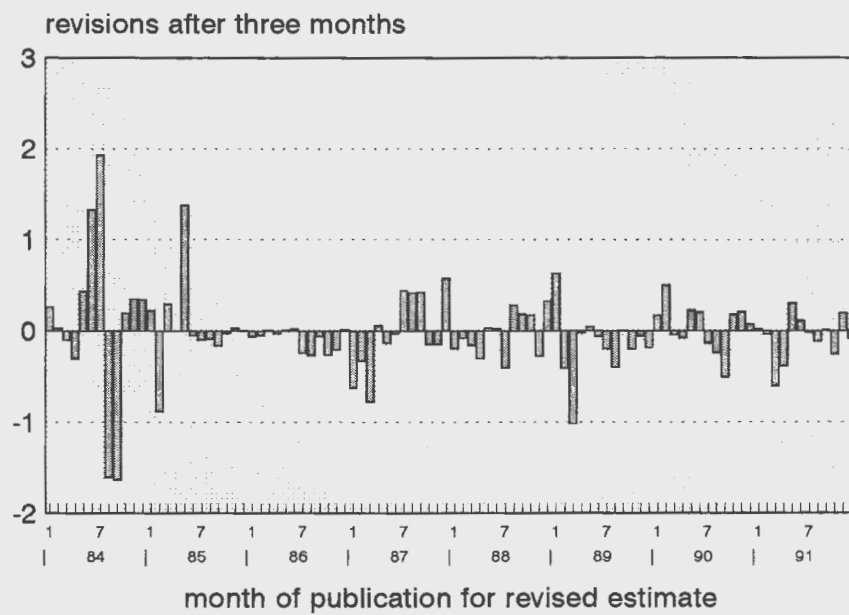
Figures for Europe

Eurostat - a familiar word to economists and statisticians. But what is Eurostat and what does it do? In this article, **Mrs Laurence Eggermont** of Eurostat Information Office explains.

Eurostat is the Statistical Office of the European Communities and one of the EC's Directorates-General. It is based in Luxembourg with a department in Brussels which deals with dissemination and liaison with the other Directorates-General.

Eurostat employs 386 officials and 255 outside experts - equivalent to one per cent of statisticians employed by the 12 Member States.

Yves Franchet, Director-General of Eurostat

Eurostat has a double function - it is a Directorate-General of the Commission and a centralizing body for statistics in the Community. And it has four main tasks:

1. Supplying data to the European institutions

The primary task is to supply Community institutions, chiefly the Commission, with the statistics required to formulate and monitor Community policies.

It is responsible for collating and processing statistics on the Member States and their main trading partners. It does not as a rule collect the source data. These are sent to it by the statistical institutes of the Member States or by other national or international institutions and organizations such as the Banque de France, the OECD, the IMF or the World Bank.

2. Creating a harmonized statistical system

An essential part of Eurostat's work is the establishment of statistical standards to ensure that the information sent to it is formally coherent. The preferred method of data harmonization is through prior standardization of classification systems, methods and concepts. This prevents any distortions which may arise as a result of divergences between the national systems, and above all facilitates comparisons.

3. Creating a European network for disseminating statistical information

Eurostat collates, processes and disseminates information. This information can be accessed not only by the European institutions but also by those who supplied the data, for example preferential users such as the national statistical institutes in the Member States, certain ministries, etc. Eurostat also aims to make this information as widely available as possible, for example to researchers, teachers, students, local authorities, businesses, etc.

Completion of the Single Market will lead to a significant increase in the demand for Community statistics. A statistical infrastructure for the Community would contribute to the transparency of this market, and thanks to ever-closer cooperation between Eurostat and the national statistical institutes, the development of such an infrastructure is under way. A truly Europe-wide network for disseminating information will soon provide local access to Community information for any member of the public in his or her own language. This information, which must be relevant, reliable and available when and where required, is vital to the smooth functioning of the Single Market.

4. Assisting in the development of statistical systems

Lastly, Eurostat assists in the development of statistical systems in developing countries and in countries moving towards a market economy.

ORGANISATION

To carry out its tasks Eurostat is organized into the following six directorates

- the horizontal directorate for dissemination and computer processing

- five sectoral directorates:

★ economic statistics and national accounts, prices and coordination relating to the Single Market

★ Statistics on international and intra Community transactions and relations with third countries

★ Business statistics

★ Social and regional statistics

★ Agricultural, fisheries and environmental statistics.

STATISTICAL PROGRAMME

Since it would not be possible to meet all the demands made without coordinating the statistical work and keeping track of priorities, a statistical programme is drawn up and updated each year by the Statistical Programme Committee (SPC). This committee is chaired by the Director-General of Eurostat and is composed of representatives of the statistical institutes of each Member State. The programme, which is approved by the Commission for four years and adopted by the Parliament and the Council of Ministers, covers

- the policies or responsibilities of the Community as laid down in the Treaties (Rome, Paris) and the Single Act (Luxembourg), for example, Economic and Monetary Union, Common Agricultural Policy

- the themes or major sectors of social, economic and environmental activity, for example, monetary integration, crop production

- the activities or projects by operational unit, for example, short-term trends, labour force survey.

EUROSTAT'S PRODUCTS

Eurostat disseminates its information in both printed and electronic publications.

Printed publications

There are around 100 publications and statistical documents which appear at varying intervals. Specific publications are easy to locate because they are classified by theme. Each theme, which is linked to a particular colour, is further divided into series.

Themes

1. General statistics (midnight blue)
2. Economy and finance (violet)
3. Population and social conditions (yellow)
4. Energy and industry (light blue)
5. Agriculture, forestry and fisheries (green)
6. External trade (red)
7. Services, transport and tourism (orange)
8. Environment (turquoise)
9. Miscellaneous (brown)

Series

A. Yearbooks
B. Short-term trends
C. Accounts, surveys and statistics
D. Studies and analyses
E. Methods
F. Rapid reports

All the methodological publications on economy and finance, for example, may be obtained by combining Theme 2 with Series E.

A distinction should be drawn between statistical documents and publications proper. Statistical documents are aimed at the specialist and deal with a specific subject in a more detailed fashion than publications. They contain no commentary and few illustrations. The emphasis is on tables and the print-runs are limited.

Electronic publications

Databases

Eurostat has established databases for a very wide variety of uses. The general public has access to only some of these bases.

There are basically three types of database: "production", "reference" and "dissemination".

Production database

The production database is the tool used by the departments involved in the production of statistics. It contains all the data received by Eurostat. These data cannot be disseminated as they stand, either because they are confidential or because they require checking.

Reference database

The reference database contains only public data. It is the source used for both the printed products mentioned above and the electronic products.

The most important reference databases at present are CRONOS, COMEXT, REGIO, FSSR, SABINE and IOT.

CRONOS is the macro-economic database. It contains more than 1.5 million time series, divided into approximately 20 domains, of which EUROSTATUS and EUROSTATISTICS are the most frequently used: they provide the main indicators required for short-term analysis.

REGIO is the regional database and covers the main aspects of economic and social life in the Community. It is structured in line with the NUTS classification, which divides the Community into three levels comprising 66, 176 and 829 regions respectively. In the case of the United Kingdom, NUTS I comprises the 11 standard regions, NUTS II is 35 groups of counties and NUTS III is 65 counties/local authority regions.

COMEXT is the database for statistics on intra-Community trade and the Community's external trade (imports and exports) with more than 200 partner countries. It is structured in line with the nomenclature for goods (the COMBINED NOMENCLATURE: 10,000 headings) and the geographical nomenclature (GEONOM: 200 headings).

FSSRS (Farm Structure Survey Retrieval System) contains the tabular results of Community surveys on the structure of agricultural holdings. FSSRS will soon be replaced by EUROFARM, whose individual data will allow *ad hoc* tables to be drawn up.
SABINE is a database system for storing and managing all types of nomenclatures.

IOT: Eurostat has compiled for each country input-output tables showing flows between sectors of industry, as well as a whole range of supplementary tables.

Dissemination database

The "dissemination" database is aimed at a non-specialist public seeking information in digest form.

EUROCRON is Eurostat's "dissemination" database. It is aimed at users who are not used to handling computerized statistics and have no inclination to acquire the expertise required to select and process the statistics which they need.

EUROCRON contains a digest of the latest statistical information drawn from CRONOS, REGIO and FSSRS.

DISSEMINATION

"On-line"

On-line access (free of charge) is reserved primarily for Commission departments and other preferential users, that is, all data suppliers who are able to access directly the Eurostat computer in Luxembourg.

The databases are also available on-line to other users, but only via private servers, to whom Eurostat sends the data on magnetic tape. These data are updated at regular intervals.

European statistical information is therefore accessible to a wide public, not only in the Member States but throughout the world. All that is required is a terminal connected to the public network (EURONET, DATEX-P, TRANSPAC, etc).

Magnetic tape

Each CRONOS domain, each chapter of COMEXT and the whole of REGIO are available on magnetic tape. Moreover, other databases not accessible on-line (for example, FSSRS, SABINE, IOT, LABOUR FORCE etc) are also available on this medium.

Diskette

Two sub-domains of CRONOS (EUROSTATUS and EURO-STATISTICS) are currently available on diskette from a private server.

In addition, Eurostat's Information Office produces and disseminates diskettes to order.

Optical digital disks (CD-ROM)

Every month Eurostat produces external trade statistics on CD-ROM covering all the data for the last 13 months in the form of annual, quarterly and monthly series. The breakdown is based on the COMBINED NOMENCLATURE.

Three other CDs are being prepared for 1992

- general statistics drawn from CRONOS, REGIO and external trade

- results of the surveys on the structure of agriculture in the Community and data on wine growing

- external trade data in line with the SITC classification.

FURTHER INFORMATION

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