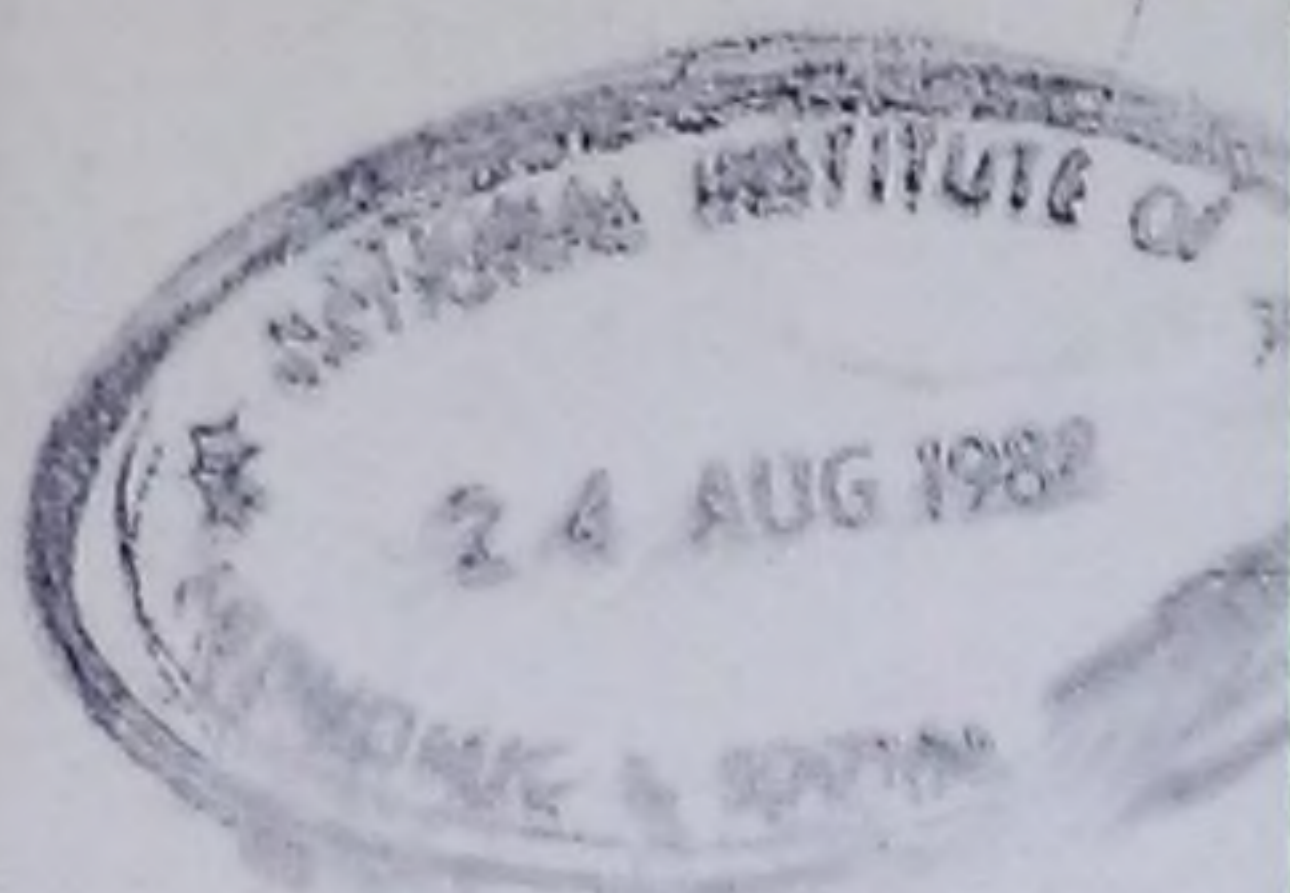


CENTRAL STATISTICAL OFFICE

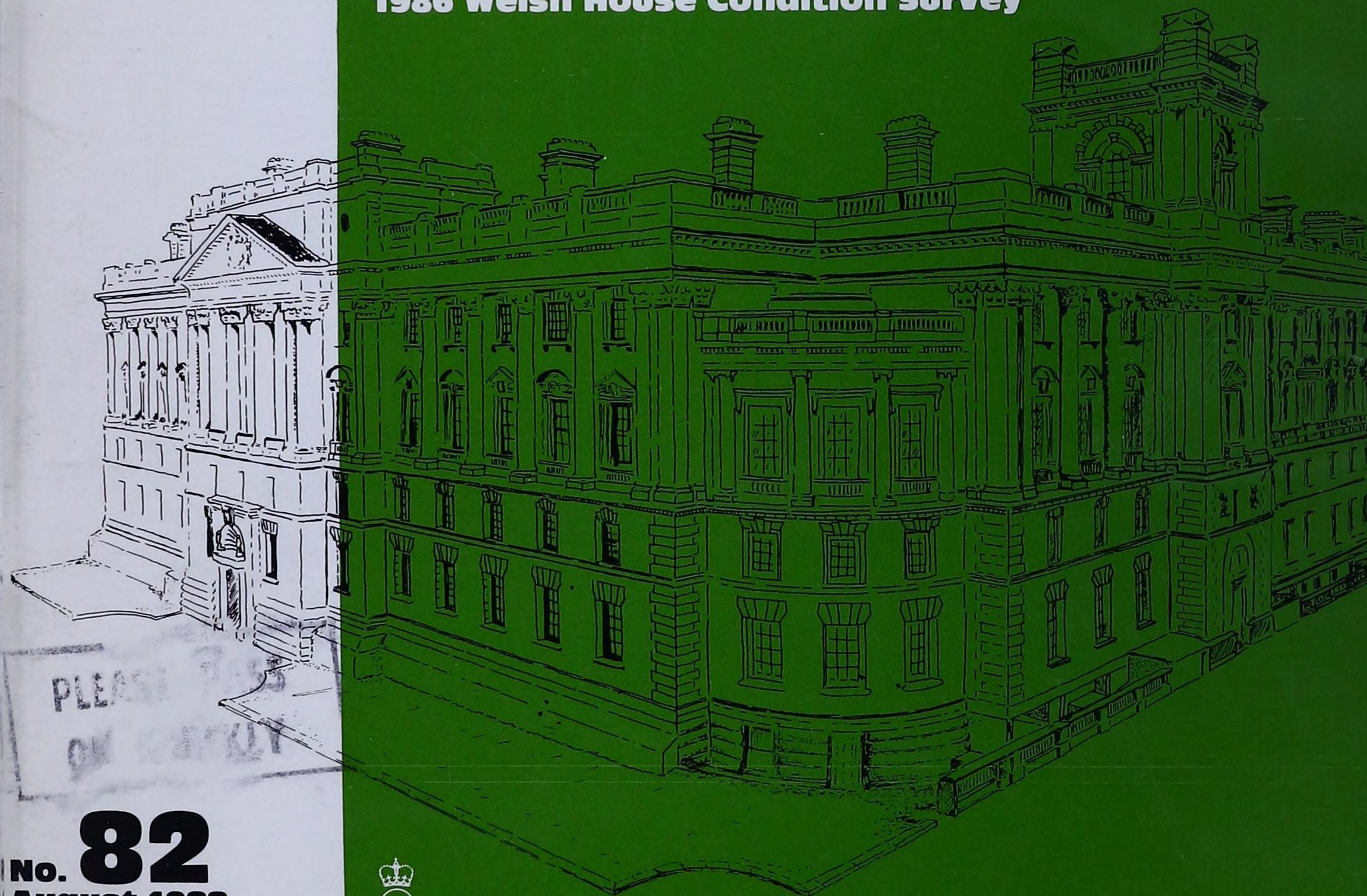


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Statistical News

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**Board of Inland Revenue
Engineering Sales and Orders
Input-Output Tables
Monitoring Radioactivity
Electricity and the Weather
1986 Welsh House Condition Survey**



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No. 82
August 1988
HMSO Quarterly



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JONES GORNE LIB REF

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Government Statistical Service

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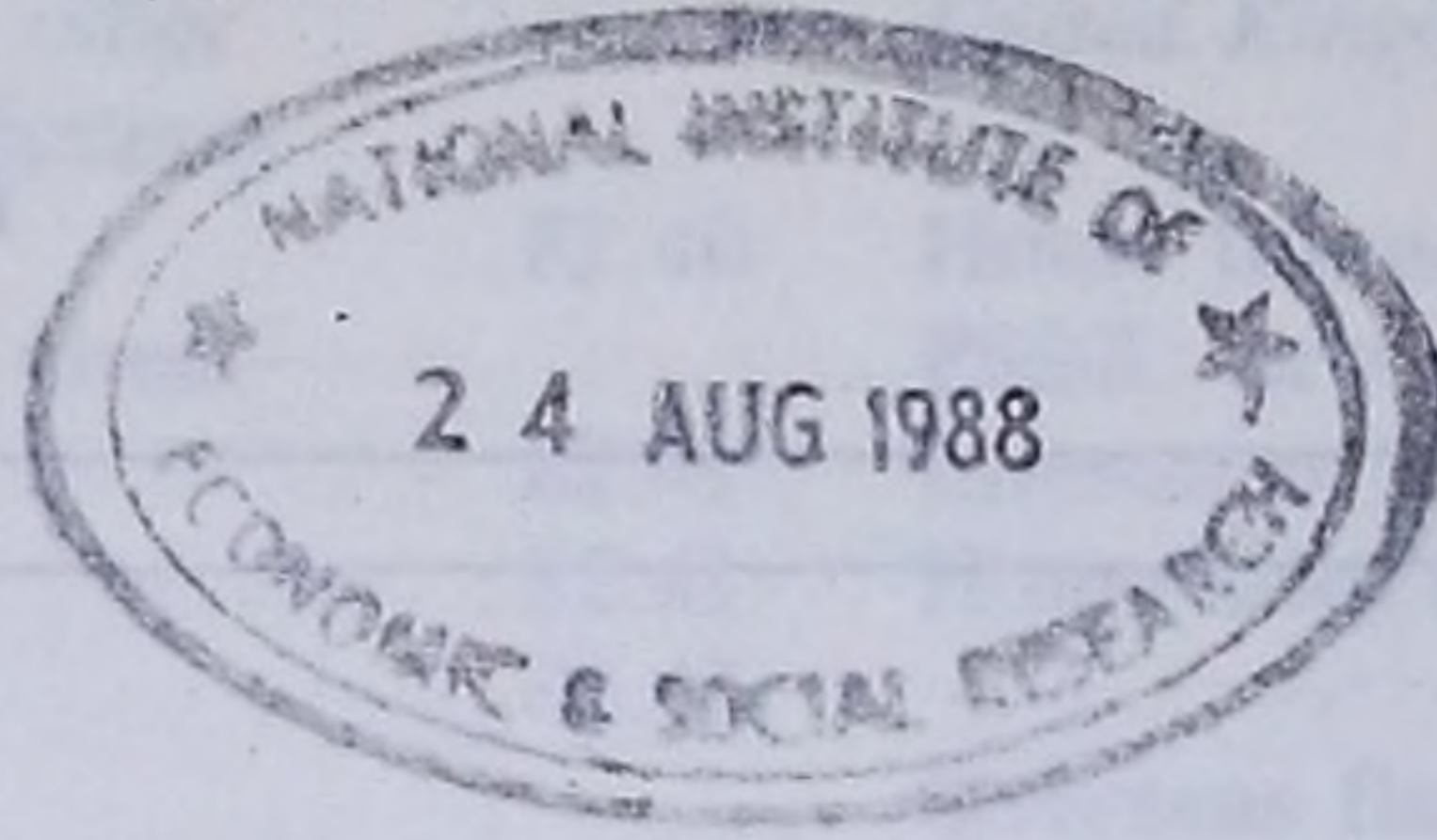
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FRONT COVER

The cover design depicts a corner of the Government Offices in Great George Street which house the CSO.



Statistical News

Developments in British Official Statistics

**No. 82
August 1988**

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Statistical Work in Inland Revenue

Roger Staton, Statistician

This article is based on a description of the analysis and research work carried out in the Inland Revenue and published in the 129th Report of the Board of Inland Revenue, December 1987 (HMSO Cm 230).

Introduction

At a party, if you say you are a Government Statistician you may get a blank look, but if you add that you work for the Inland Revenue the reaction tends to be more definite. The conversation may end there and then, but more often a lively debate develops on the tax system. Tax rates are too high (or too low)! Mortgage relief should be increased (or abolished)! Company cars are over taxed (or under taxed)! As we all know, the tax system affects every one of us. Inland Revenue Statisticians are normally in a good position for these party debates because their work is very closely integrated with that of the policy divisions. The Statisticians are continually analysing suggestions aimed at improving the system of direct taxes, providing measures of the costs, distributional impact and interactions with other taxes or economic activity. And, like all Statisticians, they are also always trying to improve their basic data and methods of processing and interpretation.

Role

The role of Statistics Division, as described in the departmental Senior Management System, a part of the Inland Revenue's response to the Financial Management Initiative, is set out in the box. In fulfilling these functions, the Statisticians in Inland Revenue are concerned with

- a. organising surveys (primarily of internal data) designed to extract data for samples of individuals or companies;
- b. sampling problems like stratification, grossing, estimation of missing data;
- c. designing and running simulation models of the various tax systems in order to produce forecasts and policy analyses interpreting the results;
- d. interpreting historical data on incomes;
- e. overseeing the development of computing systems and use of software for analyses.



From left to right: William Gonzalez (Chief Statistician), Richard Eason (Chief Statistician), Roger Staton (Statistician), Julian Calder (Director of Statistics), Ron James (Senior Principal), Frank Fitzpatrick (Chief Statistician) and John Dearman (Chief Statistician).

Inland Revenue Statistics Division

Responsibilities and Aims

To provide efficiently the numerical information needed to examine policy options for the direct taxes, including estimates of adequate scope and quality of the tax base (income or capital transactions), of the distributional effects of policy options, and of interactions with changes to other taxes or benefits. In particular to provide:

- to the policy divisions, Ministers and Parliament, estimates of the effects of changes to rates or structure of the taxes
- to the Treasury, Ministers and Parliament, forecasts of the yield of Inland Revenue duties
- to the Central Statistical Office, reliable estimates of aggregate personal incomes and of company profits for the national accounts
- for the efficient communication to the academic community and public of the factual information obtained as a by-product of these activities.

In pursuit of these aims to provide for flexibility and speed of response while at the same time reducing or limiting the cost, to the Department at large, of providing and retrieving the necessary information.

To contribute, as appropriate, to the provision of advice relevant to the pursuit of efficiency in the operations of the Department.

Typical questions arising in fulfilling these aims are:

- How much corporation tax will be collected next year? What will be the monthly pattern of receipts?
- What would be the effects of changing the rate of stamp duty on share transactions on the amount collected?
- How does the distribution of the burden of income tax change when the basic rate is cut and/or when higher rates are cut? Which types of taxpayer pay more tax, which pay less tax?
- What is the tax cost of the Business Expansion Scheme? How much new investment in small business has it stimulated? What will be the effect of a ceiling on investment for each company?

Organisation

The Division is organised into five groups — four 'taxation' groups, headed at Grade 5 (Chief Statistician), and a Central Services Group, headed at Grade 6 (Senior Principal). There are currently a total of 26 professional statisticians, 31 administrative support staff and 7 Information Technology support staff based in Somerset House with a further 63 IT and 37 clerical support staff in Worthing. The IT staff, managed by the Senior Principal, are also divided into

'taxation' groups, so that each of the statistician groups has a dedicated team of computing staff which can build up expertise in the subject matter.

The IT staff currently maintain 29 systems on the IBM mainframe computer at Worthing, accounting for about 20 per cent of usage. Increasing use is also being made of microcomputers and most statistical and support staff now have or share access to IBM PCs, many of which are linked to the mainframe and can act as terminals.

Data Collection

Most of the data are obtained from the operational parts of the Department in the form of summary totals or samples of detailed individual records. Where detailed information is required, staff in tax offices select individual cases according to criteria specified by the statistician and extract the data which the statistician needs from records held in the tax office. In some cases copies of administrative forms provide sufficient information. Otherwise more detailed surveys are carried out. One of these is the Survey of Personal Incomes, based on an annual sample of about 70,000 taxpayers. It covers all personal income tax payers and provides essential data on, for example, those with above average incomes and on the incomes and reliefs of people whose tax affairs are relatively complex. It is designed to keep work in tax offices to a minimum, consistent with obtaining enough detail on personal incomes at an acceptable level of reliability and representativeness. The data obtained from the survey are the basis for analyses of proposed income tax changes.

Some data are provided in electronic form. With the increasing use of computers throughout the tax and collection office networks, electronic extraction and transmission of data is increasing. The possibility of replacing paper forms by screen questionnaires so that local office staff could provide answers directly through the VDUs on their desks is being considered. This information would then be merged with other data for the same cases already held within the administrative computer systems and the combined record transmitted to Statistics Division.

Some statistical information is obtained directly from external sources although demands on taxpayers and companies are kept to a minimum. Estimates of company profits for recent periods are derived from a voluntary survey of the larger company groups, who report profit figures for most recent quarters direct to Statistics Division. The information provides a valuable input to the forecasting of corporation tax.

Forecasting

One of the statisticians' main tasks is to work out in detail how forecast changes in the economy will affect Exchequer receipts for the individual taxes. The Treasury's economic forecasts are the starting point. The Revenue Statisticians make their contribution using models of varying complexity. The Corporation Tax model is a good example.

The main determinants of corporation tax (CT) are company income, capital expenditure, interest rates and dividend payments. Figures of average growth in all of these economic variables are derived from the Treasury model for the forecast period and input to the CT model. The model uses random probability procedures to assign different growths in these items to each of the 15,000 or so individual companies on the database (eg allowing some companies to move from profit to loss and *vice versa*) in such a way that the growth of the whole sector is constrained to the average figure supplied. Having thus produced a simulated 'profit and loss account' for the year the model then calculates the tax liability for each company, taking into account the rules governing reliefs, transfer of losses etc, finishing up with a total of tax liability for the whole sector.

Success in forecasting tax receipts therefore depends upon three principal factors. The first is a representative sample of companies, the second is an accurate measure of the tax determinants, as mentioned above for corporation tax, and the third is the correct simulation within the model of the distribution of profits and losses among individual companies and the use of the various reliefs available to them. In recent years, forecasts of corporation tax receipts have been within 5 per cent or so of the outturn with the exception of 1986/87 when an underestimate of 15 per cent was recorded, largely because the tax determinants input to the model (profits and dividends) were too low.

Forecasts of income tax receipts are normally within 1 per cent of outturn. This greater degree of accuracy in the income tax figures reflects the greater stability of earnings and PAYE receipts compared with company profits and corporation tax receipts.

The forecasts for each tax are monitored throughout the year against receipts and any significant variations from the forecast path are investigated. This work contributes to monthly monitoring by the Treasury of all the components of the Public Sector Borrowing Requirement (PSBR).

Analysis of the effects of change

A major part of the work of the Division is in assessing the likely effect of changes to the tax system. The impact needs to be considered in terms of:

- the expected gain or loss to the Exchequer;
- how particular groups of taxpayers will be affected;
- the extent to which the proposal is likely to influence taxpayers' behaviour;
- interactions between different proposed tax changes; and
- interactions with other aspects of Government policy such as industrial or social security policy.

The personal tax model which is based on the Survey of Personal Incomes answers a wide range of questions about proposed changes to the personal tax system. The model can be set out in diagrammatic form as displayed in Diagram 1 on page 7.

This simulation model calculates the tax liability of each of the representative taxpayers under the tax regime being studied. It can be used to estimate the overall costs of raising allowance levels, changing rates of income tax, the qualifying conditions for particular tax reliefs, or combinations of these changes. Changes to the numbers of each type of taxpayer and to their individual tax bills can be estimated to help determine both the numbers of people who would gain or lose from the policy proposal and also its staffing consequences for the Revenue.

The model can also be used to look at the numbers of particular types of taxpayer by income range. For example, Diagram 2 on page 9, shows the distribution of higher rate taxpayers by income and highlights the importance for married couples of the wife's earnings election.

More fundamental changes to the income tax system can also be explored using the model. It has recently been used to estimate the aggregate and distributional effects of various proposals for changing the taxation of husband and wife. The Chancellor introduced proposals for independent taxation in this year's Budget. In order to analyse such proposals, the personal tax model programmes were developed so that husbands and wives could be treated as separate (but linked) tax units and the Survey of Personal Incomes was extended to seek additional detail about the incomes of married couples.

Models built on data collected from within the tax system are, of course, limited to the information which the tax system requires in order to collect the right amount of tax. As the personal income tax system has been simplified over recent years, information about the circumstances of the representative tax units within the model has been correspondingly reduced. Since 1979/80 when the phased replacement of child tax allowances by child benefit was completed, the tax system has not provided information on the numbers of children in a family.

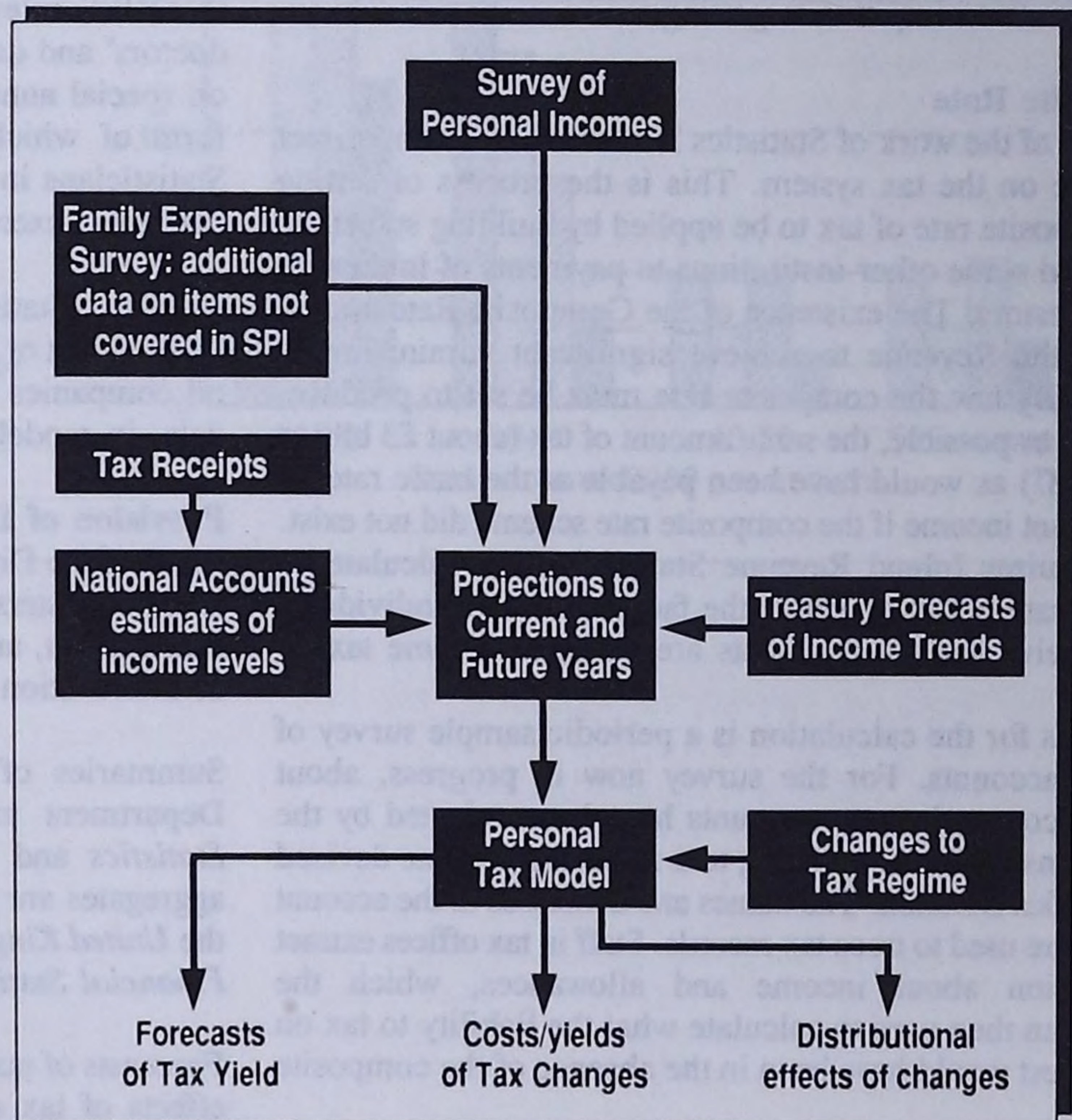
Limitations of this kind and the need to study wide-ranging policy changes led to the development with other Government Departments of a further computer model based on the Family Expenditure Survey (FES). The development and application of this tax-benefit model, which is maintained by the Central Statistical Office, has been described in *Statistical News* already (August 1987). Because this model brings together the income, expenditure and other circumstances of each family, it can be used to study the interaction of income tax, National Insurance contributions, social security benefits and taxes on consumers' expenditure. Taken together, the FES based model and the personal tax model provide extensive facilities for analysing changes to personal taxation.

Behavioural Responses to Tax Changes

The effects of tax changes on Exchequer receipts have to be considered alongside the effects on the behaviour of taxpayers. In some instances, a tax measure is designed explicitly to encourage a particular response (eg tax relief was introduced for Personal Equity Plans in order to encourage direct investment in equities) or because the Government wishes to avoid unintended side effects (eg in 1981 certain petroleum revenue tax reliefs were changed because it was feared that they could encourage wasteful forms of investment in the North Sea). In estimating the overall effect of Budget changes on the economy and the PSBR, the Treasury economic model attempts to take account of the most important macro-economic effects, thereby including indirect as well as direct effects of tax changes in the assessment of the total picture.

Estimating the impact of changes in taxation on taxpayer behaviour is not easy. Statisticians work closely with economist colleagues in the Revenue and Treasury in evaluating likely effects. Two recent examples of the sort of work undertaken in this area are, first, a study carried out by economists at the Bank of England and Treasury with assistance from the Inland Revenue economists and statisticians, on the effect of altering the rate of stamp duty

Diagram 1
Personal Tax Model



on the volume of share transactions; and, second, analysis of the effects of rebasing capital gains to 1982 for tax purposes and charging gains at income tax rates as if they were the top slice of the taxpayers' income.

Monitoring the tax system

Once a particular Budget proposal has been implemented, it is monitored and, where possible, steps are taken to evaluate whether the measure has had the intended effects. Early monitoring can often be achieved through the tax system itself. For example, the Business Expansion Scheme (BES) was introduced in 1983 to give income tax relief for investment in new equity of small companies. Claims for relief and tax returns revealed some information on the take-up by investors and how many companies were raising funds through the scheme. But more information was needed to see whether the scheme was achieving its objectives of increasing the venture capital available for small companies. This could be done only by more detailed surveys of companies and investors using the scheme. A study was commissioned from consultants which concluded that most BES investors had not previously invested in unquoted companies, that tax relief on investment was the dominant motive, and that most of the companies receiving BES finance would not have raised the equity without BES. In the light of this evaluation, Ministers decided to make the scheme permanent but with some amendments to improve targeting.

Composite Rate

One part of the work of Statistics Division has a more direct influence on the tax system. This is the process of setting the composite rate of tax to be applied by building societies, banks and some other institutions to payments of interest to their investors. The existence of the Composite Rate system enables the Revenue to achieve significant administrative savings. By law the composite rate must be set to produce, as nearly as possible, the same amount of tax (about £3 billion in 1986/87) as would have been payable at the basic rate on the relevant income if the composite rate scheme did not exist. This requires Inland Revenue Statisticians to calculate an average rate of tax to reflect the fact that not all individuals who receive interest payments are liable to income tax.

The basis for the calculation is a periodic sample survey of savings accounts. For the survey now in progress, about 100,000 composite rate accounts have been selected by the savings institutions according to a sampling scheme devised by Statistics Division. The names and addresses of the account holders are used to trace tax records. Staff in tax offices extract information about income and allowances, which the statistician then uses to calculate what the liability to tax on the interest would have been in the absence of the composite rate.

These surveys are normally held at four yearly intervals. This ensures that the data reasonably reflect the current structure of investors without placing an undue burden on the savings institutions or tax offices. Between surveys, the statisticians allow for changes in the tax position of investors in the sample caused by changes in personal incomes, allowances and tax rates.

Links with other departments

Inland Revenue Statisticians have links with colleagues in a number of other departments. They make a significant contribution to the National Accounts, providing the Central Statistical Office with information about income from employment and self-employment and the profits of industrial and commercial companies. Together these account for about 90 per cent of the income measure of GDP. Figures for income from employment are extracted and analysed by DHSS at their Newcastle Central Office from employers' statutory end of year PAYE returns, in close consultation with Revenue Statisticians. Bench-mark estimates for self-employment income are obtained from the Survey of Personal Incomes and for company profits from tax assessment data. Because of the time needed to make assessments and process tax returns, these estimates have to be updated from other information and surveys.

Revenue Statisticians also provide the Central Statistical Office with information on the distribution of personal incomes obtained from the Survey of Personal Incomes, and make estimates of the distribution of personal wealth from information about the estates of the deceased derived from inheritance tax returns.

Another significant exercise is the provision of information to DHSS relevant to the annual exercise of determining doctors' and dentists' pay. The analyses provided are based on special annual surveys of tax records, the structure and form of which are agreed in consultations between the Statisticians in both departments. DHSS actually fund this particular exercise.

Revenue Statisticians also have strong links with the Department of Energy, who supply important information on oil companies which is used, in conjunction with Revenue data, in modelling oil taxation.

Provision of Information to Parliament and the Public
Much of the Division's analytical work is for internal purposes or for Ministers' use as an integral part of the process of policy formulation, and is not published. Nevertheless a great deal of information is made generally available.

Summaries of the main data collected centrally by the Department are published annually in *Inland Revenue Statistics* and the *Survey of Personal Incomes*. National aggregates are published by the Central Statistical Office in the *United Kingdom National Accounts*, in *Economic Trends*, *Financial Statistics* and in various CSO press notices.

Forecasts of tax receipts and information about the expected effects of tax changes on tax revenue are included in the *Financial Statement and Budget Report* and in the *Autumn Statement*. Illustrative effects of tax changes are made available in Budget Press Releases. Estimated costs of the principal tax reliefs are published annually in the Public Expenditure White Paper.

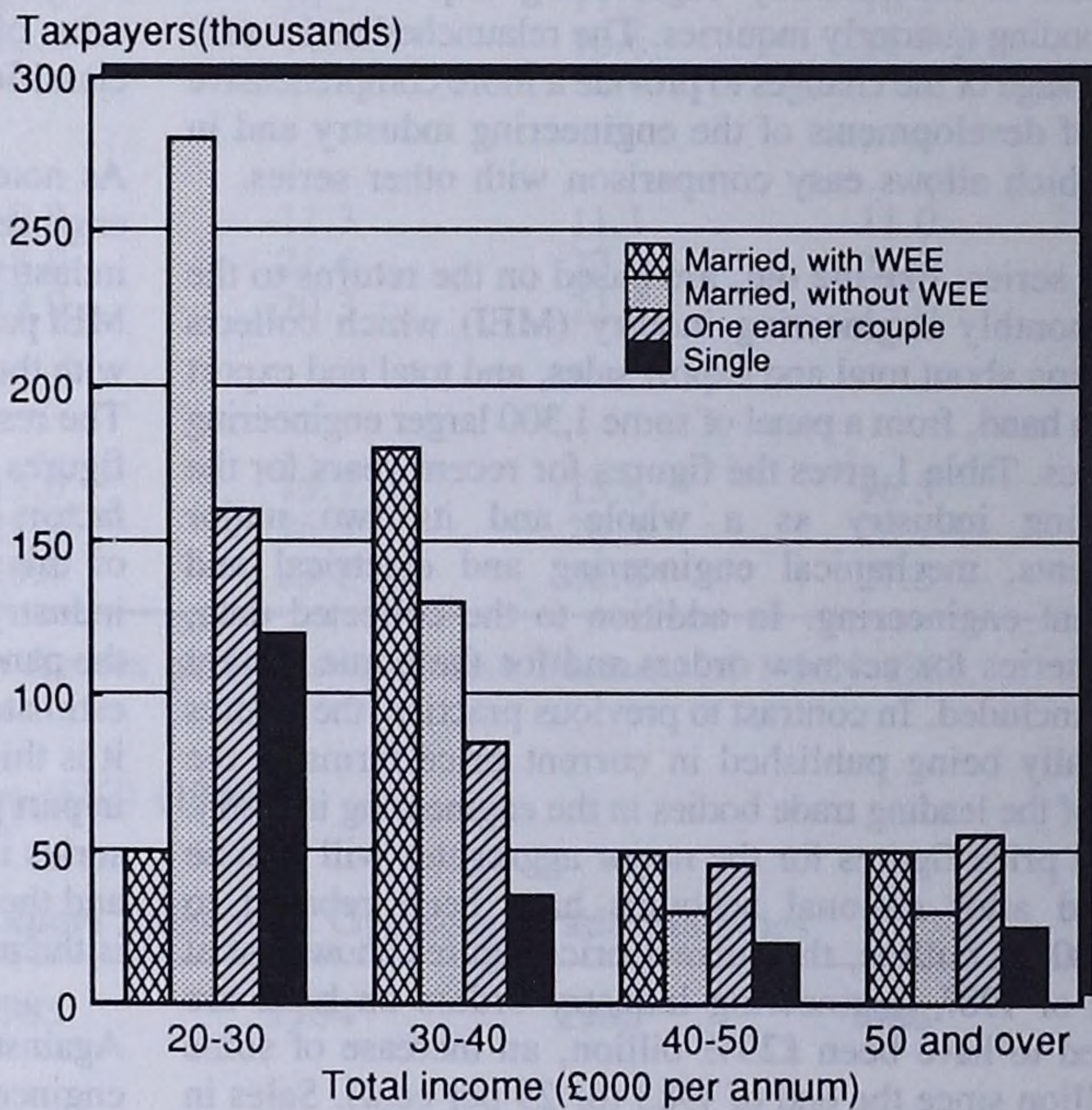
Further information is made available in answers to Parliamentary Questions, during debates on the Finance Bill, through the issue of consultative documents or Green Papers and through special reports (eg Select Committee Reports). During 1986/87 Statistics Division contributed information to around 300 Parliamentary Questions.

Summary

The preceding paragraphs provide a glimpse of the type of work carried out by Revenue Statisticians. It is by no means a full description of all aspects of the work but highlights the varied nature of the work and the close links with other parts

of the Department and the Treasury. Although some of the work is regular in nature and can be planned fairly easily - forecasting rounds, receipts monitoring, regular surveys, National Income Blue Book work - much of the work is unexpected and irregular. One of the consequences of being closely integrated into the tax policy work of the Department is that any new initiative by the Government of the day can give rise to a whole new set of questions needing quick answers, particularly in the run-up each year to the Budget. Many of the jobs in the Division therefore contain an element of the unexpected and urgent, which helps to make it an interesting and stimulating place to work.

**Diagram 2
Higher rate taxpayers by income
and type 1987/88**



Note: Married refers to couples with wife's earnings.
WEE = wife's earnings election.

Relaunch of the Engineering Sales and Orders Series

Richard Butchart, Chief Statistician, Department of Trade and Industry

In July 1988, the engineering sales and orders series were relaunched after a short gap. While the series have a long and successful record, investigations prior to the rebasing of the engineering indices of production to 1985=100 revealed that the existing methodology was not making best use of the latest developments at the Business Statistics Office (BSO), particularly in its register of businesses and the closer integration of the monthly engineering inquiries and the corresponding quarterly inquiries. The relaunched series take full advantage of the changes to provide a more comprehensive picture of developments of the engineering industry and in a way which allows easy comparison with other series.

The new series, like the old, are based on the returns to the BSO's monthly engineering inquiry (MEI) which collects information about total and export sales, and total and export orders on hand, from a panel of some 1,300 larger engineering companies. Table 1 gives the figures for recent years for the engineering industry as a whole and its two major components, mechanical engineering and electrical and instrument engineering. In addition to the collected data, derived series for net new orders and for the home market are also included. In contrast to previous practice, the figures are initially being published in current price terms at the request of the leading trade bodies in the engineering industry. Constant price figures for the major aggregates will also be published after national accounts have been rebased to 1985=100. In outline, the current price figures show that at the end of 1987, engineering industry orders on hand are estimated to have been £29½ billion, an increase of some £6½ billion since the end of 1983 (or 29 per cent). Sales in 1987 in contrast are estimated at £54 billion, a rise of £15 billion (or 38 per cent) since 1983. Estimates of engineering industry export sales and orders have been rising faster than those for the home market over this period. Within the industry, electrical and instrument engineering has been growing consistently faster than mechanical engineering. In 1987 electrical and instrument engineering sales estimates were about a quarter higher than those of mechanical engineering whereas in 1983 they were some 7 per cent higher. Finally in 1987, orders on hand represented a little over 6 months of total combined engineering sales with only minor variation for the categories shown in Table 1. There is much more variation for the individual industries within engineering.

Before attempting to compare the relaunched series with other statistics it is necessary to describe in more detail the basis of the figures. The new series are industry-based, where an industry is defined as the collection of units/companies which principally manufacture the products of that industry. However such units may, and some will, manufacture to a lesser degree

the products of other industries. Similarly the industry's products may be manufactured by units classified to other industries. An industry's total sales is defined as the sum of the total sales of all units classified to the industry, irrespective of whether such sales are the industry's own products or not. Similar considerations apply to industry exports and industry orders on hand. Industry total sales contrasts with an industry's principal product sales which is defined as the total sales of an industry's products irrespective of the industry classification of the units making them.

As noted previously, the MEI is collected from a panel of engineering companies and the published estimates at the industry level are obtained by comparing total sales for the MEI panel with the industry estimates published in association with the BSO's more comprehensive quarterly sales inquiries. The results of this comparison are used to 'gross up' the MEI figures to the level of the industry as a whole with the same factors applied to exports and orders on hand. The accuracy of this procedure will depend both on how much of the industry the panel accounts for and on how representative the panel is but clearly the export and orders on hand industry estimates will be less reliable than those for total sales. Indeed it is this question of reliability in the resulting series which in part prevented such a strategy being adopted for the orders series in the earlier version of the sales and orders statistics and the inclusion of orders in the full grossing up procedure is the major innovation in the methodology in this relaunch.

Against this background, Table 2 shows a comparison of engineering exports in the new series with an engineering total from the overseas trade statistics (OTS). The OTS figures being product based are akin to a principal product series in contrast with the industry nature of the new series. Despite that, the new series shows a reasonable degree of correlation with the OTS data. In 1987, the estimate of combined engineering sales derived from the MEI was £18.5 billion compared with £22.5 billion from the OTS, a shortfall of 18 per cent. This was little changed from 1983 when the new export estimate was £12.4 billion, 16 per cent below the equivalent OTS figure. However different pictures emerge within the engineering group. For mechanical engineering, the 1987 figure for the new series was £8.8 billion, 2 per cent below the OTS value, with the discrepancy little changed over the period since 1985 but it was somewhat larger before then. For electrical engineering in contrast, the 1987 MEI based figure for exports was £9.7 billion compared with £13.6 billion for the OTS based series, a shortfall of 28 per cent. In 1983, the shortfall was smaller at 24 per cent. The larger shortfall in the electrical and electronic engineering industries reflects in part a higher degree of entrepot trade in this sector, an activity which does not necessarily involve the UK manufacturing sector.

Table 1: Engineering Sales and Orders¹

£ billion

	1983	1984	1985	1986	1987
Combined Engineering					
Total					
Orders on hand ²	22.9	27.0	26.8	27.4	29.5
New orders ³	39.9	48.1	48.8	51.1	56.2
Sales	39.4	44.1	49.1	50.5	54.2
Home Market					
Orders on hand ²	14.6	16.8	16.0	16.6	18.3
New orders ³	26.9	31.8	31.6	34.2	37.5
Sales	26.9	29.7	32.5	33.7	35.8
Export Market					
Orders on hand ²	8.3	10.2	10.8	10.8	11.2
New orders ³	13.0	16.3	17.1	16.9	18.7
Sales	12.4	14.4	16.6	16.7	18.4
Mechanical Engineering ⁴					
Total					
Orders on hand ²	9.9	11.3	11.1	11.0	12.0
New orders ³	18.0	21.6	22.3	22.9	25.2
Sales	19.0	20.3	22.5	23.0	24.2
Electrical and Instrument Engineering ⁵					
Total					
Orders on hand ²	13.0	15.7	15.6	16.5	17.5
New orders ³	21.9	26.5	26.5	28.2	31.0
Sales	20.4	23.8	26.6	27.5	29.9

1. Consistent with engineering index of production figures published in *British Business* of 1 July 1988.

2. End year.

3. Net of cancellations.

4. Class 32 of the Standard Industrial Classification (SIC) (1980).

5. Classes 33, 34 and 37 of SIC (1980)

Table 2: Comparison of Engineering Industry Export Sales with Overseas Trade Statistics¹

	1983	1984	1985	1986	1987
Combined Engineering					
OTS £bn	14.7	17.7	20.2	20.7	22.5
MEI £bn	12.4	14.4	16.6	16.8	18.5
% difference	- 16	- 19	- 18	- 19	- 18
Mechanical Engineering ²					
OTS £bn	6.7	7.6	8.3	8.4	9.0
MEI £bn	6.3	7.1	8.1	8.3	8.8
% difference	- 6	- 7	- 2	- 2	- 2
Electrical and Instrument Engineering ³					
OTS £bn	8.0	10.1	11.9	12.3	13.6
MEI £bn	6.1	7.4	8.4	8.5	9.7
% difference	- 24	- 27	- 29	- 31	- 28

1. Consistent with engineering index of production figures published in *British Business* on 1 July 1988.

2. Class 32 of SIC (1980).

3. Classes 33, 34 and 37 of SIC (1980).

The relaunched series are being published monthly in *British Business*, the Department of Trade and Industry's weekly news magazine, for engineering as a whole and for mechanical engineering and electrical and instrument engineering. Figures are provided for recent years, quarters and months, seasonally adjusted where appropriate. In

addition, a digest of engineering sales and orders statistics for 43 engineering industries is being produced monthly for internal distribution within DTI and is available to outside organisations for an annual subscription of £30 per year. Inquiries about subscriptions should be addressed to: Mr Roy Jager, Statistics Division 1A, Room 1936, Millbank Tower, Millbank, London SW1P 4QU. Telephone: 01-211 0096.

The Input-output Tables for the United Kingdom 1984*

Robin Lynch, Statistician, Central Statistical Office

General Methods

Following the conduct of a comprehensive inquiry into the sales and purchases of production industries for the year 1984, the Central Statistical Office of the United Kingdom began the compilation of a set of 1984 input-output tables in April 1986. This work was completed in May 1988 with the publication of the tables.¹

A team was newly appointed to carry out the project. The members were one professional statistician and seven support staff. A mainframe computer was available for basic data processing, and six microcomputers were used for detailed compilation work. The main software tool was the microcomputer spreadsheet LOTUS 1-2-3 with a wordprocessor used to facilitate documentation. The spreadsheet package SMART was used towards the end of the project for matrix manipulation and production of camera-ready copy of the main tables. An Apple desktop publishing system was used to produce camera-ready copy of the introductory text.

In the United Kingdom national accounts, there is little use of commodity flow methods in the estimation of components of final demand. In general, final demand estimates are based on the results of expenditure surveys. Estimates of value added using the income approach are based upon tax records. Indices

of production and output are compiled on the basis of volume or sales indicators, deflated as necessary, from inquiries direct to businesses. This approach allows independent estimates of Gross Domestic Product (GDP) to be made based upon output data, expenditure data and data on income and profits. An 'average' measure of the three is taken as the best measure of GDP at constant prices.

The independence of the three estimates of GDP causes problems for the compiler of input-output tables, as there is therefore no reconciliation of supply and demand at a detailed level incorporated in the system of national accounts. As input-output tables present a balanced view of the economy incorporating income, expenditure and output measures at a detailed industry level, the reconciliation of the independent components of the three measures of GDP is a major task facing the compiler.

In practice this means that in order to compile tables consistent with the national accounts, control totals from the expenditure and income measures of GDP at current prices are used to determine the overall levels of final demand and value added components respectively. It is then necessary to compile the tables incorporating the supply and intermediate demand data from the production industry survey and other sources, so that the supply and demand for each input-output group is balanced.

The situation is illustrated in Table 1 below in summary form.

Table 1 The combined domestic and imports use matrix

£ billion

Imports and Sales of	Purchases by			Interm. Demand	Final Demand	Total Demand
	Agric	Man	Servs			
Agriculture	2.8	10.5	0.6	13.9	4.7	18.6
Manufacture	5.4	128.7	29.3	163.4	195.0	358.4
Services	2.0	40.5	43.0	85.5	177.5	263.0
Total	10.2	179.6	72.9	262.8	377.1	640.0
Sales by final demand	0.0	1.4	0.4	1.8	- 1.8	-
Value added & tax	4.9	103.1	174.4	282.4	37.7	320.1
Gross output	15.1	284.1	247.8	547.0	413.0	960.0

* An extended version of this paper was presented at the conference, 'New Markets in the 1990s and Beyond', Cambridge, 22-24 June 1988.

The boxed figures are wholly dictated by the national accounts measures of GDP. The controls across the various industry groupings are dictated to a lesser extent within this absolute control. Thus for value added, the pattern of the results from the Annual Census of Production (ACOP) is used to help determine the value added by industry, within the overall constraint of the income and profits industrial analysis of the national accounts.

Similarly, the final expenditure control totals for consumers' expenditure, GDFCF etc are spread across categories of final demand according to the input-output group classification using detail underlying the national accounts estimates.

It is necessary then to reconcile the intermediate components for each industry with these national accounts controls and the estimate of gross output. In Table 1 for example, the gross output for agriculture is estimated to be £15.1 bn. Imports of agriculture goods are estimated at £3.5 bn (not shown separately in Table 1). National accounts controls for value added and final expenditure suggest that the value added and tax inputs to the agriculture industry are £4.9 bn, and final demand for agriculture products is £4.7 bn. Then Intermediate consumption by agriculture is constrained to be £10.2 bn and intermediate demand must be £13.9 bn. This may of course be inconsistent with survey results.

The steps in the compilation process for input-output tables are as follows:

- a. Classify the results of the sales and purchases inquiries to input-output group level. Classify the imports and exports data to input-output groups. Use the surveys on purchases to compile the intermediate use matrix for the production industries.
- b. Complete the intermediate use matrix by estimating from other sources the purchases of industries not covered by the production industry sales and purchases inquiry. There was only limited information on employment, value added, sales and capital formation etc for these other industries.
- c. Reclassify the components of final demand from the functional headings found in the national accounts to the input-output groups.
- d. Establish the value added components of the input-output groups, by using the data from tax sources used in the estimation of GDP (incomes), augmented where necessary to achieve a finer allocation by industry.
- e. Render all transactions of goods and services on producers' prices, by adjusting for commodity taxes and distribution margins.
- f. Estimate the import content on an fob basis of the purchases made so that separate domestic and import use matrices can be compiled.
- g. Obtain an approximate balance between supply and demand for each input-output group, consistent with the control totals of the expenditure and income estimates of

the national accounts, and reflecting the results of the sales and purchases inquiries.

- h. Apply the RAS iterative method of successive pro-rating of rows and columns to derived totals to obtain a complete balance in every input-output group, largely following the route suggested by Victor Bulmer-Thomas.²

Some difficult areas

There are many industries where there is no statistical inquiry into purchases, and other sources must be used to help determine purchasing patterns. For 1984, only some 50% by value at producers' prices of intermediate purchases were estimated from the production industry purchases inquiry. For the rest a mixture of government department estimates, commodity flow techniques and administrative information was used.

Records from the administration of the Value Added Tax system are a further source of data to assist in the estimation of levels of output, but must be used with caution due to classification differences. The situation with respect to the services industries is particularly difficult, but it is in this area that data from VAT records are sometimes the only indication of turnover level.

An attempt was made to incorporate information from company tax records to establish the purchasing pattern for the insurance industry. A model of the purchasing pattern of both current and capital purchases by this industry was postulated and tested against the observations. Variations of the purchasing structure coefficients allowed a least squares criterion to be minimised. This was achieved through a Lotus 1-2-3 spreadsheet model, where some 100 company tax records were entered, and the headings of goods purchased classified to input-output group headings or aggregates thereof.

It was then possible to test the model structure against each of the 'observations' and by varying the important coefficients, the sum of the errors squared was approximately minimised. This could be more rigorously applied, using 'hill-climbing techniques' etc and it is hoped that further work can be done in this potentially interesting area.

However, non-compatibility between tax record headings and input-output groups, as well as the difficulty of incorporating confidence weights on the individual returns, meant that sufficient resources could not be devoted to the problem to allow a comprehensive solution, and only a 'feel' for the right structure could be deduced.

One very clear lesson learnt was that over-use of 'other' categories in a classification system can significantly degrade what at first sight seems a very helpful data source.

There are difficulties in establishing the appropriate measurement of transport activities in the input-output table. For the United Kingdom we have adopted the line that all transport is hired or contracted, and no transport undertaking earns its income from a margin applied to the load-on price to give a delivered price. Therefore transport margins are

shown as being earned by the distribution sector in the United Kingdom input-output tables. The distribution sector is in turn shown as a major purchaser of road transport.

There is also very little information on what proportion of transport is carried out by own account transport departments and whether these departments are included in the production inquiry into sales and purchases or whether they are included in the transport sector in their own right. An associated ambiguity is whether sales are valued at delivered or ex-works prices.

The prevalence of company cars and the many different ways of financing their purchase as well as their running costs confuses an already difficult area.

Balancing

The two basic matrices in the United Kingdom input-output table compilation process are the Make and Use matrices. The Make matrix shows the gross output of industries (the columns of the matrix) classified by the types of goods produced (the commodities) shown in the rows of the matrix. The Use matrix shows the purchases of domestic and imported goods, initially at purchasers' prices. The total of each column is the sum of gross inputs and therefore equal to the gross output of the industry.

The sum of a row of the Use matrix is the total demand for each commodity and therefore should be equal to the total supply of this commodity if they are valued on the same price basis. With appropriate adjustments for sales by final buyers, taxes and margins, the demand can be reduced from purchasers' prices to producers' prices and so should equal the supply of the commodity - domestic gross output and imports.

The overall picture is built up from a system of Lotus 1-2-3 spreadsheets holding the basic building blocks of the Use and Make matrix system. This MONITOR spreadsheet is the starting point for looking at balancing problems.

Industry imbalances

In the production sector we would expect no imbalance, as profits in the production inquiry are taken simply as the difference between gross output and the sum of all other inputs. Complications do however arise because of the need to constrain to the Blue Book components of Gross Value Added (income from employment and profits and other

income net of stock appreciation), which are not consistent with the production inquiry estimates for the components of Gross Value Added.

These inconsistencies are difficult to adjust for on an individual industry basis: an overall strategy must be adopted and applied to the production industries - this can mean changes to both gross output and purchases in the industries.

The solution adopted in the past when there has been a significant overestimate of profits by the production inquiry, is to assume that purchases of business services, bank charges etc have been underestimated due to incomplete coverage, and so increasing these has brought the profits estimate down to the level of the national accounts estimate based on company accounts. This adjustment has been possible due to the approximate equality of the two estimates of income from employment in past benchmark years.

Table 2 below illustrates the situation for manufacturing for 1984, and the effect of constraining the production inquiry estimates of value added to national accounts controls has been a redistribution of the profits and wages figures from the production inquiries within the overall figure for value added.

Commodity supply imbalances

The main focus of balancing was on resolving the differences between the Supply of and the Demand for each commodity group. The relevant components of supply and demand for each commodity are shown in the third section of the MONITOR.

A reasonable place to start was where there are major sectorial imbalances. If a situation could be reached where the aggregate sectors balanced, then we would be in a better position to set about tackling imbalances in detail within those sectors. This method appeals because of the in-built constraint of final balancing within a well defined sector. In some cases the adjustments to a particular input-output group within a balanced sector may affect other groups outside this sector.

An overall co-ordinator of balancing, and a controller of the balancing system on the microcomputer, were appointed within the input-output team. Each member of the team had a dual role - as guardian of the component of the compilation process for which he or she had been responsible over the previous one or two years, and as balancer who had to change source components in order to strike a balance for a particular commodity input-output group.

Table 2 Estimates of Value Added and employment for the Manufacturing Industry in 1984

£ billion

	Annual Census of Production	National Accounts	difference	% difference
Gross Value Added	71.3	68.6	2.7	3.8
Income from employment	44.8	49.9	- 5.0	- 11.4
Gross profits	26.5	18.6	7.8	29.6
Employment (<i>thousands</i>)	5,055	5,409	- 354	- 7.0

The statistician was appointed 'expert' to act as a consultant on balancing and to the guardians of estimates in some cases, but did not carry out directly any of this first balancing. Within a specified period of time (a week) from the start of considering a commodity imbalance, balancers reported back with a series of adjustments to their own commodity rows and compensating adjustments to other rows.

The role of the microcomputer

It was in this area of balancing that the microcomputers and associated software proved their worth. The ability to experiment with the balances on the spreadsheets in a comprehensive and automated manner was critical in investigating possible resolution of imbalances. The ability to print a spreadsheet which demonstrated investigations for circulation and comment within the section was also important. The fact that many of the compilation processes consisted of the transformation of a set of statistics from one classification system to another meant that with these transformations stored as spreadsheet rules, easily accessible to change, relatively sophisticated experiments could be conducted on the nature of the transformations and how they affected the imbalances.

Areas of possible confusion and conflict

- a. Resolution of an imbalance without justification and the agreement of the guardian of the components to be altered was not accepted as a final solution. Every change had to be argued through - again the microcomputer allowed sufficient interchange of information to allow this process to take place efficiently.
- b. The guardian role is the opposite to the balancing role - one resists change, one wants change. Guardians become emotionally attached to their estimates and may be loath to change them.
- c. With several commodities under investigation at once, conflicting adjustments may be proposed to balance different accounts - the guardians had to be informed in a timely manner through continual re-running of the central monitor system.

Balancing in a team is not the easiest way to balance the tables, but it is the most effective way if the appropriate system can be operated successfully. Section members had to state openly what problems they encountered, and accept changes to their estimates as constructive moves towards better tables rather than criticism of their methods or ability. All areas of work were susceptible to revision through balancing considerations, apart from the national accounts control totals.

There is of course a real dilemma here in that rather than the input-output compilation process working from first principles and commenting on the adequacy of the national accounts, the acceptance of control totals from the national accounts has the effect of altering the input-output table message. In order for the compilation process to generate useful input to the national accounts, careful notes must be maintained during the compilation period so that changes forced on the input-output structure due to controls from the

national accounts should not prevent investigation and comment after the completion of the tables.

The output of the balance system

The output of the balance system described above is a version of the domestic Use matrix which balances identically in the columns - ie the sum of the columns is the sum of the intermediate and primary inputs, and this is identical to the industry outputs as shown in the Make matrix. However, the rows will only be in approximate balance, as it would be unreasonable to expect hundreds of meaningful individual balancing adjustments to be made to ensure a perfect balance.

The primary inputs and the final demands are then taken as fixed, so that the national accounts income and expenditure control totals will be maintained. Subtracting the primary inputs from the industry outputs, and final demand from the commodity outputs will give a set of desired row and column totals for the intermediate domestic Use matrix. As the sum of the primary inputs is identically equal to the sum of final demands for domestic products (apart from the residual error between expenditure and income measures of GDP), and as the total output of commodities is identical to the output by industries as presented in the Make matrix, the desired row and column totals will sum to the same amount.

We then have the conditions necessary to apply an RAS² procedure - the successive pro-rating of rows and columns so that an iterative process is carried out which should result in convergence to a balanced intermediate Use matrix.

It is hoped that further work can be undertaken in the coming year to establish whether it is more effective to include the imports in the matrix to be balanced in this manner. Further work is also desirable to investigate whether final demand components can also be incorporated in the RAS process with benefit. In particular, this would involve the expansion of the final demand categories of private final consumption, general government consumption and Gross Domestic Fixed Capital Formation (GDFCF) from one column to many, representing the functional headings by which they are represented in the presentation of the expenditure components of GDP in the national accounts. This would mean that the allocation of functional headings of final demand categories would also be susceptible to change due to the RAS method rather than assuming that the input-output group classification of final demand was a fixed and known transformation. This is very unlikely to be the case for many input-output groups.

The RAS procedure will resolve the imbalances in the rows. It is then necessary to compare the original unbalanced matrix with the balanced RAS matrix, to ensure that any large changes in individual cells are reasonable. It may be necessary to exclude 'known' elements from the RAS procedure so that they may be added after.

Another problem is that the RAS method preserves zeros. This is often desirable of course, but if it is felt that a range of cells should contain entries and we are content to let the RAS method determine the values, then small trace elements may be inserted in the original matrix to allow new non-zero values to be estimated through the RAS method.

Tables published for 1984

The main changes from previous publications are:

- a. The limitation of derived tables to the commodity by commodity versions. This is in view of international practice and UN recommendations, and it is felt that the reasons put forward for the previous publications showing industry-by-industry versions reflected the opinion that it was the industry rather than the commodity which was of interest to government and outside users.
- b. A reduction in the number of derived tables. This is due to the vastly improved access of most users of the tables to software on microcomputers which renders such derived tables redundant.
- c. The inclusion of the diagonal elements in the symmetric flow matrix when calculating the Lerontief inverse. This allows easier comparison of variables across different levels of aggregation.

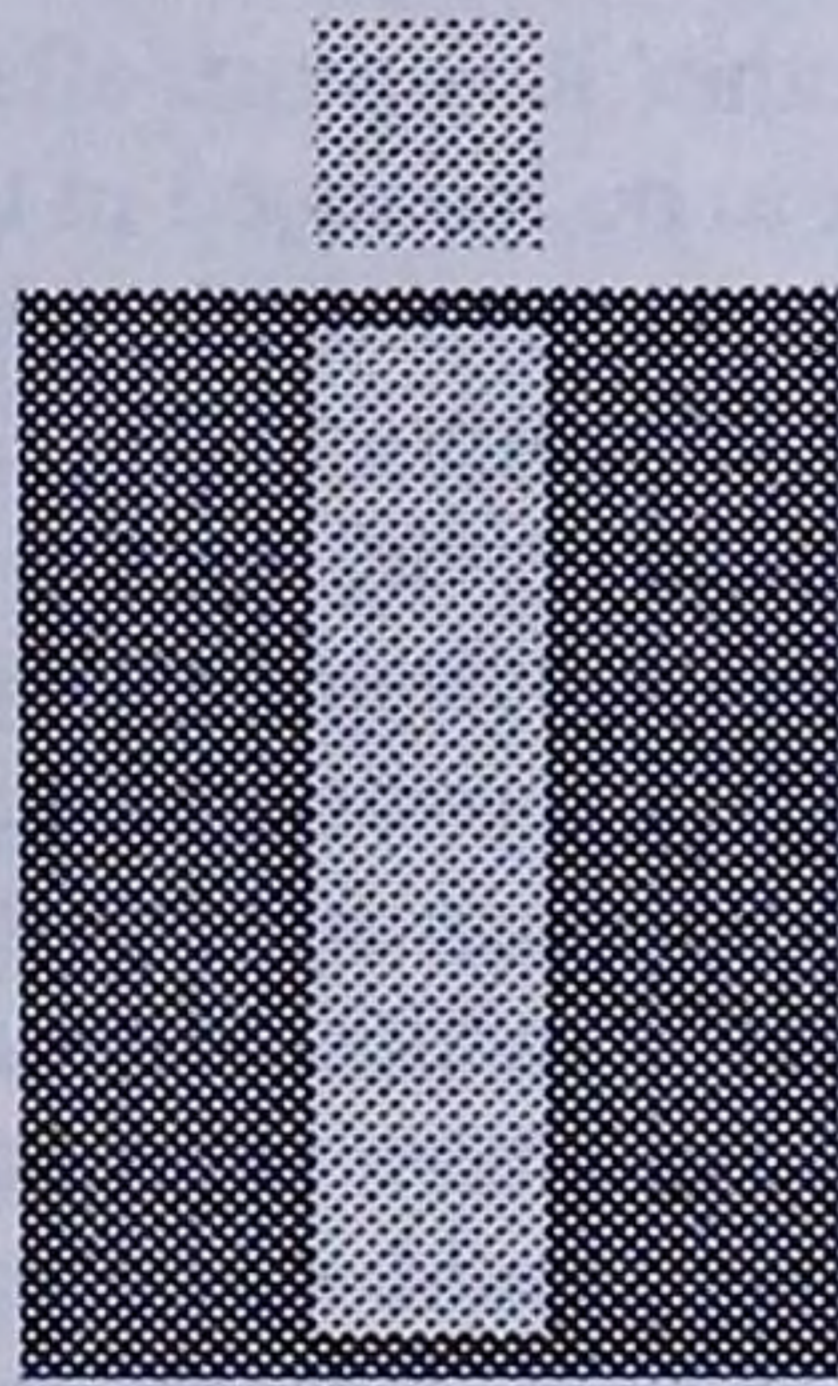
A key element in the 1984 publication is the provision with the tables of a free microcomputer floppy disk giving the tables in computer readable form. Supplementary disks are available from the Central Statistical Office containing more data such as underlying worksheets and the industry-by-industry derived tables.

Conclusions

The input-output tables for 1984 for the United Kingdom have been compiled in a relatively short time by a small team. This has been possible through the extensive use of microcomputers and the associated user-friendly software. There is a danger that setting up a method of compilation which will automatically produce balanced tables at the end of the day will result in insufficient attention being paid to the lessons of the real world. This can result in beautifully balanced tables consistent with national accounts totals, but reflecting industry structures which do not represent real life. This can only be avoided by conscientious exposure of provisional views to industry 'experts' to ensure that genuine data inconsistencies are not glossed over in the balancing process, at the expense of representation of the true structure of the economy.

References

1. *Input-output tables for the United Kingdom 1984* (HMSO, 1988) (price £19.95 net) ISBN 0 11 620299 8
2. Chapter 8 of *Input-output Analysis in Developing Countries*, by Victor Bulmer-Thomas. Wiley, 1982



Input-output tables for the United Kingdom 1984

HMSO £19.95 net

ISBN 0 11 620299 8

How much does each industry, in producing its final output, rely on the products of other industries? How are its own products consumed in turn by other industries and final demand?

This publication, the latest of a series of analyses published at approximately five-year intervals, gives the answers to these questions in the form of a series of matrices. The figures are consistent with the most recent national income figures for 1984, as published in the 1987 edition of the *United Kingdom National Accounts* (the "Blue Book").

There is an opening chapter explaining the principles of input-output tables, and inside the back cover is a floppy diskette containing data from these tables in a form suitable for handling with spreadsheet packages on a personal computer.

Formerly Business Monitor PA1004

Chernobyl Accident; Monitoring for Radioactivity in Scotland

I R Hall, Her Majesty's Industrial Pollution Inspectorate, Scottish Development Department, and P R McGill, Central Statistics Unit, Scottish Office¹

Introduction

This note summarises a statistical bulletin, published in May 1988, on monitoring in Scotland during 1986 for radioactivity from the accident at the Chernobyl nuclear site in the Soviet Union.

The accident occurred in the early hours of 26 April 1986 during an experiment designed to investigate whether a turbine, uncoupled from its steam supply and grid, could be used to supply electricity to, *inter alia*, pumps operating the emergency core cooling system. A shortcoming in the design of the reactor together with a series of violations of operating rules, led to a surge in reactor power, damage to the fuel elements and failure of pressure tubes. Interaction of the damaged fuel with the water coolant caused an explosion which resulted in the release of substantial quantities of radioactive material into the atmosphere. The radioactive cloud, transported by winds, was detected over Scotland from 2 May onwards.

Protection of the public from the effects of radiation

The UK standards for protecting the public from the effects of radiation are based on the recommendations of the International Commission on Radiological Protection (ICRP) as endorsed for application in the UK by the National Radiological Protection Board (NRPB). In general, the ICRP's recommendations apply to exposure from all sources of radiation but they deal differently with unforeseen exposure resulting from accidents as opposed to that from normal planned operations. Where the exposure is foreseen and can be limited by controls formulated in advance, the ICRP refers to 2 limits in relation to doses to individuals. The first applies to exposure over a lifetime for which a limit of 1 millisievert per year on average is recommended, while the second relates to exposure in a single year where the limit is five millisieverts, subject always to the overriding restrictions that the first limit on lifetime dose should not be exceeded.

After an accident the source of exposure is not subject to control so that any subsequent exposure can be limited, if at all, only by intervention. In the view of the Commission, it is appropriate to institute counter-measures to limit radiation exposure only so long as the social cost and risk to individuals is less than the risk resulting from further exposure. The ICRP does not define levels of dose at which intervention is appropriate for all occasions. It does, however, offer guidance on the levels of dose at which it considers that certain counter-measures are appropriate and these levels are known as the

Emergency Reference Levels (ERLs) of dose. This guidance forms the basis of the advice provided by NRPB on the criteria for limiting doses to the public in the event of accidental exposure to radiation.

Emergency Reference Levels

Since the overriding aim following an accident is to minimise risks to the individuals affected, the non-radiological risks of the counter-measures available must be balanced against the risks of the exposure itself. Because the non-radiological risks of each counter-measure are different, decisions on the introduction of a particular measure depend on the anticipated levels of dose from the accident. The counter-measures which may be needed in the period immediately after an accident, such as evacuation, generally carry a higher risk and the NRPB recommends both upper and lower ERL's of dose for each counter-measure. The NRPB's view is that if doses are likely to remain below the lower ERL for that counter-measure, its introduction is almost certainly not justified, whereas if anticipated doses are likely to exceed the upper ERL the counter-measure is almost certainly justified. If anticipated doses fall between upper and lower ERLs, decisions on the counter-measure have to be taken according to the prevailing circumstances.

Decisions about the need for restrictions on foodstuffs are less urgent than those for other counter-measures. For some foodstuffs, such as milk products and meat, there may be a delay of several weeks between radioactivity being released to the environment and its appearance in food, and it is possible to base decisions on direct monitoring measurements over relatively long periods. Other foodstuffs need immediate consideration although even for milk, which may be expected to show a peak iodine 131 concentration within 1 or 2 days after pasture has been contaminated, it will normally be possible to obtain some measurements before deciding whether to intervene on public supplies. Since restrictions on food would normally carry little, if any, penalty for consumers, the ICRP suggests a substantially lower ERL than it recommends for counter-measures appropriate to the period immediately after an accident. The NRPB has reached a similar view and concludes that it may be appropriate to take action on foodstuffs in order to restrict doses to members of the public to five millisieverts whole-body dose and 50 millisieverts to any individual organ. The ERLs are shown in Table 1.

¹ Two of many who worked on the bulletin.

Table 1: Recommended upper and lower ERLs of dose equivalent

millisieverts

Counter-measure	Lower			Upper		
	Whole body	Thyroid, lung or other single organs	Skin	Whole body	Thyroid, lung or other single organs	Skin
Evacuation	100	300	1,000	500	1,500	5,000
Sheltering	5	50	50	25	250	250
Distribution of stable iodine tablets	—	50	—	—	250	—
Restriction on distribution of foodstuffs	5	50	—	—	—	—

Derived emergency reference levels

The NRPB has calculated Derived Emergency Reference Levels (DERLs) from the ERLs for a range of radionuclides and critical pathways, specified in relation to the critical group – the group most likely to be affected by the radioactivity. (For an explanation of the terms critical pathways and critical groups, see SDD statistical bulletin No. 1(E), 1987.) For counter-measures involving restrictions on foodstuffs and water, DERLs have been recommended for the initial deposition activity density on pasture and on the ground generally, the initial activity concentrations in green vegetables, fruit and drinking water, and the peak radioactivity concentrations in milk. The DERLs for milk are supplemented with information on the predicted activity concentrations for various radionuclides which enables estimates of peak concentrations to be made from early monitoring results (see figure 2).

Dose assessments

In the case of Chernobyl, early monitoring indicated that iodine 131, caesium 134 and caesium 137 were of most importance. Caesium does not accumulate in any particular organ but spreads uniformly throughout bodily tissue. Iodine 131 on the other hand, concentrates in the thyroid, hence the need to assess the thyroid dose as well as the whole-body dose against their respective limits. The dose assessments, which also took into account the presence of other radionuclides, were made on the basis of information relating activity to dose published by NRPB. More recent dosimetric data suggest that the assessments err on the high side, particularly for children and infants.

The monitoring programme

Exposure to radiation from the accident was considered possible via the following routes:

- i. externally from gamma radiation as the cloud crossed the country;
- ii. internally from the inhalation of air;
- iii. externally from deposited activity;
- iv. internally from directly contaminated drinking water;

- v. internally from directly contaminated foodstuffs; and
- vi. internally from indirectly contaminated foodstuffs.

In anticipation of the arrival of the cloud, operators of nuclear installations and the NRPB were asked to intensify their routine programmes of environmental monitoring, including the measurement of radioactivity concentrations in air and rain. The results indicated that deposition was highest in those areas of the country, mainly on the west coast, with heaviest rainfall as the cloud passed, and early estimates of the dose indicated that counter-measures with respect to the radioactivity in air and the amount deposited on the ground were unnecessary.

Public water supplies were first sampled on 4 May. Levels of radioactivity were found to be very low and well within those at which action would have been required. However, it was considered prudent to advise, for a few days only, against consumption of rain-water collected directly from roofs or similar structures.

From the outset it was known that a primary effect of surface deposition was the contamination of vegetables. Monitoring in early May centred on those areas where spring vegetables were produced commercially and subsequent check monitoring was carried out on a range of fruit and vegetables as they became available for market. All levels were found to be low.

It was considered that the most significant dose to the public in the short term would be internal exposure from indirectly contaminated foodstuffs, particularly among young children drinking above average quantities of milk from areas of highest deposition, and an extensive programme of milk monitoring began on 2 May. Of longer term concern was the likely build-up of caesium in livestock and a programme of monitoring of radioactivity in sheepmeat began on 28 May. Deposition monitoring results suggested that action would not be necessary, but the sheepmeat results themselves showed that there could be a problem with stock from certain upland areas. Although, in general, this stock was not ready for slaughter, movement restrictions were imposed on 26 June 1986 to prevent meat from the affected areas reaching the market.

Monitoring results

External gamma radiation from the cloud

Monitoring in Scotland confirmed the early NRPB view, based on levels of air activity measured elsewhere in Europe, that significant doses from this route would not be experienced in the UK. The Commission of the European Communities has published NRPB estimates of cloud gamma doses to adults. These show estimates of critical group doses in south-west Scotland and in the rest of Scotland of 0.27 and 0.11 microsieverts, respectively. Monitoring at Scottish sites gave estimates of critical group doses to adults of 0.10 microsieverts in south-west Scotland and 0.03 microsieverts elsewhere. The separate assessments show that the dose from this route was negligible compared with the lower ERL for sheltering in Table 1.

Figure 1 (on page 20) illustrates total beta air activity results at Chapelcross, in Dumfries and Galloway, during 2–4 May as the cloud crossed the south-west of Scotland.

Inhalation during the passage of the cloud

Monitoring results from elsewhere in Europe suggested that doses from inhalation would be small, and this was confirmed by air sampling. Inhalation doses were calculated from the breathing rates for the appropriate age group, together with the effective or thyroid dose equivalent from inhalation of the radionuclides considered and their total air activity concentrations. The assessed doses were low compared with the lower ERLs in Table 1, at worst 0.02 millisieverts for those most exposed.

External dose from deposited activity

The external dose from deposited activity was estimated by calculating cumulative gamma dose rates over time, discounted for normal background levels. About 20 days after deposition the dose rate from the ground had fallen almost to background values, and only activity from the longer lived caesium and ruthenium radionuclides remained. It was known, however, that this residual activity would persist for some time after the monitoring ended (at the end of May) and that it would be possible to provide only a broad estimate of dose from the results of the Chernobyl monitoring alone. However, other monitoring at Hunterston in Strathclyde and at Torness in Lothian is undertaken routinely by the South of Scotland Electricity Board; for dose assessment purposes it was assumed that at these sites the difference between the mean gamma dose rate for 1986 and that for previous years was approximately equal to the cumulative dose rate in 1986 due to Chernobyl. The routine monitoring showed rates for 1986 of 0.015 and 0.004 micrograys per hour above the previous year's figures for Hunterston and Torness, respectively. These correspond to annual dose equivalents of 0.11 millisieverts for the Hunterston, and 0.03 millisieverts for the Torness areas.

The NRPB have subsequently carried out a fuller assessment of external dose using a theoretical model to take account

of the migration through soil of deposited radionuclides. These also show that the dose from this route was low compared with the five millisieverts per annum control level.

Internal dose from drinking water

Water monitoring results showed very low activity levels in reservoirs and even lower levels in public water supplies. Recorded levels in streams used directly for supply were higher, although still well below those which might have called for action to be taken, but they did not persist. Since most of the monitoring results were below the limits of detection it was not possible to assess the dose precisely. The total effective dose equivalent over a year to a child consuming 260 litres of water each year (the critical group consumption rate) contaminated by caesium 137 at 0.1 becquerels per litre would have been less than 0.01 millisieverts, while an adult consuming 600 litres of water per annum contaminated at the same level would have received an even lower dose.

Ingestion of directly contaminated foodstuffs

Monitoring of fruit and vegetables began early in May. Activity levels in vegetable samples, before and after washing – in general about one-third of activity was removed by washing – were low and no advice on the restriction of consumption was necessary. Monitoring continued on a range of fruit and vegetables as they became available for market and activity levels were found to be low. Green vegetables were the most highly contaminated of the fruit and vegetables monitored. The effective dose equivalent received by individuals consuming, at critical group rates, green vegetables contaminated by total caesium at 100 becquerels per kilogram, would have been about 0.02 millisieverts for infants and children, and 0.01 millisieverts for adults. Average monitoring levels were below 100 becquerels per kilogram, and exposure from this route was negligible compared with the five millisieverts per annum control level.

Ingestion of indirectly contaminated foodstuffs

Monitoring results from elsewhere indicated that the most important radionuclides as far as this route was concerned were likely to be iodine 131, caesium 134 and caesium 137. This was confirmed by the earliest UK monitoring of activity in air, rain and on pasture. Because of its short half-life, iodine 131 was monitored only in the early weeks following deposition.

i. Cows' milk

For most foodstuffs levels of activity build up reasonably slowly. This is not the case for milk, where levels of iodine 131 increase and then decrease rapidly, and decisions on counter-measures have to be made quickly before peak levels have been reached. To assist in the decision making, NRPB has produced a model of the radioactivity uptake by cows from pasture and the resultant levels in milk for a number of radionuclides deposited at different rates; using the results of this work it was possible to predict likely levels of iodine 131 and caesium in cows' milk from the earliest monitoring

Figure 1

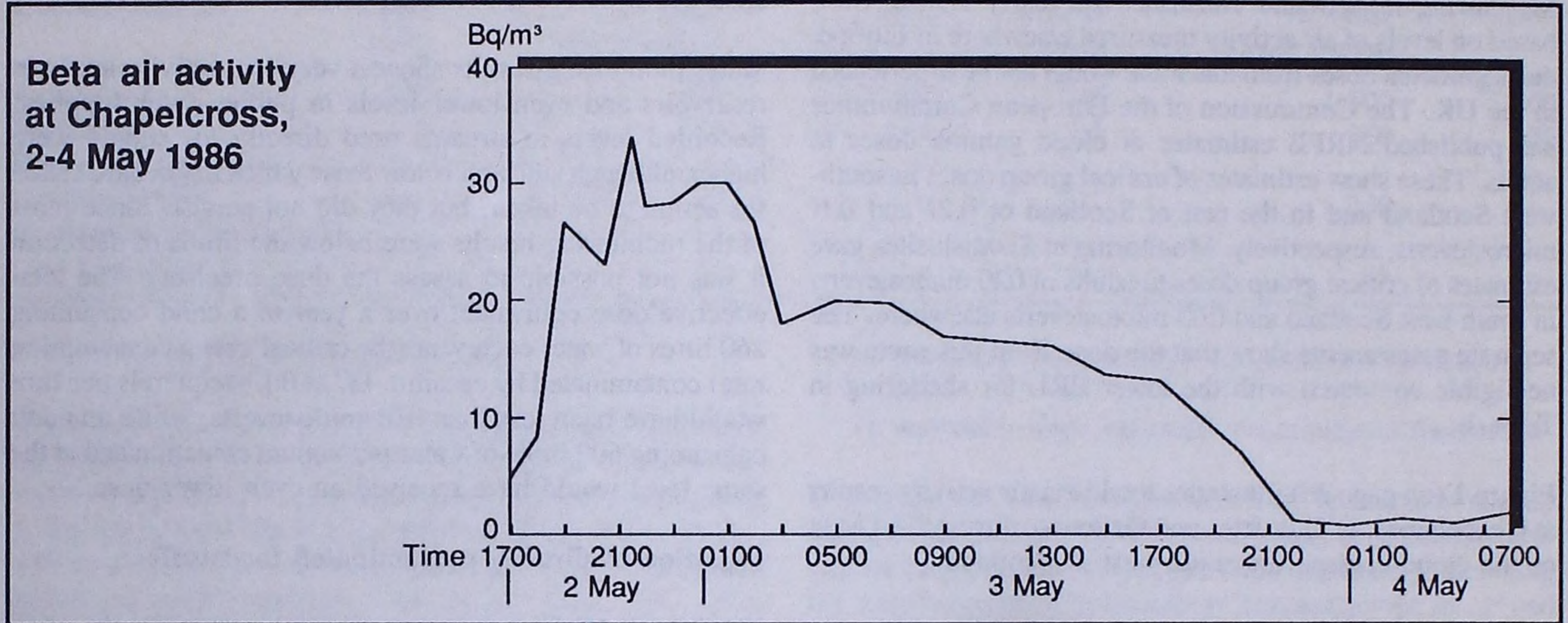
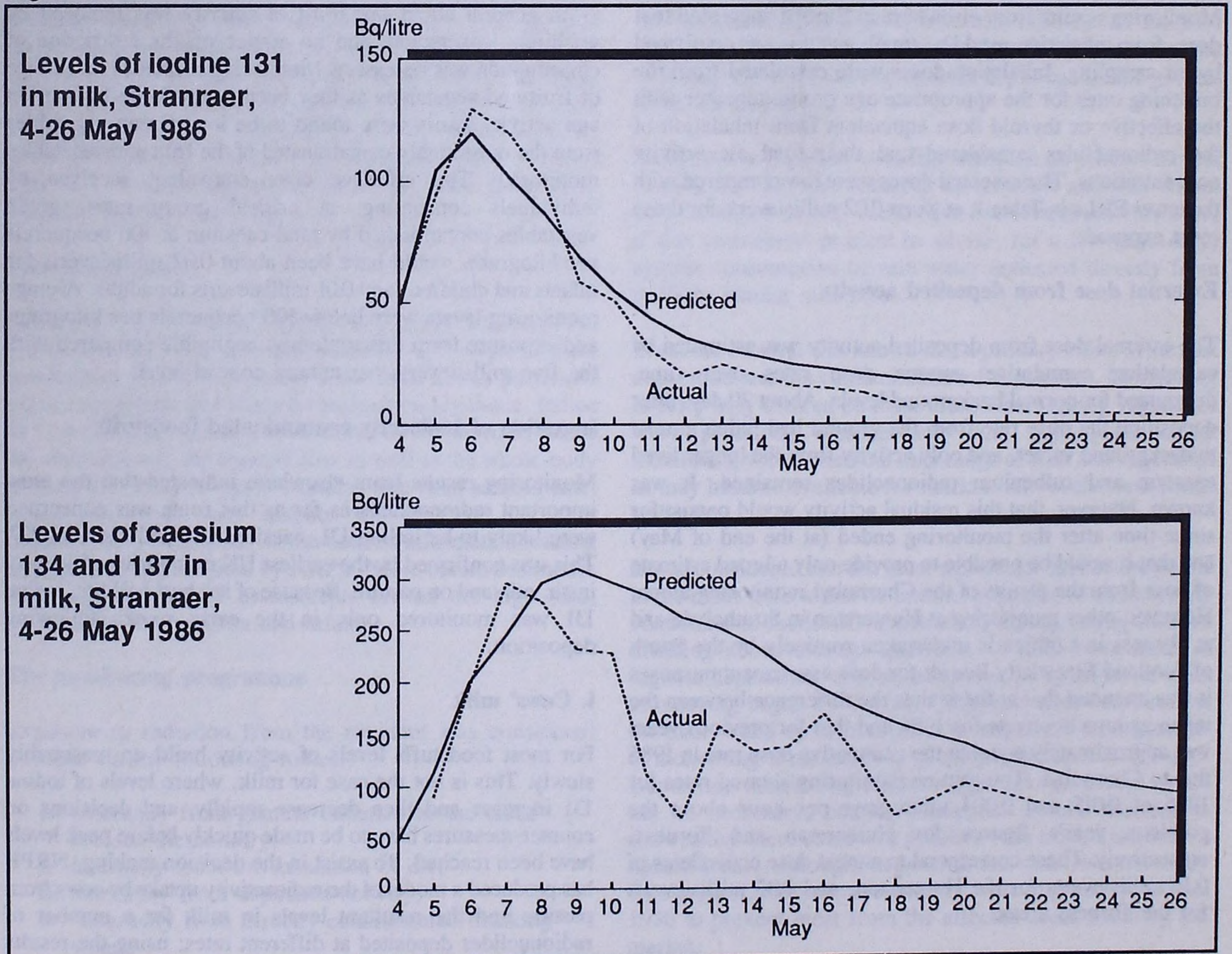


Figure 2



results. These indicated that action would not be necessary. Figure 2 (on page 20) shows, for monitoring at Stranraer in Dumfries and Galloway, comparisons between the predictions made from early milk monitoring results and the actual activity levels recorded. In general the differences were small, although actual cumulative levels were less than predicted.

The highest activity levels were found in the south-west of Scotland. For the critical group the assessed doses were high compared with exposure from other routes (Table 2); for critical group infants, the assessed effective dose equivalent for the full year after the accident was about 17 per cent of the five millisieverts per annum control level.

ii. Cows' milk products

Milk products' monitoring was mainly directed to radiocaesium since the period between manufacture and sale would have ensured that the contribution to dose from iodine 131 would have been insignificant. In general, the results showed that levels of caesium in evaporated and powdered milk were higher than in the raw milk from which they were prepared, while levels in butter, cream and cheese were lower than in the original milk. The assessed doses were low, at worst under one per cent of the five millisievert per annum control level.

iii. Goats' and ewes' milk and milk products

Levels of activity in goats' milk were generally higher than in cows' milk, but the dose to individuals consuming this milk was low. High activity levels were found in ewes' milk and ewes' milk cheese. Since it was considered unlikely that this cheese, a specialised product, would be fed to infants or children in significant quantities, the dose assessment was confined to adults. Adults consuming the cheese at critical group rates for cows' milk cheese (40kg per person per annum) would have received doses of about 0.2 millisieverts or about four per cent of the five millisievert per annum control level. Since goats' and ewes' milk and milk products do not form a major part of the average person's diet, the dose to the population as a whole was negligible.

Other foodstuffs

Monitoring levels of activity in other foodstuffs began only about 3 or 4 weeks after deposition. On 23 May the Commission of the European Communities approved a limit, applicable to all major items of diet, of 1,000 becquerels per kilogram of combined caesium 134 and 137 on the contamination in foodstuffs affected by the Chernobyl fall-out.

iv. Sheepmeat

Sheepmeat was first monitored on 28 May, and extensive sampling of lambs took place from June onwards as they came forward for slaughter. It became clear that activity would, in some cases, exceed the 1,000 becquerels per kilogram limit, and action was taken on 24 June to restrict the movement and slaughter of sheep within certain areas of the country. Subsequently the areas affected were progressively reduced

where monitoring of live lambs showed that activity had fallen to satisfactory levels. Since most of the lambs moved from the affected areas were moved to lowland ground for fattening, levels of caesium fell quickly after the lambs had left the designated areas. In total some 1½ million sheep on 2,900 farms were affected by restrictions.

Earliest samples of sheepmeat were obtained from slaughterhouses and veterinary sources. When it became apparent that action might be required, further monitoring was undertaken involving the slaughter of a sample of, usually, 4 lambs on representative farms. This programme began in June and decisions on the imposition of restrictions were based on analyses of the lamb carcasses. Towards the end of July live monitoring of lambs on farms was introduced and this enabled a greater number of animals to be monitored. Levels of total caesium 134 and 137 were generally found to be higher among lambs on poor pasture; for example, a sample of lambs on poor pasture monitored in Dumfries and Galloway on 17 September showed an average level of 1,830 becquerels per kilogram compared with 420 becquerels per kilogram among lambs on good pasture on the same farm.

To ensure that the programme of farm restriction and clearance was effective, slaughterhouse monitoring continued. A single reading of over 1,000 becquerels per kilogram in the Western Isles gave rise to comprehensive monitoring of lambs, the results of which led to the imposition of movement restrictions in the Uists similar to those introduced earlier in Dumfries and Galloway. No other reading for meat for public consumption was over 1,000 becquerels per kilogram.

For dose assessment purposes, average and critical group activity levels of, respectively, 100 becquerels and 300 becquerels total caesium per kilogram were used. The assessed doses were low, even for children in the critical group no more than about four per cent of the five millisievert per annum control level.

v. Beef

Beef monitoring began early in June and lasted about 6 weeks. For the assessment, an average activity level of 50 becquerels total caesium per kilogram was used. The assessed doses from beef consumption for Scotland as a whole were low amounting to, at worst, about one per cent of the five millisievert per annum control level.

vi. Venison

High caesium levels in venison were expected. However, not all of the activity was due to Chernobyl. The ratio of the concentration of caesium 137 to caesium 134 in the Chernobyl deposition was about 2, whereas the ratio in some of the venison samples was much higher, the implication being that some of the contamination was due to fall-out from atmospheric testing of nuclear weapons since such fall-out does not contain caesium 134.

The significance of activity levels in terms of dose was difficult to assess since venison is not regularly consumed, except

perhaps for particular groups eg some gamekeepers and forestry workers and their families. In general, it was considered that since consumption of venison was likely to be in part a replacement for and not an addition to beef and lamb in the diet, and since the assessments for beef and lamb had not indicated need for action, no restrictions on the distribution of venison for public consumption were necessary. However, in March 1987 information about the venison monitoring results was provided to specific groups of people known to eat venison at well above average rates. Children consuming venison at about the critical group rates for beef (40 kilograms per person per year) contaminated to a level of about 500 becquerels per kilogram, a typical monitoring result, would have received doses of about 0.6 millisieverts, about 12 per cent of the five millisieverts control level. Average doses were negligible.

vii. Fish, shellfish, seaweed and silt

Results of the monitoring of sea fish, molluscs and crustacea from Scottish waters showed low levels of activity. Iodine 131 was not detected in any of the fish, while the ratio of caesium 137 to caesium 134 found in most of the shellfish samples was not typical of the Chernobyl deposition. Monitoring of seaweed and silt was undertaken in order to check activity levels in the marine environment. In general, levels were high at the start of the monitoring period but soon fell to normal levels.

Relatively high levels were, however, found in some freshwater fish particularly in areas of high deposition and poor soils. In September 1987, information on the results obtained and their significance to anglers eating above average quantities of fish from lochs in Dumfries and Galloway was provided to the Scottish Anglers' National Association at its request. Of the species monitored only trout and grayling were of any dietary significance. The most highly contaminated trout were found in Loch Dee in Dumfries and Galloway, where a sample collected on 27 October showed an average level of total caesium 134 and 137 of 1,910 becquerels per kilogram.

Records maintained by the permit issuing authority, however, indicated that no individual caught fish in sufficient quantities from this source to reach critical group consumption rates.

A more appropriate level of 1,000 becquerels per kilogram of total caesium 134 and 137, about the average level recorded in some of the more contaminated wild trout, was used for assessment purposes. This, with the critical group consumption rate for adults (20 kilograms per person per annum) implies that a critical group adult would have received an effective dose equivalent of about 0.3 millisieverts, or about six per cent of the five millisievert control level. No assessment was made of the dose to infants and children because consumption of wild trout from these lochs by these age groups was considered insignificant. Doses for the population as a whole were negligible since freshwater fish in the diet consists mainly of pellet fed farmed rainbow trout, levels of activity in which were very low.

Table 2 on the next page summarises the dose assessments.

Units

- i. The becquerel is the unit of activity and is equal to one nuclear disintegration per second.
- ii. The gray is the unit of absorbed dose and corresponds to an energy absorption in a medium of one joule per kilogram.
- iii. The sievert is the unit of dose equivalent measured in joules per kilogram. Dose equivalent in the absorbed dose in tissue modified by factors which take account of the potential of the radiation in question to cause harmful biological effects.

Table 2: Summary of assessed dose by main exposure route¹

millisieverts

Exposure route		SW Scotland		Rest of Scotland	
		Critical group	Average group	Critical group	Average group
1. Cloud gamma radiation	– all	<0.01	<0.01	<0.01	<0.01
2. Inhalation	– infant		0.01		<0.01
	– child		0.02		<0.01
	– adult		0.01		<0.01
3. Deposited activity	– adult	0.10	0.03	0.07	0.02
4. Water		<0.01	<0.01	<0.01	<0.01
5. Directly contaminated foodstuffs	– infant	0.02	–	<0.01	–
	– child	0.02	–	<0.01	–
	– adult	0.01	–	<0.01	–
6. Indirectly contaminated foodstuffs ²					
i. Cows' milk	– infant	0.87	0.57	0.34	0.23
	– child	0.40	0.19	0.16	0.08
	– adult	0.20	0.10	0.08	0.04
ii. Cows' milk products	– infant	0.04	0.01	0.02	<0.01
	– child	0.03	<0.01	0.01	<0.01
	– adult	0.02	<0.01	<0.01	<0.01
iii. Sheepmeat	– infant				
	– child				
	– adult				
iv. Beef	– infant				
	– child				
	– adult				
v. Venison	– infant				
	– child				
	– adult				
vi. Wild trout	– adult				

Critical group³

Average group³

< less than

1 Assessments are based on intakes during the year after the accident.

2 Not all the foodstuffs monitored are included in this table. Excluded are those foodstuffs for which the assessed dose to the population was insignificant.

3 Separate assessments for SW Scotland and the rest of Scotland were not made since these foodstuffs are generally consumed over the country as a whole and not just where reared, slaughtered or caught.

Electricity and the weather : developments in measuring the response of electricity sales to changes in weather

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Introduction

The requirement to assess the influence of weather on electricity sales arises because of the Electricity Supply Industry's (ESI) forecasting needs. This is not to say that attempts are made to forecast the weather - that is notoriously difficult in this country. The objective is simply to remove the effects of abnormal weather from current sales so that the influence of other factors can more easily be seen and the underlying trend determined. The process is therefore one of 'weather-normalization' in which an estimate is made of what sales might have been had the weather been normal at the time. Forecasts assume that normal weather will apply.

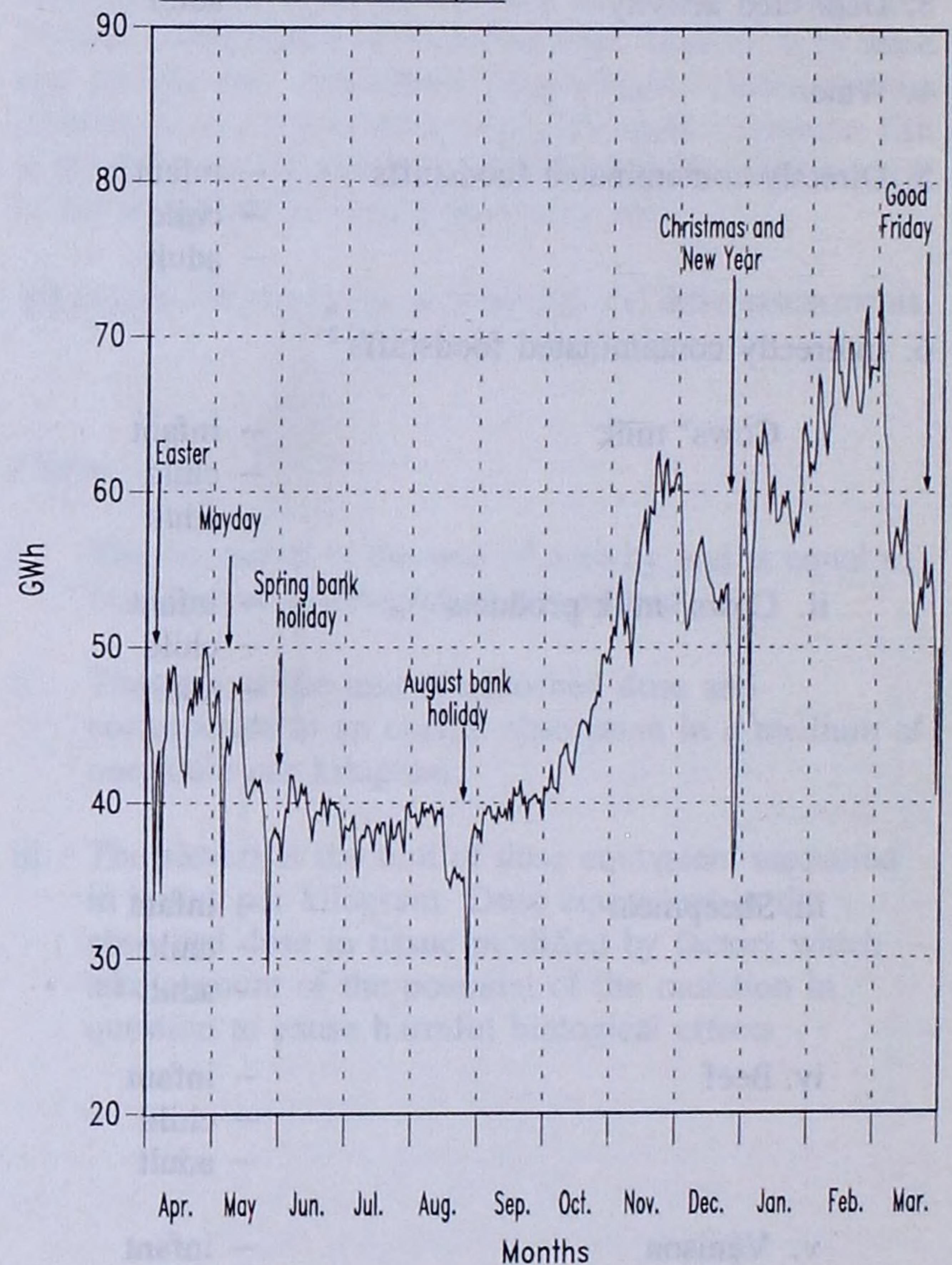
The weather-normalization of sales is particularly important in the short term when the management of cash flow can be significantly influenced by views about revenue prospects over a matter of weeks. This management is currently undertaken by the Electricity Council on behalf of the ESI through the provision of a corporate treasury function which includes agreement with the clearing banks to transfer daily Board bank balances (both credit and overdraft) to the Council's bank account. By this means, Council is able both to minimise interest charges and to secure better rates for lending temporarily surplus funds. Over the longer term the influence of weather is less important with, in most years, positive and negative weather effects tending to cancel out.

With 15 Boards and Council itself interested in the outcome of such studies there is merit in ensuring a commonality of approach and in securing the savings in computing resources that are obtainable with a centrally organised service. For this reason, Council has for many years been responsible for providing a weather-normalization service for the whole of the ESI.

Methodology, past and present

Electricity sales are influenced by a number of factors, many of which were described at length by Davies¹ as long ago as 1958. What has changed over the years is the way in which the estimation of these factors has been attempted and the relative importance of the results. In the short term, the strongest systematic influence on sales is the day of the week. In general, sales are at their lowest at weekends and on Mondays and Fridays during weekdays. Public holidays also have a clearly observable effect and there is a strong seasonal pattern evident with sales rising to a maximum in winter and falling to a minimum in summer. An illustration of the pattern of an Area Board's sales profile adjusted for day of the week variation is given in Chart 1.

Chart 1: Example of an Area Board's sales adjusted for day of the week, 1985/86



More difficult to observe is the influence of abnormal weather and economic growth. In the longer term, ie over a period of years, the influence of these factors can in turn be affected by changes in the character of electricity consumption brought about by changes in the mix of customers (residential, commercial, industrial) and the way in which they use electricity. Ideally, the isolation and estimation of all of these factors requires a model which includes day of the week, public holiday, season of the year, weather, and economic growth variables specified in such a way that their influence is allowed to change with time. The model would also be estimated in one pass ie all the variables would be estimated simultaneously.

This is a tall order. In practice, statistics of economic growth are not available on a daily basis so the 'economic influence' part of the model has to be subsumed within the general trend. But there are many ways of describing a trend. Early models relied upon polynomials which absorbed the trend within a

changing seasonal pattern, others used a structure built up from harmonics of sine and cosine waves. In recent years, a model has been used which utilises a Henderson curve (a weighted moving average) derived from a development of the Census Method II Seasonal Adjustment Program². All of these models first estimated the trend and then examined the relationship between deviations from the trend and the weather. Since the earliest days, the 'weather' part of the model has usually comprised temperature, illumination and wind speed variables although the latter two are very much second order effects. The functional forms of the models were kept simple and took either a linear (additive) or log-linear (multiplicative) form. Weather sensitivity is known to vary with the season, so separate models were estimated for each month of the year. Changes in the structure of these relationships were generally taken into account by re-estimating the models over consecutive three year periods.

Recent research has had two objectives. Firstly, the improvement of the explanatory power of the models and, secondly, the improvement of the model estimation process. The first objective arose because of a need to obtain a better appreciation of the impact of abnormal weather in summer. This is because some Boards now exhibit a clear increase in sales when temperature rises above the summer 'norm' due to the growing cooling load caused by air conditioning. The second objective arose because of the limitations imposed by the existing computing facilities which were main-frame based. Anyone who has attempted modelling will know that it is primarily a learning process in which the initial assumptions are iteratively refined as one learns more about the capabilities of the model and the limitations of the data. The process requires a range of statistical tools and access to a computing system that will respond speedily. In general, the range of statistical software available for main-frames is inferior to that now available for PCs and the advantage of the main-frame's greater processing speed is in practice lost when, as is often the case, the machine operates in a time-sharing mode. Recent statistical research has therefore sought to take advantage of the benefits offered by the PC. The results illustrated in this paper were obtained using an IBM PC AT and software developed by the Statistical Graphics Corporation³. The advantage of the latter is that it contains a wide range of statistical tools within the same package and is capable of presenting many of the results graphically - greatly speeding understanding.

Another aspect, of continual interest, is the influence of space heating load on the temperature response of sales in winter. Substantial changes have occurred to the level and nature of the space heating load over the years, partly as a consequence of competition from gas and partly resulting from the advent of off-peak storage heating - which has changed the character of the load. In the mid 1960s for instance, the domestic space heating load was approximately 75 per cent unrestricted and 25 per cent off-peak and accounted for almost 12 per cent of annual sales to this customer class. The ratio is now almost exactly the reverse and the contribution to the annual total has fallen to about 7 per cent. Sensitivity measurements relating to unit sales do not of course have the same implications for system maximum demand because off-peak

sales are, by definition, outside the period during which this occurs.

Results of recent research and their implications

This section describes the methodology used to examine changes in the sensitivity of sales to temperature for a sample Board and discusses some of the results.

Model specification

The analysis starts with estimation of 'day of the week' factors obtained from a period free of public holidays. The data is then adjusted and all observations affected by public holidays (which may include some days both before and after the event) are then identified and removed. Various methods are available for doing the latter, a simple method being to regress adjusted sales against normal temperature and to identify outliers beyond, say, 95 per cent confidence limits. The initial structure of the model is then specified in the following form:

$$Ca = Z + b1.Tu + b2.Td \quad (1)$$

where Ca is sales adjusted for day of the week and public holidays, Z is a time trend expressed in the form of a 5 term polynomial, and Tu and Td are mutually exclusive variables containing, respectively, upward and downward differences in temperature from normal. In this form, Z takes on responsibility for describing the seasonal structure and any other trends in the broad pattern of sales whilst Tu and Td take up the effects of deviations in temperature. The coefficients b1 and b2 are, however, allowed to vary with normal temperature (Tn) ie sensitivity is assumed to be a function of the season of year. This is achieved by making:

$$b1 = (b3 + b4.Tn) \quad (2)$$

and

$$b2 = (b5 + b6.Tn) \quad (3)$$

Replacing b1 and b2 in (1) by (2) and (3) produces:

$$Ca = Z + [b3.Tu + b4.Tn.Tu] + [b5.Td + b6.Tn.Td] \quad (4)$$

This equation is then estimated and b1 and b2 evaluated for the annual range of normal temperature using the estimates of the coefficients b3, b4 and b5, b6. Sensitivity, measured in terms of the percentage change in unit sales per degree deviation in temperature from normal, is obtained from:

$$Su = (b1/Z).100 \quad (5)$$

and

$$Sd = (b2/Z).100 \quad (6)$$

where Su and Sd are the respective upward and downward sensitivities. The novelty of this method is the splitting of the temperature effect into two variables and the estimation of the seasonal change in sensitivity in one regression instead of in 12 monthly regressions. Equation (4) generally gives statistically acceptable results in all departments except the Durbin-Watson statistic. This is primarily due to the influence of economic growth which does not necessarily proceed in a uniform fashion through the year. A further practical difficulty is that no matter what the sophistication of the model

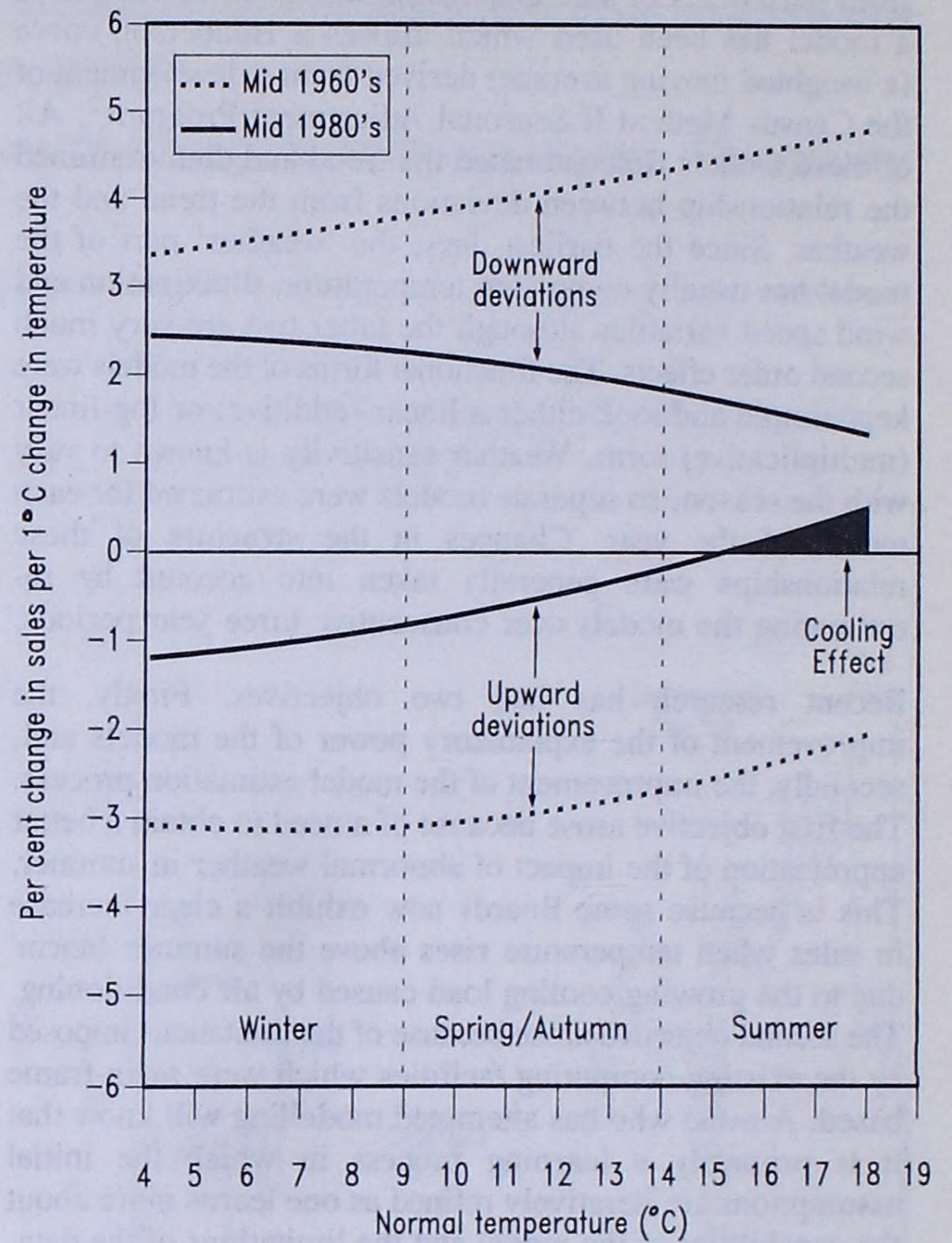
it will not produce results if the information is not in the data. Thus it is not possible to pick up the effects of a hot summer, or cold winter, if these have not been experienced in the year. For this reason it is usually necessary to look at several years data.

Estimated temperature sensitivities

The outcome for the Board illustrated in Chart 1 is shown graphically in the next Chart. The chart is something of a simplification because the sensitivity measure, being based on change in sales, is influenced by growth in the base. The illustration shows the trend values. It needs also to be acknowledged that the specification of a linear relationship between sensitivity and normal temperature is also a simplification since it is known from other research that sensitivity trends to be higher in early winter and spring. Additionally, one might not expect temperature response to remain the same when the deviations are very large. The model is therefore capable of further refinement but experience suggests that it is not very far from the truth for the range of weather variation normally encountered.

The results show that upward and downward deviations in temperature from normal do not have the same impact on sales, even in winter. Taking the mid 1980s situation, the experience is that in summertime upward temperature movements do not now lead to a significant disconnection of heating load because there is little there in the first place. At the height of summer these disconnections are more than counterbalanced by the cooling load arising from air conditioning. In contrast, downward deviations from normal still attract some heating. Hence, in summer we get the curious situation whereby an increase in temperature above normal gives rise to increased sales from cooling whilst a decrease in temperature below normal gives rise to increased sales from heating. The situation in the mid 1960s was very different. At that time, electricity was used more commonly for space heating and direct-acting heating was often used to 'top up' outside the main heating season. As a result, sensitivity tended to be higher in the summer than in winter. Compared with the 1980s, weather sensitivity was significantly greater at all times of the year.

Chart 2: Sales response to temperature



The absolute response of sales is however dependent on the base level of sales at the time - ie for the same sensitivity the response is higher in winter than in summer. Comparisons of seasonal sensitivities therefore need to have regard to the relative importance of the seasons themselves. This is attempted in the table below which uses the seasonal factors of total sales for the sample Board to compare changes in the impact of downward temperature variation.

Table: Influence of changing seasonal pattern on the absolute response of sales to temperature

Quarter	Mid 1960s			Mid 1980s		
	SF*	Sd(%)	SF.Sd	SF*	Sd(%)	SF.Sd
January-March	131.8	3.5	4.5	119.5	2.4	2.9
April-June	85.3	4.2	3.6	92.7	2.0	1.9
July-September	71.0	4.7	3.3	83.1	1.5	1.2
October-December	111.9	3.8	4.2	104.6	2.3	2.4

* seasonal factor

Taking the seasonal factors as representative of the level of sales in each quarter and multiplying by the average level of sensitivity gives an indication of how much sales would have changed for a one degree fall in temperature from normal in that period. Thus in the January-March period in the 1960s, sales would have increased in index terms by 4.5 whilst in the mid 1980s the increase would have been just 2.9. In other words the combination of changed sensitivity and seasonal structure has reduced the weather response in this quarter by some 35 per cent. The reductions in the other quarters are even greater. The actual level of response in the 1980s is of course influenced by the growth of sales over the intervening years.

Actual and weather-normalized sales compared

Chart 3 illustrates the impact of abnormal weather on the sample Board in 1985/86 using the sensitivities shown in Chart 2. Firstly, on a general point, it will be observed that the effects of weather were much greater in the winter than in the summer. This is because of the combination of the greater sensitivity and greater seasonal importance of winter sales referred to earlier. Another point of general interest is that the size of temperature variation is, as a rule, also greater in winter. On more specific points, 1985/86 was a year in which there were fairly pronounced periods of temperature variation and the effects of the cold November, warm December, fluctuating spells in January and the very cold February can clearly be seen. It will also be observed that there are no negative differences in the period from late May to mid September. This is the period during which the normal temperature is above the threshold at which upward temperatures produce a positive response (Chart 2). The period was characterised by generally cool weather in June and August and a predominantly warm July.

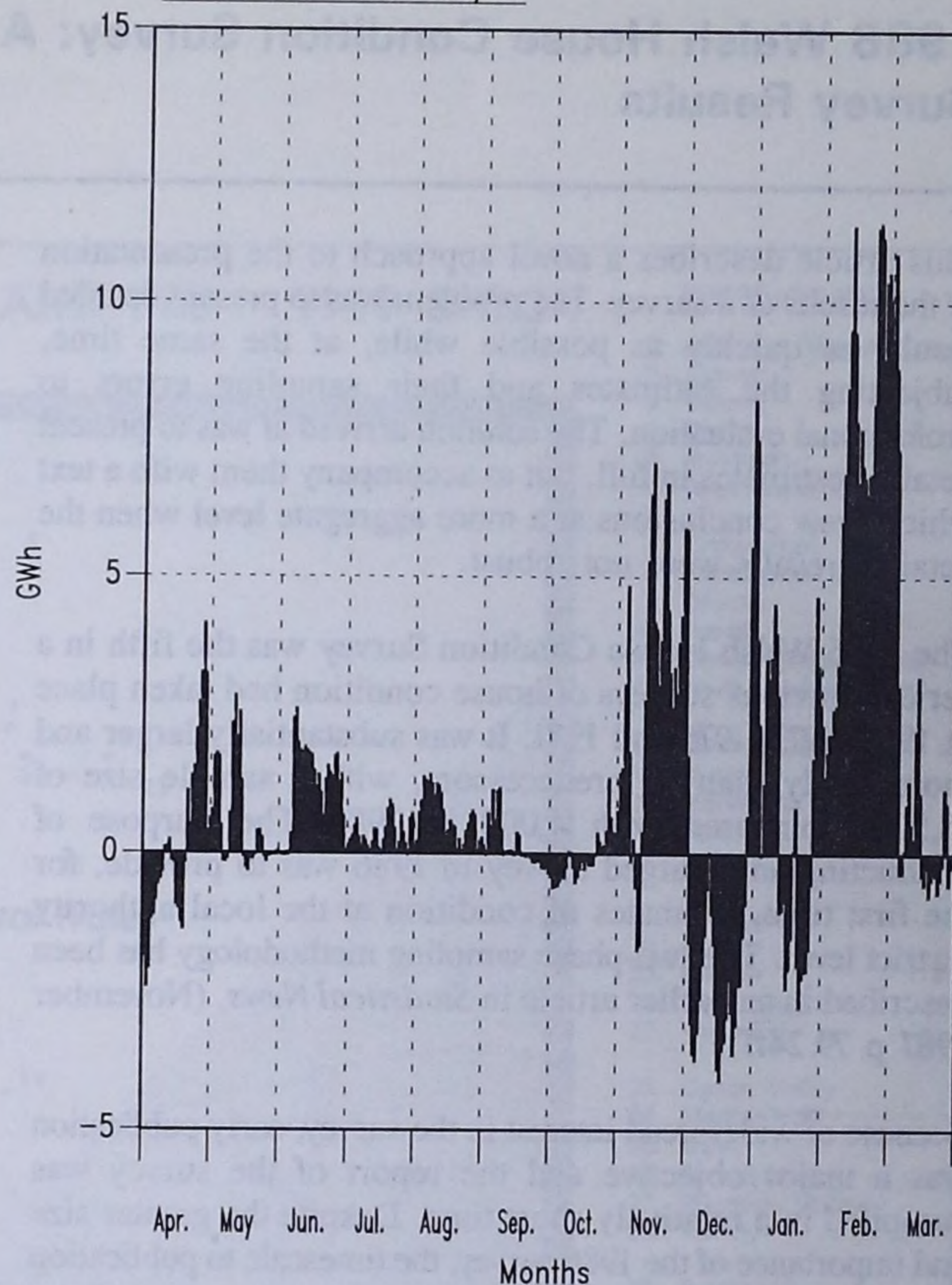
Impact of weather on cash flow

In mid-winter the advent of a cold spell can have a substantial impact on the Industry's cash flow. Taking as an example the Board used in this illustration, it is estimated that a one degree C drop in temperature in mid-winter could increase income by some £60,000 a day. In the cold February of 1986, it is estimated that the overall effect was to increase this Board's income by approximately £8 million. The way in which this impacts on cash flow is not, however, so straightforward. This is because of the billing cycle. The billing cycle for a typical domestic customer is 13 weeks. Depending upon when the meter is read, some domestic customers will therefore be charged almost immediately for their extra consumption whilst others will not pay until almost the end of the period. For industrial and commercial customers the period is generally 4 weeks but customers with a low level of consumption could have a billing cycle of 13 weeks, similar to domestic. The relationship between sales and cash flow therefore demands careful modelling.

Conclusions

The nature of electricity consumption has changed significantly over the years and so too has the response to weather. Whilst this change continues, the methodology of weather-normalization will need to be kept under review. A central, or common, service for this purpose seems sensible

Chart 3: The difference between actual sales and weather normalized sales, 1985/86



because of the consequent savings in resources and the advantages that come from having a common basis from which to forecast. The process has been helped considerably in recent years by the advent of the PC and the greater availability of statistical software.

The most interesting results of recent research have been the identification of the summer response to the air conditioning load and the improvement, yet simplification, of the methodology. There is room for further sophistication but the modifications look difficult and are likely to lead to complications in the estimation process. In practice, there is a trade-off between what is desirable and what is possible and the kind of model described in this paper is, in our view, a reasonable compromise.

Finally, weather clearly has a substantial influence on electricity sales and it is important to try to assess the magnitude of this impact, particularly during a cold spell in winter. Given the lag that exists between the occurrence of sales and the billing of the account, the realization of the resulting cash flow may extend over a considerable period and requires careful modelling. But that is another story.

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1. Davies, M: 'The relationship between weather and electricity demand', IEE Monograph No. 314S October 1958.
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3. STATGRAPHICS, a statistical graphics system developed by Statistical Graphics Corporation.

1986 Welsh House Condition Survey: A new Approach to the Presentation of Survey Results

This article describes a novel approach to the presentation of the results of a survey. The problem was to present detailed results as quickly as possible while, at the same time, subjecting the estimates and their sampling errors to professional evaluation. The solution arrived at was to present detailed estimates in full, but to accompany them with a text which drew conclusions at a more aggregate level when the detailed results were not robust.

The 1986 Welsh House Condition Survey was the fifth in a series: previous surveys of house condition had taken place in 1968, 1973, 1976 and 1981. It was substantially larger and more costly than its predecessors, with a sample size of 18,500, compared with 4,000 in 1981. The purpose of conducting an enlarged survey in 1986 was to provide, for the first time, estimates of condition at the local authority district level. The two-phase sampling methodology has been described in an earlier article in *Statistical News*, (November 1987 p 79.24ff).

Because of widespread interest in the survey, early publication was a major objective and the report of the survey was compiled in a relatively short time. Despite the greater size and importance of the 1986 survey, the timescale to publication was similar to that for the smaller 1981 version; and the finished report was sent for printing just ten weeks after the final database had been established. This timetable did not allow for detailed statistical analysis. However, since each of the estimates in the final tables had a different sampling error, there was considerable potential for confusion in the interpretation of the results. It was vital that a careful professional evaluation of the reliability of the results was undertaken.

In order to provide estimates at the district level, a sample of 500 dwellings had been taken in each of the 37 Welsh local authority districts. It was important to present as much information as possible at this level, so disaggregation by a variety of housing and household characteristics was clearly necessary. Some of the sampling errors on such detailed analyses were very large, and results at the district level correspondingly unreliable. It was therefore decided to construct a method of grouping the information so that, when the sampling errors were large, appropriate conclusions could still be drawn from estimates at a more aggregate level.

The approach used was to group together local authorities which have similar housing stock in terms of major determinants of house condition. The two major variables postulated as determinants of house condition were the age of the dwelling and its location in a rural or urban environment. The composition of the housing stock in each local authority district was accordingly plotted on a graph showing the proportion of dwellings built before 1919 and the proportion of dwellings in rural locations (see Figure 1). This immediately suggested clusters of 'similar' districts. These clusters tended, as would be expected, to comprise districts in the same geographical vicinity. By a judicious arrangement of the cluster boundaries, the groups were made into single geographical areas. Such a grouping of authorities was obviously quite pragmatic; however it is believed a very similar outcome would have been achieved using multivariate analysis techniques.

The grouped clusters were then regarded as areas about which conclusions could be drawn so that comparisons could be made between the areas. When the sample size was sufficient, comparisons of districts within areas were made.

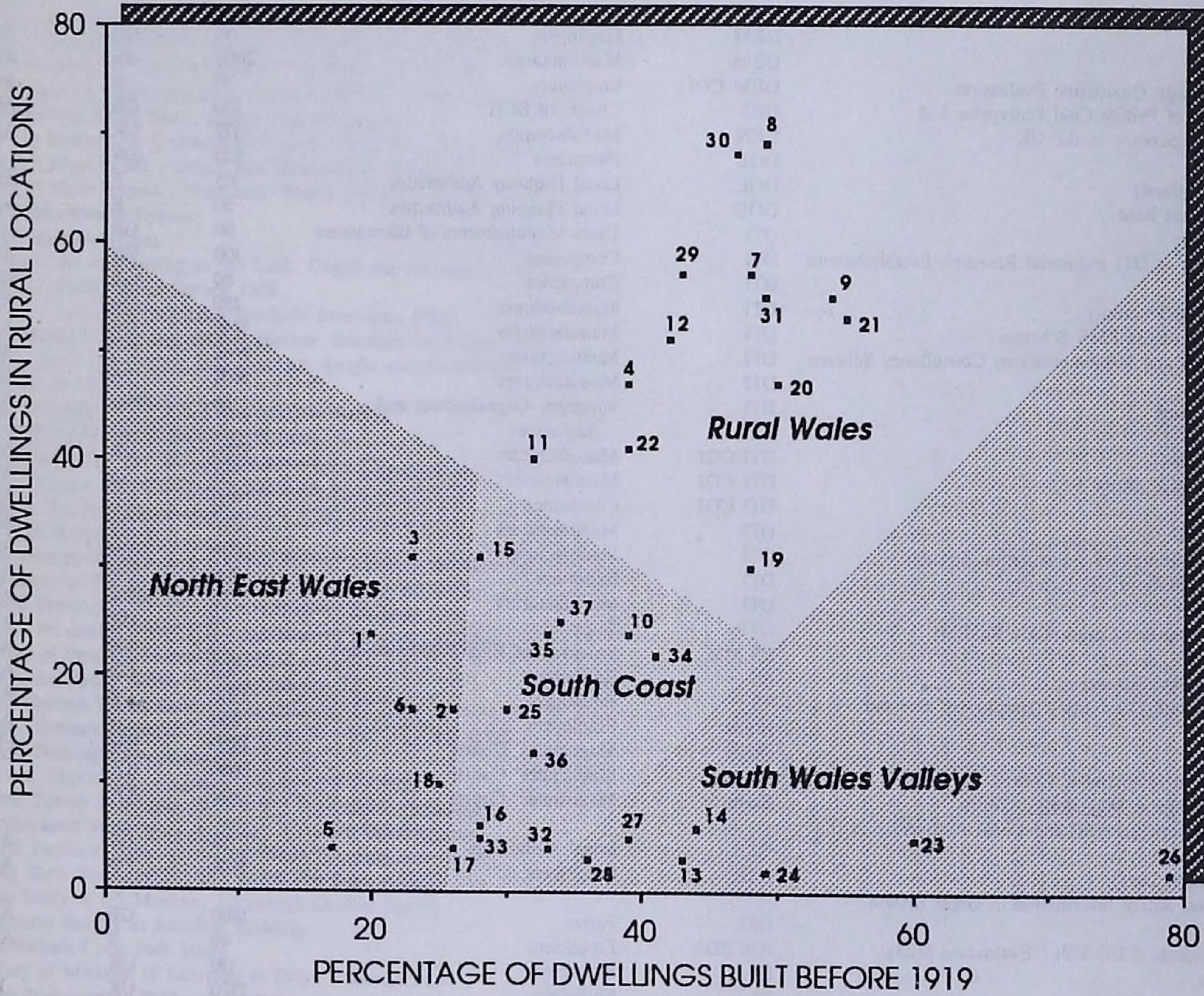
The benefit of this approach was to provide a means of aggregating estimates whose sampling errors vary widely and which appear in a tabular form so that the survey results can be discussed at whichever level is most appropriate. It enabled a rapid evaluation of the data identifying those results which were significant.

The 1986 Welsh House Condition Survey was published on 9 May, 1988 and is available from:

Statistical Publications Unit
Welsh Office
Cathays Park
Cardiff CF1 3NQ

at a cost of £4 (including UK postage and packing).

Figure 1: PROPORTIONS OF RURAL AND PRE - 1919 STOCK



DISTRICT KEY

1. Alyn and Deeside
2. Colwyn
3. Delyn
4. Glynwri
5. Rhuddlan
6. Wrexham Maelor

7. Carmarthen
8. Ceredigion
9. Dinefwr
10. Llanelli
11. Preseli Pembrokeshire
12. South Pembrokeshire

13. Blaenau Gwent
14. Islwyn
15. Monmouth
16. Newport
17. Torfaen

18. Aberconwy
19. Arfon
20. Dwyfor
21. Meirionnydd
22. Ynys Môn

23. Cynon Valley
24. Merthyr Tydfil
25. Ogwr
26. Rhondda
27. Rhymney Valley
28. Taff-Ely

29. Brecknock
30. Montgomeryshire
31. Radnor

32. Cardiff
33. Vale of Glamorgan

34. Lliw Valley
35. Neath
36. Port Talbot
37. Swansea

New Surveys notified to the Survey Control Unit

March to May 1988

For further information on the surveys listed, the appropriate departmental contact may be obtained from Miss J Dinehart (01-270 5963), Survey Control Unit, Central Statistical Office, Great George Street, London SW1P 3AQ.

New Surveys notified March to May 1988

Title	Department	Those approached	Approximate number approached	Location	Frequency
Business and Local Authority Surveys					
Small Firms Service Development Study	DEM	Employers	50	GB	AH
Survey of Vacancies in Greater London	DEM	Manufacturers	2000	SE	AH
'Employ the Unemployed' Spring Campaign Qualitative Evaluation	DEM COI	Employers	70	E	AH
An Evaluation of the Cost Effectiveness of British Coal Enterprise Ltd	DEN	Clients of BCE	120	GB	AH
Evaluation of EC Energy Demonstration Scheme in the UK	DEN	Manufacturers	172	UK	AH
Capital Outturn Returns	DOE	Financiers	500	EW	A
Signposting of Public Rights of way (England)	DOE	Local Highway Authorities	115	E	AH
Tree Preservation Orders:- An Information Base	DOE	Local Planning Authorities	50	E	AH
Survey of Bioreactor Users/Manufacturers	DTI	Users/Manufacturers of Bioreactors	90	GB	AH
Survey of Customers of Repayment work at DTI Industrial Research Establishments	DTI	Companies	100	UK	AH
Expert Systems in British Industry	DTI	Companies	60	GB	AH
Survey On Demands For Standards of Radioactivity	DTI	Manufacturers	150	GB	AH
Evaluation of Robot Installation Projects of the FMS Scheme	DTI	Manufacturers	N/K	UK	AH
Evaluation of Planning Studies (Planning and Implementation) Consultancy Scheme	DTI	Manufacturers	N/K	UK	AH
Spitalfields Business Survey	DTI	Manufacturers	N/K	SE	AH
Pilot Study of Handsworth Task Force Area	DTI	Voluntary Organisations and Businesses	86	WM	AH
Single European Internal Market Monitor	DTI COI	Manufacturers	5200	UK	AH
Single European Internal Market-Qualitative Study	DTI COI	Manufacturers	64	E	AH
Queen's Awards Awareness Research	DTI COI	Companies	2000	UK	AH
Evaluation of Regional Enterprise Grants	DTI	Manufacturers	350	GB	AH
Evaluation Working Group. Consultancy Initiatives : Evaluation Strategy	DTI	Manufacturers	2420	GB	AH
Factual Study of the Role of Trading Houses in UK Exports	DTI	Exporters	500	UK	AH
Survey of Potential or Existing Exporters	DTI	Manufacturers	1530	UK	AH
Study into Growing Transhipment of Deep-Sea Cargo (Case Studies)	DTP	Shipping	77	UK	AH
EAS Awareness Day Providers Survey	ES MSC	Providers of EAS awareness days	20	GB	AH
Evaluation of Integrated Office (Employers' Survey)	ES	Employers	2300	GB	AH
Review of Special Schemes for People with Disabilities (Employers' Survey)	ES	Employers	1200	GB	AH
Equal Opportunities Study : Cardiff	Home	Employers	200	W	AH
Waiting Times in Magistrates Courts	Home	Magistrates' Courts	1800	EW	FM
Statistical Return on Care Proceedings in Magistrates' Courts	Home	Magistrates' Courts	600	EW	A
Statistical Return on Domestic Proceedings in Magistrates' Courts	Home	Magistrates' Courts	600	EW	A
Review of the Effectiveness of Liaison between HSE and Local Authorities in the field (on Health and Safety Enforcement)	HSE	Local Authorities	153	GB	AH
Expectations of Pricing Levels for Publications	HSE	Employers	N/K	GB	AH
The Market for Agricultural Health and Safety Information in Great Britain (Priced Material)	HSE	Farms	1800	GB	AH
Local Enterprise Grants for Urban Projects (LEG-UP) : Evaluation Study	IDS SDA	Financiers	40	S	AH
Personal Equity Plan : Annual Return	IR	Financiers	170	UK	A
Composite Rate Investigation	IR	Financiers	1320	UK	Y4
Appraisal of the Farm Woodland Scheme	MAFF	Farms	375	E	AH
The Socio-Economic Impact of the Pennine Dales Environmentally Sensitive Area	MAFF	Farms	150	E	AH
Monitoring and Analysis of the Impact of the Environmentally Sensitive Areas Scheme; A Study of the North Peak and the Suffolk River Valleys	MAF	Farms	800	E	AH
Employers' Attitudes to YTS (Employee Status Trainees)	MSC COI	Employers	400	SE	AH
Development of the Use of Supported Self Study Materials for 'A' Levels etc	MSC	Local Education Authorities	105	EW	AH
National Training Award Advertising Response Check-1988	MSC COI	Employers	200	UK	AH
Subcontracting CALLMI Data Collection-Pilot Exercise	MSC	Employers	2000	GB	AH
'Just In Time' Concept - A Survey of Services and Materials	MSC	Manufacturers	34	GB	AH
Electoral Registration Monitoring	OPCS Home	Local Authorities	N/K	EW	A
Rural Development Commission-Evaluation of the Rural Development Programme Process	RDC	Local Authorities	155	E	AH
Land Register Research Project	SHHD SO	Solicitors	80	S	AH
Register of Conditional Offers of Fixed Penalties by Procurators	SHHD	Clerks of Courts	56	S	M
Fiscal Under S56 of Criminal Justice (Scotland) Act 1987	SHHD	Clerks of Courts	56	S	A
Police Fixed Penalties : District Courts Return	TRRL DTP	Tourist Coach Operators	15	SE	AH
Tourist Coach Operators in London - First Stage	WO	Farms	401	W	A
Welsh Farm Business Study	WO	Schools	2000	W	AH
Survey of Information Technology in Schools in Wales	WO	Local Authorities	45	W	AH
Household and Individual Surveys					
'Better off in Work' Advertising Qualitative Research	DEM COI	Unemployed	50	E	AH
MSC Adult Training Name Research	DEM COI	Unemployed	50	GB	AH
Organ Donor Research	DHSS COI	Adults	2350	GB	AH
Family Credit Advertising Development Research	DHSS COI	Adults	40	GB	AH
AIDS Longterm Tracking	DHSS COI	Adults	1500	UK	AH
Adult Dental Health in the UK 1988	DHSS OPCS	Adults	3700	UK	AH
Nursing Recruitment - Advertising Communication Check	DHSS COI	Adults	70	E	AH

Title	Department	Those approached	Approximate number approached	Location	Frequency
Household and Individual Surveys (continued)					
National Savings Income Bond TV Commercials Survey	DNS	Adults	20	E	AH
National Savings Corporate Poster Survey (Remember when)	DNS	Adults	2400	GB	AH
National Savings Investment Account TV Campaign : February/March 1988	DNS	Adults	2400	GB	AH
National Savings Investment Account: Joint Post Office/National Savings Study	DNS NGOV	Adults	50	E	AH
National Savings Corporate Poster Survey (Crown-March/April 1988)	DNS	Adults	2400	GB	AH
National Savings Investment Account Closures Survey	DNS	Adults	800	UK	AH
National Savings Investment Account Press Advertisements Study	DNS	Adults	30	E	AH
National Savings Deposit Bond Poster Survey (May-June 1988)	DNS	Adults	2400	GB	AH
National Savings Corporate Poster Survey (Calendar April/May 1988)	DNS	Adults	2400	GB	AH
National Savings Corporate and Product Advertising Development	DNS	Adults	32	GB	AH
Product Certificate Research	DNS	Adults	100	ES	AH
Survey of New Housing Association Tenants-1988	DOE NGOV	Tenants	2000	E	AH
Empty Dwellings Survey 1988 (Including Review of Local Property Market)	DOE	Owners of empty dwellings	50	E	AH
Measurement of Product Exposure and Perception of Risk	DTI	Adults	1400	GB	AH
Awareness of Single European Internal Market - General Public	DTI COI	Adults	2000	GB	AH
A6 Fairfield Relief Road, Buxton-Feasibility Study	DTP	Travellers	4000	EM	AH
A6 (T) Rothwell & Desborough Bypass, Northants. Traffic Survey	DTP	Drivers	9000	EM	AH
A453 Clifton to M1 - Origin and Destination Surveys	DTP	Drivers	3000	EM	AH
A45(T) Flore Bypass , Northants. Traffic Survey	DTP	Drivers	3000	EM	AH
A417 Brockworth Bypass	DTP	Drivers	2600	SW	AH
A417 Stratton Bypass	DTP	Drivers	10000	SW	AH
Second Severn Crossing to M5 Link. Origin and Destination Survey	DTP	Drivers	6500	SW	AH
Carlisle Study Traffic Survey 1988	DTP	Drivers	1000	NW	AH
A585 Norcross to M55 Link-Roadside Interviews 1988	DTP	Drivers	1100	NW	AH
A74 Beattock-M6 (Junction 44) Section. Roadside Interviews 1988	DTP	Drivers	1000	ES	AH
A38 Liskeard to Bodmin Improvement. Origin and Destination Survey					
Roadside Interviews	DTP	Travellers	5000	SW	AH
A23 Coulsdon Inner Relief Road Traffic Survey	DTP	Drivers	6000	SE	AH
A4/A46 Batheaston-Swainswick Bypass	DTP	Drivers	25000	SW	AH
A249 Iwade Bypass and Sittingbourne Link (Roadside Interviews)	DTP	Drivers	4500	SE	AH
A167 Durham Western Bypass Roadside Interview Survey	DTP	Drivers	15000	N	AH
Vehicle Tax Evasion - Campaign Development Study	DTP COI	Adults	70	E	AH
JobClub Postal Survey	ES	JobClub Participants	3000	GB	AH
The Enterprise Allowance Scheme Eighteen Month National Interview Survey	ES	Adults	1200	GB	AH
ICI Diary of Purchases of Home Security Measures 1988	HOME COI	Householders	5000	EW	AH
Crime Prevention Handbook - Qualitative Research	HOME COI	Adults	90	E	AH
Crime Prevention Handbook - Quantitative Research Among Requesters	HOME COI	Adults	900	UK	AH
Survey of Personal Income 1987-88	IR	Taxpayers	20000	UK	A
Wycombe Health Authority Food Allergy Survey	MAFF	Householders	15000	GB	AH
RAF Ground Trades Other Ranks Recruitment-Qualitative Research	MOD COI	Careers Advisers	75	GB	AH
Ulster Defence Regiment - Qualitative Research (Spring 1988)	MOD COI	Adults	50	NI	AH
Youth Training News Readership Survey	MSC COI	Readers	450	GB	AH
Clients' Experiences on Lead Development Projects	MSC	Trainees	500	GB	AH
Postal Survey of Former Community Programme Participants	MSC	Community Programme Leavers	2000	GB	AH
Employment Training Advertising : Creative Development	MSC COI	Adults	40	E	AH
North Peckham Task Force Community Development Survey	NGOV DTI	Residents	1045	SE	AH
Long Term Psychological and Social Problems Arising from Road Accidents	TRRL	Hospital Patients	300	SE	AH
Case Study of C5 Minibus, Edinburgh On-Bus Survey	TRRL DTP	Passengers	350	S	AH
Cognitive Factors in Accident Liability	TRRL DTP	Drivers	1000	GB	AH
Cheltenham Cycle Path Study	TRRL	Cyclists	150	SW	AH
Survey of Methods of Learning to Drive - Second Pilot	TRRL DTP	Drivers	50	SE	AH
Aber Improvement Public Consultation	WO	Householders	65	W	AH
'Heartbeat Wales' Heart Health Survey 1988	WO	Adults	10000	EW	AH

LIST OF ABBREVIATIONS

Location	General		
E	England	EAS	Enterprise Allowance Scheme
EM	East Midlands	EC	European Community
ES	England and Scotland	FMS	Flexible Manufacturing System
EW	England and Wales	NK	Not Known
GB	Great Britain	YTS	Youth Training Scheme
N	North		
NI	Northern Ireland	Frequency	
NW	North Western	A	Annual
S	Scotland	AH	Ad hoc
SE	South East	M	Monthly
SW	South West	Y4	Every 4 years
UK	United Kingdom		
W	Wales		
WM	West Midlands	Departments	
		COI	Central Office of Information
		DEM	Department of Employment
		DEN	Department of Energy
		DHSS	Department of Health and Social Security
		DNS	Department for National Savings
		DOE	Department of the Environment
		DTI	Department of Trade and Industry
		DTP	Department of Transport
		ES	Employment Service
		HOME	Home Office
		HSE	Health and Safety Executive
		IDS	Industry Department for Scotland
		IR	Inland Revenue
		MAFF	Ministry of Agriculture, Fisheries and Food
		MOD	Ministry of Defence
		MSC	Manpower Services Commission
		NGOV	Non Government
		OPCS	Office of Population Censuses and Surveys
		RDC	Rural Development Commission
		SHHD	Scottish Home and Health Department
		TRRL	Transport and Road Research Laboratory
		WO	Welsh Office

Recently available statistical series and publications

The following publications containing social statistics have recently, or will soon become available during the July to September quarter of 1988. Unless otherwise specified, copies can be purchased from Her Majesty's Stationery Office. A list of release dates of economic series is published monthly in *Economic Trends*.

Department of Health and Social Security

The Department of Health and Social Security produce regular monthly and quarterly statistical series on such topics as unemployment benefit, child benefit and sickness and invalidity benefits. Extracts and summaries for these series are published in *Social Security Statistics*. Further information can be obtained from:

Mr W J Graham
Department of Health and Social Security
Room A2215
Newcastle-upon-Tyne NE98 1YX
Telephone: Tyneside (091) 2797373 (GTN 2622)

The following statistical series and publications are available:

Bulletin 2/6/88 *Quarterly statistics of elective admissions and patients waiting; quarter ending 30 September 1987, published April 1988, price £2*

Bulletin 2/7/88 *New cases seen at DHSS Genito-Urinary Medicine clinics in England 1976-1986. Bulletin was released on 16 June 1988, price £2*

Statistical Bulletins referred to above may be purchased from:

DHSS Information Division
PO Box 21
Canons Park
Government Buildings
Honeypot Lane
Stanmore
Middlesex HA7 1AY
Telephone: 01-952 2311

Causes of Blindness and Partial Sight among Adults in 1976/77 and 1980/81 in England, (HMSO June 1988), price £3.20 net

(a) *Low Income Families-1985*

(b) *Households Below Average Income: A Statistical Analysis*
Publications (a) and (b) are available from:

Mr R Pike
Department of Health and Social Security
Room A526
Alexander Fleming House
Elephant and Castle
London SE1 6BY
Telephone: 01-407 5522 ext. 6723 (GTN 2915)

Scottish Education Department

Scottish Education Department Statistical Bulletins on the following subjects:

Pupils and Teachers in Education Authority Primary and Secondary Schools

The National Certificate: 1985-86

Excess and Deficit of Secondary School Teachers by Subject

School Leavers' Qualifications

School Leavers

The Social Work Service Group of the Scottish Education Department have published the following bulletins:

Referrals of children to Reporter's and Children's Hearings 1986

Staff of Social Work Departments 1986

Copies of the above bulletins may be purchased (price 75p net) from:

The Library
Official Publication Sales
Scottish Office
Room 2/65
New St Andrew's House
Edinburgh EH1 3TG
Telephone: 031-244 4806 (GTN 2688)

Industry Department for Scotland

The following Research Paper has now been published (price £5): *ODA Dispersal to East Kilbride: An Evaluation* by B K Ashcroft, D Holden, J Smith and K Swales, Department of Economics, University of Strathclyde (Research Paper No. 14)

Copies of Research Papers may be obtained from:

Scottish Office Library
Official Publications Sales
Room 2/66A
New St Andrew's House
Edinburgh EH1 3TA
Telephone: 031-244 4806 (GTN 7031 etc.)

Office of Population Censuses and Surveys

Population Trends 53 Autumn (HMSO 1988) (price approx £5 net)

- OPCS Monitors -

(available from OPCS Information Branch, St Catherine's House, 10 Kingsway, London WC2B 6JP. Telephone enquiries 01-242 0262 ext. 2243)

Electoral statistics 1988 - local government areas (EL 88/1) (price £2.00 net)

Infant and perinatal mortality 1986: birthweight (DH3 88/1) (price £1.50 net)

Legal abortion 1987 (AB 88/3) (price £3.00 net)

Legal abortion 1987: residents of regional and district health areas (AB 88/4) (price £1.00 net)

- Reference volumes -

Marriage and Divorce Statistics (England and Wales) 1986
(FM2 No. 13)

Congenital Malformation Statistics 1981-1985 (MB3 No. 2)

- Social Survey reports -

Informal Carers (General Household Survey 1985 - GHS
No. 15 Supplement A)

- Studies on Medical and Population Subjects -

Analysis of Population Density and Concentration in 1971
and 1981 (SMPS No. 52)

Welsh Office

Supplement to Welsh Economic Trends No. 1, 1987

1986 Welsh House Condition Survey

Staff of Social Services Department: Year ended
30 September 1987

Activities of Social Services Departments: Year ended
31 March 1987

Statistics of Education in Wales: Further and Higher Education
No. 1, 1987

Farm Incomes in Wales No. 2, 1988

Welsh Social Trends No. 7, 1988

Environmental Digest for Wales No. 3, 1986/87

Welsh Transport Statistics No. 4, 1988

Cancer Registration in Wales 1974-1984

Welsh Education Statistics Bulletin No. 5: Primary School
Staffing Survey

The above publications are available from:

Publications Unit

Economic and Statistical Services Division

Welsh Office

Cathays Park

Cardiff CF1 3NQ

Telephone: 0222-82 5054 (GTN 2408)

Department of the Environment

Housing and Construction Statistics, Great Britain, 1976-1986

Housing and Construction Statistics, Part 1 No. 32 December
Quarter 1987 and Part 2 No. 32 December Quarter 1987

Local Housing Statistics, England and Wales, No. 84 January
1988 - figures for third quarter 1987

Digest of Environmental Protection and Water Statistics,
No. 10 1987 (HMSO 1988)

Local Government Financial Statistics England 1985-1986

The above publications are available from Her Majesty's
Stationery Office.

Statistical Bulletin (88)1 : *Air Quality*

Statistical Bulletin (88)2 : *Water Quality*

Statistical Bulletin (88)3 : *Radioactivity*

Statistical Bulletin (88)4 : *Noise, Waste, Landscape and*
Nature Conservation, and Supplementary

The above annual bulletins provide additional detailed tables
for most of the Chapter topics in the Department's *Digest*
of Environmental Protection and Water Statistics published
recently by HMSO.

Development Control Statistics: England
1983/84-84/85-85/86

Development Control Statistics: England
1979/80-80/81-81/82-82/83 (reprint)

Land Use Change in England, Statistical Bulletin (88)5 figures
for 1987

1985 Based Estimates of Numbers of Households in England,
The Regions, Counties, Metropolitan Districts and London
Boroughs 1985-2001

The above publications are available from:

Department of the Environment

Publication Sales Unit

Victoria Road

Ruislip, Middlesex HA4 0NZ

Telephone: 01-841 3425

The following information is issued in press notices or
bulletins on a regular basis:

Monthly: *Housebuilding, construction new orders,*
building new orders, building materials and
components, brick production, and new
orders by type of work.

Quarterly: *Construction output and employment,*
planning applications and decisions,
renovations and homeless households.

Annually: *Slum clearance.*

Further information is available from:

Department of the Environment

LGS, Room P1/001

2 Marsham Street

London SW1P 3EB

Telephone: 01-276 4003

Scottish Home and Health Department

The following statistical bulletins are available:

No. 1/1987 *Crimes and Offences involving Firearms,*
Scotland 1985

No. 2/1987 *Children and Crime, Scotland 1983-1985*

No. 3/1987 *Criminal Proceedings in Scottish*
Courts, 1985

No. 4/1987 *Recorded Crimes Scotland 1986*

No. 5/1987 *Motor Vehicle Offences in Scotland 1985*

No. 6/1987 *Prison Statistics Scotland 1986*

No. 7/1987 *Children and Crimes, Scotland 1986*

No. 8/1987 *Homicide in Scotland 1981-1985*

No. 9/1987 *Criminal Proceedings in Scottish*
Courts, 1986

No. 1/1988 *Recorded Crimes and Offences Involving*
Firearms, Scotland 1986

No. 2/1988 *Recorded Crime in Scotland 1987*

Copies of the above bulletins may be purchased (price 75p
post paid) from:

The Library

Official Publication Sales

Scottish Office

Room 2/65

New St Andrew's House

Edinburgh EH1 3TG

Telephone: 031-556 8400 Ext 4806 (GTN 2688)

Scottish Development Department

The following statistical bulletins are available:

- HSIU No. 26 - *Annual Estimates of Households*
HSIU No. 27 - *Q2(86) - Housing Trends in Scotland:*
Quarter ended 30/6/86
HSIU No. 28 - *Q3(86) - Housing Trends in Scotland:*
Quarter ended 30/9/86
HSIU No. 29 - *Public Sector Rents in Scotland:*
1986-1987
HSIU No. 30 - *Q4(86) - Housing Trends in Scotland:*
Quarter ended 31/12/86
HSIU No. 31 - *Q1(87) - Housing Trends in Scotland:*
Quarter ended 31/3/87
HSIU No. 32 - *Q2(87) - Housing Trends in Scotland:*
Quarter ended 30/6/87
HSIU No. 33 - *Q3(87) - Housing Trends in Scotland:*
Quarter ended 30/9/87
HSIU No. 34 - *Q4(87) - Housing Trends in Scotland:*
Quarter ended 31/12/87
HSIU No. 35 - *Annual Estimates of Households*

Copies of the above bulletins may be purchased (price 75p net) from:

The Library,
Official Publication Sales,
Scottish Office,
Room 2/65
New St. Andrew's House
Edinburgh EH1 3TG
Telephone: 031-244 4806 (GTN 2688)

Department of Education and Science

The following Statistical Bulletins are now available:

- No. 1/88 *Education Statistics for the United Kingdom, 1987 Edition*
No. 2/88 *Pupil/Teacher Ratios for each Local Education Authority in England - January 1987*
No. 3/88 *Student Awards in England and Wales, 1985-86*
No. 4/88 *Pupils under 5 years in each Local Education Authority in England - January 1987*
No. 5/88 *English School Leavers, 1985-86*
No. 6/88 *Statistics of Schools in England - January 1987*
No. 7/88 *Student/Staff Ratios at Polytechnics and other Higher and Further Education Establishments in England*
No. 8/88 *Student Numbers in Higher Education - Great Britain 1975-1986*
No. 9/88 *Teachers in Service and Teacher Vacancies 1986-87*

Copies of these publications may be obtained from:

The Department of Education and Science
Statistics Branch
Room 1/28
Elizabeth House
York Road
London SE1 7PH
Telephone: 01-934 9038 (GTN 2914-9038)

The following annual publications are announced:

- Statistics of Education: Further Education - November 1986*
Statistics of Education: School Leavers, CSE and GCE - 1986

Copies (priced £12.00) may be obtained from:

Department of Education and Science
Room 337
Mowden Hall
Staindrop Road
Darlington DL3 9BG

Home Office

The following proposed statistical publications are announced:

-- for July --

Control of Immigration Statistics, 1987 (Command Paper)

-- for September --

Statistics of the misuse of drugs, Supplementary and area tables (Home Office publication)

The following statistical bulletins are announced:

-- for July --

Statistics of domestic proceedings in magistrates' courts, 1987
Statistics of the time taken to process criminal cases in the magistrates' courts, February 1988

Statistics on the operation of the prevention of terrorism legislation, 2nd quarter 1988
Statistics of breath tests, 1987

-- for September --

Criminal careers of those born in 1953, 1958 and 1963; convictions in three further years

Summary probation statistics, England and Wales, 1987

Statistics of the misuse of drugs, United Kingdom 1987

Control of immigration statistics, 2nd quarter 1988

Notifiable offences recorded by the police in England and Wales, 2nd quarter 1988

Statistical Bulletins are available from:

The Home Office
Statistical Department
Lunar House
40 Wellesley Road
Croydon
Surrey CRO 9YD

Department of Employment

Employment Gazette, which is published on Thursday towards the beginning of each month, regularly contains recent data and time-series on employment, unemployment, earnings, prices, family expenditure, tourism and other indicators. In recent months there were special features on 'New entrants to the labour market in the 1990s', 'Membership of trade unions 1986', 'Revisions to the pattern of household spending in 1986', 'Pensioner price indices: revision of weights', 'International comparisons of industrial stoppages for 1986', 'Industrial stoppages in 1987', and 'Training in Britain: Key statistics'. The last of the articles also announces the availability of two reports on statistics of Training, prepared by the Department of Employment: Training Statistics Group. These are *Summary Statistics on Training*, and *Register of Sources of Training Statistics*. Both can be obtained from the

Department (address below) at the cost of £5. *Employment Gazette* is published monthly by Her Majesty's Stationery Office, price £3.40 per issue. Annual subscription inclusive of postage is £35.

Department of Employment
Caxton House
Tothill Street
London SW1H 9NF

Department of Transport

Recent Statistical Publications by the Department of Transport:

Port Statistics 1987 (price £25.00)

Available from:

British Ports Federation
Commonwealth House
1-19 New Oxford Street
London WC1A 1DZ
Telephone: 01-242 1200

Survey of Heavy Goods Vehicles entering Britain via Dover, November 1987 statistical bulletin (88)34, price £2.50

Road Accident Statistics, English Regions, 1986 (statistical bulletin (88)36, price £6.00)

International Comparisons of Transport Statistics 1970-1985 (statistical bulletin (88)38, price £6.00)

National Road Maintenance Condition Survey 1987, sub-national results (statistical bulletin (88)40, price £1.50)

Survey Control Review of the Continuing Survey of Road Goods Transport (statistical bulletin (88)41, price £2.00)

Local Road maintenance expenditure in England 1986/87 (statistical bulletin (88)42, price £2.50)

Heavy Goods Vehicles in Great Britain 1987 (statistical bulletin (88)43, price £8.00)

Transport of Goods by Road in Great Britain 1987 (statistical bulletin (88)44, price £8.00)

National Road Maintenance Condition Survey: Deflection Measurements 1987 (price £1.00)

The following statistical bulletins are issued on a regular basis:

Monthly: *New Motor Vehicle Registrations, Great Britain* (price £3.00 per copy, annual subscription £30.00)

Quarterly: *Road Goods Vehicles on Roll-on Roll-off ferries to Mainland Europe* (price £5.00 per copy)

Road Casualties Great Britain (price £4.00 per copy)

Quarterly Transport Statistics (price £5.00 per copy annual subscription £12.00)

Traffic in Great Britain (price £8.00 per copy, annual subscription £27.00)

Department of Transport statistical publications are available from:

Publication Sales Unit
Building 1, Victoria Road
South Ruislip
Middlesex HA4 0NZ
Telephone: 01-841 3425

The Department of Transport is often prepared to sell unpublished data. Further information can be obtained from:

Directorate of Statistics
Department of Transport
Romney House
43 Marsham Street
London SW1P 3PY
Telephone: 01-276 8513

Central Statistical Office

Regional Trends 1988 Edition (HMSO June 1988) (Price £18.50 net). See page 52.

United Kingdom Balance of Payments 1988 Edition (HMSO 24 August 1988) (Price £9.95 net). See page 50.

United Kingdom National Accounts 1988 Edition (HMSO 9 September 1988) (Price £11.95). See page 49.

Key Data 1988 Edition (HMSO 23 September 1988) (Price £3.50 net)

POPULATION AND VITAL STATISTICS

Population Trends

The latest edition of *Population Trends*, the quarterly journal of the Office of Population Censuses and Surveys (OPCS), was published in June and contains the following articles:

Regional patterns of divorce in England and Wales

This article estimates regional rates of divorce, examines the evidence concerning their reliability, and concludes that the estimated rates provide a reasonable guide to the underlying patterns. Other aspects of regional variations in divorce are also examined, such as the proportions of the adult populations in the different regions who are divorced, and the estimated regional rates of remarriage after divorce. The author is John Haskey of Population Statistics Division, OPCS.

Fertility data from the Population (Statistics) Act in England and Wales: 1938–1988

The Population (Statistics) Act 1938 allowed for much more detailed information to be collected at the registration of births in England and Wales than was possible earlier. In this article Barry Werner, of Population Statistics Division, OPCS, gives an account of trends since 1938 in four aspects of fertility which can be studied using data collected under the Act. These are fertility rates to women of different ages; birth order within marriage; intervals from marriage to first birth; and births to women in second or later marriages.

Spacing of births to women born in 1935–1959: evidence from the OPCS Longitudinal Study

The OPCS Longitudinal Study provides details of the childbearing experiences of a sample of women by linking details collected in the 1971 Census to birth registrations since then. In this second article by Barry Werner these linked data have been used to analyse the length of intervals between successive births to women born from 1935–59, taking into account the ages of the women at each birth.

Components of growth in the ethnic minority population

This article by Chris Shaw of Population Statistics Division, OPCS, provides estimates of the components of population growth for broad subgroups of the ethnic minority population using data from birth and death registrations, the International Passenger Survey and the Labour Force Survey. It supports the estimates given in the article in the Spring issue of *Population Trends* and concludes that two thirds of the annual increase in the size of the ethnic minority population is due to an excess of births over deaths and one third to net migration, (ie an excess of immigrants over emigrants).

Mid-1985 based population projection by marital status

In this article John Haskey describes the assumptions and key results of the latest set of population projections by marital status for England and Wales prepared by the Government Actuary.

Reference

Population Trends 52, Summer 1988 (HMSO) (Price £5.00 net)

Marriage and Divorce Statistics (England and Wales) 1986

During 1986 there were nearly 348 thousand marriages in England and Wales, a half per cent increase over 1985. Between 1981 and 1986, the annual number fluctuated between 352 and 342 thousand, without showing any consistent trend. As in 1985 there were slightly fewer marriages of spinsters and of bachelors compared with the corresponding numbers in the previous year. Civil ceremonies accounted for 48 per cent of marriages in 1986, but marriages solemnised with a religious ceremony which involved the remarriage of one or both partners increased by 7 per cent to just over 27 thousand, representing the highest number ever recorded.

There were 154 thousand divorces in England and Wales during 1986, a decrease of 4 per cent on the previous year, when a record 160 thousand divorces were granted. The number of petitions filed during 1986 was 6 per cent lower than in 1985 but was about the same as in 1984. The last three years cover the period in which major changes in divorce legislation came into effect, the most important of which was the reduction in the time bar for presenting a divorce petition from 3 years to one year after marriage. The trends between 1984 and 1986 in the numbers of petitions filed and decrees made absolute have been largely due to these changes.

The largest decrease between 1985 and 1986 in the numbers who divorced occurred at the youngest ages for both husbands and wives, particularly for those aged under 25. The only category of divorce to show an increase in numbers between 1985 and 1986 was of decrees granted to husbands on the grounds of their wives' unreasonable behaviour.

Reference

Marriage and Divorce Statistics (England and Wales) 1986 FM2 No. 13 (HMSO) (£8.60 net) ISBN 0 11 691223 5

Congenital Malformation Statistics 1981–85

This is a statistical review of the notifications of congenital malformations in the period 1981–85 in England and Wales, and is the second OPCS review on this subject, the first covering the period 1971–80.

The data analysed in this report are collected through the congenital malformations monitoring system which is used primarily to detect changes in the frequency of reporting any particular malformation rather than trying to estimate the prevalence at birth. Only malformations detected at or within seven days of birth are included in the system to ensure rapid detection of any increase in reporting levels.

The report presents data on trends for over twenty malformations or groups of malformations. Some of the findings of the review are:

- The notification rate per 10,000 total live and still-born babies has remained fairly constant since 1971 even though the numbers of babies with notified malformations fluctuate according to the numbers of babies born, any of which are 'at risk' of being malformed.
- Between 1981 and 1985 there were over 30 per cent more male babies notified as being born malformed than female. Although there were more males born than females the notification rates were also 25 per cent higher for males.
- Notification rates were higher for babies born in the first six months of the year.
- The lowest notification rate, by mother's age, was for the age group 25–35.
- East Midlands was the standard region with the highest malformations notification rate at 292.2 per 10,000 total births and East Anglia the lowest at 155.8 per 10,000 total births.

Reference

Congenital Malformation Statistics 1981–1985 (MB3 No.2) (HMSO) (£5.80 net) ISBN 0 11 691225 1

Analysis of Population Density and Concentration in 1971 and 1981

The emphasis in this report is an analysis of ward population densities and the number of people living at different densities. Because local government wards subdivide local authorities, towns or large rural districts they provide a more precise measure of changes in the numbers of people living at different densities and of the distribution of the population.

Some of the findings of this analysis of ward population densities show that:

- The number of people living at high densities, that is in densely populated urban areas, continued to decrease – the number living at 50 or more persons per hectare fell by a quarter between 1971 and 1981 from over 11 million to well under 9 million (despite the larger total population in 1981). The decrease occurred in both metropolitan and non-metropolitan areas.
- The numbers living in the most sparsely populated rural areas also declined. Those living in very rural wards at densities of 0.5 persons per hectare or less declined by 5 per cent.
- The highest rate of population growth was in wards with densities of 15–40 persons per hectare (suburban and small, or fringe, urban areas). Nationally these wards increased their populations by 14 per cent. Even in the standard region with the greatest total population decline between 1971 and 1981 – the North West – there were sizeable population increases at these densities.

For areas larger than wards the better method of comparing the most densely populated parts of the country is by using a fixed shape such as a square. This analysis was carried out using three sizes of square with sides of 25, 50 and 100 km.

Some of the results obtained are:

- In 1981 the most densely populated 25 km sided square was that covering Inner London. This had a population of 3.9 million which was more than twice that of the next such square, for the West Midlands. This results in an average density of over 60 persons per hectare; fifty years earlier, in 1931, the same Inner London square had a population of 6.7 million.
- With a 100 km sided square the difference in the size of London's population compared with any other square of this size is not so marked because of the square in the North West which contains the Greater Manchester conurbation as well as large parts of the Merseyside and the West Yorkshire conurbation. The 1981 population of the London square has fallen since 1971 (although, unlike the 25 km sided square, it is greater than 1931).

The report also shows how ward densities can be used to calculate an average population density which takes some account of the actual distribution of the population within a local authority – which the usual density measure does not.

Reference

Analysis of Population Density and Concentration in 1971 and 1981 (SMPS No. 52) (HMSO) (£7.60 net) ISBN 0 11 691224 3

SOCIAL STATISTICS

Informal Carers

About one adult in seven in Great Britain looks after an elderly or disabled person. Four per cent of adults care for someone living with them and 10 per cent look after people living elsewhere. These figures represent about six million carers overall in Great Britain, with about 1.7 million caring for someone in the same household.

These are the main findings contained in a report of a survey carried out by the Social Survey Division of OPCS for the DHSS, of people caring for a disabled or elderly person. The report gives national estimates of the total number of adult carers and of the numbers who had particularly heavy burdens. It also describes the characteristics and circumstances of those who were providing care (carers) and of the people they were looking after (dependants). These show that:

- Women were more likely to be carers than men but the difference was not very marked, 15 per cent compared with 12 per cent.
- The peak age for caring was 45 to 64. In this age group, about one in four women and one in six men were carers.

- One in four carers, about 3 per cent of all adults, devoted at least 20 hours per week to caring.
- One in five carers looked after more than one person.
- Nearly one in five carers had looked after the same person for at least ten years.
- The most common form of help was practical help with household tasks.
- About one quarter of carers had no help with caring.

Reference

Informal Carers (General Household Survey 1985) (GHS No. 15, Supplement A) (HMSO) (£3.75 net) ISBN 0 11 691226 X

Family Expenditure Survey (FES) 1986

The FES Report was originally published in December 1987. However, the 1986 results were subsequently revised following the discovery that certain business and credit expenditure had been wrongly included in overall household spending. Average household expenditure in 1986 is now estimated as £178.10 per week and not £185.02 as previously published.

The error had a widespread effect on the detailed survey results and a revised edition of the 1986 Report was published in July. Copies of this report are available from HMSO free of charge to those who purchased the original report.

An article in the June 1988 edition of *Employment Gazette* (pages 324-331) also presented some revised results.

Reference

Employment Gazette, June and July 1988 (HMSO) (Price £3.40 net)

Pensioner price indices: revision of weights

This article in *Employment Gazette* June 1988, gives the weights being used in 1988 for the two special price indices which are compiled for pensioner households mainly dependent on state benefits.

In a report in 1968 (Cmnd 3677) the Retail Prices Index Advisory Committee (then called the Cost of Living Advisory Committee) recommended that two special indices of retail prices should be compiled to cover the low-income pensioner households whose expenditure has always been excluded from the weighting pattern of the general index of retail prices. The Committee recommended that the indices, for one and two-person pensioner households, should be compiled in the same way as the general index except that they should exclude housing costs and be quarterly rather than monthly.

The Family Expenditure Survey (FES) provides expenditure information for many other categories of household besides those for which price indices are compiled, and users wishing to analyse this information may find it helpful to have more detail than that given in this article on the average weekly household expenditure by type of household in 1986. This is available on request from the Statistics Division (Branch D1), Caxton House, Tothill Street, London SW1H 9NF at a cost of £2.

All the data quoted in this article, and all those used in compiling the weights for the general RPI and pensioner price indices, take account of the revisions made to the FES results after they had first been published, and are consistent with the figures quoted in the present issue of *Employment Gazette*.

Reference

Employment Gazette, June 1988 (HMSO) (Price £3.40 net)

Supplementary Benefit Statistics 1987

The DHSS supplementary benefit Annual Statistical Enquiry was the main source of detailed information on the characteristics of those receiving the benefit. It was used for monitoring the operation of the scheme and for estimating the effects of proposals for changes, as well as providing an important input into financial planning and forecasting of benefit expenditure. It was also the primary source of information for Parliament and the public on the benefit which in 1987/88 cost some £8 billion.

The information was obtained from a basic sample of 1 in 50 cases in Local Social Security Offices receiving regular payments on a specified day. The pensioner and unemployed cases were re-selected to produce samples of 1 in 200 and 1 in 100 respectively effectively leading to an overall sample of around 1 in 100 for the whole enquiry. Returns from Local Offices were processed by computer leading to the establishment of a database and some 320 tables constituting the main set of results. The tables cover a wide variety of information about recipients; there are details of families with children, ownership of accommodation, types of income, average amounts of benefit, housing requirements, additional requirements, cases receiving other benefits as well as supplementary benefit, length of time on supplementary benefit and other characteristics.

Summary characteristics on supplementary benefit are usually given in the annual HMSO publication *Social Security Statistics*. The full set of tables, derived from the May 1987 enquiry, contained in a bound volume with explanatory notes and definitions, are now available at the unchanged price of £25 per copy from:

Department of Health and Social Security
 Canons Park
 Government Buildings
 Honeypot Lane
 Stanmore
 Middlesex HA7 1AY
 (Telephone: 01-952 2311)

As the supplementary benefit scheme was replaced by the income support scheme from April 1988 this set of tables will be the last annual supplementary benefit enquiry to be published. Results from the Income Support Annual Statistical Enquiry held in May 1988 should be available in the summer of 1989.

Judicial Statistics 1987

The *Judicial Statistics Annual Report, 1987* was published in July. The publication contains statistics on the criminal

and civil business of those courts in England and Wales for whose administration the Lord Chancellor is responsible. It also covers the work of some associated offices, the Judicial Committee of the Privy Council and certain tribunals, including for the first time the Immigration Appeal Tribunal and the Immigration Adjudicators.

There are ten chapters in the report covering, for instance, Appeal Courts, the High Court, County Courts, Family Matters, the Crown Court, the Judiciary, Taxation of Costs and Legal Aid. To supplement the last chapter an Information Bulletin entitled *Criminal Legal Aid 1987* was published on the same date. This gives detailed breakdowns on applications for legal aid at individual Petty Sessional Divisions and Crown Court centres and also covers applications to Criminal Legal Aid Committees, in 1987.

Where appropriate each chapter includes a brief description of the function, constitution and jurisdiction of the courts or tribunals concerned. In addition, the commentary highlights the major features of the statistics and notable trends. There are also several comparative tables and charts showing longer-term trends.

Further details can be obtained from:

Statistics Branch
CS1 Division
Lord Chancellor's Department
Trevelyan House
30 Great Peter Street
London SW1P 2BY

References

Judicial Statistics, Annual Report 1987, Cm. 428 (HMSO July 1988) (Price 9.60 net)
Criminal Legal Aid 1987, an information bulletin, available free from the Information Office, Lord Chancellor's Department, Trevelyan House, 30 Great Peter Street, London SW1P 2BY.

Housing trends in Scotland

This Bulletin (HSIU No. 34) summarises housing activity in Scotland during the fourth quarter of 1987, as reported to the Scottish Development Department by the various housing authorities. Topics covered include new house building, improvement of existing houses, and sales of public sector dwellings.

The following main points emerge:

- a. Sales to sitting tenants at 6,109 increased by 40 per cent compared with the same period in 1986. The annual figures of 18,484 for sales to sitting tenants and 37,107 for applications to buy are the highest recorded since the introduction of the Tenant's Rights legislation.
- b. The number of houses completed in both sectors decreased by 4 per cent compared with the corresponding quarter of 1986. The private sector figure fell by over 10 per cent while the public sector increased by almost 23 per cent.

- c. New dwellings started decreased by almost 23 per cent compared with the corresponding quarter of 1986. Within this total, private sector starts fell by almost 26 per cent and public sector starts fell by just over 16 per cent.
- d. The number of applications by private owners approved for repair and improvement grants increased by 15 per cent compared with the same quarter in 1986.

This Bulletin was compiled by the Housing Statistics and Intelligence Unit (HSIU). Enquiries regarding details in the bulletin should be addressed to:

Housing Statistics and Intelligence Unit
Scottish Development Department
Room 327
St. Andrew's House
Edinburgh EH1 3DD
Telephone: 031-244 2684 (GTN 2688)

Copies of the Bulletin (price 75p) are available from:

Scottish Office Library
Publications Sales
Room 2/65
New St. Andrew's House
Edinburgh EH1 3TG
Telephone: 031-244 4806 (GTN 2688)

Membership of trade unions 1986

An article in *Employment Gazette*, May 1988 states that trade union membership in the United Kingdom reached a peak of 13,289,000 in 1979. From 1981 to 1983 there was a sharp downward trend in membership figures, followed by a continued but more gradual decline up to and including 1986. Total membership at December 31, 1986 was 10,539,000, 2.6 per cent lower than a year earlier and 20.7 below its 1979 peak.

The total number of trade unions at the end of 1986 was 335, a decrease of 35 on the 1985 total and less than 65 per cent of the peak number of 519 recorded in 1973. More than half the total number of unions are relatively small consisting of fewer than 1,000 members and together accounting for only 0.4 per cent of the total membership of all unions.

Reference

Employment Gazette, May 1988 (HMSO) (Price £3.40 net)

HEALTH

Registrar General's Medical Advisory Committee

A new Registrar General's Medical Advisory Committee has recently been appointed and held its first meeting on 7 July.

The Committee will advise the Office of Population Censuses and Surveys on its work in the Medical Statistics field, particularly on future developments. Its central purpose is to give better information about the needs and views of those who use OPCS statistics. The terms of reference are:

- to advise OPCS on the development of strategy and priorities for its medical statistics within the resources available;
- to advise on the analysis and interpretation of medical statistics as requested;
- to help to safeguard the professional standard of published material from Medical Statistics Division;
- to review the availability and handling of medical data held by OPCS to meet user needs as effectively as possible within available resources and within confidentiality requirements.

The Committee will be chaired by Mrs Terry Banks, Director of OPCS and Registrar General for England and Wales. Professor Eva Alberman, Professor of Clinical Epidemiology at the London Hospital Medical School, has agreed to be Deputy Chairman, and to help Dr John Fox, the Chief Medical Statistician OPCS, formulate proposals for future work. The Committee will be kept fairly small. It will be supported by a panel of experts who will advise on the analysis and interpretation of statistics and other matters in their own particular fields.

Organ transplants

Provisional figures for the first five months of 1988 show a rise in organ transplantations compared with a similar period last year. The total number of NHS transplants of kidneys, hearts, heart/lungs, lungs and livers notified to the UK Transplant Service (UKTS) are as follows:

1 January 1987 to 29 May 1987: 708
1 January 1988 to 31 May 1988: 1045

The revenue allocation to UKTS in 1988/89 is £929,000 compared with £800,000 in 1987/88. The additional resources provide for additional staff in the organ exchange and data processing departments, and will help to develop the Eye Bank which stores tissue for use in corneal transplant operations. A capital allocation of £61,000 for new and replacement equipment is also being provided.

Reference
DHSS Press Release No. 88/196

New cases seen at NHS Genito-Urinary Clinics in England 1976–1986

A DHSS Statistical Bulletin (2/7/88) was published recently which brings together routinely collected figures on new cases of sexually transmitted diseases for the last ten years. It shows the number of new cases presenting at clinics has been increasing each year since 1976 and reached an all time high of 647,000 in 1986. Female conditions accounted for 46 per cent of this total. Around ten per cent of patients received treatment outside the NHS and therefore will not be included in the figures quoted.

Reference
DHSS Statistical Bulletin 2/7/88. *New cases seen at NHS Genito-Urinary Clinics in England 1976–1986* ISBN 1 85197 198 X. Price £2.00 from Department of Health and Social Security, Information Division, Canons Park, Government Buildings, Honeypot Lane, Stanmore HA7 1AY.

Cancer Registration in Wales, 1974–84

The third report of the Welsh Cancer Registry was published in July. It contains a detailed analysis of new cancer cases registered for Welsh residents in each of the years 1974 to 1983, together with a summary of registrations for 1984.

The first report presented an analysis of cancer registrations for Mid and South Wales for the years 1969 to 1973. The second, published in 1982, covered the period 1974 to 1978 and was first to include figures for the whole of Wales. The current report covering data for 1974 to 1984 presents revised data for the five year period 1974 to 1978 – the result of an extensive exercise to eliminate duplicate registrations and to validate the quality of diagnostic and geographical information.

The bulk of the present volume is given over to detailed tables which cover cancer registrations, registration rates per 100,000 population, standardised registration ratios, analysed by 5 year periods, by sex and/or by area of residents. However, the first thirty pages or so provide a commentary on the data and some explanatory notes, together with summary results, diagrams and maps.

Besides maintaining a population-based registry for planning and research purposes, the Welsh Cancer Registry – which is part of the newly-formed Health Intelligence Unit of the Welsh Office and the Welsh Health Common Services Authority – participates in the cancer registration scheme for England and Wales administered by OPCS.

Reference
Cancer Registration in Wales, 1974–1984, published by the Welsh Office (ISBN 0 86348 5251). Copies are available from Welsh Office Publications Unit, Economic and Statistical Services Division, Crown Building, Cathays Park, Cardiff CF1 3NQ. Price £5 (including postage in the United Kingdom).

EDUCATION

Student/staff ratios at polytechnics and other higher and further education establishments in England

A Statistical Bulletin with the above title (No. 7/88) has just been published, and is the first bulletin to provide a summary of the main results from the Department's Annual Monitoring Survey. This survey currently collects, for the academic year, staff and student numbers and class contact hours in most local authority higher and further education establishments in England. In 1980–81, the survey covered only 29 per cent of these establishments; this had increased to 70 per cent by 1985–86. Certain indicators are derived from the results of the survey which are of interest to those involved in college management. Most notable amongst these indicators is the student/staff ratio, which is defined as student full-time equivalent numbers divided by staff full-time equivalent numbers. A full report of data from the survey, including data for individual establishments, is published annually in a statistical volume entitled 'Statistics of Education – Further Education Student/Staff Ratios'. The latest published edition covers the 1985–86 academic year; the 1986–87 volume will be published during the summer.

Copies of the bulletin are available from the Department of Education & Science, Statistics Branch, Room 1/28, Elizabeth House, York Road, London SE1 7PH (Telephone: 01-934 9038). Enquiries about its contents should be addressed to Mr G Whitfield at the same address (Telephone: 01-934 0953).

Student numbers in higher education – Great Britain 1975–1986

A new Statistical Bulletin (No. 8/88) with the above title is now available, and presents statistics and trends on the numbers of students (including those from abroad) at publicly funded higher education institutions in Great Britain, including the Open University but excluding the independent University of Buckingham. The figures have been revised since last published (Statistical Bulletin 14/86) and are therefore presented in some detail in a series of eight tables and three charts, and include summaries on student enrolments, subjects of study, type of institution, level of course and qualifications awarded.

Copies of the bulletin can be obtained from the Department of Education & Science, Statistics Branch, Room 1/28, Elizabeth House, York Road, London SE1 7PH (Telephone: 01-934 9038). Enquiries about its contents should be addressed to Division A1, Room 2/31 at the same address (Telephone: 01-934 9094 or 9095).

Scottish Education Statistics

Excess and Deficit of Secondary School Teachers by Subject
This statistical bulletin gives estimates of the net excess of deficit of teachers in each of the main subjects taught in education secondary schools in Scotland at September for the years 1979 to 1987.

School Leavers' Qualifications

This statistical bulletin provides details of the Scottish Certificate of Education qualifications held by pupils who left Scottish schools in 1985–86 and some earlier sessions.

School Leavers

Published annually, this bulletin gives information about the numbers of pupils leaving school in Scotland in 1976–77 (the first for which the current school leaving arrangements applied) and 1980–81 to 1986–87. A separate bulletin will be published later giving details of the Scottish Certificate of Education held by school leavers.

Training for tomorrow

An Engineering Industry Training Board (EITB) study brings new information to the debate on how training is organised and resourced in this country. It is the traditional role of trainers that is changing according to the report and new emphasis is placed on technical staff being able to impart their technical know-how to others as new computer-based technology systems are introduced. The training needs of these 'Occasional Trainers', are identified in the study.

Copies of the report are available from EITB Publications, price £10.

For further information on the study please contact:

Sadie Shirkins
Principal Research Officer
EITB, Box 176
54 Clarendon Road
Watford
Herts WD1 1LB

MANPOWER AND EARNINGS

Separation of Regional Manpower Intelligence Units

The Regional Manpower Intelligence Units of the former Manpower Services Commission, now the Training Commission, were reorganised on 25 July. Except for Scotland where there will be no change, there will now be two separate regional organisations, one for the Employment Service of the Department of Employment, taking responsibilities for most regional and local labour market information enquiries, whilst the Training Commission's (TC's) offices will continue to provide regional information and statistics on TC programmes, training and training providers, and skill shortages. A fuller description of the new units, to be named Employment Intelligence Units and Training Commission Intelligence Units respectively, is given below. The reorganisation will result in several changes of address. Further details are available from DEHQ, stats B (Tel: 01-273 5524) or the Training Commission (0742 704033) together with any other information regarding the changes.

Employment Intelligence Unit

General information about the labour market

Regional and local information about employment, unemployment and Jobcentre vacancies

Census of Employment enquiries

Statistics of industrial stoppages

Information and statistics about small firms, enterprise and tourism

Enquiries about other official statistics prepared by the Department of Employment, such as Earnings and the Retail Price Index

Training Commission Intelligence Unit

Labour market information about skills, such as skill shortages in a locality

Information and statistics about training provision and providers

Statistics of the Training Commission's programmes

Access to Training Commission information systems

BOTH UNITS WILL CONTINUE TO CHARGE FOR CERTAIN STATISTICS.

Regional labour force outlook

Estimates and projections of the labour force in Wales, Scotland and the regions of England are now available, consistent with the figures for Great Britain published in the March 1988 edition of *Employment Gazette* which were described in the May edition of *Statistical News*. These are summarised in the 'Topics' section of the July 1988 edition of *Employment Gazette*, which also gives an address from which more detailed analysis can be obtained (including estimates for 1986 of the civilian labour force and activity rates for the counties of England and Wales and the regions of Scotland, consistent with the regional figures).

Reference

Employment Gazette, July 1988 (HMSO) (Price £3.40 net)

Top Salaries

Report No. 27 of the Review Body on Top Salaries (Chairman, Lord Plowden) was published in April 1988. The report reviewed the salaries of the higher judiciary and certain other judicial appointments, senior civil servants and senior officers in the Armed Forces and recommended revised salaries to take effect from 1 April 1988.

Appendix G of the Report gives details of the latest survey of top salaries in the private sector carried out by the Office of Manpower Economics (which provides the secretariat for the Review Body). The survey covered salaries and other direct remuneration (such as bonuses, commission and profit-sharing), and other benefits including pensions of full-time Board members and senior executives at 1 October 1986 and 1 October 1987. Usable replies were obtained from 168 organisations in respect of 2,477 posts. The response rate was 78 per cent.

At Appendix H is an evaluation of superannuation benefits by the Government Actuary; and at Appendix D the results of a survey of earnings at the Bar carried out by OME.

Reference

Review Body on Top Salaries, Report No. 27, Eleventh Report on Top Salaries Cm. 359 (HMSO April 1988) (Price £8.00 net)

Doctors' and Dentists' Remuneration

The Eighteenth Report by the Review Body on Doctors' and Dentists' Remuneration (Chairman, Sir Graham Wilkins) was published in April 1988: it recommends pay levels, for the year from 1 April 1988, for doctors and dentists in the National Health Service. Details of the pay recommendations are in Appendix A.

Reference

Review Body on Doctors' and Dentists' Remuneration, Eighteenth Report 1988 Cm. 358 (HMSO April) (Price £5.30 net)

Armed Forces Pay (Service medical and dental officers)

A Supplement to the Seventeenth Report of the Review Body on Armed Forces Pay was published in June 1988 and recommends pay levels for Service medical and dental officers to apply from 1 April 1988. (A full list of the Review Body's reports is in Appendix 1.)

The recommended military salaries for the ranks of Captain to Colonel (and equivalent) are in Table 1; paragraphs 7–19 include details of recommended salaries for Brigadiers, pre-registration medical practitioners and cadets; and paragraphs

20–25 are concerned with medical additional pay. (Equivalent salary levels for 1 April 1987 are in Appendix 2.)

Reference

Review Body on Armed Forces Pay, Service Medical and Dental Officers, Supplement to Seventeenth Report – Cm. 396 (HMSO June 1988) (Price £1.90 net).

Pay of Nursing Staff, Midwives and Health Visitors

The Fifth Report on Nursing Staff, Midwives and Health Visitors by the Review Body for Nursing Staff, Midwives, Health Visitors and Professions Allied to Medicine (Chairman, Sir James Cleminson) was published in April 1988 and recommends pay levels in the National Health Service for the year from 1 April 1988. Current and recommended pay scales are in Appendix A; current and recommended levels of leads and certain allowances are in Appendix B; recommended levels of London supplements, which are payable in addition to London weighting (for which the Review Body is not responsible), are in Appendix C; and details of the numbers covered and paybill are in Appendices D and E respectively. Appendix F gives details of the background, methodology and outcome of the clinical grading review carried out jointly by the two sides of the Nursing and Midwifery Staffs Negotiating Council. The grading review covered staff in grades from nursing auxiliary to senior nurse 7, together with some teaching grades.

The results of two unpublished surveys – covering vacancies in the NHS and early career pay and conditions of service for jobs outside the NHS with academic entry requirements equivalent to those required for entrance to schools of nursing – were used by the Review Body in the course of the review.

Reference

Review Body for Nursing Staff, Midwives, Health Visitors and Professions Allied to Medicine, Fifth Report on Nursing Staff, Midwives and Health Visitors, 1988 Cm. 360 (HMSO April 1988) (Price £5.90 net)

Pay of Professions Allied to Medicine

The Fifth Report on Professions Allied to Medicine by the Review Body for Nursing Staff, Midwives, Health Visitors and Professions Allied to Medicine (Chairman, Sir James Cleminson) was published in April 1988. It recommends pay levels, for the year from 1 April 1988, for chiropodists, dietitians, occupational therapists, orthoptists, physiotherapists, radiographers, and related grades in the National Health Service. Current and recommended pay scales are in Appendix A; current and recommended levels of certain allowances are in Appendix B; recommended levels of London supplements, which are payable in addition to London weighting (for which the Review Body is not responsible), are in Appendix C; and details of the numbers covered and paybill are in Appendices D and E respectively.

The results of two unpublished surveys – covering vacancies in the NHS and early career pay and conditions of service for jobs outside the NHS with academic entry requirements equivalent to those required for entrance to the professions allied to medicine or to training for them – were used by the Review Body in the course of the review.

Reference

Review Body for Nursing Staff, Midwives, Health Visitors and Professions Allied to Medicine, Fifth Report on Professions Allied to Medicine, 1988 Cm. 361 (HMSO April 1988) (Price £4.00 net)

Armed Forces Pay

The Seventeenth Report by the Review Body on Armed Forces Pay (Chairman, Sir Peter Matthews) was published in April 1988 and recommends pay, accommodation and food charges for Service ranks up to and including Brigadier (and equivalent), to apply from 1 April 1988.

Details of the main recommended levels of military salary (in Army terms) are in Tables 1–3, and of accommodation charges in Tables 5–7. Equivalent levels for 1 April 1987 are in Appendices 3 and 4 respectively.

The results of four unpublished remuneration surveys – covering comparators for Officers, Corporals, and Warrant Officers and Senior Non-commissioned Officers – were used by the Review Body as a guide to judgement in determining appropriate levels of military salary. Appendix 2 gives the background to the earnings comparisons undertaken by the Review Body.

Reference

Review Body on Armed Forces Pay, Seventeenth Report 1988 – Cm. 357 (HMSO April 1988) (Price £5.30 net)

DHSS low income statistics

Following publication of the previous edition of the low income figures in 1986, a technical review of the tables was announced. The report by government statisticians was published on 29 March. It identified a number of methodological weaknesses in the low income tables, particularly in the use of supplementary benefit scale rates as the yardstick for the measurement of low income. Furthermore, the tables gave no indication of whether those in the lower income groups were becoming better or worse off in real terms.

In view of these and other weaknesses, and the imminent end of the supplementary benefit scheme itself, the report recommended the introduction of a number of new analyses based on income measures which would be broadly independent of the social security rules and rates, and which could therefore continue unaffected by changes in the benefit system itself. The report included detailed proposals for these new tables, which would include data on changes in real living standards and new analyses of the contribution of benefits to income in the lower ranges. Overall, the proposed new tables – which are called *Households below average income: a statistical analysis* – are significantly more extensive than the low income series.

To ensure a proper overlap between the old and new series, the report recommended that data on both bases should be published for all three years. In addition, to facilitate analysis of longer-term trends, the report proposed that a subsequent edition should include data for a much earlier year – probably 1971.

The report's recommendations were accepted by the Government. Accordingly, tables published both the new and the old bases.

The *Households Below Average Income* series provides an extensive range of data, including:

- the characteristics of those in the lower half of the income distribution;
- the numbers of people in households with incomes below the average, and proportions of the average;
- the role of social security for those in the lower half of the income distribution.

Copies of the *Household Below Average Income Statistics* (Price £2.00) and the *Low Income Family Statistics* (Price £1.50) are available from:

DHSS
Branch SR3A
Room A526
Alexander Fleming House
Elephant and Castle
London SE1 6BY
Telephone: 01-407 5522 Extn. 6723

Reference

DHSS Press Release 88/159

New entrants to the labour market in the 1990s

This article in *Employment Gazette*, May 1988 analyses the consequences for the labour market of the decline in the number of young people in the period up to 1995 following the low birth rates in the 1970s. It identifies where the main instances of labour market imbalance may occur and outlines some ways in which employers may adjust their recruitment strategies as a result.

For many years Britain's economy has absorbed increasing numbers of people of working age. In the ten-year period to 1986, for example, the population of working age grew by some two million. The prospects for the foreseeable future are, however, quite different. Between 1986 and 1995 a rise of less than half a million is all that is expected. The population aged 16–19, which stood at 3.7 million in 1982, fell to below 3.5 million in 1986 and will reach less than 2.6 million in the mid-1990s.

Reference

Employment Gazette, May 1988 (HMSO) (price £3.40 net)

Young People in the Labour Market – A Challenge for the 1990s

This report, published in July, was produced by the National Economic Development Office and the Training Commission. It publishes the findings of a major research programme into the implications for employers of the falling number of young people. For a copy of the full NEDO report, you should send a cheque for £8.00 to:

NEDO Books
Millbank Tower
Millbank
London SW1P 4QX (Telephone: 01-211 5989).

New graduate destinations and degree class

This article is by Jason Tarsh, an Economic Adviser in the Department of Education and Science and is published in *Employment Gazette*, July 1988.

The article uses the 1986 first destinations survey to look at the link between the patterns of new university graduates' destinations and their degree class. It considers how degree class influences the decision whether to enter further study or other forms of training such as teaching. For graduates entering the labour force, there is an assessment of whether a better degree class gives greater success in finding employment and whether it influences the type of job that graduates get.

The annual first destinations survey is a major source of information on the graduate labour market. There have been a series of articles reporting its results — many of these have been in *Employment Gazette*. Generally, these demonstrate that to understand the graduate labour market it is essential to disaggregate the results at least to the level of individual subject and sector (university, polytechnic and college). The aim of this article is to take that analysis a stage further and look at the patterns of first destinations by class of degree within individual subjects. This is the first time that detailed results on this basis have been published.

Reference

Employment Gazette, July 1988 (HMSO) (Price £3.40 net)

Industrial stoppages in 1987

The annual article on stoppages of work due to industrial disputes is published in the July issue of *Employment Gazette* and provides statistics for 1987. Recent trends in the figures are reviewed and the coverage of the statistics is described. As in previous years the tables show the number of stoppages, workers involved and working days lost analysed by industry and region; industry and principal cause; size, both in terms of working days lost and workers involved; and by duration. It also contains a list giving details of the prominent stoppages which occurred in 1987.

Reference

Employment Gazette, July 1988 (HMSO) (Price £3.40 net)

FOOD

National Food Survey

Summarised results from the National Food Survey for the first quarter of 1988 were published in June 1988. More detailed information from the survey is available for a fee. For details contact:

National Food Survey Branch
Ministry of Agriculture, Fisheries and Food
Room 419
Whitehall Place (West Block)
London SW1P 3AQ

The Scottish Sample Pig Census, April 1988

The results of the Scottish Sample Pig Census for April 1988 were published as a Scottish Office Press Notice on 10 June 1988 (Press Notice Number 0934/88).

COMPUTER ENVIRONMENT

News on Package X

Release 74 of the data handling and statistical analysis system Package X is now available for ICL Series 39 machines running the VME operating system. The package has facilities for manipulating data and provides a range of statistical analysis techniques including: linear, polynomial and multiple regression, descriptive statistics, tabulation, parametric and non-parametric tests. Package X has a useful programming and macro language which allows commands to be combined together to develop very powerful applications.

In addition to the new release for Series 39 machines, there are still versions of the package available for older ICL Series 1900 and 2900 machines. There are also versions for Bleasdale and VAX minicomputers and for IBM PC ATs (and compatibles) running the XENIX operating system. There is a portable version of the package which runs under the UNIX System V operating system. We are very willing to consider requests from government departments for ports to other UNIX based machines.

Package X is provided free of charge to government departments and other exchequer funded bodies and has at one time or another been installed at nearly 70 government sites. Commercial and academic organisations can now purchase licences for Package X following the conclusion of a marketing agreement between CCTA and Systems Designers Scientific.

For further details of the package government departments should contact:

Liz McKay
Room 65C/2
Central Statistical Office
Great George Street
London SW1P 3AQ
Telephone: 01-270 5955

Commercial/Academic organisations should contact:

Mr E Yorston
Systems Designers Scientific
Ferneberga House, Alexandra Road,
Farnborough, Hampshire GU14 6DQ
Telephone: 0252-544444

The Government Data Network (GDN)

The government has examined the feasible options for meeting the foreseen data communications needs of four major departments - the Department of Health and Social Security, Inland Revenue, HM Customs and Excise and the Home Office. The costs of these have been compared with the costs of meeting these requirements through a Government Data Network (GDN). The comparison showed that, over ten years, a GDN would be significantly cheaper than the alternatives, even before taking account of the superior service and greater security offered by a GDN. The government has therefore decided to proceed with the GDN and intends to award contracts for the GDN service to Racal Scicon Ltd.

Why is the GDN necessary?

The efficiency and effectiveness of the key business operations of most central government departments are now heavily dependent on IT systems. Many departments - for example, Inland Revenue and DHSS - have local offices in most major towns throughout the country, and need direct, fast and secure links with the department's computer centre(s) and access to data from a variety of different systems within the department.

What happens next?

Acceptance testing of the GDN service will commence before the end of the year using the HM Customs and Excise VALID (VAT Access and Local Input of Data) application system, and an operational service is planned for early 1989.

Background

In 1987 there were about 65,000 terminals in departments. Departmental plans indicate a growth to 155,000 by 1992 and to 240,000 by 1995. By the turn of the century, possibly 350,000 terminals could be in use on desks in departments. This huge and sustained investment is directed to improving the quality and efficiency of departmental business and providing better value for money for tax-payers.

Security

The aim is to provide each department with at least the same level of privacy and protection they would have enjoyed on their own separate departmental networks. The Data Protection Registrar was consulted early on, and subsequently, in order to review proposals and reports. BIS Applied Systems were engaged to review supplier's security proposals and to advise on policy and implementation. As part of this they have produced guidelines for departments' use of the GDN. Security also formed part of the tender evaluation process. Departments will be able to add on additional security measures, such as encryption, for particularly sensitive applications.

Saving costs

There are disadvantages in each department introducing independent data networks. There is a high basic cost in terms of skilled staff resources and running costs for each network established. These costs vary little as the network increases.

The present plans for the GDN take account of the current planned needs of the four initial users. Because of the size of the Inland Revenue and DHSS applications and the wide

geographical spread of all four users, the network could readily form the core of a much broader government communications service if this offers the best value for money in meeting needs. It will be designed from the outset to facilitate rapid and easy growth and increased geographical coverage.

The actual cost to each department will depend on its use of the network. The contractor has had to guarantee service levels and offer the service at a lower cost than a comparable public service.

Provision of the service

The network will not be owned by the government. It will be provided, owned and operated by the contractor under a commercial contract. The supplier will be responsible for designing, procuring, implementing and running the network to provide the service stipulated by the users. A small central government team will be needed to safeguard the government position and to organise developments and changes to the network. The contract will include clauses allowing the government to take over the network if necessary.

Standards

Because of the many types of computer used in a department, the network will use Open Systems Interconnection (OSI) Standards. OSI simplifies interworking between different systems, allowing users to mix together equipment and software from different suppliers. This improves competition, increases customer choice and tends to lead to lower prices. The network will use the internationally agreed set of rules (the X.25 protocol) governing the connection of a terminal or a computer to a packet switching network. Enquiries about the GDN itself should be directed to:

GDN Project Director, Eryl Thomas, 01-217 3050

Reference

Central Computer and Telecommunications Agency, HM Treasury Press Notice No. 33/88.

INDUSTRIAL

Business Monitors – Annual Census of Production 1986

Readers of *Statistical News* are made aware of the results of the 1986 Census of Production as the Business Monitors become available. The following table lists the monitors published since notification in the last number of *Statistical News*.

Business Monitor Number	Description	Standard Industrial Classification 1980 Group
PA111	Coal extraction and manufacture of solid fuels	111
PA120	Coke ovens	120
PA130	Extraction of mineral oil and natural gas	130
PA140	Mineral oil processing	140
PA161	Production of distribution of electricity	161
PA162	Public gas supply	162
PA221	Iron and steel industry	221
PA222	Steel tubes	222
PA223	Drawing, cold rolling and cold forming of steel	223
PA224	Non-ferrous metals industry	224
PA231	Extraction of stone, clay, sand and gravel	231

<i>Business Monitor Number</i>	<i>Description</i>	<i>Standard Industrial Classification 1980 Group</i>
PA239	Extraction of miscellaneous minerals (including salt)	239
PA241	Structural clay products	241
PA242	Cement, lime and plaster	242
PA243	Building products of concrete, cement or plaster	243
PA244	Asbestos goods	244
PA245	Working of stone and other non-metallic minerals	245
PA247	Glass and glassware	247
PA248	Refractory and ceramic goods	248
PA251	Basic industrial chemicals	251
PA255	Paints, varnishes and printing ink	255
PA256	Specialised chemical products mainly for industrial agricultural purposes	256
PA312	Forging, pressing and stamping	312
PA313	Bolts, nuts etc, springs; non-precision chains; metals treatment	313
PA316	Hand tools and finished metal goods	316
PA320	Industrial plant and steelwork	320
PA322	Metal-working machine tools and engineers' tools	322
PA324	Machinery for the food, chemical and related industries, process engineering contractors	324
PA325	Mining machinery, construction and mechanical handling equipment	325
PA326	Mechanical power transmission equipment	326
PA327	Machinery for printing, paper, wood, leather, rubber, glass and related industries; laundry and dry cleaning machinery	327
PA328	Miscellaneous machinery and mechanical equipment	328
PA329	Ordnance, small arms and ammunition	329
PA342	Basic electrical equipment	342
PA343	Electrical equipment for industrial use, and batteries and accumulators	343
PA344	Telecommunication equipment, electrical measuring equipment, electronic capital goods and passive electronic components	344
PA345	Miscellaneous electronic equipment	345
PA346	Domestic-type electric appliances	346
PA351	Motor vehicles and their engines	351
PA352	Motor vehicle bodies, trailers and caravans	352
PA353	Motor vehicle parts	353
PA363	Cycles and motor cycles	363
PA364	Aerospace equipment manufacturing and repairing	364
PA365	Miscellaneous vehicles	365
PA371	Measuring, checking and precision instruments and apparatus	371
PA372	Medical and surgical equipment and orthopaedic appliances	372
PA373	Optical precision instruments and photographic equipment	373
PA411	Organic oils and fats	411
PA412	Slaughtering of animals and production of meat and by-products	412
PA413	Preparation of milk and milk products	413
PA415	Fish processing	415
PA416	Grain milling	416
PA419	Bread, biscuits and flour confectionery	419
PA421	Ice-cream, cocoa, chocolate and sugar confectionery	421
PA422	Animal feeding stuffs	422
PA423	Starch and miscellaneous foods	423
PA424	Spirit distilling and compounding	424
PA427	Brewing and malting	427
PA428	Soft drinks	428
PA429	Tobacco industry	429
PA432	Cotton and silk industries	432
PA436	Hosiery and other knitted goods	436
PA437	Textile finishing	437
PA439	Miscellaneous textiles	439
PA441	Leather (tanning and dressing) and fellmongery	441
PA442	Leather goods	442
PA451	Footwear	451
PA453	Clothing, hats and gloves	453
PA455	Household textiles and other made-up textiles	455
PA461	Sawmilling, planing, etc of wood	461
PA465	Miscellaneous wooden articles	465
PA467	Wooden and upholstered furniture and shop and office fittings	467
PA472	Conversion of paper and board	472
PA475	Printing and publishing	475
PA481	Rubber products	481
PA483	Processing of plastics	483
PA491	Jewellery and coins	491
PA493	Photographic and cinematographic processing laboratories	493

PA494	Toys and sports goods	494
PA495	Miscellaneous manufacturing industries	495

All 112 monitors in the series have now been published. Copies of these Business Monitors are available on standing order from Her Majesty's Stationery Office, PO Box 276, London SW8 5DT (Telephone 01-622 3316) or through any HMSO bookshop.

Further information on the PA series of Business Monitors and Censuses generally can be obtained from:

Mr J Dowsell
Business Statistics Office
Government Buildings
Cardiff Road
Newport
Gwent NP9 1XG
Telephone: 0633-815696 Ext 2455

Individual monitors or a free brochure describing the full range of Monitors with prices and order form may be obtained from:

The Librarian
Business Statistics Office
Government Buildings
Cardiff Road
Newport
Gwent NP9 1XG
Telephone: 0633-815696 Ext 2973

Centres for European Business Information

The removal of internal Common Market trade barriers will create new opportunities for British businesses. This article by Elizabeth Round in the May *Employment Gazette*, looks at some of the advice and information now on offer to them. It also shows how a new breed of Centres for European Business Information (CEBIs) is helping small firms in particular to expand.

Towards the end of 1988 the Commission will decide whether the response to the original 39 CEBIs is good enough for it to launch more throughout the EEC. The Commission has talked about having 200 CEBIs throughout the Common Market by 1992, but that will depend on the success of the pilot scheme.

By December 31, 1992 most existing trade barriers between the member countries of the European Economic Community should have been completely swept away. The 12 EEC countries have all signed the Single European Act which is committed to making a Europe a unified market of some 322 million people by that date. This internal market will not just happen overnight. Instead, in the years leading up to 1992, trade barriers will be gradually whittled away. By the time the internal market is complete, 300 individual pieces of legislation will have taken place. So far 75 have gone ahead.

Reference

Employment Gazette, May 1988 (HMSO) (Price £3.40 net)

Textiles and clothing industries 1987

Production in the textiles and clothing industries both fell slightly by 0.5 per cent in the fourth quarter of 1987, after increases earlier in the year as reported in *British Business*, 3 June 1988. Textiles output for the year still rose by 2 per cent, after a more modest increase in 1986. However, clothing output fell by 1 per cent in 1987.

The value of exports of both textiles and clothing rose strongly in 1987: by 10 per cent and 16 per cent respectively. However, imports rose significantly also, at a similar rate to exports in both sectors. The EC accounted for almost 60 per cent of clothing exports in 1987.

Producer output prices for textiles were up by 5 per cent in 1987, slightly more than for manufacturing as a whole. Prices for the clothing, footwear and made-up textiles group rose by only 3 per cent. Material and fuel prices rose at a slightly higher rate in both groups. However, earnings increased at a faster rate than prices generally, up by 8 per cent in textiles and 7 per cent in clothing.

Employment in the following industries during the fourth quarter of 1987 was as follows:

Textiles, 219,000
Clothing and fur goods, 207,900

Any inquiries regarding the subject of this article should be addressed to:

Department of Trade and Industry
Room 2012
Millbank Tower
Millbank
London SW1P 4QU
Telephone: 01-211 3539

Reference
British Business (Department of Trade and Industry) (Price £1.40 every Friday)

The Chemical Industry in 1987

An article in *British Business*, 1 July 1988 gives details of output of the chemical industry which resumed strong growth in 1987. Output was up 7½ per cent compared with 1½ per cent in 1986 though the rate of increase slowed in the fourth quarter. The industry forecasts a rise of some 3 per cent in 1988.

Exports volume increased by 8 per cent in 1987 with a jump in the third and fourth quarters. UK manufacturers' sales to the home market rose by 7 per cent in 1987.

Home demand rose by 9½ per cent in 1987 with imports up sharply by 13 per cent.

Prices of raw materials and fuel in 1987 were 4½ per cent higher than in 1986, but were still some 11 per cent lower than in 1985 on average.

Output prices rose by 4½ per cent in 1987 and by a further 2 per cent in the first quarter of 1988.

The growth in average earnings is still above the level of inflation. Employment showed a slight increase in the 12 months to December 1987. The rise in output in 1987 together with trades in employment indicates a further rise in productivity during the year.

The volume of capital expenditure rose by 5 per cent in 1987. The industry expects a substantial increase in capital expenditure in the next two years, with an 18 per cent rise in 1988 and 5 per cent in 1989.

Supporting tables, graphs, bar and pie charts give indications, from 1981, of imports, exports, production indices, sales, prices etc.

Further detail on the subject can be obtained by contacting:

Statistics Division 1B
Department of Trade and Industry
Room 2016
Millbank Tower
Millbank
London SW1P 4QU
Telephone: 01-211 6578

Reference
British Business, (Department of Trade and Industry) (Price £1.40)

TRANSPORT

Road Haulage in Great Britain – 1987

The Department of Transport has just published the results of its 1987 survey of heavy goods vehicles. The survey shows that there has been a sharp increase in activity in 1987 – with tonne-kilometres up by 7 per cent compared with 1986. Within this total the proportion of work done by the heaviest lorries has continued to increase.

The survey covers goods vehicles over 3.5 tonnes gross weight registered in Great Britain. The tables in the report show activity by size and type of vehicle, commodities carried, distances travelled, etc. Time series of the main aggregates are given from 1977. There are also tables showing estimates of the mean distances travelled, tonnes carried, etc. for vehicles grouped according to size and type of work. Further tabulations of the data can be purchased from the Department.

The report – *The Transport of Goods by Road in Great Britain: 1987*, Statistics Bulletin (88)44, ISBN 1 85112 147 1 costs £8 and is available from:

Department of Transport
Publication Sales Unit
Building 1
Victoria Road
South Ruislip HA4 0NZ
Telephone: 01-841 3425

Port Statistics 1987

The latest edition of the annual publication *Port Statistics*, compiled by the Department of Transport (DTp), is due for publication in August, jointly with the British Ports Federation. This is the eighth such publication since the closure of the National Ports Council and the fifth on a 'mode of appearance' basis.

Port Statistics 1987 provides details of total foreign and domestic traffic through the principal ports of Great Britain by mode of appearance, ie disaggregated into bulk, container, roll-on/roll-off, semi-bulk and conventional traffic. Some commodity detail is given for bulk traffic. The statistics show yet another record year for port traffic with both exports and imports increasing, a further growth in the use of 'ro/ro' and containers and in the use of ferries by accompanied passenger vehicles. For the first time it has been possible to include summary statistics of Northern Ireland port traffic; these will be expanded in future editions of the publication.

The statistics are accompanied by a detailed commentary on the 125 pages of tables and 10 pages of charts and graphs. They are mainly based on the annual port traffic return to the Department, plus other sources to cover port manpower, finance, passenger traffic/shipping movements, and Northern Ireland traffic etc. *Port Statistics 1987* is available from:

British Ports Federation
Commonwealth House
1-19 New Oxford Street
London WC1A 1DZ

price £25.00 including postage.

Statistical Bulletin of International Comparisons

Statisticians in the Department of Transport are often asked how this country compares with others and how comparisons are changing over time. This exercise is fraught with statistical problems; but some at last have now been overcome.

On 11 July 1988 the Department of Transport published the first of a new series of bulletins comparing the main transport features of various countries.

The first bulletin in the series, *International Comparisons of Transport Statistics 1970-1985* concentrates on aggregate indicators, and on freight transport. The next issue will cover more detailed aspects of road statistics such as vehicle stock, vehicle kilometres and road deaths.

Changes in the nature of transportation in the member countries of the European Community are discussed and compared with those in selected countries in the rest of Europe. Data for Japan, the USA, and the USSR are also provided wherever possible. The main features are illustrated using a range of maps and charts.

Perhaps not surprisingly, countries with the greatest population densities tend to have the most extensive road networks and, to a lesser extent, railways infrastructure. Belgium and Japan have the highest road network densities;

whilst the German Democratic Republic, the Federal Republic of Germany, Switzerland and Belgium have the most comprehensive railway networks.

Size, population, geographical terrain, location, and economic structure and performance are amongst the factors influencing the nature of transportation systems in different countries. The bulletin brings out their significance in the most important comparisons and emphasises the need to bear them in mind when contrasting activity between countries.

The data was derived from a wide range of published sources, in particular the UN publication *Annual Bulletin of Transport Statistics*.

Enquiries regarding details in the bulletin should be addressed to:

International Transport Statistics Branch
Department of Transport
Room A2.06
Romney House
43 Marsham Street
London SW1P 3PY
Telephone: 01-276 8539

The bulletin can be purchased, (Price £6), through the Department's Publication Sales Unit at Victoria Road, South Ruislip, Middlesex.

DEFENCE

Defence Statistics

The Statement on the Defence Estimates 1988 was published on 17 May 1988. Volume 1 describes the United Kingdom's defence policies, gives an account of defence expenditure in the previous year, sets out plans for the future, and reports on the condition, strength and activities of the services. Volume 2 contains the available statistics on a wide range of defence activities including expenditure, trade, manpower, services to the community and health of the armed forces.

Reference

Statement on the Defence Estimates 1988 (HMSO May 1988) (Volume 1, Cm 344-I, Price £5.60 net; Volume 2, Cm 344-II, Price £5.80 net)

ENERGY

Digest of United Kingdom Energy Statistics 1988

The latest edition of this series, prepared by the Economics and Statistics Division of the Department of Energy, was published at the end of July. It contains 75 tables, generally showing data for the years 1983 to 1987, and four pages of maps and charts.

The first section covers general energy statistics and includes tables showing inland consumption of fuels on a primary fuel input basis (in coal equivalent, in oil equivalent and in terms of the thermal content of fuels). Other tables show the estimated value of purchases of fuels, energy consumption by final users and an analysis of consumption by main

industrial groups. The section also contains charts showing trends in the inland consumption of primary fuels and equivalents.

The other sections deal separately with individual fuels, prices and values and foreign trade in fuels. Fuel production and consumption statistics are derived mainly from the records of the fuel producers and suppliers. Foreign trade statistics are generally derived from returns made to HM Customs and Excise.

Reference

Digest of United Kingdom Energy Statistics 1988 (HMSO) July 1988 (Price £13.50 net)

PRICES

Rebasing the PINCCA Indices – Business Monitor MM17

The *Price Index Numbers for Current Cost Accounting* published by HMSO (Business Monitor MM17) on behalf of the Government Statistical Service are compiled mainly from the family of producer price indices. These indices are rebased at regular intervals to take account of the changing pattern of Industry's purchases, sales, stocks held and capital expenditure. Figures from the latest rebasing are now being prepared and are expected to be published in August at which time rebased PINCCA indices will also become available. Thus, when the provisional figures for July are published in August they will be referenced to 1985=100.

A longer history of these indices referenced to 1985=100 and covering the period from 1983 to the end of 1987 will be published as Business Monitor M0 18 *Price Index Numbers for Current Cost Accounting Summary Volume 1983–87* which should be available in September.

A magnetic tape on a monthly basis containing all the data in M0 18 is also available.

Users of PINCCA indices should note that because the new indices will reflect a more recent pattern of stocks held by industry or capital expenditure etc, the index movements may differ from those published previously.

Enquiries regarding rebasing or magnetic tape should be referred to:

Business Statistics Office
Room 2.155
Government Buildings
Cardiff Road
Newport
Gwent NP9 1XG
Telephone: 0633 812173

NATIONAL ACCOUNTS

United Kingdom National Accounts 1988 Edition

The 1988 edition of the CSO Blue Book – *United Kingdom National Accounts* – is due to be published on 9 September 1988.

Rebasing. In this issue 1985 replaces 1980 as the base year for all constant price series. Data, formerly in 1980 prices, will be expressed in 1985 prices to reflect (from 1983 onwards)

the price structure in the economy in 1985. All index numbers will relate to a value of 100 in 1985. This will be the first official publication of UK national accounts data rebased on 1985 prices. The Blue Book contains data for whole calendar years only. Quarterly national accounts aggregates in 1985 prices consistent with the 1988 Blue Book will be published for the first time in the September GDP press notice and in the September 1988 issue of *Economic Trends*. The October issue of *Economic Trends* will contain the regular article on 'National Income and Expenditure in the second quarter of 1988' giving quarterly series for the latest ten years, consistent with the Blue Book annual totals. Longer-run data will be published as usual in the *Economic Trends Annual Supplement* early in 1988. An analysis of the effects of rebasing will be published in *Economic Trends* as soon as possible.

The average estimate. The average estimate of Gross Domestic Product, regarded as the definitive estimate for levels of economic activity and for assessing change over periods of a year or more, is being given more prominence. The expenditure-based, income-based and output-based estimates from which the average is obtained, will be published in full as in previous editions.

Summary input-output tables. Summary input-output tables for 1984 will be included. These display the flow of goods and services in the economy, illustrating the interdependence of the various industries. Because of the size of the task of computing these data, the industry and commodity detail given for 1984 is consistent with the previous edition of the Blue Book.

Computer-readable dataset. A computer-readable Blue Book dataset will be available, containing annual data only, as part of the Central Statistical Office Databank Service. The computer-readable series are indicated throughout the publication by the occurrence of four-character identifiers. The Blue Book itself can therefore be used as a directory to the computer-readable dataset.

References

United Kingdom National Accounts 1988 edition (HMSO) (Price £11.95 net)

ISBN 011 620295 5

Economic Trends (HMSO Monthly) (Price £9.25 net, annual subscription including supplement £110).

Economic Trends Annual Supplement No. 13, 1988 edition (HMSO) (Price £12.50 net)

HOME FINANCE

PSBR: New Data on Notes and Coin

An article in the July issue of *Economic Trends* describes the small revisions which have been made in the calculation of the public sector borrowing requirement (PSBR). The changes, which result from the inclusion for the first time of data on public corporations' holdings of notes and coin, affect figures for 1976-77 onwards. The revisions amount to less than £0.1 billion in most financial years. Corresponding changes have also been made to the monetary aggregates, other than M0.

Reference

'PSBR: New Data on Notes and Coin', *Economic Trends*, (HMSO July 1988) (Price £9.25 net)

Investment intentions for 1988 and 1989

An article on this subject appeared in *British Business*, 3 June 1988. The latest survey of investment intentions carried out by the Department of Trade and Industry indicates a rise of around 12 per cent in the volume of investment by the manufacturing, construction, distribution and selected service industries in 1988. Indications from the results of the second survey for 1989 suggest a further, though smaller, increase.

The figures for manufacturing industry cover Divisions 2, 3 and 4 of the Standard Industrial Classification (SIC) 1980. Those for construction, distribution and selected service industries are covered by Divisions 5, 6 and 8 plus Classes 72, 76 and 77 of Division 7. Exploration and development work in the North Sea is classified to the energy industries and is therefore not included in these figures.

An article on investment in assets for leasing was published in the Bank of England *Quarterly Bulletin* for November 1987.

Reference

British Business (Department of Trade and Industry) (Price £1.40 net)

Home sales of manufactured products in 1987

An article in *British Business* dated 6 May 1988 stated that the output price index for home sales of manufactured products rose by 3.9 per cent in the 12 months ended December 1987. This compares with increases of 4.2 per cent during 1986 and 5.2 per cent during 1985.

The input price index for materials and fuel purchased by manufacturing industry rose by 3.6 per cent in the 12 months ended December 1987. This follows falls of 3.2 per cent during 1986 and 6.1 per cent in 1985.

The article contains detailed tables of annual data and 1980 SIC product level for input and output prices index numbers.

The producer price indices were published for the first time in August 1983, replacing the former wholesale price indices.

The producer price indices are calculated using the same general methodology as that used by the wholesale price indices. A comprehensive guide to the collection and calculation of the wholesale price indices entitled, *Wholesale price index, principles and procedures* is published by the Government Statistical Service and is available from HMSO, price £5.60 net.

Reference

British Business (Department of Trade and Industry) (Price £1.40 weekly)

OVERSEAS FINANCE AND TRADE

United Kingdom Balance of Payments 1988 Edition

The CSO Pink Book

The 1988 edition of the CSO Pink Book, containing detailed balance of payments figures for the last eleven years and summary figures from 1966, was published in August. The Pink Book contains revisions to previously published figures reflecting mainly the incorporation of later information

although some changes result from improvements in the methods of estimating certain series.

The Pink Book presents more complete information than is published elsewhere and is the source for estimates of United Kingdom transactions with the countries and institutions of the European Community and the overseas earnings of United Kingdom financial institutions ('City' earnings). It also includes estimates of the levels of United Kingdom external assets and liabilities. The annual data are consistent with the quarterly series which will be published in the September issue of *Economic Trends*.

As in previous years the Pink Book is divided into sections e.g. visible trade, services, transfers, transactions in United Kingdom external assets and liabilities, etc., with each section containing explanatory notes on the series covered and the sources of the data.

The data in the Pink Book, and where available those for earlier years not covered in this publication, are obtainable in computer readable form as a CSO Databank Dataset. To help use this Dataset the appropriate CSO Databank identifiers are included in the Pink Book tables.

Reference

United Kingdom Balance of Payments, 1988 Edition (HMSO) (Price £9.95 net) ISBN 0 11 620343 9

Performance of industrial countries

An article in *British Business*, 17 June 1988 contains ten tables giving figures for OECD countries on: industrial production (excluding construction), gross domestic production, unemployment, earnings/wages per head in manufacturing, consumer prices (all goods and services), balance of payments on current account, industrial countries' trade, exports (fob), imports (cif) and exports of manufactures by the main manufacturing countries (by value/volume index/unit value index in US \$).

Real gross domestic product for the countries making up the Organisation for Economic Cooperation and Development (OECD) grew by about 3 per cent in 1987, slightly faster than in 1986. The trend in unemployment levels in OECD countries has been generally downward in recent months. Main Manufacturing Countries (MMC's) exports of manufactures rose by 3 per cent in volume terms in 1987, with particularly strong growth towards the end of the year. Exports by the UK showed growth of 8 per cent, implying an increase in the UK's volume share of MMC's exports of manufactures.

Inquiries regarding the content of this article should be addressed to:

Department of Trade and Industry
Room 245
1 Victoria Street
London SW1H 0ET
Telephone: 01-215 4873

Reference

British Business (Department of Trade and Industry) (Price £1.40 net)

Tourism 1988

Tourism contributed some £18,000 million to the British economy in 1987, and provided up to 1.4 million jobs. This article in *Employment Gazette* June 1988, looks at the recent successes of the industry and considers ways to develop it still further.

The number of visits by overseas residents to the United Kingdom reached a new record last year: 15.6 million. For every four overseas visitors in 1982, there were five in 1987—a tremendous increase that has led to the UK reaching fifth spot in the league of world overseas tourist earnings.

According to the latest estimates, tourism contributed some £18,000 million to the British economy in 1987—and at the end of the year provided jobs for some 1.3 million people in the main sectors of the industry, rising to 1.4 million jobs at the height of the season.

Tourism '88 highlights some of the emerging trends likely to be of significance to the tourism industry; a continuing growth in disposable personal income—with increasing proportions of this being spent on tourism and leisure activities—and an increasing number of tourists worldwide who will demand high quality accommodation, facilities and service.

Copies of *Tourism '88* are available free of charge from:

Carol Wheeler
SFT 3c
Department of Employment
Room 209
Steel House
Tothill Street
London SW1H 9NF.

Reference

Employment Gazette, June 1988, (HMSO) (Price 3.40 net)

International comparisons of industrial stoppages for 1986

The incidence of working days lost due to industrial stoppages in the United Kingdom between 1977 and 1986 was compared with data available for other OECD countries in the June issue of *Employment Gazette*. The article also discussed the differences between countries in methods of compiling data and the criteria used for inclusion of stoppages in the statistics.

Reference

Employment Gazette, June 1988 (HMSO) (Price £3.40 net)

International publications

The following have recently been published and are available from HMSO:

Atomic Energy Research Establishment (UK Atomic Energy Authority)

Mortality study by Lucy Carpenter *et al*, price £23 net.

Customs Co-operation Council

Harmonized-system explanatory notes, amending supplement No. 2, July 1987, price £8 net.

European Communities Commission

The European Community population (Scale 1:4,000,000), includes basic statistics on the European Community and its 12 member states and comparison between the European Community, the United States and the Soviet Union, price £4.90 net.

The labour force survey as an employment policy instrument: report of the conference organised in Avignon 30 January - 1 February 1986 by Jacques A Zighera, price £8.50 net.

Programme for research and actions on the development of the labour market: trends in non-wage labour costs and their effects on employment: final report by Robert A Hart *et al*. (On cover: 'Deadline '92: a frontier free Europe'), price £9.50 net.

European Conference of Ministers of Transport

Statistical trends in transport 1965-1985, price £15.50 net.

Eurostat

Agricultural income 1987: sectoral income index analysis, price £6 net.

Agriculture: statistical yearbook 1988, price £14.80 net.

Basic statistics of the Community: comparison with some European countries, Canada, USA, Japan and the USSR, price £5.25 net.

EC external trade indices 1980-1986, price £12 net.

Economic accounts for agriculture 1981-86, price £12.20 net.

Electricity prices 1980-1987, price £8 net.

Energy: statistical yearbook 1986, price £15.75 net.

Europe in figures (A brochure of European statistics aimed at the younger readers), price £3.30 net.

External trade indices: proceedings of a seminar held in Luxembourg, (6-8/11/1985), price £8 net.

Price structure of the Community countries in 1985, price £3.30 net.

International Energy Agency

Annual oil and gas statistics and main historical series 1985-86, price £30.50 net.

Energy balances of OECD countries 1985/86 (with insert 'OECD energy flow chart 1986 based on International Energy Agency statistics'), price £14 net.

Energy statistics 1985/86, price £21 net.

International Monetary Fund.

World economic outlook, April 1988: a survey by the staff of the IMF, price £1 net.

International Working Group on External Debt Statistics

External debt: definition, statistical coverage and methodology, World Bank, price £7 net.

Organisation for Economic Co-operation and Development

Bank profitability: statistical supplement financial statement of banks 1982-86, price £9.40 net.

Historical statistics 1960-86, price £11 net.

Multinational enterprises and disclosure of information: clarification of the OECD guidelines, price £8.50 net.

Organisation for Economic Co-operation and Development. Development Centre

Food consumption statistics 1976-85, price £35 net.

United Nations

National accounts statistics: main aggregates and detailed tables, 1985, price £60 net.

United Nations Conference on European Statisticians

Statistical Standards and Studies - 40 - Recommendations for the 1990 censuses of population and housing in the ECE region: regional variant of the world recommendations for the 1990 round of population and housing censuses, price £16.75 net.

United Nations. Department of International Economics and Social Affairs. Statistics Office

Industrial statistics yearbook 1985, Vol. 1: *General industrial statistics*, price £35 net. Vol. 2: *Commodity production statistics*, price £35 net.

Population studies - 102 - World population policies, Vol. 1, *Afghanistan, France*, price £18.75 net.

Statistical papers, series V, 11 - *World statistics in brief: UN statistical pocketbook*, 11th edn., price £3.50 net.

Studies in methods. Series F - 45: *Training users and producers in compiling statistics and indicators on women in development: syllabus and related materials from the Subregional Seminar held in Harare 29 April to 7 May 1985*, price £11.50 net.

United Nations. Economic and Social Commission for Asia and the Pacific

Foreign trade statistics of Asia and the Pacific 1981-1985, price £27 net.

African statistical yearbook 1984, Part 2, West Africa, price £20 net.

United Nations, Economic Commission for Europe

Annual bulletin of gas statistics for Europe: Vol. 32, 1986, price £15 net.

Statistics of road traffic accidents in Europe, Vol 33, 1986, price £15 net.

UNESCO

Statistical Digest 1987: a statistical summary of data on education, science and technology, culture and communication, by country, price £6 net.

Readers should note that publications of international organisations are subject to price changes.

THE ENVIRONMENT

Handling geographic information

The Committee of Enquiry, Chairman Lord Chorley, was appointed by the Secretary of State for the Environment in April 1985 in response to a recommendation from the House of Lords Select Committee on Science and Technology. Their report was published in May 1987.

In that report the Committee highlighted four key tasks which needed to be put in hand:

- Rapid conversion of the OS basic scales map series to digital form in collaboration with the main users.
- More widespread use of post codes as standard units for holding and releasing socio-economic data. The plans for the 1991 Population Census are crucial in this respect.
- More widespread use of the National Grid referencing systems to link different data sets.

- Setting up a Centre for Geographic Information to carry matters forward in promotion, training, and bringing users together and to submit proposals for developing national policy.

The Government's response to the Report was published on 8 March 1988. Four main points emerged and the Government:

- accept the need for a faster programme to provide Ordnance Survey Maps in computer (or digital) form and describes the steps that have been taken by Ordnance Survey and the major users of maps to find a faster programme;
- draw attention to the Tradeable Information Initiative which aims to encourage wider use of Government data but stress that this has to be subject to overriding safeguards including the need to protect confidentiality and the undertakings given when the data were collected;
- accept that the Ordnance Survey National Grid should be the fundamental locational referencing system for Great Britain and also that post codes should be more widely used as a means of referencing data;
- reject the Committee's view that the Government should provide launch finance for a new Centre for Geographic Information. Instead, the Government believe that existing organisations (such as Automated Mapping/Facilities Management (AM/FM), the Economic and Social Research Council's Data Archive and Regional Research Laboratories and the Natural Environment Research Council) could develop their roles to meet the tasks which the Committee saw for the new Centre.

References

Handling Geographic Information (HMSO 1987) (Price £14.95)

Handling Geographic Information - The Government's Response of the Committee of Enquiry chaired by Lord Chorley (HMSO 1988) (Price £2.80 net)

PUBLICATIONS

Regional Trends 23

The 1988 edition of *Regional Trends* was published on 9 June. Detailed information is presented for Scotland, Wales, Northern Ireland and the eight standard regions of England, through tables, charts and maps. Data cover a wide range of social, demographic and economic topics, ranging from population to GDP and from law enforcement to industry. The volume contains twelve pages of statistics for the English and Welsh counties, the Scottish local regions and the education and library boards of Northern Ireland, and four pages of data at metropolitan district level. Variations within each region, which can be just as important as those between regions, are drawn out in separate regional profiles which comprise the first chapter of the book.

The publication is primarily a descriptive brief for government about broad regional changes, but is also an important reference book for those with general regional interests and for specialist users such as planners or marketing managers. This edition contains new items on, for example, housing stock values, infectious diseases, and water pollution incidents.

Reference

Regional Trends 23 1988 edition (HMSO June 1988) (Price £18.50 net)

Labour Market Quarterly Report – July 1988

The July issue of the *Labour Market Quarterly Report* was published by the Training Commission in July 1988. In addition to the usual commentary on the training implications of current labour market trends it includes three Special Features. The first Special Feature examines the training implications of the fall in the number of young people in the population over the next five years. The second looks at higher education. The third article considers the subject of the Inner Cities and focuses on the role of the Training Commission within the context of all Central Government activity within such areas.

For further information, or copies of the LMQR please contact:

Darren Howson
Training Commission
LM5, Room W815
Sheffield S1 4PQ
Telephone: (0742) 704075.

Bank of England Quarterly Bulletin

In addition to regular articles providing commentary on recent developments in the UK and world economies and on domestic and international financial markets, the May issue of the Bank's *Quarterly Bulletin* contains the following items:

Developments in international capital and banking markets in 1987

International capital flows in 1987 were dominated by the persistent large current account imbalances between the major economies; borrowing by developing countries, from banks and in the international capital markets, remained weak, with virtually no signs of any revival in spontaneous lending. Activity in international capital markets slowed over the year, in part as a result of the stock market crash in October, and there was a shift in the pattern of borrowing from eurobond issues to syndicated credits. The equity market crash also accelerated a shake-out of excess capacity in the eurobond market, led to increased tiering of interest rates in international bond markets and reinforced a shift away from securitised financing that had already become apparent. The Japanese retained their major presence in the international financial markets as intermediaries, investors and borrowers.

Trends in real interest rates

The level of UK interest rates in relation to those in other major economies has been the subject of much public comment. The point is usually made with reference to nominal rates (which have been, and remain, higher in the United Kingdom than in other industrial countries). However, real rates of interest are likely to have a greater and longer-lasting

influence on investment and savings decisions. This note attempts to set UK real interest rates in an international context by comparing pre-tax and post-tax rates in the seven largest industrial countries (the G7). These comparisons suggest that while UK real rates of interest were a little higher than in the rest of the G7 at the end of 1987, the discrepancy was considerably less than nominal differences suggest and would seem to have narrowed in the early months of 1988.

Inflation-adjusted sectoral saving and financial balances

This note presents revised and updated estimates of sectoral saving and financial balances adjusted for the effects of price inflation on net monetary assets and liabilities. It also presents estimates of the *ex ante* inflation gains and losses accruing to each sector based on a measure of implicit long-term market expectations. Since actual inflation changed by much more than this *ex ante* measure over the period, the *ex post* inflation adjustment is rather more substantial.

Composition of company boards

This article reports the results of a study of changes in the numbers of non-executive directors on the boards of the larger quoted companies since an earlier exercise conducted in 1985 (see the June 1985 Bulletin). The study reveals evidence of some slowdown in the trend towards increasing numbers of non-executive directors, but an encouraging improvement in their degree of independence, with fewer than one in four non-executive directors being former executives of the company or professional advisers to it, compared with one in three in the 1985 study.

Alternative measures of aggregate company liquidity

The past seven years have witnessed a sustained recovery in the profitability of industrial and commercial companies which has been reflected, *inter alia*, in a rapid accumulation of liquid assets. At the same time, companies have substantially increased their bank borrowing so that the sector's net liquidity position has remained broadly unchanged over the period. Does such a simultaneous accumulation of liquid assets and liabilities represent an improvement in liquidity? In addressing this question, this article reviews the various alternative measures of the liquidity concept and concludes that no single measure can adequately represent the sectoral liquidity position: any rounded assessment must take account of more than one indicator and of the prevailing economic background.

Other items

Also reprinted are speeches by the Governor on convergence of standards of capital adequacy and the lessons of the stock market crash and by Mr Brian Quinn, an executive director of the Bank, on some of the issues involved in the management and adequacy of banking liquidity.

The Bank's *Quarterly Bulletin* (£7.50 per copy) may be obtained from:

Bulletin Group
Economics Division H0-4
Bank of England
Threadneedle Street
London EC2R 8AH

DHSS Handbook of Research and Development – new edition

Since 1977 the DHSS has published annually a handbook listing the research units and projects which it funds, and reporting on significant research work and achievements.

A notable development in January 1987 was the establishment of a new DHSS Cancer Screening Evaluation Unit at the Institute of Cancer Research, Sutton, to conduct research into the effectiveness of screening in the early detection of cancer. This Unit is evaluating the newly set up National Breast Cancer Screening Programme. The Unit was officially opened by Mrs Edwina Currie, Parliamentary Secretary for Health, on 25 November 1987.

Examples of recent DHSS-funded research which has been clearly influential on government policy include:

- Non take-up of benefits in on Inner City area.
- Monitoring the central initiative to get mentally handicapped children out of hospital.
- A study of help-seeking and service utilisation among problem drug users.
- Nurses working in the community.

Reference

DHSS Handbook of Research and Development is published for the Department of Health and Social Security by Her Majesty's Stationery Office, price £8.00 (ISBN 0 11 321152 X), and is available from the HMSO Publications Centre, PO Box 276, London SW8 5DT, and from HMSO bookshops and accredited agents.

DHSS Press Release No. 88/202.

National Institute Economic Review, No.124: 50th Anniversary Issue

Fifty years of economic research: a brief history of the National Institute of Economic and Social Research 1938–88 by Kit Jones

This special article by Kit Jones traces the development of the National Institute over its 50-year history and looks at the Institute's wide-ranging contributions to economic research, the results of which have appeared in 80 books, many conference volumes and more than 200 articles in the *National Institute Economic Review*, in addition to many in other journals.

The following six notes look at different areas of the National Institute's research programme, each picking out for consideration one strand of the many in the Institute's history.

The National Institute: the early years by Austin Robinson

Research on productivity and the productivity gap by R C O Matthews

Growth through liberalisation by Herbert Giersch

The Institute and the microeconomics of public policy by A B Atkinson

Can financial markets form 'rational' expectations? by Gavyn Davies

The National Institute and understanding technical change by D K Stout

Reference

National Institute Review No. 124 May 1988, 50th anniversary issue is available from The National Institute of Economic and Social Research, 2 Dean Trench Street, Smith Square, London SW1P 3HE (Price: annual subscription £45 net or £12.50 net per single issue).

The Statistician at work

What do statisticians do? How and where do they work? If I were to get a qualification in statistics where would it lead me?

These tapes give an insight into answers to these and many similar questions. Leading statisticians such as Professor George Barnard, Professor Vic Barnett, Sir John Boreham, Professor Jim Durbin, Professor John Nelder, Professor Clifford Pearce, Dr Malcolm Pike, Dr Donald Preece, Mr Barry Wakefield and Professor Toby Lewis talk about their work as statisticians in different spheres.

The two tapes were first prepared as background material for the Open University course M345: Statistical Methods. They do, though, have a much wider appeal than this. They were devised by Professor Toby Lewis and Professor Vic Barnett to show the wide range of work that a statistician might be called upon to do.

The material is not tied to any particular syllabus, though occasionally some technical terms are used in the discussions, so these tapes can be used to supplement any course in statistics. They are useful for students at any level from age 16 to postgraduate and for their teachers and lecturers. The wide range of applications of statistics soon becomes apparent as does the wide range of activities that any statistician may be required to carry out. Hearing eminent practitioners of the subject speak is itself a broadening educational experience and gives insights that cannot be gained through a normal lecture course with background reading. Careers Officers should find this a valuable resource in advising students what are the job opportunities for those with a qualification in statistics.

Price £11.45 (inc VAT). Postage and packing: £0.70 (United Kingdom), £1.25 (Europe), £1.75 (Rest of world – surface mail), £5.80 (Rest of world – air mail).

US dollar price for customers in United States: \$20.00. Postage and packing: \$3.00 (surface) or \$10.00 (air mail).

Cheques should be made payable to 'Centre for Statistical Education'. The address is:

Department of Probability and Statistics
University of Sheffield
Sheffield S3 7RH
Telephone: 0742 768555

A use of microchips now general in British industry

Over the past decade the much feared microchip has grown from being a new technology to becoming a mature and familiar one. In 1978 only 1 British factory in 14 was using microelectronics in its products or production processes. Now two-thirds of them are, and they account for five-sixths of total employment in manufacturing. The microelectronic revolution has been a peaceful and bloodless one.

Policy Studies Institute (PSI) published on 30 June the fourth in a series of major surveys of the use of microelectronics in British industry: *The Impact of Microelectronics*.

The full results of the survey of 1400 factories, representative of the whole of manufacturing industry is published as a 320 page report, and presents the most up-to-date findings on this key area of manufacturing activity. The survey was funded by the Department of Trade and Industry and the Department of Employment. Main findings include:

- * 13 per cent of Britain's factories are now using microelectronics in their products and 59 per cent in their production processes.
- * The benefits gained and profits earned are substantial and important.
- * By far the most common problem – experienced by nearly half the user factories – has been lack of people trained in the new specialist skills.
- * The spread and increased use of micros has brought little opposition from shopfloor workers or their unions. This has been a problem in only 6 per cent of user plants.
- * The effects on employment have been less great than feared.
- * There is still scope for increased use.
- * Microelectronics was used increasingly first in the larger factories, but is spreading rapidly to smaller plants employing less than 20 people.

Reference

The Impact of Microelectronics: Diffusion, Benefits and Problems in British Industry by Jim Northcott with Annette Walling is published by PSI as a large format paperback at £19.95. Copies may be obtained from all good bookshops, or in case of difficulty directly from Policy Studies Institute, 100 Park Village East, London NW1 3SR, Telephone: 01-387 2171.

CONFERENCES

Focus on index numbers

The Continuing Education Department of the Library Association is organising a one-day seminar *Focus on Index Numbers* to be held at the Library Association, 7 Ridgmount Street, London WC1 on Monday October 3 1988. The one-day course has been designed by the Committee of Librarians and Statisticians, and the speakers will be Government Statisticians responsible for preparation of various index numbers. Further details on the course are available from the Information Services Secretary, Miss A Hobart at the Library Association, telephone: 01-636 7543.

Statistical information: sources for business planning & marketing

A seminar which reviews the range of UK statistics available for business and industry is being organised by the University of Warwick Business Information Service. It will take place on Friday 21 October 1988 at the University's Radcliffe House Conference Centre.

In business planning and marketing there is a constant need for up-to-date statistical information in areas such as sales, markets, production, foreign trade and economic and social trends. The purpose of the seminar is to review the major sources for this kind of data which include Government and non-official statistical sources as well as the increasingly important area of on-line statistical information. The seminar also includes a session with speakers involved in using or providing statistical information in which they consider the practice and problems of using statistics.

Speakers at the seminar include Elizabeth Chapman, Librarian of the Institute of Economics and Statistics at Oxford University, Tony Denison, Director of the Centre for Construction Market Information and Allan Foster, Librarian Designate of Manchester Business School.

The fee for the seminar, which includes tea, coffee, lunch and background papers, will be £90 for subscribers to the Business Information Service and £100 for non-subscribers.

Further details from Alison Kent, University of Warwick Business Information Service, University of Warwick Library, Gibbet Hill Road, Coventry CV4 7AL. Telephone: 0203-523251/523051.

GOVERNMENT STATISTICAL SERVICE

Government Economic Statistics Scrutiny

In its report on the 1988 Budget, the Treasury and Civil Select Committee said:

'We regard the problem of official statistics as sufficiently serious to warrant a thorough review. Accordingly we recommend the Government undertakes an investigation into the operation of the various Departments involved in the collection of national accounts statistics with a view to improving their reliability.'

The Government's response was that it shares the Committee's concern about the quality of national accounts statistics. While keeping in mind the related issue of minimising the burden on those who provide statistics, a review has been established, to be conducted as an efficiency scrutiny led by the Cabinet Office, with the following terms of reference:

'To examine the present interdepartmental arrangements for the production of Government economic statistics and to make recommendations for achieving cost-effective improvements where necessary.'

The review team will be led by Stephen Pickford, Senior Economic Adviser, who is being assigned to the Cabinet Office from the Treasury. The other members of the team are:

John Cunningham, Grade 5, Efficiency Unit
Jennifer Radice, Grade 7, Cabinet Office
Robin Lynch, Statistician, Central Statistical Office

The review started on 20 June 1988 and will report by the end of October 1988.

As a major compiler of economic statistics, the **Department of Trade and Industry** will be conducting a complementary review of its business surveys. In particular the review will consider: the purposes for which the various data are required; the sample designs and the relevant impact on large and small firms; whether forms could be redesigned to improve their understandability and/or ease of completion; the frequency with which data are collected and published; the number and range of questions included in particular enquiries; and the level of concern over statistical compliance costs in industry and commerce. The review team will have regard to the present arrangements for approval and control of surveys, which involve the Survey Control Unit and Ministers, and where appropriate will make recommendations for modifying those arrangements or for further supplementing or developing them, in consultation with the CSO.

The review team consists of:

Alan Armstrong, Consultant
David Rees, Grade 5, Economist, DTI (joint leaders)
Jane Green, DTI

This team is due to report by the end of the year.

Marketing Government Statistics

In recent years the Government has made major strides forward in making available to the public, detailed statistics which it has collected for its own purposes. Despite their great usefulness these statistics and the ways they can be used are not widely known. The Statistics Users Council therefore organised a seminar at the National Economic Development Office earlier this year under the chairmanship of Sir Ronald Halstead where Derrick Porter explained what was available from the Department of Trade and Industry, Michael Barker outlined the Central Statistical Office Database, Mitch Pratt provided a lively introduction to the material from Customs and Excise and the detail available from the Population Census was also outlined.

The exciting feature of these presentations was not so much the facilities themselves but the way in which they are being developed and the uses that can be made of them. Take the Census, for example, John English from Pinpoint showed how it is possible to produce detailed maps down to the level of enumeration districts which provide details of the distribution of social class and other characteristics required for marketing studies.

In the case of Customs and Excise we heard an even more remarkable tale. Not only is it possible to get great detail on trade from the marketing agents through the Bill of Entry service but the Chemical industry has through the Special Chemical Return, achieved a unique partnership between the public and private sectors. The industry has financed the setting up of a computer system at Customs in Southend to extract detail on imports of 2,000 specialised chemicals. The system is run by Customs but paid for by customers in the industry.

This sort of special relationship is now being expanded under the terms of the current Finance Bill (No. 2) which proposes to make available the names of import consignees. The route chosen for this type of disclosure, by using marketing agents, enables the final customer to obtain the data prepared in a way suitable for their specific needs. Such a service would be impossible for Government itself. It is thus illuminating to see the way in which the DTI is preparing the Industrial Economic Indicators database for marketing. This database contains much of the detail on over a hundred industries as provided under the Business Monitors and other sources. This will provide an invaluable source of information for researchers in industry.

It was very clear from the seminar that the information that Government has available is substantially underexploited. Much of it has not yet been marketed and that which has is only slowly finding a market. However, the use of marketing agents and imaginative arrangements between public and private sectors mean that the information is being presented in a manner which the private customer is most likely to find helpful – using prior analysis, incorporating it in reports and providing on-line access are just a few of the ideas being applied.

These developments are greatly to be welcomed and their extension right across Government under the tradeable information initiative should be firmly encouraged. The use of such information helps markets work better and the economy continue its path towards increased efficiency. I welcome in particular the very positive response that has been made on importers' details which will help suppliers and purchasers alike find the best sources of goods for their needs.

Review of Regular Surveys

Set out below is a list of recently completed quinquennial reviews of surveys to businesses and local authorities. These surveys are subject to a departmental review and a report which is monitored by the Survey Control Unit. Any enquiries concerning a survey or its review should be made to the appropriate departmental contact point given below.

I Surveys to businesses

Survey of Fertiliser Practice
Crude and Refined Vegetable Oils, Production, Stocks
Return from Manufacturers of Margarine and Compound
Fat
Wages and Employment Inquiry

Mr B N Downie
Ministry of Agriculture, Fisheries and Food
Stats (C&P)
Room 502B
Government Buildings
Epsom Road
Guildford
Surrey GU1 2LD

Continuing Survey of Road Goods Transport

Mr J Rooney
Department of Transport
Room B644
Romney House
43 Marsham Street
London SW1 3PY

II Surveys to Local Authorities

Scottish Industrial Sites Register (ISR)

Mr T Hardie
Scottish Development Department
Room 5/79
New St Andrew's House
Edinburgh EH1 3SZ

Census of Pupils and Staff – Primary and Immigrant Centres

Census of Pupils and Staff – Middle Schools
Census of Pupils and Staff – Secondary Schools
Census of Pupils and Staff – Nursery Schools

Mr J Gardner
Department of Education and Science
Elizabeth House
York Road
London SE1 7PH

Capital Outturn Returns

Miss F V Sly
LGS3
Department of the Environment
Room P1/179A
2 Marsham Street
London SW1P 3EB

Demand for Casino Gaming Clubs Registered under Parts II and III of the Gaming Act 1968

Casino Financial Returns

Mrs D Gonsalves
The Gaming Board for Great Britain
Berkshire House
168–173 High Holborn
London WC1V 7AA

Appointments and changes

Mr P Roberts, Chief Statistician, Ministry of Agriculture, Fisheries and Food, retired on 30 May 1988.

Dr P J Lund, Director of Financial Management, Economics and Statistics, Civil Service College has taken up a post as Chief Statistician in the Ministry of Agriculture, Fisheries and Food.

Mr R J Smith, is now Director of Financial Management, Economics and Statistics, Civil Service College.

Mr D E L Allnutt, Chief Statistician, Department of Employment transfers to the Department of the Environment on 19 September 1988.

Mr W H Stott, Chief Statistician, Department of the Environment retires in September 1988 and will then start work as a Statistician in the Office of Manpower Economics.

Miss M C Rout, Statistician (Grade 6), in the Training Commission has been promoted to Chief Statistician and will move to the Department of Employment on 3 October 1988.

Mr D Wallage, Chief Statistician, Ministry of Defence, moved to an administrative post on 1 August 1988.

Mr E J Lomas, Statistician, has been promoted Chief Statistician and will take up a post in the Ministry of Defence on 1 September 1988.

Obituary

Dennis Newman – one of the earliest members of the Government Statistical Service – died on 17 March at the age of 71.

Dennis was a Londoner educated at Archbishop Tenisons Grammar School and University College London, where he was awarded BSc 1st Class Honours in Statistics in 1937 and MSc following dissertation and examination in 1939.

Virtually his whole career was spent in statistical work within Government starting with wartime service in the Ministry of Supply as an experimental officer working on quality control in ordnance factories and other industries. After the war he worked in the National Physical Laboratory, the National Coal Board and the Central Statistical Office (on food and agricultural statistics). In 1951 he was transferred as statistician to the Ministry of Pensions and National Insurance where he stayed for 17 years. There he was in charge of the Statistics Branch at Newcastle Central Office and responsible for a large clerical and executive staff. This was before the use of computers for the recording of contributions and payment of benefits. Dennis built up and maintained an impressive statistical system, based on samples, that provided the Ministry and the Government Actuary with regular information on the operation of the various schemes.

In 1963 the introduction of computers for the administration of social security benefits led to reorganisation of the Newcastle Central Office and he returned to HQ in London in a more analytical post advising policy branches. He advised on numerous special enquiries including those into the Incidence of Incapacity for Work (1967), the Financial and Other Circumstances of Retirement Pensioners (1966) and the Circumstances of Families (1967).

In 1968 he was transferred to the General Register Office to work on the planning and statistical aspects of the 1971 Census. Dennis played a vital role in the preparation and carrying out of this Census, bridging the change over between two Chief Statisticians in 1971, encouraging the many junior staff by assistance and example and by forming a very effective working relationship with those in the executive grades. After 1971 he started the first phases of planning the next Census including an ambitious proposal to extend the range of census information by varying the questions to different samples of

households. His professional and technical expertise was also brought to bear on innovations such as automatic editing. In 1975, two years before he retired, he was promoted to Chief Statistician in charge of Census Division – in many people's view an elevation that was long overdue.

Dennis was a quiet self-effacing man who set himself and maintained high professional standards. He was a particularly thoughtful manager and supervisor of other professional staff and won great respect as a statistician and colleague. He enjoyed teaching, and lectured for many years at the Regent Street Polytechnic and Ealing Technical College. He examined external degree students for the University of London and the Institute of Statisticians. Indeed he played an active part in both the Royal Statistical Society and the Institute of Statisticians and was the author of a number of papers.

He attended the reception in Somerset House last year to mark the 150th Anniversary of the General Register Office and, sadly, that was the last occasion when many of his former friends and colleagues would see him.

LATE ITEMS

Tourism and the tourist industry - latest statistics

In 1987 overseas residents made a record 15.4 million visits to the United Kingdom and spent £6,200 million.

An article in the *Employment Gazette* for August 1988 presents this and other findings about international tourism from the International Passenger Survey. The article also presents statistics of domestic tourism, from the British Tourism Authority's monthly survey, and of employment in tourist-related industries, from Department of Employment sources. Some of the key findings are as follows:

- Numbers of visits to the UK by overseas residents increased by 11 per cent in 1987 compared with 1986 and their spending increased, in real terms, by 6 per cent.
- Visits to the UK by residents of North America increased by 19 per cent in 1987 and, as in previous years, visitors from the USA formed the largest group from a single country.
- Holiday trips accounted for 44 per cent of all visits to the UK by overseas residents in 1987 while business trips accounted for 23 per cent.
- Visits abroad by UK residents increased by 10 per cent in 1987 to 27.4 million and their spending increased by 19 per cent to £7,300 million.
- Numbers of tourist trips within Britain by British residents in 1987 increased by 3 per cent compared with 1986.

- Spending on accommodation was the largest single item of tourist expenditure, accounting for nearly a third of both overseas and domestic tourists' spending in the UK.
- The estimated number of employees in tourism-related industries increased by 3 per cent to 1.4 million in 1987 continuing the strong growth in this sector over the past decade.

Reference

Employment Gazette, August 1988 (HMSO) (Price £3.40 net)

Local Housing, England and Wales

Local Housing Statistics is prepared by the Department of the Environment and the Welsh Office to provide figures for individual local authority areas in a quarterly publication. These figures are taken mainly from returns made by the local authorities and do not include any allowance for missing returns. Tables are by region, county and local authority area, unless otherwise stated. Regular tables appearing in each issue show cumulative figures within either the calendar or financial year.

Subject areas covered are: housebuilding, renovations, sales of dwellings owned by local authorities and new towns, housing land disposals, local authorities' action under the provisions for the 1985 Housing Act, compulsory purchase orders confirmed and slum clearance.

Reference

Local Housing Statistics, England and Wales, No 85, (HMSO April 1988) (Price £6.00 net)

Northern Ireland Housing Statistics 1986

The figures contained in this publication are compiled by the Housing Division of the Department of the Environment, Northern Ireland or from the various returns made by the Northern Ireland Housing Executive (NIHE).

The contents include: general data; output and new orders; new house building; repairs and improvements; registered housing association activity; NIHE housing management; housing finance; private rented sector and household survey statistics.

Enquiries about the contents of this publication should be directed to:

Housing Division
Department of the Environment (NI)
Belfast
Telephone: Belfast 63210 ext 2008

Reference

Northern Ireland Housing Statistics, December 1987 (HMSO) (Price £5.90 net)

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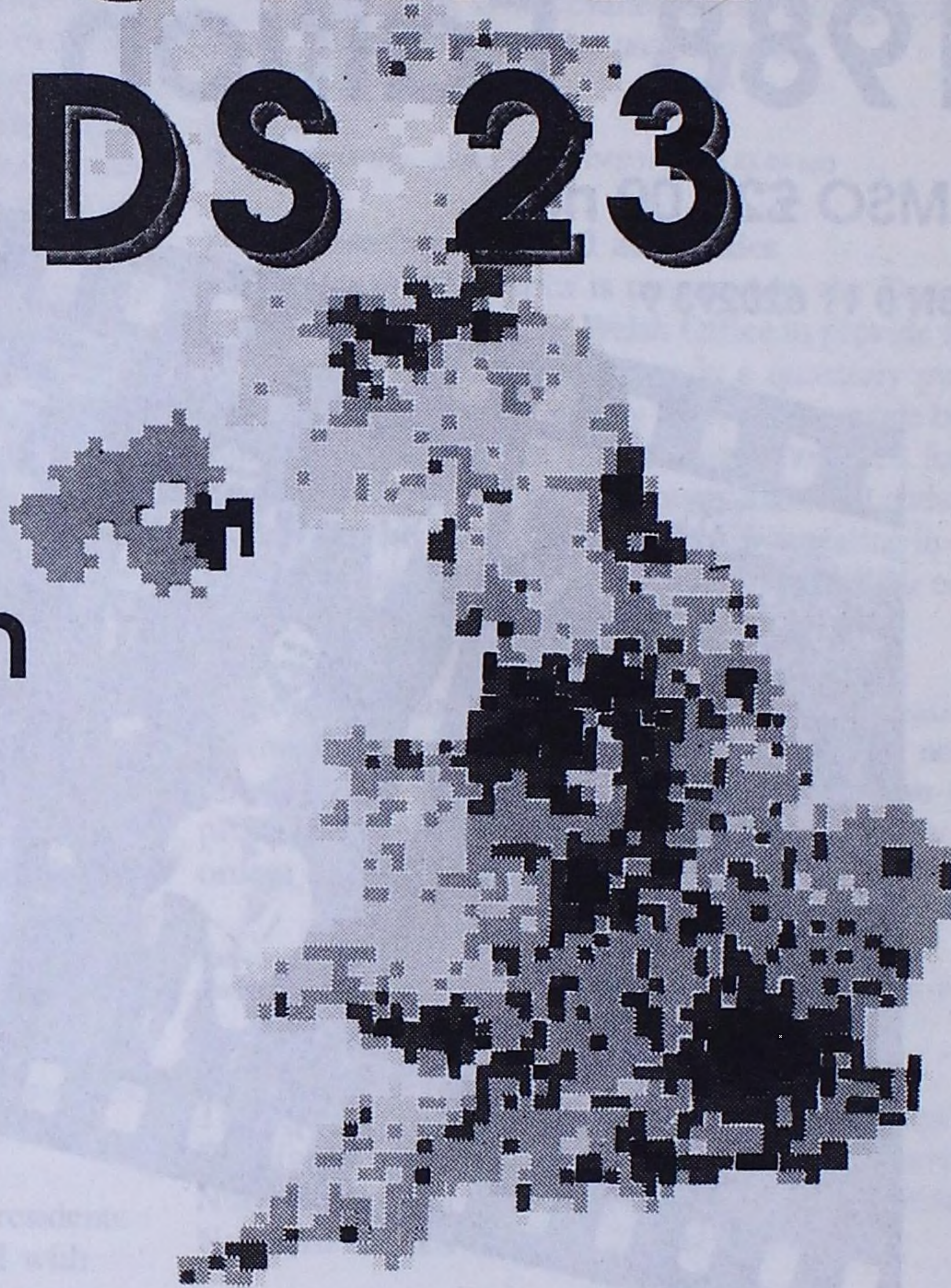
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