Contents

COVER QUOTATION

THE QUOTATION ON THE FRONT COVER IS TAKEN FROM THE NATIONAL INSTITUTE'S ANNUAL REPORT FOR 1943. IT DEMONSTRATES THE INSTITUTE'S INTENTION, FROM ITS ORIGIN, TO COMBINE HIGH QUALITY ACADEMIC WORK WITH QUESTIONS OF DIRECT RELEVANCE TO POLICYMAKERS IN GOVERNMENT AND BUSINESS. THIS HAS REMAINED CENTRAL TO OUR WORK EVER SINCE.

LOOKING BACK . . .

An era in the Institute's history came to a close at the 1996 Annual General Meeting, with a major reorganisation of the Council and retirement of twelve members. Among those retiring was Sir Kenneth Berrill, a member of Council since 1981 and its chairman for the past nine years. As he reflects below, the period has been one of considerable change.

In 1995 our Executive Committee embarked on a thorough review of Institute governance. Our aim was to ensure that we met the highest standards of charity management, whilst providing effective support to the Director and Secretary. Our recommendations included a smaller council, and restrictions on the age of members and length of service.

The proposals were made with mixed feelings since, for many of us, they inevitably brought to an end a long-standing association. It is a staggering fact that the twelve retiring members between them boast a combined service of 262 years. That the transformation has been achieved without a hint of ill-feeling further emphasises the great affection felt for the Institute and its work.

To survive for sixty years the Institute has required both resiliance and the ability to adapt to change. The past decade has been no exception. In the early 1980s, the future of publicly-funded social science research in the UK was under threat. Happily, the findings of the Rothschild Report and the strong defence of our profession – for which the Economic and Social Research Council should take particular credit – has demonstrated the value of our work. But the debate was not without cost.

In the 1960s and 1970s the Institute benefited from large-scale grants, from HM Treasury and the Research Councils, which underpinned our work. The availability of these has gradually declined. In 1995–6, our largest single grant (interestingly from a private charitable foundation) accounted for just 12% of total revenue. This transformation was all the more important since the Institute, unlike most of its rivals, has no core government funding or party political constituency on which to draw.

By the late 1980s two other threats began to emerge. Our business support – a traditional strength – declined as a result of the recession, whilst the physical foundations of the Institute – our premises at Dean Trench Street – required major remedial work to avoid subsidence. Both problems placed great strains on our resources, but happily both have been contained. The Corporate Membership Scheme, launched in 1994, has been particularly instrumental in strengthening the links with old and new supporters in business.

In other ways, too, we were well placed to meet the challenges. Our predecessors anticipated the need for research to be relevant to policymakers and industry, and be disseminated as widely as possible, at a time when such concepts were not uniformly fashionable. Their foresight has proved vital in ensuring our continued success.

On behalf of those retiring from the Council, I can say how pleased we are to be leaving the Institute in the sound state revealed in this Report, and to be playing a continuing role as governors in the coming years.

THOSE MEMBERS RETIRING FROM THE COUNCIL IN 1996, WITH THEIR LENGTHS OF SERVICE, WERE AS FOLLOWS: DR WILF BECKERMAN (24 YEARS), SIR KENNETH BERRILL (15 YEARS), SIR ALEC CAIRNCROSS (49 YEARS), SIR JOHN CASSELS (3 YEARS), LORD CROHAM (18 YEARS), PROFESSOR DAVID HENDRY (11 YEARS), SIR ARTHUR KNIGHT (20 YEARS), SIR DONALD MACDOUGALL (34 YEARS), PROFESSOR ROBIN MATTHEWS (27 YEARS), PROFESSOR MARCUS MILLER (16 YEARS), LORD ROLL (29 YEARS) AND PROFESSOR AUBREY SILBERSTON (16 YEARS). THE INSTITUTE WOULD LIKE TO EXPRESS ITS GRATITUDE FOR THEIR SERVICES AND SUPPORT. ALL WILL CONTINUE TO SERVE AS GOVERNORS OF THE INSTITUTE.

. . . LOOKING FORWARD

As its sixtieth anniversary approaches in 1998, the Institute is keen to ensure that its work remains as relevant as ever. Here the Institute President, Sir Brian Corby, describes some of the plans to achieve this goal in the coming year.

Although the influence of its work has been widespread, the success of the Institute over so many years has depended on its reputation amongst three groups – the academic community, policymakers, and users of its research in commerce and industry. In the past year we have been examining how to improve relations with each group further.

Sir Kenneth Berrill, retiring Chairman of the Council, with John Flemming, the new Chairman, at the Annual Reception.

Fortunately, the interests of each are more compatible than at any time since the second world war. Relevance is now a clear criterion in the award of academic and government grants and, if my experience as President is anything to go by, business increasingly recognises the value of high quality research. These trends should benefit the Institute, which has long argued that quality and relevance are compatible.

The future lies in strengthening links with all three, and providing an effective forum in which they can discuss issues in depth. In developing university links, we have made considerable progress since the appointment of Martin Weale, from Cambridge, as our Director. We have begun to expand facilities for Visiting Fellows, have joint research projects with three universities and, through the new ESRC sponsored seminar series on Productivity and Competitiveness which the Institute hosts, developed a valuable network in this important field of our research. Further developments planned for 1997 include the organisation, for the first time, of a special session at the Royal Economic Society Conference in March, more external articles in the *Review* and further exploration of joint appointments with leading universities.

Relations with policymakers have traditionally been good – not least because of our excellent location. The frequent references to our work by government and opposition sources in 1996 suggest that recognition of our work remains as strong as ever. Added to this there has been a strong presence from both politicians and civil servants at our expanded range of seminars. In 1997 we aim to develop this link further, with a new series of policy related events aimed specifically at this audience.

Business continues to give generous help to the Institute, through donations, support for specific research programmes and practical help such as the hosting of seminars. Their involvement, however, goes much deeper than this and I feel sure that the new members of council with current interests in the field will give an added impetus to these efforts. The growth of our Corporate Membership Scheme, and active participation of Members, gives further cause for optimism. Again, we will be placing increasing emphasis on targeting our activities in 1997 to meet the requirements of those who need to acquire maximum information in minimum time.

*Research at the National Institute falls into three areas: **Economic Modelling and Macroeconomic Analysis, Productivity, Education and Economic Performance** and **the International Economy.** This report, by Institute Director Martin Weale, summarises the main activities in each during the year.*

ECONOMIC MODELLING AND MACROECONOMIC ANALYSIS

The Institute remains the UK's leading producer of *Macroeconomic Models,* although this does not dominate our work in the way it once did. We have enjoyed outstanding success in this area in 1996. In February, we were awarded the 'Golden Guru' award of the *Independent* news`paper, and in December came top of the *Sunday Times* table of 45 forecasters for the second successive year – a unique achievement described by that newspaper as 'close to a miracle'. Whilst forecasting with such accuracy twelve months ahead relies on a combination of skill and good fortune, these successes represent a major triumph for Garry Young and the domestic economy team, to whom I offer my congratulations.

There is, of course, no room for complacency, and to this end we can report several new developments to our model and forecast presentation. We have just included a new model of house prices, which relates consumption of housing to other types of consumption, and takes full account of possible speculative motives for buying houses. A discussion paper describing this was released in August, and led to considerable media coverage. We were also the first forecasters to present probability ranges with our forecasts on a regular basis (page 7). Andy Blake is building on this using stochastic simulations of our model. Our global model is also advancing (page 17). We have recently added models of Mexico and of the smaller EU states as well as utilising different versions of the model to analyse the Maastricht criteria.

Traditional macroeconomic models, for all their virtues, cannot answer every question of economic interest. Jayasri Dutta, James Sefton and I are developing a new 'micro-model' in addition to our domestic and global econometric models in order to be able to address new topics. In this model we project the behaviour of 1,000 households spread out along the income distribution. I hope that this will open the way for model-based analysis of **inequality**.

Other modelling work takes us into the realm of **economic statistics,** but with the eventual aim of looking at the role of monthly data in economic models. Work so far has involved an assessment of techniques for interpolating monthly GDP, including provision of estimates of the reliability of the interpolands (page 15). We hope it will lead to the provision of regular monthly estimates of GDP. The modelling itself is intended to lead to definite conclusions on whether monthly models can tell us more than quarterly models or whether monthly data have too much 'noise' in them to be helpful.

PRODUCTIVITY, EDUCATION AND ECONOMIC PERFORMANCE

The Institute is well known for its studies of **productivity** and I hope this is an area where we will continue to contribute. We have two projects looking at productivity in service industries, the first conducted by Nicholas Oulton and Mary O'Mahony and the second by Valerie Jarvis and Sig Prais. Oulton and O'Mahony are comparing labour productivity in the UK, US, France and Germany (page 11). They find that productivity shortfalls in the UK in services are larger than those in manufacturing. Prais and Jarvis are continuing the tradition of case studies as a tool for illuminating productivity differentials. Their study of insurance and retailing will report in 1997. Preliminary results indicate productivity differentials comparable with those identified by Oulton and O'Mahony; we still have to identify possible causes of these differentials.

A question related to productivity is that of economies of scale. It has been argued elsewhere that there are high social returns to investment in plant and machinery – that the social return exceeds the private return substantially. Work by Nicholas Oulton and Garry Young does not support this view. Their international study suggested that the social return to plant and machinery is broadly reflected by its private return.

Labour market conditions excite continuing interest in the UK and are an important aspect of economic performance. Work by Ray Barrell and Julian Morgan compared labour market performance in the current recovery with that of the mid 1980s. They found little evidence of increased flexibility: although unemployment appears to exert a greater downward pressure on wages than it used to. However, the fall in unemployment had been helped by the increase in student numbers and by a reduction in labour force participation (page 13).

Our continuing work on **education and training** reflects the belief that these are important influences on productivity. Work by Sig Prais and Julia Whitburn is described on page 8 on studying and learning from teaching methods in use in other European countries. Research on graduate utilisation by Geoff Mason has been presented to the Dearing Committee on Higher Education. The recent increase in the supply of graduates has helped to compensate for deficiencies in higher intermediate (technical and supervisory) skills training. However, most employers stress the need for an adequate *mix* of university graduates and intermediate-level personnel, with the latter acquiring skills and practical experience through employment-based training as well as classroom study.

Another important area of work concerns **company behaviour**, and the question of whether Britain's poor economic performance is attributable to a long tail of under-performing companies. Work by Nicholas Oulton and

Witnessing the Institute's pioneering work on mathematics teaching at first hand are Secretary of State Gillian Shephard MP (above), and Opposition Spokesman David Blunkett MP (below).

Peter Hart showed that small businesses are an effective engine for creating jobs, but that there is a wide dispersion of labour productivity across the corporate sector, particularly in areas not exposed to international competition (page 10). Two other projects, conducted by Duncan Matthews, John Pickering and Caroline Wilson, have looked at the effect of EU legislation and use of intellectual property. The former project identified ways in which national differences in implementation could obstruct the single market in seven key sectors. The second project will not report until the summer, but has already noted the wide range of managers involved in decision making on intellectual property, and their relative effect on decision making.

THE INTERNATIONAL ECONOMY

Our work on the international economy has continued to develop. Ray Barrell and Nigel Pain have looked at the influences on German **foreign direct investment** (page 16) and at the closely related question of influences on foreign direct investment into central Europe. Labour costs appear more important than any differences in tax regimes, and the internal market programme has been a significant factor in raising the level of German investment in the United Kingdom. This may have been diverted away from countries outside the EU, such as the United States.

A separate study by Nigel Pain and Garry Young looked at influences on foreign direct investment by the UK. Once again, the internal market programme has had an effect, but there is also clearer evidence for tax competition. Gearing levels also affect whether firms make investments or not.

From the causes of FDI to its effects. A study by Nigel Pain and Katherine Wakelin identified a significant link between FDI and **trade patterns.** Inward investment seems to lead to an improvement in export performance, while outward investment is at the expense of exports. Preliminary results for Germany indicate that foreign investment is an important influence on the rate of labour-saving technical progress. Other work on trade by Bob Anderton (page 18) suggests that a temporary appreciation of the exchange rate may lead to a permanent loss of export markets – a powerful argument in favour of exchange rate stability.

Hong Kong offers an unusually interesting study of changing trade patterns. In the post-war years it developed as a manufacturing centre, while now its trade is dominated by re-exports to and from China. Simon Broadbent and Chao-Dong Huang have been quantifying these trade flows as a tool to understanding these changes, and to provide a basis for seeing the impact of China's takeover in July 1997.

The question of monetary union remains topical, as demonstrated by our programme on **European Economic Integration**. John Arrowsmith and Chris Taylor published the first of our 'new look' occasional papers – *Unresolved Issues on the Way to a Single Currency* – identifying just how much remains to be decided before monetary union can actually be effected (page 14). John Arrowsmith and Ray Barrell also completed a study for the European Commission of the likely impact of monetary union on European capital markets (page 20). A separate study with Bob Anderton and Katarzyna Wlodek suggested that deregulation of institutional investors' portfolios is likely to lead to an increase in holdings of foreign assets as a means of reducing exposure to risk.

DISSEMINATION

1996 has seen enhanced efforts to bring Institute work to the attention of business users, policymakers and the business community. We have widened our range of seminars (page 21), reorganised our Occasional Papers series to facilitate more rapid publication, and introduced 'themed' issues of the *National Institute Economic Review*. We have also maintained our high profile in the academic community, where staff publish in core journals such as the *Economic Journal, European Economic Review, Journal of Public Economics* and the *Review of Economics and Statistics*.

Dissemination of this type is important both to the reputation of the Institute and its staff. We will look to improve our efforts still further in 1997, a task which will be much easier if our staff can replicate the range and quality of work exhibited in the past year.

THE NATIONAL INSTITUTE IS VERY GRATEFUL TO A LARGE NUMBER OF FINANCIAL SUPPORTERS FOR MAKING OUR WORK POSSIBLE. FOR DETAILS SEE PAGE 29 BELOW.

ECONOMIC FORECASTS AND THEIR RELIABILITY

Both the presentation and reliability of economic forecasts are the subject of continuing debate. Despite its outstanding record in predicting the UK economy during 1995 and 1996, Institute staff keep their methods of forecasting under constant review.

The National Institute was one of the first organisations to produce economic forecasts on a regular basis using a computer model. But the presentation of these forecasts has left something to be desired. Historically, these have usually been presented as point forecasts

GARRY YOUNG WITH THE GOLDEN GURU AWARD FOR FORECASTING, PRESENTED BY THE *INDEPENDENT* NEWSPAPER

and can lead to the conclusion that the forecasts are either right or wrong. The reality of course is that any forecast has an error range associated with it, and that users are likely to be helped if an indication of that error range is provided.

There is a clear analogy with weather forecasting. We can produce a weather forecast for Christmas Day in London in the summer. The average maximum temperature is 7C, and this is a sensible forecast maximum three months or two years ahead. It will be helpful to anyone with no idea what to expect. But it will be more helpful to say that the maximum temperature has ranged between –7C and 15C and that there is a 1 in 10 chance of snow falling. As the day in question approaches it becomes possible to produce a weather forecast which differs from the seasonal mean. The shorter the forecast horizon the more reliable the forecast is likely to be.

The same is true of economic forecasting. It is difficult to produce a forecast of output growth more than 18 months ahead which is more reliable than the past trend rate. But over a shorter horizon it is plain that economic forecasts have significant predictive power and their accuracy increases as the horizon approaches. This should be no surprise. Economies are susceptible to shocks; shocks by their nature cannot be forecast. The shorter the time horizon the less scope there is for the economy to be 'blown off course' and thus the greater the reliability of any forecast which is produced.

We have two ways of identifying error margins for our forecasts. One is on the basis of past performance. The other is by simulating our model with random shocks included in the equations which drive it. If these shocks are chosen to be comparable with the components of the economy that the model fails to explain, we can then have some idea of how reliable our forecast is likely to be.

The two methods give broadly comparable results, although there is some evidence that our forecasts have become more reliable in the 1990s than they were in the 1980s, so that an assessment based on average historical performance is unduly pessimistic. They allow us to include with our forecasts probabilities that inflation and output will be in particular ranges.

This means that we can say not only how much we expect output to grow, but also what probability we think there is of a recession happening. Our October forecast for 1997 suggests growth of nearly 3½% is likely. But we see a 1 in 25 chance of a recession. We forecast an inflation rate of 2.7% excluding mortgage interest payments, but at the same time there is a 46% chance of the government meeting its target of having inflation of 2½% or less.

THE INSTITUTE'S FORECASTS FOR BOTH THE UK AND WORLD ECONOMIES ARE PUBLISHED QUARTERLY IN THE *NATIONAL INSTITUTE ECONOMIC REVIEW* – SEE PAGE 23.

MATHS TEACHING: WHAT CAN WE LEARN FROM EUROPE?

Standards of mathematics education have produced widespread debate, with many arguing that Britain can learn much from continental methods. But how might this be achieved in practice? In a unique project, Institute staff have joined with education advisers in a London Borough to compare techniques in detail and to implement their findings in the curriculum.

It is now clear that the progressive development of modern automated industry requires the emphasis of our schooling system to be shifted from the 'cultivation of geniuses' to promoting the attainments of the average citizen; in the latter respect, the schooling systems of many continental countries provide much helpful guidance. Our work has therefore been concerned with the detailed functions of the schooling process; mathematics was taken as a focus both because it is more readily comparable across countries than other school subjects, and because of its relevance to so many branches of vocational training.

With support from the Gatsby Charitable Foundation to attempt trial implementation of reforms in British schools, a series of team visits was undertaken to continental primary and secondary schools with the ready cooperation of educational authorities here and on the continent. These soon established that two principal lines of reform needed to be pursued in our schools. First, teaching styles needed to incorporate a much greater element of what is often called 'whole-class teaching', but which – on current best continental examples – means incorporating more time on interactive question-and-answer instruction directed to the whole class; the objective is to avoid a 'fanning out' of attainments which makes teaching increasingly difficult as children move up through school, and to bring the whole class forward together. The issues were detailed in an article in the *Review* in July (page 23 below). The second main line of reform relates to teaching materials. In contrast to British textbooks in mathematics at young ages, continental textbooks (a) place much more emphasis on the arithmetic component of mathematics than customary here, and than provided for in our National Curriculum; (b) give priority to mental over written calculations; (c) provide many more practice exercises than we do (typically, three times as many); (d) provide a more differentiated and graduated approach to successive difficulties, with an ample number of exercises directed to each step. In addition, the teacher's task is eased by the provision of detailed teachers' manuals, often incorporating suggestions for a week-by-week allocation of topics and the contents of individual lessons. These matters were analysed in a comparison of British, German and Swiss school mathematics textbooks used by the majority of pupils aged 8–9 in each of these countries. (See Discussion Paper no. 90, page 24 below).

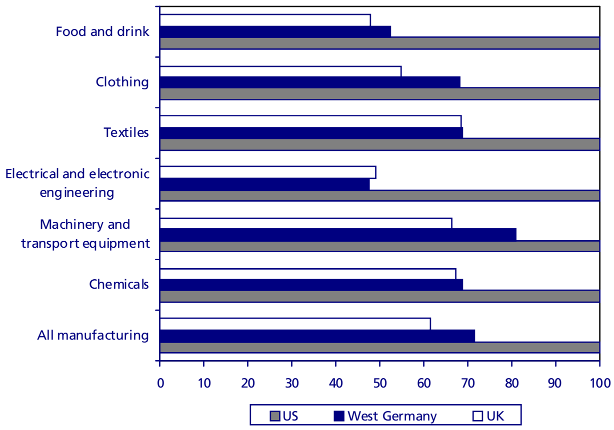
Both these lines of schooling reform are now being trialled in some 40 primary schools in the London Borough of Barking and Dagenham, with 3,000 pupils involved. To assist in the training of teachers in the reformed teaching styles, a video is being prepared by the Institute in cooperation with schools and the inspectorate in that Borough. The preparation, trialling and revision of pupils' textbooks and the associated teachers' manuals for the whole of the primary phase of schooling is proceeding on a similar joint basis. The latter has to be regarded as a long-term project, with a need for associated evaluations and basic research, but arrangements are already under active discussion with a leading university press for ultimate publication of a new mathematics series for primary schools.

THE TEACHING MATHEMATICS IN PRIMARY SCHOOLS PROJECT HAS BEEN MADE POSSIBLE BY A GRANT FROM THE GATSBY CHARITABLE FOUNDATION, AND THE ACTIVE COOPERATION OF TEACHERS AND OFFICIALS IN THE LONDON BOROUGH OF BARKING AND DAGENHAM, TO WHOM GRATEFUL THANKS ARE EXTENDED. THE INSTITUTE TEAM COMPRISES S.J. PRAIS, JULIA WHITBURN AND FIONA THIRLWELL.

Several recent studies have shown that average labour productivity levels in US manufacturing and in the economy as a whole remain the highest in the world. This consensus has reawakened interest in understanding the sources of continued US productivity leadership and in particular the links between relative productivity performance and inter-country differences in the quality and utilisation of physical and human capital inputs.

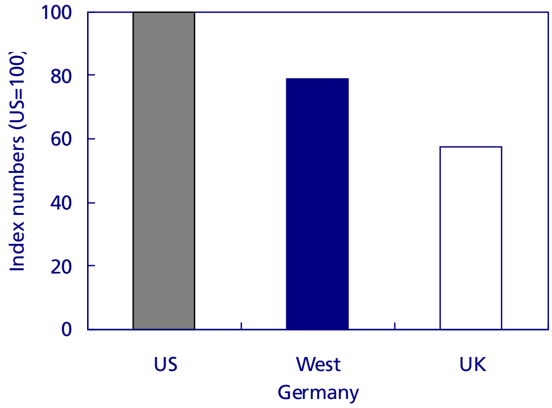
These issues have recently been tackled at the Institute by pulling together the results of two different research programmes, firstly, the analysis of new international data sets on capital stocks, skills and total factor productivity (led by Mary O'Mahony) and secondly, detailed comparisons of matched samples of manufacturing establishments in the US and Western European countries (carried out by Geoff Mason in conjunction with American, Dutch and German colleagues).

Relative labour productivity levels in manufacturing, 1989 (Index numbers: US = 100)



Using 'growth accounting' methods, the US productivity advantage over countries such as Britain and (West) Germany was found to be partially explained by inter-country differences in physical capital intensity and, to a lesser extent, in R&D capital (but not by differences in human capital endowments). However, large proportions of the US–British and US–German

Gross physical capital stocks per hour worked in the United States, West Germany and the United Kingdom, 1989 (1990$)



productivity gaps remain unexplained by measured inter-country differences in broad capital accumulation. This contrasts with British–German productivity differences which are largely explicable in terms of inter-country differences in physical capital, workforce skills and R&D.

However, the international matched-plant comparisons shed considerable further light on the sources of US labour productivity leadership. They suggest that inter-country differences in the potential for production economies of scale and in the quality and modes of utilisation of capital inputs – not captured in most published datasets on capital investment – contribute greatly to relative productivity performance. Examples include machinery being operated for longer periods of time without interruption in the US than in Western Europe and relatively high levels of (unmeasured) incremental process improvements and reconditioning of old equipment in US plants. Such developments are facilitated by the close involvement of American graduate engineers in support of direct production.

THIS RESEARCH WAS SUPPORTED BY THE LEVERHULME TRUST AND THE ANGLO-GERMAN FOUNDATION. GEOFF MASON AND MARY O'MAHONY WILL BE PRESENTING THEIR PAPER ON 'CAPITAL-INTENSITY, CAPITAL-QUALITY AND PRODUCTIVITY PERFORMANCE' TO THE ROYAL ECONOMIC SOCIETY ANNUAL CONFERENCE IN 1997.

WHY DO COMPANIES DIFFER SO GREATLY IN PRODUCTIVITY?

Labour productivity is crucial to living standards, but until now little has been known about how it varies across firms. Now new research based on a comprehensive database of 140,000 companies demonstrates a remarkable gap between the best and the worst performers: in 1993, the dispersion of labour productivity across companies was twice as wide as that of weekly earnings across individuals. This research also suggests that measures to enhance competition are the best way of goading the laggards into improving their performance.

There has been a long-standing concern that the UK economy may be characterised by a long tail of under-performing companies. Though the best companies are as good as any in the world, the performance of some of the others, it is claimed, leaves a lot to be desired. The poor performance of the under-achievers lowers the average performance of the whole economy.

Performance in any one year is to some extent a matter of luck, so both the good and bad performers of a particular year will tend to appear average in a different one. It is therefore necessary to know first, how much of the variation is due to purely transitory factors? Second, does the spur of competition cause laggard firms to improve?

These issues were analysed using an electronic database of company accounts. The database contains information on some 140,000 UK companies, both independents and subsidiaries, and covers the whole economy.

The main findings were as follows:

- In any year, dispersion is very wide. By way of comparison, it is twice as high as the dispersion of weekly earnings of full-time workers (male and female, white and blue collar).

- At least three quarters of the variance of productivity is due to differences between firms in the same industry. In other words, technology differences between industries account for only a minor part of the overall dispersion of productivity.

- To some extent, dispersion is transitory. Surviving companies with productivity initially below average find their productivity level tending to rise towards the average level and those with initially above average productivity have the opposite experience. But because there are always new shocks occurring the actual reduction in dispersion amongst surviving companies is quite modest: around 1 per cent per annum for independents and 0.5 per cent per annum for subsidiaries.

- Dispersion is 40–50 per cent lower in manufacturing than in the rest of the economy. A plausible explanation is that manufacturing, unlike say services where dispersion tends to be high, is exposed to the full blast of international competition.

THIS RESEARCH WAS FUNDED BY THE DEPARTMENT OF TRADE AND INDUSTRY AND DREW ON EARLIER WORK FUNDED BY 3I GROUP PLC. FURTHER DETAILS MAY BE FOUND IN NATIONAL INSTITUTE DISCUSSION PAPER NO. 103: COMPETITION AND THE DISPERSION OF LABOUR PRODUCTIVITY AMONGST UK COMPANIES BY NICHOLAS OULTON.

PRODUCTIVITY IN THE SERVICE SECTOR

The UK's performance in services is much better than in manufacturing, according to the common view. But a recent study by three researchers at the National Institute reaches the opposite conclusion.

Most international comparisons of productivity are confined to manufacturing, which is nowadays only about a fifth of GDP. This study redresses the balance by looking at what the authors call market services, comparing the UK with France, Germany and the US. Market services comprise three broad groupings – distribution & catering, transport & communication, and financial & business services – and make up about 34–43 per cent of total employment and 36–43 per cent of GDP in the four countries.

The main findings, which are summarised in the table, are as follows:

- Labour productivity (value added per hour worked) in market services in 1993 was more than a third higher in each of the other three countries than in Britain.

- The UK's productivity gap in services was greater than in manufacturing when the comparison is with France or Germany, though smaller with respect to the US.

- Since 1979, the UK's productivity gap with the US in market services has narrowed from 50 per cent to 38 per cent and the gap with France has also narrowed (43 to 36 per cent). But the gap with Germany has widened (15 to 34 per cent).

- Ranking countries by living standards, GDP *per capita*, is very different from ranking them by overall labour productivity, GDP per hour worked. This is mainly because of differences in the proportion of the population who work. In living standards, the US is far ahead of the other countries but her productivity level is now about the same as that of France and Germany. The UK's overall productivity was 18 per cent lower in 1993.

THIS RESEARCH WAS FUNDED BY THE ESRC AND BY THE DEPARTMENT OF TRADE AND INDUSTRY. FURTHER DETAILS MAY BE FOUND IN NATIONAL INSTITUTE DISCUSSION PAPER NO. 105: PRODUCTIVITY IN MARKET SERVICES: INTERNATIONAL COMPARISONS BY MARY O'MAHONY, NICHOLAS OULTON AND JENNET VASS.

Comparative labour productivity by sector in 1993: value added per hour worked, UK=100

	US/UK	*Germany/UK*	*France/UK*
Distribution, Hotels & Catering	151.6	113.2	149.4
Transport & Communications	165.7	102.4	133.4
Finance, Insurance & Real Estate	121.7	153.6	126.3
All Market Services (average of above)	137.8	133.5	136.0
Manufacturing	168.3	119.2	116.5
All Industries and Services (GDP)	122.7	124.3	122.5
Memorandum item: GDP per capita	*157.3*	*132.3*	*111.5*

Source*: Discussion paper no. 105, see box above. 'Germany' refers to Western Germany. National currencies converted using Purchasing Power Parities.*

WHAT MAKES BIG RECESSIONS BIG?

*Some recessions are much bigger than others. A book nearing completion by Christopher Dow concentrates on the five major recessions in the UK since 1920, and examines them one by one to single out the causes of each. The book is to be published by Oxford University Press under the title **Major Recessions.***

One premise of the study is that the economy behaves differently in big recessions as compared with minor ones, so that it is worth looking at them separately: the present study appears to be unique in doing so. Five recessions were selected as being 'major'.

1) *The first postwar recession following World War I (1920–21)* – a very quick, sharp recession following a strong uncontrolled speculative boom.
2) *The Depression of the 1930s (1929–32)* – almost certainly brought on by the US Great Depression, channelled here *via* a fall in UK exports.
3) *The first OPEC recession (1973–75)* – here seen as a reaction to the Barber boom of 1972–73, and to the effect of the rise in world oil prices.
4) *The second OPEC recession 1979–82)* – again seen as due to rising oil prices, and also to the policies of the new Thatcher government.
5) *The third postwar recession (1989–93)* – seen essentially as a reaction to the over-large Lawson boom of the late 1980s.

In a growing economy it is best to measure the depth of a recession by the extent to which output falls below previous trend. The five major recessions were of roughly equal depth *viz* 8–13%. As will be seen they occurred at very unequal intervals, the intervals between their starting dates being 9, 43, 6 and 10 years; there were none in the long interval between World War II and 1973.

Why do major recessions happen? Among the explanations proposed are the following: (1) Major recessions arise from demand failures not supply fluctuations. (2) They are not caused by the sort of endogenous mechanism which would make major recessions inevitable – but rather by unexpected events (exogenous

	Mini-cycles (1950–72) 4 fast phases	Mini-cycles (1950–72) 5 slow phases	Large fluctuations (1920–38 & 1972–93) 4 fast phases	Large fluctuations (1920–38 & 1972–93) 5 major recessions
% deviation of output from previous trend	3.0	–2.9	5.6	–10.9
Length of period (yrs)	2	2¾	2¾	2½
% of output deviation:				
a) reflected in unemployment[a]	10	21	66	55
b) explained by 4 indicators of demand shocks	108	105	70	52

[a]*Change in % unemployment as % of % deviation of output from trend.*

shocks) which deplete demand. The original cause has often been acts of government, either at home or working on a world scale. (3) Major shocks affect business and consumer confidence, which may rapidly amplify their original impact. (4) Fluctuations in confidence can occur also even without identifiable shocks, and can alone cause a major recession – as in 1989–93.

In the long 1945–73 period, growth was faster, and unemployment lower, than periods before or after war. Uninterrupted growth, it seems, caused growing confidence, which in turn caused growing investment – and that supported continued growth. The study argues that that is the main mechanism which enables the economy to adjust itself out of an unemployment situation: wage flexibility, or freedom from inflation, however desirable, are not themselves an answer to unemployment.

One of the theses of the book is that a major recession results in part of the capital stock deteriorating through disuse and – equally serious – firms' working arrangements (with suppliers, with customers, or internal to the firm) being damaged. This, it is argued, shifts the growth path down – a permanent loss.

No major recession has been well-predicted: the study argues that this will always be so. Policies to prevent or mitigate major recessions are discussed in a final chapter.

JOB CREATION AND THE RECOVERY: HOW DOES THE UK FARE?

The UK has now experienced over three years of economic recovery since the cyclical trough in 1992. The upturn has been unusual in that unemployment began to fall much earlier than had been expected and wage inflation remained at historically very low levels. The Institute has examined the recent behaviour of labour markets in the UK and other developed economies.

THIS RESEARCH WAS SUPPORTED BY THE DEPARTMENT FOR EDUCATION AND EMPLOYMENT (DFEE) AND PUBLISHED IN DFEE RESEARCH REPORT RS 38 BY RAY BARRELL AND JULIAN MORGAN. HOWEVER THE VIEWS EXPRESSED HERE ARE THOSE OF THE AUTHORS ALONE. ASPECTS OF THE RESEARCH HAVE ALSO BEEN REPORTED IN ARTICLES IN THE INSTITUTE *REVIEW* AND IN THE OFFICE FOR NATIONAL STATISTICS PUBLICATION, *LABOUR MARKET TRENDS.*

The UK experienced significant reforms of labour market institutions in the 1980s and 1990s. These focused on trade union activity, social security, employment rights and minimum wage protection. The aim was to achieve a more flexible labour market that could allow for a better matching of employment and output and a more favourable trade-off between unemployment and wage inflation.

The behaviour of employment in the recent upturn appears to be consistent with increased flexibility. The UK has performed better in the 1990s upturn than it did in the 1980s, although its performance does not seem remarkable by international standards. The behaviour of wages is also consistent with an improvement in the functioning of the labour market. Real wage growth has been slower in the 1990s upturn than it was in the previous decade and has been modest by international standards. At the same time unemployment has fallen significantly and, among the seven countries studied, only the US now enjoys a lower level than the UK.

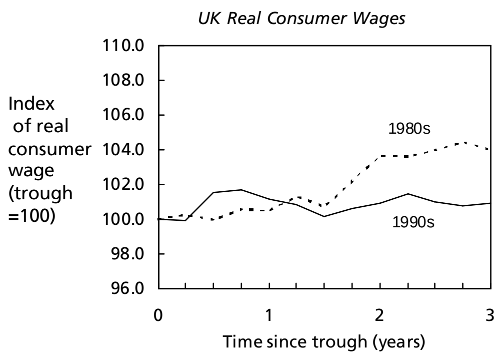
However there are also a number of other factors which may have contributed to this more benign outcome. The improved performance of unemployment is partly explained by lower participation in the labour force. In particular there has been a fall in activity among younger and older workers in the UK. These workers tend to have higher rates of unemployment, so this development may well have contributed to a fall in the overall unemployment rate. Also the reduced regional bias in the recession and recovery is likely to have been one of the reasons why it has been easier to contain wage pressures in the 1990s. In the 1980s, labour markets in the south and east of the UK began to 'overheat' much earlier whilst those in the north retained significant unemployment.

Despite the existence of other factors which have served to improve the performance of the UK labour market it does seem likely that the reforms of the 1980s have led to some increase in flexibility. However it also seems likely that these reforms have contributed to a significant widening in the earnings distribution.

Unemployment and real consumer wages in the first three years of the upturn (1980s compared with 1990s).

Unemployment falls much earlier ....

.... whilst real wages rise more slowly



STEPS TOWARDS EMU: COMPLEX PROBLEMS STILL TO BE FACED

In rushing towards monetary union before many key questions are answered, Europe is risking serious practical problems and policy errors; while the UK, by ignoring two of the entry requirements, is in danger of disqualifying itself. In a succession of articles, members of the Institute's European Financial Markets programme have been drawing attention to the main problems still to be faced and proposing ways to tackle them.

It is quite possible that between seven and eleven countries will form a monetary union on 1 January 1999, before various deficiencies in the new framework have been rectified. If politicians interpret the economic data 'constructively' when convergence is assessed in 1998 and if governments are allowed to indulge in creative accounting, it may be difficult to exclude economies that have not yet sufficiently converged.

'Convergence trading' in the financial markets could result in exchange rates for some countries which are inappropriate for permanent locking. Yet the Council, in rushing to produce a Regulation to require the conversion of the ECU into the Euro *at par* on 1 January 1999, is in effect committing itself to lock currencies together permanently then at whatever exchange rates the markets have determined the day before.

Replacing national currencies with the Euro in the space of three and a half years will be a huge and complex task without real precedent. The changeover may be vulnerable to a combination of mishaps, putting the monetary authorities under great pressure: the 'fixed' conversion rates could prove fragile as long as national currencies exist alongside the Euro; there is a risk that changing over to the Euro by non-financial firms may become a disorderly process; and contractual continuity between the ECU and the Euro may be open to legal challenge.

Problems in any of these areas could magnify potential weaknesses in the new arrangements. The institutional imbalance between a highly independent European Central Bank using monetary policy to achieve price stability and the limited provisions for co-ordinating national economic policies, could lead to conflicts between monetary and fiscal policies.

Recent agreement on a 'Stability and Growth Pact' to tighten constraints on deficit financing do not address this problem and could impose too rigid a budgetary straitjacket. Mechanical pursuit of a money-stock target by the ECB might also result in an inappropriate monetary policy stance.

If EU and national authorities, concentrating in their haste on technical preparations for the Euro and cosmetic touches to government finances, ignore these more fundamental questions, the viability of the monetary union might be threatened.

The UK could ensure that these issues are examined. As it is, by refusing to take part in closer exchange-rate co-operation and to consider independence for the Bank of England, it risks debarring itself not only from joining EMU but from helping to shape it.

FURTHER DETAILS OF THIS ANALYSIS ARE GIVEN IN NIESR OCCASIONAL PAPER NO. 49 BY ARROWSMITH AND TAYLOR [PAGE 22 BELOW] AND IN ARTICLES IN THE SPECIAL EMU ISSUE, NO. 158, OF THE *REVIEW*. WORK CURRENTLY IN PROGRESS INCLUDES STUDIES OF THE INTERNATIONAL IMPLICATIONS OF THE EURO, THE CONDUCT OF MONETARY POLICY IN EMU AND THE IMPACT OF MONETARY UNION ON FINANCIAL INSTITUTIONS AND MARKETS.

THE EUROPEAN FINANCIAL MARKETS PROGRAMME IS SUPPORTED BY A NUMBER OF UK AND EU PUBLIC SECTOR BODIES AND PRIVATE SECTOR INDUSTRIAL COMPANIES AND FINANCIAL INSTITUTIONS. IT HAS ALSO RECEIVED A ROPA AWARD FROM THE ESRC FOR WORK ON THE EFFECTS OF MONETARY UNION ON PORTFOLIO INVESTMENT FLOWS.

MONTHLY NATIONAL ACCOUNTS

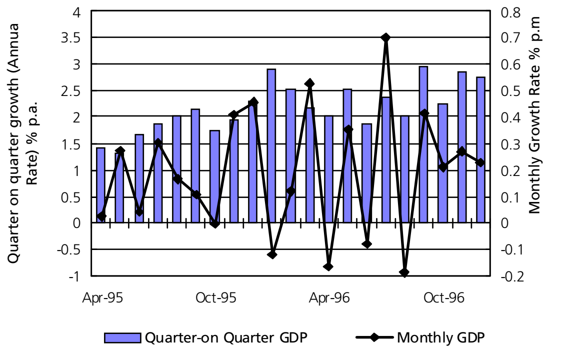
Economic data published on a monthly basis is incomplete, and may be unduly influenced by those sections of the economy for which information is more readily available. A new Institute project is looking at the role of monthly data in analysing the state of the economy. This article describes the construction of monthly national accounts.

There is a wide range of data, such as manufacturing output estimates, which are available monthly, and economists traditionally use these to gain an up-to-date picture of what is happening to the economy. But there is the real problem that they can be misleading. It is quite possible for manufacturing to be performing badly when the rest of the economy is doing well. As a very minimum, any inference about the state of the whole economy made from the figures for manufacturing or for industrial production has to be tempered by the knowledge that the service sectors do not move closely in line with them. If there are other sources of information also available on a monthly basis, then, in order to build up a picture of the whole economy some weighting scheme is necessary to combine these disparate data.

It is possible to use statistical techniques to put this sort of exercise on a firmer basis. If there were no lags involved in the relationships between monthly indicators and the quarterly components of GDP which we want to interpolate and extrapolate, then it would be a simple matter to aggregate the monthly indicators to quarterly figures and to study the relationship between these and quarterly output figures. Once there are lags involved the translation of an underlying monthly relationship into an equation which can be estimated from quarterly data is much more complicated, but iterative methods can be used to identify a good underlying model from which an underlying monthly relationship can be recovered.

This serves two purposes. First of all it enables us to interpolate the quarterly data. We can produce interpolands which fit the estimated monthly equation reasonably well, but which also add up to the published quarterly totals. Historic estimates of monthly GDP have to be consistent with the quarterly figures that the Office for National Statistics publishes. Secondly we can use the monthly equations to extrapolate beyond the last available quarter, in order to give a short-term picture of the evolution of the economy based on the available monthly data. These monthly figures will be prone to revision once quarterly data appear. But we can say with confidence that they give a better impression of what is happening to the economy than can be inferred without the use of statistical techniques.

Economic growth month by month



Our work so far has involved a thorough testing of these indicators and the techniques used to derive them. We are now moving on to look at the question whether models based on monthly data provide better forecasting tools for the economy than those based on quarterly data.

EDUARDO SALAZAR AND MARTIN WEALE ARE ENGAGED IN THIS RESEARCH WHICH IS SUPPORTED BY THE ECONOMIC AND SOCIAL RESEARCH COUNCIL.

WHY DO FIRMS INVEST OVERSEAS?

Foreign direct investment (FDI) has expanded rapidly over the past two decades, with the aggregate stock of FDI estimated to have risen from 4½% of world output in 1975 to 9½% by 1994. New investments have increasingly been concentrated within developed economies and within non-manufacturing industries. An understanding of the motives behind firms' decisions to invest overseas is of particular importance for the UK, whose aggregate stocks of outward and inward foreign direct investment reached 30% and 21% of GDP respectively at the end of 1995.

FDI outflows and inflows in the G-10 economies ($ billion, annual averages)

	1976-80	1981-85	1986-90	1991-95
G-10 Outflows	39.3	41.3	154.0	193.5
G-10 Inflows	19.9	31.3	111.1	116.1
UK Outflows	7.8	9.2	28.1	25.4
UK Inflows	5.6	4.3	21.7	17.2

Source: *IMF International Financial Statistics Yearbook*

Two key factors seem to explain the pattern of foreign direct investment: the role played by knowledge-based, firm-specific assets and the structure of regional markets.

Knowledge-based assets such as firm-specific process or product innovations and managerial and marketing skills encourage foreign investment in two ways. First, they act as a joint input across plants, giving economies of scale at the level of the firm rather than at the level of the individual plant. This can give a single multi-plant firm a cost advantage over two separate single plant firms. In many service industries foreign investment is the only means of entering global markets and exploiting the competitive advantages provided by firm-specific assets. The existence of knowledge-based assets also encourages firms to undertake foreign direct investment rather than license existing foreign firms to undertake production, reducing problems of product quality and technical confidentiality. Our empirical work shows that the cumulated level of registered patents or R&D expenditure helps to explain the industrial pattern and level of foreign investment by British and German companies.

Firms producing tradable goods may at times invest overseas to improve market access and bypass trade barriers. Our research suggests that the frequency of anti-dumping petitions within the EU and the US in the 1980s helped to raise the level of inward investment by Japanese companies. Their key objective was to locate within the EU to gain access to the wider regional market. Locations within the EU were then evaluated on the basis of their cost competitiveness against other possible EU locations.

The EU single market programme has also raised the level of investments within other EU countries by UK and German companies. Firms in sectors such as financial services have been able to enter previously closed national markets as technical regulations have been harmonised.

These findings have a number of interesting implications for the UK. It appears that membership of the EU and access to the EU market are important factors behind the high level of inward investment. Labour costs and tax competitiveness do matter, but only if a firm wishes to locate within the European market. However if these were the sole factors in investment decisions it would be difficult to account for the continued, positive, level of net outward direct investment from the UK. The importance of knowledge-based assets suggests that more research be directed towards the types of investment taking place in particular locations and the role of labour quality in the investment decision.

FURTHER DETAILS OF THIS RESEARCH MAY BE FOUND IN DISCUSSION PAPERS NOS. 43, 91 AND 107. WE ARE GRATEFUL TO THE ECONOMIC AND SOCIAL RESEARCH COUNCIL AND TO THE ECONOMISTS' ADVISORY GROUP FOR FINANCIAL SUPPORT.

MODELLING THE WORLD ECONOMY

The Institute programme of work organised around our large world model has continued to gain strength this year. Not only have we continued to expand the number of model users in finance ministries and central banks, we have made a number of interventions in the policy debate in Europe, and expanded the geographical scope of our work. Regular forecasts have been produced for the Institute Review, and the forecast has been presented at numerous international meetings in Europe, Japan and America.

The Maastricht Treaty introduced targets for fiscal deficits, and it is widely believed that these are contractionary and have been raising unemployment in Europe. The world economy team have presented a number of papers contributing to this debate. They have argued that fiscal tightening would be required in many European countries even if there were no Treaty commitments. As a consequence the Treaty cannot be seen as excessively contractionary. In some countries, such as Greece and Italy, attempting to cut government deficits to achieve the targets may well raise unemployment for some time. Institute research also suggests that the combination of fiscal consolidation and attempts to reduce Italian inflation to German levels may have an even greater effect.

The discussion of Monetary Union in Europe also requires the calculation of equilibrium real exchange rates. If a country has an overvalued exchange rate when parities are fixed then it can expect to face several years of low growth or recession. The world economy team has made several attempts to calculate equilibrium exchange rates, and at the end of 1996 Europe looked as if it were closer to sustainable levels than it had been for some time. This work was presented in the July Institute *Review* as well as at major conferences in Europe and the US.

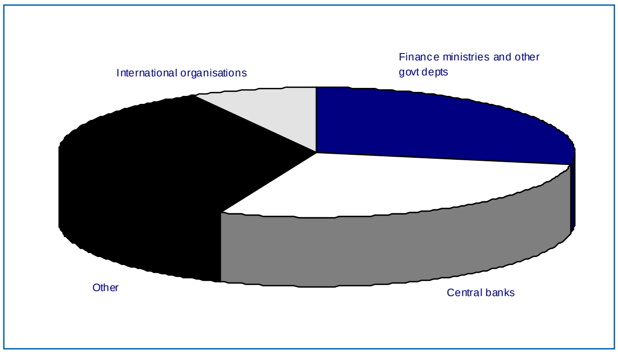
Actual and equilibrium exchange rates in the fourth quarter of 1996 (US dollar rates)

	Actual	Equilibrium
Japan	113.00	116.89
Germany	1.54	1.54
France	5.12	5.36
Italy	1525.00	1565.00
UK	1.65	1.57

(Note the UK exchange rate is £/$)

The geographical and historical scope of the team's activity has increased. The world model now has a detailed description of Mexico, and the group has also undertaken work on Korea, Taiwan, Thailand, and Singapore. Models have been estimated for these countries and their policies toward their exchange rates evaluated. Work has also been undertaken on other East and Southern Asian economies over the last year. There have also been counterfactual studies, analysing the world without oil price shocks or German unification. These analyses allow us to understand the importance of policymaking in the evolution of events, a factor stressed at the Institute for some time.

The distribution of the users of our world model



Model users receive a comprehensive package of support and analysis. Further subscription details can be obtained from Ian Hurst.

HYSTERESIS, PRODUCT QUALITY AND UK TRADE PERFORMANCE

This research project highlights the apparent contradiction in UK trade performance in manufactures over the past two decades: on the one hand, the early 1980s witnessed a substantial contraction in manufacturing employment along with a substantial surge in imports and decline in UK exports. On the other hand, UK trade performance, particularly exports, seems to have improved in the second half of the 1980s and early 1990s. The project sheds light on this contradiction by investigating whether the substantial, but temporary, *appreciation of sterling in the early 1980s was associated with a* permanent *increase in UK imports; and whether the UK's relative investment performance, via its impact on product quality, helps to explain the subsequent improvement in UK trade performance.*

During the period 1979–84, UK import penetration rose by more than a quarter (from 26–33%). At the same time, manufacturing employment fell by 25% (a net loss of some 1.8 million jobs), while imports from the newly-industrialising countries rose by more than 120%. Our research demonstrates the link between the three, and attributes them to the large appreciation of sterling between 1979–81. At this time, the sterling effective exchange rate rose by around 30%, before returning to its original level by the end of 1983. Its large *temporary* appreciation caused a *permanent* loss of market share for UK producers by effectively offering a discount on import prices which encouraged UK purchasers to sample the quality of previously untried imported goods, particularly from the newly-industrialising countries. Large increases in exchange rates, even when subsequently reversed, can thus result in *permanent* effects (known as 'hysteresis') as UK purchasers effectively have a greater variety of goods to choose from. The results bear out the long-standing complaints of the business community. Giving evidence to the House of Commons Trade and Industry Committee on the *Competitiveness of UK Manufacturing Industry* (1993), car component manufacturer, GKN plc, bemoaned that, 'supplies of plant and equipment are now dominated by imports because the UK manufacturers of many capital goods (eg, machine tools) have contracted greatly.'

The problems were exacerbated by the severe recession of the early 1980s which contributed to the notable deterioration in the UK's investment performance. Investment is a vital determinant of UK competitiveness via its impact on the relative quality of UK products. We estimate that hysteresis effects and a 20% decline in UK investment relative to our major competitors are *each separately responsible* for around a third of the rise in import penetration during the period 1979–84, and around 40% of the decline in the UK's share of world exports of manufactures.

UK trade performance

	% UK export share[a]	% UK import penetration[b]	Manufacturing employment[c]
1978	11.1	26	7138
1981	10.0	28	6099
1984	9.2	33	5302
1990	9.8	37	4994

Source: NIESR Discussion Paper 102, tables 3 and 4.
[a]Export share = UK exports (of manufactures) as a % of G7 exports. [b]Import penetration = imports/home demand (manufactures. [c]Total employment in manufacturing in GB (thousands).

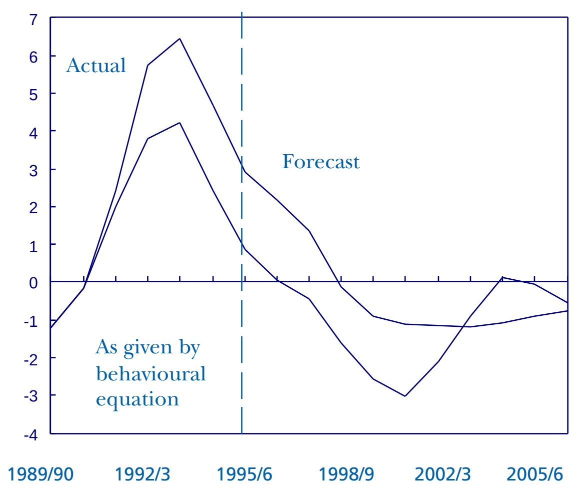
However, our research also shows that the improvement in the UK's relative investment performance since the mid-1980s has made a significant contribution to the improvement in UK trade performance during the latter 1980s and first half of the 1990s (ie, a reversal of the long-term decline in UK export share and a less rapid rise in import penetration). But more is needed: despite improvements in the 1980s, the level of UK manufacturing investment relative to our major competitors was lower in 1990 in comparison to 1979.

THIS RESEARCH WAS COMMISSIONED BY HM TREASURY AND THE DEPARTMENT OF TRADE AND INDUSTRY. MORE DETAILS MAY BE FOUND IN DISCUSSION PAPERS 101 AND 102 BY BOB ANDERTON. FURTHER WORK, IN COLLABORATION WITH BIRMINGHAM UNIVERSITY, IS BEING FUNDED BY THE THE ECONOMIC AND SOCIAL RESEARCH COUNCIL.

The recession between 1990 and 1992 was associated with a sharp worsening of Britain's budgetary position. The Public Sector Borrowing Requirement, which had been –1½ in 1989/90, worsened to 6% of GDP in 1992/3. Since then, although the economy has recovered, the borrowing requirement has been slow to fall. In 1996/7, despite the increase in the tax base generated by 4½ years of recovery, it remains at 3½% of GDP.

An analysis of past behaviour indicates that the government's primary deficit (before allowing for debt interest net of property income) can be explained in terms of a number of factors. The more depressed the state of the economy, the greater is cyclical social security expenditure and the narrower is the tax base; the closer the government is to an election the more it is prepared to let borrowing rise and the smaller is its outstanding net debt the happier it is to borrow. But even when these factors are taken into account, we find that the government deficit has been about higher than 'normal' by about 2% of GDP since 1992.

The current primary deficit as a % of GDP



How far and how fast should government borrowing be brought down? There is a steady-state relationship between the level of government borrowing as a percentage of GDP and the level of net government debt as a proportion of GDP. The ratio of borrowing to the rate of growth of nominal demand indicates the steady-state ratio of debt to GDP. If the deficit is 3% of GDP and nominal GDP is growing at 5% p.a., then in the steady state debt will amount to 60% of GDP. Do we then have to worry if the government succeeds in bringing our deficit down to 3% of GDP by 1997/98?

The answer is undoubtedly that deficit reduction to 3% of GDP does not go far enough. At the end of 1995 the government had assets of 56% of GDP and debts of 43% of GDP. A deficit of 3% of GDP means that debt is still rising relative to income. In turn this means that interest payments are rising, so that, if the deficit is to be held at 3% of GDP other types of spending will have to be cut or taxes will have to be raised to make room for debt interest. The choice is not between adjusting fiscal policy and not adjusting. It is simply between adjusting now and adjusting in the future.

If the government's debt position is to stop worsening, then the budget deficit has to be reduced by means of spending cuts or tax increases by 2% of GDP as compared with the situation in 1996/7. The budget statement shows this being achieved by means of tight control over spending and buoyant tax receipts generated by economic growth. It is very unclear both whether spending can be controlled as much as is required and whether the sustainable level of economic activity is high enough to generate the tax revenue needed. The new government is likely to need to introduce a mixture of spending cuts and tax rises.

THIS WORK, BY NIGEL PAIN, MARTIN WEALE AND GARRY YOUNG, HAS BEEN SUPPORTED BY THE ESRC MACROMODELLING CONSORTIUM. A PAPER ON THE TOPIC IS TO BE PRESENTED AT AN ESRC SEMINAR IN MARCH 1997 AND TO BE PUBLISHED IN THE *ECONOMIC JOURNAL* IN JULY 1997.

FINANCIAL MARKET INTEGRATION IN EUROPE

The Institute has completed a large scale study on the effects of barriers to the mobility of capital in Europe. Barriers to the free movement of capital lead to inefficient resource allocation across and within countries. They also limit effective competition in many markets for financial services, reducing the gains from the operation of the market.

Despite evidence that a considerable degree of liberalisation has taken place in the EU in recent years we found that capital is not yet fully mobile between countries. The UK, Germany and the Netherlands have had few external barriers to the free movement of capital for 15 years or more. Even in these cases, it is clear that prudential regulation and other internal financial market policies have continued to form barriers to capital mobility.

The free movement of capital should enable individuals and groups to trade consumption risks and to alter the time profile of their consumption as compared to their income. It is clear that overall national portfolios are more diversified in countries without a recent history of capital controls. The UK and the Netherlands, for instance, both have stocks of foreign assets and liabilities that exceed the size of their GDP. This suggests that their income and wealth risks are spread over a wider range of possible outcomes than are those of say, Italy. The gradual removal of controls has been accompanied by an increasing international diversification of portfolios in France, Spain and Italy. As a result of increasing capital flows and freer markets, rates of return in equity markets within Europe have become more co-ordinated. This suggests that risk-sharing has risen, and that the increased mobility of capital is beginning to have a real impact on the European economy. However, increased exchange rate uncertainty after 1992 appears to have formed a different sort of barrier, reducing the coherence of equity markets.

Our analysis of the extent to which European countries are complying with the OECD Codes of Liberalisation and the findings of our survey of financial market participants throughout the EU both indicate that there is still some way to go before complete freedom of capital movement in the Single European Market. Significant obstacles or distorting factors of various kinds were identified in most EU Member States. In many instances, these derive from national rules for the prudential regulation of financial institutions or markets, such as restrictions on the composition of institutional investors' portfolios or onerous authorisation and local incorporation requirements. Differences in national tax regimes and the differential tax treatment of residents and non-residents also continue to restrict and distort capital flows: withholding taxes and non-recoverable corporate income tax charges were widely identified as a serious constraint on cross-border investment in securities.

Increasing European integration and continued progress towards implementing the Single Market should lead to the removal or erosion of many of these obstacles but elimination of some of the fiscal constraints may require a greater degree of tax harmonisation than has so far been envisaged. In the absence of monetary union, exchange rate uncertainty will also continue to be a major factor inhibiting capital flows and preventing the efficient allocation of capital within the single market.

THIS WORK WAS SUPPORTED BY THE EUROPEAN COMMISSION. KOGAN PAGE, ON BEHALF OF THE COMMISSION, WILL PUBLISH THE REPORT BY JOHN ARROWSMITH, RAY BARRELL, NIGEL PAIN, KATARZYNA WLODEK AND GARRY YOUNG AS PART OF THEIR SERIES ON DISMANTLING BARRIERS IN EUROPE.

CONFERENCES AND SEMINARS

Our 1996 Programme of Conferences and Seminars had a distinctly international flavour, and a wide variety of speakers and participants.

BRITAIN AND THE WORLD ECONOMY

A series of three seminars on the above theme was organised in collaboration with the Economic and Social Research Council. The first concerned Determinants and Consequences of Foreign Direct Investment, with papers from Dr DeAnne Julius of British Airways and Ray Barrell of NIESR. Contributors to the second event, on British Interests in Pacific Asia, included Dr David Vines of Balliol College, Oxford and Andrew Burns of the Foreign and Commonwealth Office. In the final seminar E Philip Davis of the European Monetary Institute and Klaus Päben of the Deutsche Bundesbank spoke on Prospects for European Financial Integration. The events were hosted by Prudential, Shell UK and Goldman Sachs.

PRODUCTIVITY AND COMPETITIVENESS

A two-year series of seminars under the ESRC Research Seminar Scheme has allowed the Institute to develop a new network on the above theme. Seminars in 1996 included papers from Nicholas Oulton and Garry Young (NIESR); Professor Nicholas Crafts (London School of Economics); Professor Balasubramanyam, Professor David Sapsford and Dr Mohammed Salisu (Lancaster University); Ray Barrell, Nigel Pain and Florence Hubert (NIESR); Mary Gregory and Christine Greenhalgh (Oxford University); Steve Nickell, Daphne Nicolitsas and Neil Dryden (Oxford University); Colin Thirtle (Reading University); and Paul Temple and Giovanni Urga (London Business School).

ANGLO-GERMAN PROBLEMS COMPARED

Two seminars staged with the Anglo-German Foundation allowed senior German academics to give their perspective on current problems affecting both countries. Speakers were Dr Gunter Kayser of the Institut für Mittelstandsforschung on the Problems of Medium Sized Companies and Professor Ulrich Teichler of the Universität Gesamthochschule Kassel on Graduate Utilisation in Industry.

INSTITUTE GOVERNORS PRESENTING PAPERS IN 1996 INCLUDED TUC GENERAL SECRETARY JOHN MONKS (LEFT) AND SIR SAMUEL BRITTAN OF THE FINANCIAL TIMES.

GOVERNORS' SEMINARS

This popular series continued with seven papers by Institute Governors to an invited audience of fellow Governors, Institute supporters and staff. Speakers were Ewen Macpherson on Venture Capital, Sir Samuel Brittan on Britain outside EMU, Ian Byatt on Utility Regulation, John Marks on Job Insecurity and Labour Market Flexibility, John Flemming on Trade and Industry in Eastern Europe, Sir Kit McMahon on Is Inflation Dead? and Sir Peter Middleton on From the Mixed Economy to Free Markets and Back.

STAFF SEMINARS

The Institute would also like to thank the following speakers for presenting papers to our vigorous staff seminar programme during the year: John Boyd (University of Minnesota); Michael Devereux (Keele University); Rachel Griffiths (Institute for Fiscal Studies); Steve Machin (University College London); Paul Seabright (Cambridge University); Michael White (Policy Studies Institute); John Whitley (Bank of England) and Adrian Wood (Sussex University).

BOOKS AND MAJOR REPORTS

The goal of full employment

by *Andrew Britton*

Report no. 10. ISBN 0 952 6213 0 4.

Price £11.50. Published by NIESR.

Full employment as an objective of economic policy has not lost its appeal, despite the failure of successive governments to achieve it over the past 25 years. But is this objective still appropriate in circumstances very different from those of the postwar period? Britton offers an interpretation of historical events and then goes on to redraw a picture of full employment as it might be today. He includes quantitative estimates of measures to increase demand and to improve employment incentives and concludes that full employment is a possible destination but that the journey is likely to be slow and costly.

Sources of productivity growth

edited by *David Mayes*

ISBN 0 521 55437 3. Price £37.50.

Published by Cambridge University Press.

Over the past two decades there have been episodes of particularly rapid growth in output per head in many countries throughout the world, in particular in the UK since the early 1980s. To understand this phenomenon requires detailed analysis of productivity changes using data for individual firms. Contributors to this volume provide a comparative analysis of data for a number of different countries – the UK, the USA, Canada, Japan, Australia, Belgium, Norway, Sweden, Germany and The Netherlands.

Unresolved issues on the way to a single currency

by *John Arrowsmith and Christopher Taylor*

Occasional paper no. 49. ISBN 0 952 6213 1 2.

Price £10.00. Published by NIESR.

Arrowsmith and Taylor focus on parts of the Treaty which are likely to create uncertainty and confusion during the protracted period of transition, causing nervousness and possibly destabilising speculation in foreign exchange markets. They deal with the timetable for transition, crucial exchange rate questions, difficulties that lie in wait in transforming ECUs into Euros, the huge uncertainties in the process of fiscal convergence, and the possibility of a breakdown in the Maastricht timetable. Alternative routes to EMU are discussed and a possible safety-net of policy cooperation that might be put in place if the timetable looks like suffering a serious setback.

The influence of financial intermediaries on the behaviour of the UK economy

by *Garry Young*

Occasional paper no. 50. ISBN 0 952 6213 2 0.

Price £15.00. Published by NIESR.

Garry Young, winner of *The Independent*'s Golden Guru award for forecasting, now turns his attention to investigating the behaviour of financial intermediaries, especially banks and building societies, in the recession of the early 1990s to determine whether their reaction to their own balance sheet problems contributed to the weakness in the wider economy. The behaviour of both lenders and borrowers is examined to understand how difficulties experienced by lenders might be transmitted to the expenditure decisions of borrowers. Evidence from a range of sources is combined with a rigorous theoretical framework to quantify the effect on the national economy.

Barriers to international technology transfer

edited by *John Kirkland*

NATO ASI Series. ISBN 0 7923 4360 3 volume 11.

Price US$143.00. Published by Kluwer Academic Publishers, Dordrecht, The Netherlands.

The importance of technology transfer to innovation and wealth creation is now recognised by most governments. As the policy debate has intensified, however, it has become clear that the problem of encouraging successful transfer is complex, and requires an interdisciplinary approach. The papers collected here offer perspectives from economics, sociology, science, engineering, public administration and from those involved at the 'sharp end' of technology licensing and administering government research programmes. The authors are drawn from ten countries, from throughout Europe and North America.

PUBLICATIONS DURING 1996 HAVE COVERED A WIDE RANGE OF SUBJECTS. OUR REPORT SERIES HAS NOW BEEN REPLACED BY THE OCCASIONAL PAPERS SERIES, FORMERLY PUBLISHED FOR US BY CAMBRIDGE UNIVERSITY PRESS – WHO CONTINUE TO PUBLISH THE ECONOMIC AND SOCIAL STUDIES SERIES. A FULL LIST OF INSTITUTE PUBLICATIONS IN PRINT IS AVAILABLE FROM THE PUBLICATIONS OFFICE AT THE NATIONAL INSTITUTE.

In its 38th year of publication, the Review *continued to attract exceptionally widespread attention. After starting the year with prestigious forecasting awards from the* Sunday Times *and the* Independent, *Review articles were widely quoted in the White Paper on Competitiveness, by the Chancellor and by Opposition spokesmen. Favourable press coverage included the comment in the* Times, *that Flemming and Oppenheimer's article in the July* Review, 'should ... be made compulsory reading for politicians and commentators of all parties', *whilst the article by Arrowsmith and Taylor in the October edition was described by the Observer as* 'one of the best technical studies ... by two of this country's economic experts on the subject'.

No. 155 (February)

Real national income
James Sefton and Martin Weale
Structural change in European labour markets
Julian Morgan
The rise of China as an economic power
C Goodhart and C Xu
Anti-dumping policy after the Uruguay round: an appraisal
Nigel Grimwade

No. 156 (May)

What do comparisons of the last two economic recoveries tell us about the UK labour market?
Julian Morgan
Graduate utilisation in British industry: the initial impact of mass higher education
Geoff Mason
Foreign direct investment in central Europe since 1990: an econometric study
Melanie Lansbury, Nigel Pain and Katerina Smidkova
The performance of National Institute economic forecasts
David Poulizac, Martin Weale and Garry Young
An assessment of OECD and UK leading indicators
Martin Weale
Forecast errors for inflation by stochastic simulation
Andrew P. Blake

No. 157 (July)

Commentary on reform of mathematical education in primary schools
S.J. Prais
Are government spending and taxes too high (or too low)?
John Flemming and Peter Oppenheimer
Financing the United Nations: international taxation based on capacity to pay
Simon Broadbent
James Meade's vision: full employment and social justice
A.B. Atkinson
Recession and recovery in the United Kingdom in the 1990s: identifying the shocks
Luis Catão and Ramana Ramaswamy

No. 158 (October) Themed issue on European Financial Integration

Moving towards EMU: the challenges ahead
John Arrowsmith and Christopher Taylor
Fiscal policy and EMU
Christopher Allsopp and David Vines
A reconsideration of the optimum currency area approach: the role of external shocks and labour mobility
Daniel Gros

EACH EDITION OF THE REVIEW INCLUDES DETAILED FORECASTS OF BOTH UK AND WORLD ECONOMIES, COMMENTARY AND COMPREHENSIVE STATISTICAL APPENDIX, PLUS HIGH QUALITY ARTICLES FROM INSTITUTE AND EXTERNAL AUTHORS. ITS LARGE CIRCULATION ENABLES ANNUAL SUBSCRIPTIONS TO BE KEPT AT £90 (UK AND EU SUBSCRIBERS) AND £110 OVERSEAS. SPECIAL RATES ARE AVAILABLE FOR STUDENTS, TEACHERS AND INDIVIDUAL ACADEMICS. FOR FURTHER DETAILS PLEASE CONTACT ANNE STEWART AT THE NATIONAL INSTITUTE.

DISCUSSION PAPERS

The purpose of this series is to foster the interchange of ideas at an early stage and to describe work in progress. The following papers published in 1996 are currently available at £3.00 each and £22.00 for ten consecutive published papers. A list of earlier papers is available from the Publications Department.

90. **Laying the foundations of numeracy: a comparison of primary school textbooks in Britain, Germany and Switzerland**
Helvia Bierhoff

91. **Regionalism, innovation and the location of German direct investment**
Ray Barrell, Nigel Pain and Florence Hubert

92. **The role of the firm in the evolution of European environmental rules: the case of the water industry and the European drinking water directive**
Duncan Matthews and John Pickering

93. **The social rate of return to investment**
Nicholas Oulton and Garry Young

94. **Innovation and export behaviour at the firm level**
Katharine Wakelin

95. **Job creation and variations in corporate growth**
Peter E. Hart and Nicholas Oulton

96. **Wage determination and active labour market programmes**
Bob Anderton and Soterios Soteri

97. **Financial intermediation services indirectly measured: estimates for France and the UK based on the approach adopted in the 1993 SNA**
Iain Begg, Jacques Bournay, Martin Weale and Stephen Wright

98. **Modelling structural change in the UK housing market: a comparison of alternative house price models**
Nigel Pain and Peter Westaway

99. **Personal sector wealth in the United Kingdom – 1920–1956**
Solomos Solomou and Martin Weale

100. **Did the underlying behaviour of inflation change in the 1980s? A study of 17 countries**
Bob Anderton

101. **Trade performance and the role of R&D, patents, investment and hysteresis: an analysis of disaggregated bilateral import volumes for the UK, Germany and Italy**
Bob Anderton

102. **UK trade performance: the role of product quality, innovation and hysteresis**
Bob Anderton

103. **Competition and the dispersion of labour productivity amongst UK companies**
Nicholas Oulton

104. **The British stake in Hong Kong: trade in goods**
Simon Broadbent and Chao-Dong Huang

105. **Productivity in market services: international comparisons**
Mary O'Mahony and Jennet Vass

106. **Air transport: international comparisons of labour productivity**
Jennet Vass

107. **Continental drift: European integration and the location of UK foreign direct investment** *Nigel Pain*

108. **Employment protection and labour demand in Europe** *Julian Morgan*

THE WORK ON COMPARISONS OF SWISS AND BRITISH PRIMARY SCHOOLS IN DISCUSSION PAPER NO. 90 CONTINUES WITH A COMPARISON OF SECONDARY SCHOOLING IN A FORTHCOMING BOOK BY HELVIA BIERHOFF AND S.J. PRAIS ENTITLED, *FROM SCHOOL TO PRODUCTIVE WORK: BRITAIN AND SWITZERLAND COMPARED*. IT PROVIDES A NUTS-AND-BOLTS COMPARISON WITH BRITAIN OF SWITZERLAND'S SUCCESSFUL TRANSITION PROCESS FOR YOUNGSTERS FROM SCHOOL TO WORK. IT WILL BE PUBLISHED BY CAMBRIDGE UNIVERSITY PRESS IN THE SPRING OF 1997.

OTHER PUBLISHED ARTICLES AND PAPERS PRESENTED

The following are not published by the Institute. However, enquiries may be addressed to the individual authors.

Publications

Anderton, R., 'Policy regimes and the persistence of inflation and unemployment', *Manchester School*, forthcoming.

— 'Did the underlying behaviour of inflation change in the 1980s? A study of 17 countries', *Weltwirtschaftliches Archiv.*, forthcoming.

Arrowsmith, J., 'La non-participation à la phase 3: la vie à l'étage inférieure de l'UEM', *Revue d'Economie Financière*, 36, Paris, Spring.

— 'Achieving a harmonious and balanced development of activities in a two-tier EMU', memorandum to Select Committee on the European Communities, House of Lords, Session 1995–96, 11th Report, *An EMU of 'Ins' and 'Outs'*, Volume II – Evidence, London, HMSO.

— 'Economic and monetary union: economic, financial and legal aspects of the transition to a single European currency', memorandum to Treasury Committee, House of Commons, Session 1995–96, 8th report, *The Prognosis for Stage Three of Economic and Monetary Union,* Vol. II – Evidence, London, HMSO.

— 'The role of exchange arrangements in preparing for EMU', in Kenen, P.B. (ed.), *Making EMU Happen – Problems and Proposals: A Symposium*, Essays in International Finance No. 199, Princeton.

— 'Opting out of Stage 3: life in the lower tier of EMU', in Davidson, I.D. and Taylor, C.T. (ed.), *European Monetary Union: The Kingsdown Enquiry*, London, Macmillan.

—, Barrell, R., Pain, N. Wlodek, K. and Young, G., 'Capital market liberalisation in Europe', in *Dismantling Barriers in Europe,* Kogan Page.

Barrell, R., 'German monetary union and its implications for the rest of Europe' in Holscher, J. and Frowen, S. (eds), *The German Currency Union of 1990 – a critical assessment*, Macmillan Press.

—, Hurst, I. and Pain, N., 'German monetary union: an historical counterfactual analysis', *Economic Modelling*, 13.

— and Morgan, J., 'International comparisons of labour market responses to economic recovery', DfEE Report RS 38, November.

—, Morgan, J., Lansbury, M. and Pain, N., 'US labour market – the process of job creation', DfEE Report, forthcoming.

— , Morgan, J. and Pain, N., 'Sustainable growth and low inflation: the outlook for the US and Europe', in Toida, M. and Hiratsuka, D. (eds), *1996 Economic Forecasts for the Asian Industrializing Region*, Tokyo, Institute of Developing Economies.

— and Pain, N., 'Trade restraints and Japanese direct investment flows', *European Economic Review.*

— and Pain, N., 'EMU as a job creator', *New Economy*, June.

— and Pain, N., 'An econometric analysis of US foreign direct investment', *Review of Economics and Statistics*, May.

—, Pain, N. and Sefton, J., 'The effects of fiscal policy and the Maastricht solvency criteria on European employment' in Hairault, J.O., Henin, P.Y. and Portier, F. (eds), *Business Cycles, Public Policies and Macroeconomic Stability,* June, 1997.

—, Pain, N. and Young, G., 'The cross country demand for labour in Europe', *Weltwirtschaftliches Archiv*, 132, December.

— and Sefton, J., 'Fiscal policy and the Maastricht solvency criteria', *Manchester School*, forthcoming.

Begg, I., Bournay, J., Weale, M. and Wright, S., 'Financial intermediation services indirectly measured: estimates for France and the UK based on the approach adopted in the 1993 SNA', *Review of Income and Wealth*, series 42, 4.

Bierhoff, H., 'Laying the foundations of numeracy: a comparison of primary school textbooks in Britain, Germany and Switzerland', *Teaching Mathematics and its Applications*, 15, 4.

Blake, A. and Westaway, P., 'Credibility and the effectiveness of inflation targetting regimes', *Manchester School,* Supplement.

Cave, M. and Weale, M., 'Higher education: expansion and reform' in Jenkinson, T. (ed.), *Readings in Microeconomics,* reprinted from *Oxford Review of Economic Policy.*

Davidson, I.D. and Taylor, C.T. (ed.), *European Monetary Union: The Kingsdown Enquiry*, London, Macmillan.

Hart, P.E. and Oulton, N., 'Growth and size of firms', *Economic Journal*, 106, September.

Jarvis, V. and Prais, S.J., 'The quality of manufactured products in Britain and Germany', *International Review of Applied Economics*, forthcoming.

Kirkland, J., 'Barriers to technology transfer – motivating the science base', *Industry and Higher Education*, 10, 6, December.

Lansbury, M., Pain, N. and Smidkova, K., 'The determinants of foreign direct investment in Central Europe by OECD countries: an econometric analysis', in Csáki, G., Fóti, G. and Mayes, D. (eds), *Foreign Direct Investment and Transition: the Case of the Visegrád Countries*, Budapest, Institute for World Economics of the Hungarian Academy of Sciences.

Mason, G., 'Shopfloor management skills in manu-

facturing: the formation of production supervisors in the United States, Germany and Britain', Report to the US Department of Labor.
— and van Ark, B., 'Productivity, machinery and skills: engineering in Britain and the Netherlands' in Mayes, D. (ed.), *Sources of Productivity Growth*, Cambridge University Press.
—, van Ark, B. and Wagner, K., 'Workforce skills, product quality and economic performance', in Booth, A. and Snower, D. (eds), *Acquiring Skills: Market Failures, their Symptoms and Policy Responses*, Cambridge University Press.
Morgan, J., 'Labour market recoveries in the UK and other OECD countries', *Labour Market Trends*, December.
O'Mahony, M., 'Conversion factors in relative productivity calculations: theory and practice', in *Industry Productivity: International Comparison and Measurement Issues*, Paris, OECD.
— 'Measures of fixed capital stocks in the post-war period: a five country study', in Crafts, N.F. and van Ark, B. (eds), *Quantitative Aspects of Post-War European Growth*, Cambridge University Press.
— and Wagner, K., 'Anglo German productivity growth since 1973', in Mayes, D. (ed.), *Sources of Productivity Growth in the 1980s*, Cambridge University Press.
— and Wagner, K., 'Anglo German productivity performance: 1960–89', in Wagner, K. and van Ark, B. (eds), *International Productivity Differences: Measurement and Explanations*, North Holland.
Oulton, N., 'Increasing returns and externalities in UK manufacturing: myth or reality?' *Journal of Industrial Economics*, XLIV, March.
— 'Workforce skills and export competitiveness: an Anglo-German comparison', in Booth, A.L. and Snower, D.J. (eds), *Acquiring Skills: Market Failures, their Symptoms and Policy Responses*, Cambridge University Press.
— 'Zipf and the size distribution of firms', *Applied Economics Letters*, forthcoming.
— 'Competition and the dispersion of labour productivity amongst UK companies', *Oxford Economic Papers*, forthcoming.
— and Young, G., 'How high is the social rate of return to fixed investment', *Oxford Review of Economic Policy*, 12 (2).
Pain, N., Weale, M. and Young, G., 'The origins of Britain's public finance problem', *Economic Journal*, forthcoming.
Pain, N. and Westaway, P., 'The demand for domestic output and imports in the UK: a dynamic systems approach', *The Manchester School*, LXIV.
Prais, S.J., 'Class-size and learning: the Tennessee experiment – what follows?' *Oxford Review of Education*, December.
Sefton, J. and Weale, M., 'The net national product and exhaustible resources: the effects of foreign trade', *Journal of Public Economics*, 61.
Solomou, S. and Weale, M., 'UK national income: 1920–1938: the implications of balanced estimates', *Economic History Review*, 49.
— 'Personal sector wealth in the United Kingdom: 1920–1956', *Review of Income and Wealth*, forthcoming.
Taylor, C.T., 'The implications of a small-group EMU', memorandum to Select Committee on the European Communities, House of Lords, Session 1995–96, 11th Report, *An EMU of 'Ins' and 'Outs'*, Volume II – Evidence, London, HMSO.
Whitburn, J., 'Contrasting approaches to the acquisition of mathematical skills: Japan and England', *Oxford Review of Education*, 22, 4.

The newest recruits to the Institute: (from left) Dirk Willem te Velde, Florence Hubert, Dawn Holland, Caroline Wilson, Kurt Pertsch, Marie Sheldon and Gonzalo Camba-Mendez.

Papers presented at conferences

R. Anderton, *UK wage flexibility and labour market policies*, Employment and Education Economics Group Conference, July; Policy Studies Institute, November.
J. Arrowsmith, *The ins and outs of EMU*, University Association for Contemporary European Studies, King's College, London, May.
— *Uncertainties and flashpoints before the single currency is reached*, Henry Stewart Conference Studies, London, May.
— *On the way to a single currency: unresolved issues*, WEFA Group International Economic Outlook Conference, Philadelphia, October.
R. Barrell, *Sustainable growth and low inflation*, UN, New York, March.
— *Policy analysis and model design*, Institute for Economic Growth Conference, New Delhi University, March.
— *Risks to stable growth and inflation*, LINK conference, University of Lausanne, September.

— , R. Anderton, M. Lansbury and J. Sefton, *FEERs for the NIEs*, LARE Conference, Bordeaux University, July, AUME, Seoul, November.
— and K. Magnussen, *Counterfactual analyses of oil price shocks using a world model*, Warwick Macro Modelling Bureau, July.
—, J. Morgan and N. Pain, *The employment effects of the Maastricht fiscal criteria: an update,* UN, New York, March; European University Institute, Florence, April; LARE Conference, Bordeaux University, July.
—, J. Morgan and N. Pain, *Employment, inequality and flexibility*, University of Lausanne, September; CEPR, London, November.
—, N. Pain and F. Hubert, *Regionalism, innovation and the location of German direct investment*, Royal Economic Society Conference, Swansea, April; EMOT Workshop, University of Durham, June.
—, N. Pain and J. Sefton, *The effects of fiscal policy and the Maastricht criteria on European employment*, CEPRMAP Conference, Paris, January.
— and J. Sefton, *Fiscal policy, real exchange rates, and monetary union*, European University Institute Conference on Employment, Florence, November.
A. Blake, *Evaluating monetary policy rules by stochastic simulation*, Warwick Macro Modelling Bureau, July.
S. Broadbent and C-D. Huang, *Is this trade with China? Inconsistency and reconciliation of data on bilateral trade between China and its partners*, Chinese Economic Association (UK), London School of Economics, December.
M. Lansbury, N. Pain and K. Smidkova, *The determinants of foreign direct investment in Central Europe by OECD countries: an econometric analysis,* Institute for World Economics of the Hungarian Academy of Sciences, Budapest, March.
G. Mason and D. Finegold, *Vocational training systems and industrial performance: US–European comparisons,* International Conference on Employer Training, Cornell University, Ithaca, New York, November.
G. Mason and M. O'Mahony, *Capital-intensity, capital-quality and productivity performance in manufacturing: international comparisons*, IARIW Conference, Lillehammer, Norway, August.
Morgan, J., *Employment protection and labour demand,* European Economic Association Congress, Istanbul, August.
— *Monetary and fiscal policy in the UK*, 54th Kiel Konjunkturgesprach, IFW, Kiel, September.
— *What do comparisons of the last two economic recoveries tell us about the UK labour market*? AIECE Conference, Brussels, October.
N. Oulton, *Labour productivity amongst UK companies: experiences with a large dataset*, Stata Users Group Conference, University of Westminster, July.
— *Competition and the dispersion of labour productivity amongst UK companies*, E.A.R.I.E. Conference, Vienna, September; Birmingham University, December; Lancaster University, December.
N. Pain, *The impact of the EU internal market programme on the evolution of German direct investment,* European Economic Association Conference, Istanbul, August.
— *Continental drift: European integration and the location of UK foreign direct investment*, Money, Macro and Finance Research Group Annual Conference, London, September.
— and K. Wakelin, *Foreign direct investment and export performance*, EARIE Conference, Vienna, September.
— and P. Westaway, *Modelling structural change in the UK housing market: a comparison of alternative house price equations*, Society of Housing and Property Economists Conference, London Business School, March.
— and G. Young, *Tax competition and the pattern of European foreign direct investment*, International Institute of Public Finance, Tel Aviv, August; IFS Conference on Public Policy and the Location of Economic Activity, November.
E. Salazar, *Data augmentation by wavelet neural networks*, Society of Computational Economics Second International Conference, Geneva, June.
J. Sefton, *Trend output and underlying inflation*, Royal Economic Society, Swansea, April: University of Nottingham, June.
— *Consumption and financial liberalisation*, Warwick Macromodelling Bureau Conference, July.
C. Taylor, *The implications of a two-tier Europe for those outside the core*, RIIA Conference on Economic and Monetary Union, London, March.
— *A common-currency route to EMU: the hard ECU revisited*, Confederation of European Economic Associations Symposium, Frankfurt, November.
J. Whitburn and M. Maclean, *A comparison of Welsh and English children's understanding of number words'*, International Society for Behavioural Development, Quebec, August; British Psychological Society, Oxford, September.
G. Young, *The influence of international taxation on domestic fixed investment: a cross country study*, National Bureau of Economic Research and Centre for Economic Research, Tilburg University, Amsterdam, May.
— *A new system of factor demand equations for the NIESR domestic model*, University of Warwick, July; University of Lausanne, October.

26 OTHER PAPERS WERE GIVEN BY INSTITUTE STAFF IN 1996 AT UNIVERSITIES AND OTHER LOCATIONS THROUGHOUT THE WORLD.

CORPORATE MEMBERSHIP

The Corporate Membership Scheme was launched in 1994 to facilitate a close link between the Institute and its major corporate supporters. Membership, which is by invitation, extends to all sectors of the economy. Participating companies are listed on page 29.

Amongst many benefits, the Scheme provides the opportunity for two-way exchange between Institute staff, corporate chairmen, board members and senior economists. Meetings hear accounts of recent research findings at first hand, but also contribute to our research output. Discussions feed directly into the commentary and editorials which appear in the *National Institute Economic Review*. Special guests with a particular interest in the subject under discussion are also invited to attend from senior levels in the media, academic life and government departments.

Principal meetings of Corporate Members during the year included:

FEBRUARY
Does Britain have too many graduates?
Introduced by Geoff Mason
Guest: David Thompson, DfEE

MAY
Forecasting in the UK economy
Introduced by Martin Weale
Guests: Kate Barker, CBI; Bridget Rosewell, Business Strategies Ltd; Sir Alan Budd, HM Treasury

JULY
Competition and company performance
Introduced by Nick Oulton

OCTOBER
Annual dinner – Talk on **Labour market flexibility and job creation: Britain's performance in an international context**
Venue: The Reform Club
Introduced by Nigel Pain
Guests: Martin Wolf, *Financial Times*; Frances Cairncross, *The Economist*.

THE INSTITUTE STAGES A BROAD PROGRAMME OF EVENTS FOR SENIOR DECISION MAKERS IN INDUSTRY. FURTHER INFORMATION ABOUT CURRENT ACTIVITIES MAY BE OBTAINED FROM THE SECRETARY, DR JOHN KIRKLAND.

AT THE MAY MEETING OF THE CORPORATE MEMBERS FORUM, PARTICIPANTS MET TO DISCUSS THE PROBLEMS OF ECONOMIC FORECASTING WITH CHIEF ECONOMIC ADVISER TO THE TREASURY, SIR ALAN BUDD (RIGHT) AND THREE OF THE CHANCELLOR'S PANEL OF SIX

INDEPENDENT ADVISERS – KATE BARKER (ABOVE LEFT) OF THE CBI, BRIDGET ROSEWELL (ABOVE RIGHT) OF BUSINESS STRATEGIES LTD AND THE INSTITUTE DIRECTOR, MARTIN WEALE.

FINANCIAL SUPPORTERS

The Institute would like to record its thanks to the following organisations for their support through research projects, corporate donations and hosting events during 1996. Contributions of this type are vital in preserving our independence, and are much appreciated by our officers and staff.

CORPORATE MEMBERS

Bank of England
Barclays Bank plc
British Gas plc
Cadbury Schweppes plc
Esso UK plc
Glaxo Wellcome plc
3i plc
ICI plc
ING Barings
INVESCO Europe Ltd
Lloyds TSB Group plc
Marks and Spencer plc
National Grid Company
Nomura Research Institute Europe Ltd
Post Office
Prudential Corporation
RTZ Corporation plc
Rothmans International plc
Shell (UK) Ltd
TI Group plc
Unilever plc
SG Warburg Group plc
Williams Holdings plc
Willis Corroon Group plc

FINANCIAL SUPPORTERS

Abbey National plc
The Bank of England
The Bank of Scotland
Banque Nationale de Paris plc
BOC
Booker plc
BPB Industries plc
BTR plc
Cazenove & Co
Commercial Union plc
Communication Workers Union
Coutts & Co
Du Pont Company (United Kingdom) Ltd
Ernst & Young
Financial Times Ltd
Fire Brigades Union
Robert Fleming Holdings Ltd
Goldman Sachs
GMB
Halifax Building Society
Hanson plc
IPMS
Leopold Joseph & Sons Ltd
KPMG
Laings Charitable Trust
Laporte Industries plc
John Lewis Partnership
Mars GB Ltd
Morgan Grenfell Group plc
Morgan Stanley Group (Europe) plc
National Provident Insurance
National Union of Civil and Public Servants
Norwich Union Insurance Societies
Rolls Royce plc
NM Rothschild & Sons Ltd
Royal Bank of Scotland
RTZ
Schroders Charity Trust
Scottish TUC
Slough Estates plc
Smiths Industries plc
Standard Chartered Bank plc
Trades Union Congress
Transport and General Workers Union
USDAW
Vickers plc

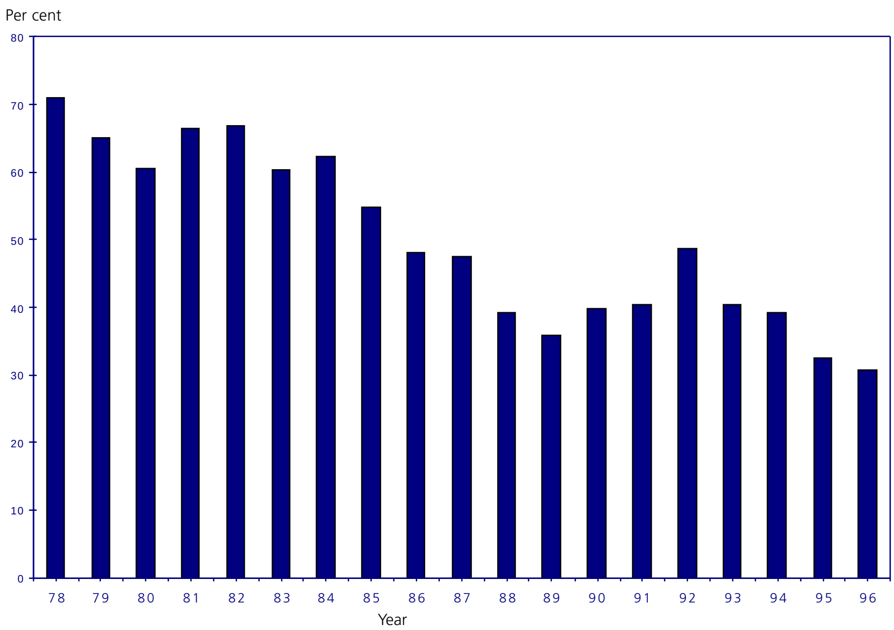
RESEARCH SUPPORTERS

The Anglo-German Foundation
Association for European Monetary Union
Bank for International Settlements
City of London Corporation
Department for Education and Employment
Department of Trade and Industry
Economists' Advisory Group
Economic and Social Research Council
European Commission
European Monetary Institute
Foreign and Commonwealth Office
The Gatsby Charitable Trust
German Marshall Fund
Institute of Developing Economies (Tokyo)
The Leverhulme Trust
Office of National Statistics
Royal Bank of Scotland
Alfred Sloan Foundation
HM Treasury
US Labor Department

FINANCIAL REPORT

After two years in which expenditure exceeded income, the Institute was able to report an operating surplus of £57,507 – its best financial result for a decade. Research income rose by 18%, and publications by 15%. Administration and general costs declined by 8%. Full and unqualified accounts, audited by Messrs KPMG, have been delivered to the Charity Commissioners and Companies House. Highlights include the following:

	1995–96 £	*1994–95* *£*
INCOME		
Research	1,138,753	*966,659*
Publications	414,886	*363,436*
Corporate supporters	127,294	*135,828*
Investments and interest	129,417	*113,464*
Total income	1,810,350	*1,579,387*
EXPENDITURE		
Research	1,221,795	*1,101,807*
Publications	241,071	*219,675*
Premises	61,490	*74,079*
Administration and general services	228,487	*247,642*
Total expenditure	1,752,843	*1,643,203*
OPERATING SURPLUS	57,507	*(63,816)*



The Institute enjoys no core support from government, and is independent of all political interests. Since 1978 the proportion of income from public grants has declined from 71% to 31% – all of which are now competitively won.

INSTITUTE GOVERNORS

Sir Campbell Adamson
DI Allport
JIW Anderson
Professor MJ Artis FBA
The Lord Ashburton KCVO
AB Atkinson FBA
Professor AD Bain OBE FRSE
Professor Sir James Ball KB
Sir John Banham
NCF Barber
Ms K Barker*
Sir Donald Barron DL
Professor C Bean
W Beckerman
Sir Terence Beckett KBE
Sir Kenneth Berrill GBE KCB
Sir George Bishop CB OBE
Professor R Blundell
Lord Borrie QC
F Bourgignon
The Rt Hon Lord Briggs FBA
Sir Samuel Brittan
AJC Britton
Professor AJ Brown CBE FBA
Professor WA Brown
Sir George Burton CBE DL FRSA
ICR Byatt
Sir Adrian Cadbury
D Cadbury
Sir Michael Caine
Sir Alec Cairncross KCMG FBA
Ms F Cairncross
The Rt Hon The Viscount Caldecote KBE DSC
W Callaghan
Sir John Cassels CB
M Cassidy*
C Cheetham
Sir Michael Clapham KBE
Sir Robert Clark DSC
Mrs J Cohen
Sir Brian Corby
Sir Colin Corness
Professor BA Corry
Sir John Craven*
The Rt Hon Lord Croham GC
Lord Currie
Professor P Dasgupta*
G Davies
H Davies
IF Hay Davison FCA
Sir Ron Dearing CB
KHM Dixon
Professor DV Donnison
JCR Dow FBA
The Hon John Eccles
Professor CH Feinstein FBA
JS Flemming FBA
J Foulds
RF Fowler CBE
Sir Campbell Fraser FRSE
E George
Sir Paul Girolami, FCA
Professor WAH Godley
Professor CAE Goodhart CBE FBA
Professor D Greenaway
Sir Richard Greenbury
The Rt Hon Lord Greene of Harrow Weald CBE
Lord Griffiths of Fforestfach
S Hampson
Sir David Hancock KCB
C Haskins
The Rt Hon Lord Haslam of Bolton
Professor PD Henderson
Professor DF Hendry FBA
Sir Michael Heron
Sir Terence Higgins MP KBE
Sir Geoffrey Holland KCB
The Rt Hon Lord Hunt of Tanworth GCB
Sir Roger Hurn
Professor JP Hutton
W Hutton
Sir Robin Ibbs
JS Jennings CBE
C Johnson
JL Jones CH MBE
Mrs K Jones
Professor H Joshi
Ms D Julius*
Sir Stanley Kalms
Professor JA Kay
The Rt Hon Lord Keith of Castleacre
Professor MA King
The Rt Hon Lord Kingsdown PC
Sir Arthur Knight
Baron Alexandre Lamfalussy
DE Lea OBE
Ms P Leith
Sir Christopher Lewinton
PT Lewis
HH Liesner
Professor SC Littlechild
Sir Geoffrey Littler KCB
A Lord CB
Professor WG McClelland
Sir Donald MacDougall CBE FBA
Sir Ronald McIntosh KCB
Professor DI MacKay
Sir Kit McMahon
E Macpherson
Professor RCO Matthews CBE FBA
Sir Peter Middleton GCB
Professor MH Miller
R Milner
Professor J Mirrlees*
Sir Nigel Mobbs DL
Sir Nicholas Monck
J Monks
Professor PG Moore
Ms KMH Mortimer
Sir Claus Moser KCB CBE FBA
The Rt Hon Lord Murray OBE
Professor RR Neild
Sir Gordon Newton
Professor S Nickell
AJ Norman*
PM Oppenheimer
Sir Geoffrey Owen
Sir Alan Peacock DSC FBA
Lord Peston of Mile End
Sir David Plastow
The Rt Hon Lord Plowden KCB GBE
MV Posner CBE
JM Raisman CBE
Professor WB Reddaway CBE FBA
J Reeve
Sir Bob Reid
The Rt Hon Lord Richardson of Duntisbourne KC MBE
GB Richardson CBE
Sir Thomas Risk
The Rt Hon Lord Robens of Woldingham
The Rt Hon Lord Roll of Ipsden KCMG CB
Ms E Rothschild
Sir Nigel Rudd
Professor TM Rybczynski
The Rt Hon Lord Sainsbury of Drury Lane
JR Sargent
Sir David Scholey CBE
JR Shepherd
Sir Alfred Shepperd
Professor ZA Silberston CBE
RDN Somerville CBE
JG Speirs CBE
Ms C Spottiswoode
Professor N Stern
Professor DK Stout
PD Sutherland
KH Taylor
Professor JHB Tew
AR Thatcher CB
Professor AP Thirlwall
The Rt Hon Lord Tombs of Brailes
RC Tress CBE
A Tuffin
Professor J Vickers
Professor D Vines
Sir David Walker
Professor KF Wallis FBA
Professor T Wilson OBE FBA FRSE
Sir Brian Wolfson
Sir Ernest Woodroofe
GDN Worswick CBE FBA
Professor S Wren-Lewis

THE GOVERNORS ARE FORMALLY THE MEMBERS OF THE INSTITUTE. THE ARTICLES OF ASSOCIATION LIMIT THE NUMBER OF GOVERNORS TO A MAXIMUM OF 200. THESE ARE RECRUITED BY INVITATION AND REFLECT EXCELLENCE IN BUSINESS, ACADEMIC AND PUBLIC LIFE.
THE FUNCTIONS OF GOVERNORS INCLUDE ELECTION OF THE COUNCIL AND APPROVAL OF THE ACCOUNTS. MANY ALSO PROVIDE INVALUABLE ADVICE IN THEIR AREAS OF EXPERTISE.
GOVERNORS APPOINTED IN 1996 ARE MARKED WITH AN ASTERISK.

PEOPLE AT THE INSTITUTE

INSTITUTE STAFF

DIRECTOR

Martin Weale, MA, Cantab

SECRETARY

John Kirkland, BSc, PhD, Brunel

SENIOR RESEARCH FELLOWS

John Arrowsmith, MA, Oxon, MSc(Econ), London
Ray Barrell, BSc(Econ), MSc, London
Nicholas Oulton, BA, Oxon, MSc, London
SJ Prais, MCom, Birmingham, PhD, ScD, Cantab, Hon DLitt (City), FBA, Visiting Professor at City University, London
Garry Young, BSc(Econ), MSc, PhD, London

RESEARCH FELLOWS

Robert M Anderton, BA, London, MA, Victoria, Canada
Andrew P Blake, BA, Liverpool, MA, Essex, PhD, London
Geoff Mason, BA, Auckland, MSc(Econ), London
Mary O'Mahony, MA, Dublin
Nigel Pain, BA(Econ), Exeter

SENIOR RESEARCH OFFICERS

Valerie Jarvis, BA, London, MA, McGill
Julian Morgan, BA, Portsmouth, MA, Sussex
James Sefton, BA, PhD, Cantab
Julia Whitburn, BSc, Leicester, MA, London

RESEARCH OFFICERS

Gonzalo Camba-Mendez, BSc (Econ), Santiago de Compostela, MSc, Lancaster
Dawn Holland, BA, Tufts, MSc (Econ), London
Chao-Dong Huang, BSc, Guangzhou, DIC, PhD, London
Florence Hubert, BA, Licence, Maîtrise, Nantes, MSc (Econ), Warwick
A Ian Hurst, BEng, DipEng, PhD, Hull, IEng
Melanie Lansbury, BSc, MSc(Econ), London
Eduardo Salazar, BA, MA, Buenos Aires
Marie Sheldon, Licence, Maîtrise, Magistère, Bordeaux, MSc, Birmingham
Dirk Willem te Velde, Drs, Groningen
Jennet Vass, BA (Econ), Sussex, MSc (Econ), York
Caroline Wilson, LLB, LLM, London
Katarzyna Wlodek, BSc (Econ), London, MA, Reading

RESEARCH ASSISTANTS

Kurt Pertsch, Diplom-Betriebswirt (BA), Ravensburg, MBA, South Bank
Fiona Thirlwell, BA, Newcastle

ADMINISTRATION AND FINANCE

Robert G Coles, FCCA, MIMgt
Barbara Daly
Ann Hall
Jean MacRae
Michele Ockenden, BA, East Anglia, Grad IPD
Johanna Seymour, BA, Manchester
Pat Shaw

COMPUTING

Hassan K Feisal, BSc, London

LIBRARIAN

Claire Schofield, BA, Portsmouth, Dip LIS, Newcastle

PUBLICATIONS

Gill Clisham, BA, Essex
Fran Robinson, BA, London
Anne Stewart, BA, London, DipLib, Aberystwyth

VISITORS

VISITING FELLOWS

Simon H Broadbent, BA, Dunelm, BPhil, Oxon
JCR Dow, BSc(Econ), London, FBA
Jayasri Dutta, BA, Calcutta, MA, PhD, Delhi
Duncan Matthews, BSc, Plymouth, MA, Warwick, LLM, Exeter
Richard Pierse, MA, Oxon, MSc, London
Christopher Taylor, MA, Cantab, MA, McGill
Paul Wallace, MA, Cantab, MPhil, London

CONSULTANTS

Professor R Alexander, University of Warwick
Professor K Aurin, University of Freiburg
Professor P Croll, University of Reading
Professor M Galton, University of Leicester
Professor PE Hart, University of Reading
Professor AG Howson, University of Southampton
Professor David G Mayes, New Zealand Reserve Bank
Professor John Pickering, University of Warwick
Frau Professor Dr K Wagner, Fachhochschule für Technik und Wirtschaft, Berlin