UNIVERSITY OF CAMBRIDGE

DEPARTMENT OF APPLIED ECONOMICS

University of Cambridge

DEPARTMENT OF APPLIED ECONOMICS

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Annual Report 1987-88

* Director from 1 October 1988: David Newbery

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Dr J.P. Dunne
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Co-opted Members
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Dr W. Macpherson

Assistant Staff Observer
Miss A. Mason

Invited to attend
Secretary to the Faculty

Secretary
Mrs K.M. Wilson

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TWENTYEIGHTH REPORT OF THE DEPARTMENT OF APPLIED ECONOMICS

(covering the year from 1 October 1987 to 30 September 1988)

I STAFF

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Professor P. Dasgupta, Faculty of Economics and Politics, Fellow of St. John's College

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Professor A. Stewart

Professor Sir Richard Stone, Fellow of King's College

Professor D.A. Vines, University of Glasgow

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Dr H. Bojer, University of Oslo, Norway

Mr A. Conibear, City of London Polytechnic

Dr S. Crawford, Bates College, Lewiston, USA

Dr R.E.A. Farmer, University of California, Los Angeles, USA

Dr L.P. Floge, Bowdoin College, Brunswick, USA

Professor O. Forssell, University of Oulu, Finland

Mr R.J. Howard, Footscray Institute of Technology, Australia

Professor K. Ito, Chiba University of Commerce, Japan

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Dr J. Wajcman, University of New South Wales, Australia

Dr. M.J. Waters, University of Tasmania

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Miss S.D. Seal	Mrs. S. Swann
Mrs K.M. Wilson	

II RESEARCH ACTIVITIES

This section outlines the work done in 1987-88 on the research projects being conducted in the Department.

A ECONOMICS

Labour Studies Group:

1. Social Change and Economic Life: The Northampton Labour Market

Project members
F. Wilkinson
J. Rubery
B. Burchell
S. Horrell
R. Jobling (Faculty of Economics)
C. Fraser (Social and Political Sciences)
C. Marsh (Social and Political Sciences)

Associates
R. Blackburn
K. Prandy

Sponsor
ESRC

In March 1985 a Cambridge team was selected to participate in the ESRC's interdisciplinary Social Change and Economic Life Initiative. This involves the study of six local labour market areas in England and Scotland, one under the responsibility of each separate team. The Cambridge team is responsible for studying Northampton. The initiative is coordinated at the national level of Dr Duncan Gallie of Nuffield College, Oxford.

The aim of the initiative was to study social change and economic life from an interdisciplinary perspective and through a range of different methods. Thus the Initiative studied the local labour market from the perspective of employers, individuals and households; it has involved work by economists, sociologists, social psychologists and statisticians and it has both an historical and a contemporary dimension. There have been common parts to the work in the six areas, but considerable scope has been allowed for each team to develop its own particular interests and perspectives.

There have been three main 'core' surveys: the first involving 1000 individuals in each locality; the second, a telephone survey of 300 employers in each locality; and the third, 300 households in each locality. Each of these surveys had a substantial common element, but each also allowed for team-specific questions to be included. The Cambridge team's responsibility was to contribute to the construction of these questionnaires and to the analysis of the data, but the actual surveys were carried out by market research agencies. In addition to these surveys, the common part of the programme required the team to carry out an interview survey of 30 firms and intensive case studies of 12 firms. Each team also undertook two or more related studies.

The first Cambridge related study was an intensive survey of the employees in a sample of firms to be included in the core survey as detailed case studies. The intention was to link directly the employment policies and practices of the firms to the attitudes, skills and job orientations of their employees. These parallel studies provided the way of linking the changing economic, technical and institutional environment to the labour market experiences of individuals and how this was subsequently modified.

The second Cambridge related study surveyed a sample of households and investigated welfare organisation and provision. The focus on welfare provision was intended to bring together the study of current changes in employment opportunities and changes in family and social organisation, and thus to provide a basis for the comprehensive analysis of changes in social and economic life which underlies this initiative.

The aims of this project and its work programme and progress made were fully described in the *Annual Reports* for 1985/6 and 1986/87. The field work for all the surveys is now complete and the coding-up of the results is finished for all surveys except that for the 30-employer enquiry, the coding of which is being carried out in Oxford. The analysis of the data is now well advanced and the writing up is under way (see below for details).

The ESRC has provided additional finance for an extension of the SCELI project to allow the integration of the more detailed information from the team-specific parts of the core survey and the related studies with more extensive data from the core surveys. This will improve the analysis of internal labour markets and allow a closer analysis of the links between household organisation, hours of work and employment.

Publications
In accordance with the wishes of the ESRC a large part of the output from the SCELI initiative will be published in a series of thematic books with articles and editors drawn from all the teams participating in the project. Four members of the Cambridge team are involved in editing a total of five books: Frank Wilkinson is an editor for the book on Jobs and Skills and for the Employers and the Labour Market book; Jill Rubery is an editor for Employers and the Labour Market and for a book on Self-employment; Sara Horrell is editing a book on Households and Labour Market Participation, and Cathie Marsh is editing the book on Unemployment.

2. Hours of Work

Project members
J. Rubery
S. Horrell

Sponsor
Equal Opportunities Commission

Associates
C. Marsh (Social and Political Sciences)

This project is being conducted to provide the sponsor with information which could be used in tribunals on possible indirect discrimination arising from certain hours-of-work patterns, and with material to enable the EOC to draw up a code of practice for employers on hours-of-work arrangements. Besides its direct aims the project also has considerable general interest: working-time arrangements have been an important area of study in Europe over recent years because of pressures for changing working times. In Britain, however, the topic has received little attention and is only just coming to the fore as an issue, with some major firms instigating more flexible patterns of working.

The issues are being investigated through two surveys: one of 1700 individuals throughout the country on their working times, domestic arrangements and ability to comply with certain hours-of-work scenarios, and the other of 25 employers to look at the demand-side factors in working-time arrangements. The employers' interviews are to be conducted by Jill Rubery and Sara Horrell centred around five geographical locations. Swindon, Grimsby, Cambridge, Edinburgh and Birmingham. The questionnaires for both surveys have been designed and a pilot survey of individuals completed.

The project will enable an informative picture of both the demand for and the supply of labour for particular working-time arrangements to be developed. Thus a clearer understanding both of the constraints men and women face in being able to accommodate certain hours of work and of the implications of any changes in working-time arrangements for the employee, the household and the firm will emerge.

3. Carpi-Nottingham Consortium

Frank Wilkinson is collaborating with Prof. Brusco of Modena University and Dr Farrands of Trent Polytechnic in the Carpi-Nottingham Consortium which is undertaking a comparative analysis of the impact of international competition and new technology on requirements for skill and training in the knitwear industries concentrated in Carpi in Northern Italy and in the Nottingham and Leicester area. This involves surveys of firms in the knitting and related industries, the providers of education and training, employees and potential recruits. The international comparative element is funded by the EEC under the Connett project which is designed to provide 'seed' money for local financial support. A detailed research proposal is being prepared aimed at the local authorities, industry and trade unions in Leicestershire and Nottinghamshire. The project has received the full support of employers' organisations and trades unions in the industry.

4. International Working Party on Labour Market Segmentation

The Labour Studies Group continued its active involvement with the International Working Party throughout the year. This body is composed of researchers from 14 countries (11 West European with Hungary, the USA and Canada) and meets annually in different European countries. It provides a forum for reporting and comparing research findings and fostering international - and particularly inter-European - research collaboration.

A selection of the papers presented at the IXth Conference of the International Working Party have been published in a special issue of *Labour and Society* on restructuring of labour markets, edited by Frank Wilkinson. A further special issue is in preparation on industrial restructuring, to be edited by Werner Sengenberger.

This year its Xth Conference was funded by DGV of the European Commission; the topic was Employment Competition and the Terms and Conditions of Employment, with a specific emphasis on the implications of the Single European Act in 1992. The conference was organised in Oporto in Portugal by Dr Alberto Castro, with Jill Rubery taking responsibility for the contract with the EEC. An extended report on the conference will be prepared later in the year by Jill Rubery for publication by the EEC.

Survey of the Net Costs of Training to Employers Participating in YTS

Project members
B.M. Deakin
C.F. Pratten
I.G. Begg

Sponsor
Training Commission (formerly Manpower Services Commission)

The empirical findings of this research are based upon a stratified, representative sample of 101 firms in England. The benefits of YTS to employers is estimated from the net output of YTS trainees. This is estimated by employers, and allowance is made for 'deadweight' effects (training places which would have been created without the incentive provided by YTS) and 'substitution' effects (YTS places which are substituted for young employees who would have been engaged in the absence of YTS). These effects are estimated, as a proportion of all YTS places taken up, to be 'deadweight', 51 per cent and 'substitution', 7 per cent. The training positions induced by YTS are therefore 42 per cent of all YTS places. Net output per trainee per week, after these allowances, is estimated at £9.90 for first-year YTS trainees and £21.80 for second-year trainees. Net output is higher in the North than the South, and is higher in small establishments than in large ones. In the apprentice trades, net output is very low in the first year of training, but considerably higher in the second year.

Costs to employers of taking on YTS trainees include top-up pay (an addition to the YTS pay provided by the Training Commission), payments by employers to managing agents, costs of supervision, and various incidental costs such as clothing and footwear, extra holiday pay, meals, tools, wastage of materials and travel expenses.

For first-year YTS trainees benefits exceed costs by the very small margin of 70 pence per trainee per week. In the second year of training subsidised by YTS the net benefit rises to £12.70 per trainee per week.

Other findings from this project include employers' opinions of the off-the-job training arranged for YTS trainees. Two-thirds of all respondents considered that off-the-job training improved the work performance of trainees, but a significant minority of small firms were not satisfied with the quality of off-the-job training. The YTS improved the recruitment process for firms, to the extent that most would be willing to pay up to £20 per recruit per week to managing agents for YTS trainees. Above that figure it is estimated that recruitment into the scheme would decline.

The results of this research are being prepared as an article for publication and in the full form of the existing report as a DAE Working Paper.

Economies of Scale

Project members
C.F. Pratten

Sponsor
Commission of the European Communities

A survey of estimates of economies of scale and the effects of the completion of the Community market in 1992 has been made (see Pratten, 1988A). The conclusions fall under two main heads.

(a) Economies of scale
Completion of the EC will have three groups of effects via economies of scale. Where completion of the market results in substantial changes in the conditions of trade (for example, by changing the rules for public procurement) there will be direct effects on industries, inter-country trade will increase, structural change will occur in the industries and firms will benefit from economies of scale. These effects of completing the EC can only be assessed on a case-by-case basis.

The second effect of completion of the market will be the widespread reduction of impediments to trade, increasing trade in all sectors, causing structural change in industries and generating benefits from economies scale. This result will be reinforced by the third effect of completion of the market, which will be to increase the growth of income within the Community through achieving economies of scale and through the pressure of more intense competition. The increase in Community income will increase demand, output and intra-Community trade, leading to further gains through economies of scale.

Although many of the estimates of economies of scale are hedged around with qualifications, the evidence nevertheless supports the hypotheses that economies of scale are a widespread feature of manufacturing industries and to a lesser extent of service trades.

The important result of this survey is to focus attention on the effects of changes in output of distinct products and production runs on costs. Economies of scale are usually associated with the size of establishments and firms. However, the main effects of completion of the market will result from many firms being able to increase their output of particular products, without necessarily increasing the average output of their establishments. This survey shows that there are substantial scale effects for products and production runs to be obtained in a wide range of manufacturing industries. The sources of these economies are technical economies of scale for production processes and the spreading of product development costs over the output to which they relate.

(b) The competitiveness of EC industries
The second question concerning the effects of completion of the EC is the impact on competitiveness of EC industries in third markets. One conclusion of the report is that economies of scale continue indefinitely for complex products made by the vehicle, mechanical and electrical engineering and instrument industries. These are important EC export industries, and completion of the market will facilitate the restructuring of firms in these industries so that they increase their output of products and increase their competitiveness.

The report also highlights the paradox of the resurgence of small firms and the existence large economies of scale, and it is hoped to do further work in this area (see Pratten, 1988b).

Company Failure and Rescue Policy

Project members
A.W. Goudie
G. Meeks
J.G. Meeks

Sponsor
Leverhulme Trust

The aim of the project is to develop a macro-micro model of company failure and to use the model to assess the theory of, as well as policy towards company failure. Two papers describing the model have been published during the year (Goudie and Hausen, 1988; Goudie, Meeks and Weale, 1988). The properties of the model in relation to exchange rate policy are explored in Goudie and Meeks (1988); and some general issues in our disaggregated method are discussed in Meeks (1988).

The Cambridge/DTI Databank

Project members
G. Meeks
J.G. Meeks
J. Wheeler

Associate
Dr L.J. Slater

Sponsor
ESRC

This two-year project aims to extend, develop and distribute a long-run machine-readable databank of standardised accounts for UK companies. This year an additional year's set of accounts has been incorporated in the databank, which now spans the years 1948 to 1984. Copies of the databank have been supplied to other academics and to the ESRC Data Archive at Essex. A paper describing the data was presented at the ESRC workshop on statistical sources in May 1988. A book *Company Finance and Performance,* derived from and summarising parts of the databank, was published by the DAE in 1986.

Barriers to Growth in Small Firms

Project members
P. Dunne
A. Hughes

Sponsor
ACOST

This project, which began in March 1987, is the second stage of a larger project investigating barriers to growth in small firms in the UK, and funded by the Advisory Council for Science and Technology (ACOST). It is being carried out for a study group set up by ACOST to consider the problems which small and medium-sized companies have to overcome if they are to develop to the extent necessary to compete in international markets.

The terms of reference of the study group (of which Hughes is a member) are to identify the internal and external barriers to growth experienced by small and medium-sized UK firms and to make recommendations. The first stage of the study which reviewed the research on this subject and identified the main issues for further study is to be published by Routledge under the title *Barriers to Growth*.

The work being carried out in Cambridge consists of

(1) A series of interviews with companies in the Specialised Organic Chemicals sector (one of four industry groups selected for case studies).

(2) A disaggregated international comparative analysis using UK Census of Production and Eurostat data of the size distribution of plants and enterprises in the UK, France, Germany and Italy in the 1980s.

(3) A comparative analysis, using the ESRC Exstat Company Database, of the comparative growth, profit and export performance of small, medium-sized and large companies in the UK since the mid 1970s.

Dunne has prepared an industrial background analysis of the Specialised Chemicals sector for item (1) above, and Hughes (along with other members of the study group) has carried out a series of interviews. Dunne and Hughes have together formulated the analyses to be carried out in (2) and (3) and Dunne has organised the necessary databases, conducted the econometric and statistical analysis, and written up a preliminary draft of the results of (2). (See also Hughes, 1988.)

Risk, Information and Quantity Signals in Economic Theory

Project members
Professor P. Dasgupta (Faculty of Economics)
Professor F. Hahn (Faculty of Economics)
Professor D.M.G. Newbery (on leave 1987/8)
L. Anderlini
P. Seabright

Associates
Dr. C. Doyle (Gonville and Cauis)
Mr R. Evans (Faculty of Economics)
Dr K. Gatsios (Fitzwilliam College)
Dr D. Kelsey (Churchill College)
Dr H. Sabourian (Faculty of Economics)

Visitors
Professor R. Farmer (Penn and UCLA)
Professor J. Green (Harvard)
Professor E. Maskin (Harvard)
Professor H. Polemarchakis (Columbia)
Professor J. Riley (UCLA)
Professor R. Solow (MIT)

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The project's purpose is to investigate both at a fairly general and abstract level and in particular contexts the consequences of 'missing markets', asymmetric information, market dependent information and strategic behaviour. Economic theory has only recently began to understand the relationship of a market economy to 'fundamentals'. It could not do so until the basic theoretical assumptions (always known to be descriptively poor) were modified. Informational postulates as well as assumptions of 'complete markets' and perfect competition all stood in the way. All these matters have, from outset, been at the centre of the programme's research.

To take a recent example. Pure theory postulates that there exist all possible 'future markets' and all possible 'insurance markets'. We know this to be false and it is not even approximately true. One question is: what determines which markets exist? Radner suggested that essentially asymmetric information and the resulting moral hazard set a limit, while Hahn developed a theory based on transaction costs. But recent work on incentive compatibility suggests that a good deal more needs to be done.

If one takes it for granted that some markets are 'missing', some quite startling results emerge. If insurance is via 'Arrow-securities' (i.e. securities that pay returns in unit of account depend on the 'state of nature'), then equilibria are not constrained Pareto-efficient (Geanakoplos and Polemarchakis, 1987; Hahn, 1988b). There exist equilibrium in which, given the limited insurance possibilities, no agent is worse off and some are better of than in a given equilibrium of this economy. (A related result is to be found in Economic Theory Discussion Paper No. 77 by Newbery and Stiglitz.)

If the securities have their return fixed in terms of some good then there is a continuum of real equilibrium. This is a striking indeterminacy.

Both these results together with the work on overlapping generations models (e.g. Economic Theory Discussion Papers Nos. 112, 113, 114) now make it clear that there may be 'bootstrap market equilibria' quite unrelated to 'fundamentals' and which are welfare-unattractive. That is, equilibria may be based on the correct belief that market prices are correlated with events which have no significance for the 'real' economy. This is so because if all agents but one hold this belief then it is rational for the remaining agent to hold the same belief. This cannot happen in an economy with complete markets and information.

Once the 'pure' assumptions are abandoned the problems faced by a rational agent multiply. For instance, the agent may be in strategic interaction with others. This means that computational problems become large and possibly infeasible. This has led Anderlini to study the large, rather new mathematical literature on complexity. He is now in the process of re-examining Nash-equilibrium subject to complexity constraints. Others are of course also studying these problems.

But all sorts of other problems arise. Certainly one cannot suppose that firms 'know their demand curve' or indeed that (in a general equilibrium context) there is such a well-defined or well-behaved function. This has led to a study of conjectures and conjectural equilibria. (See Discussion Paper No. 117 by Sabourian.)

Hahn (1988a) has taken a different route. He considers a learning process (Bayesian) and shows that if this process converges it will converge to an equilibrium which is not independent of initial beliefs (priors). He calls this a 'history dependent equilibrium'. It is another example where beliefs and 'fundamentals' may diverge. For instance, in the process of learning its demand the firm may affect the belief of consumers (e.g. concerning availability) and so the demand which its learning reveals.

In order to disseminate the work of the project more widely, a book of papers written by past and present members and associates of the project has been edited by Hahn. It will be published by Oxford University Press under the title *The Economics of Missing Markets, Information and Games.* Ten new titles have also been added in the Discussion Papers in Economic Theory Series (see p.15).

Structural Change and International Competition in Western Economies, 1973-86

Project members
M.A. Landesmann
T.S. Barker
J.R. Wells

Associates
G. Erber (DIW-Berlin)
S. Nakamura (Waseda University)
P. Petit (CEPREMAP, Paris)
R. Rowthorn (Faculty of Economics)
A. Snell (University of Edinburgh)

Sponsors
ESRC
Anglo-German Foundation

The aim of this research was to study some aspects of structural change in advanced industrial economies since 1973. This period has seen a sharp fall in the average rate of growth as compared to the earlier post-war experience, which together with the emerging pattern of industrial development in a number of Third World countries exerted strong pressures towards structural change in most advanced industrial economies. The research project examined in some detail the ways in which Western economies have responded to this environment in their structural patterns of output and employment growth, productivity development and investment activity, export performance and trade specialisation.

The study consisted of two complementary parts. First, it extended previous work done on constructing an econometric model which demonstrates the interrelationships of processes of structural change which occur in the group of the six larger OECD economies (West Germany, France, the UK, Italy, USA, Japan) (see Landesmann, 1987, 1988a). Second, it pursued a number of statistical and econometric examinations and cross-country comparisons which analysed the particular features by which structural change occurred in the different national economies since 1973.

The econometric model which provided the overall framework for these studies relates disproportional growth processes (i.e. growth patterns where different industries grow or contract at different rates) in a number of interdependent economies. This work has led to the development of a unified database for the member countries of the European Community encompassing industrial (including Census) and international trade statistics. In addition, the statistical database for comparative structural analysis and the econometric model have both been extended to include the USA and Japan (Landesmann, forthcoming).

The specific statistical and econometric exercises undertaken fall under three heads:

(i) Productivity developments in OECD economies since 1973
Here we tested for changes in the behaviourial determinants of productivity growth in OECD economies before and after 1973. Specific emphasis was laid on testing for a weakening of the output growth-productivity growth relationship in certain sub-periods after 1973. It was found that such a weakening was a common pattern in all Western European economies in periods when major 'restructuring' occurred (see Landesmann, 1988b; Landesmann and Erber, 1988a).

(ii) Structural breaks in manufacturing export performance
A detailed analysis was undertaken to test whether structural breaks occurred in important determinants of the longer-term export performance of the UK manufacturing sector in the period after 1979. This work was extended to analyse similar breaks in other OECD economies which occurred after both the first and the second oil crisis. Work was also started to introduce technology indicators (such as R&D expenditure) into trade equations to allow an evaluation of the performance of the different OECD economies in terms of 'technological competition' (see Landesmann and Snell, 1988b, 1989; Erber and Nakamura, 1988).

(iii) De-industrialisation, the balance of payments and trade in services
A close examination of the uneven growth of the UK manufacturing and service sectors was undertaken for the period after 1979 and comparisons with the developments of service activities in other OECD economies were made. Research was also started on a comparison and evaluation of competitiveness of trade in producer services (see Wells, 1988; Landesmann and Petit, 1988).

Structural Analysis of Economic Systems

Project members
T.S. Barker
P. Dunne
K. Lee
M.H. Pesaran (Faculty of Economics; on leave 1987/8)
R. Pierse

Associates
Dr. M. Karshenas (Cambridge Econometrics)
Professor O. Forssell (Oulu University)

Sponsors
Cambridge Econometrics
DAE

The research work undertaken under this title continues the model-building and analysis of the Cambridge Growth Project. Work fell under the following main heads:

Disaggregation in economic modelling
Research continued the work reported to the International Conference on Disaggregation in Econometric Modelling held at Queens' College, Cambridge in April 1987. The edited proceedings of the conference, together with additional invited contributions are being prepared for publication (Barker and Pesaran, eds, forthcoming). A paper for this volume, 'Aggregation bias and labour demand equations for the UK economy' has been written by Lee, Pesaran and Pierse. This extends the results of Pesaran, Pierse and Kumar (1989) to examine the effect of aggregation on the estimates of long-run wage and output elasticities of demand for employment in the UK. A measure of embodied technological change based on current and past movements of gross investment is developed which replaces the time trend used in the previous paper. Two new tests of aggregation bias are developed. One is a Hausman-type test of the disaggregate model against a more general alternative model. The other is a nonlinear Wald test of the equality of the long-run elasticities implied by the disaggregate model with those derived from the aggregate model. This latter test is then used to look at the long-run aggregate wage elasticity. It is found that the wage elasticity of around -0.6 derived from the disaggregate results is considerably less than the consensus view of a unit elasticity which is supported by our aggregate estimates. The test thus confirms that aggregation bias may lead to considerable overstatement of wage elasticities.

A second paper was revised and accepted for publication (Pesaran, Pierse and Kumar, 1989), and Pesaran and Pierse wrote a short paper 'A proof of the asymptotic validity of a test for perfect aggregation'. This presents an asymptotic justification for a test proposed in a previous paper when the degree of disaggregation increases without bound but where the number of time periods remains fixed. As a consequence, the asymptotics involved in the proof are quite novel (See Pesaran and Pierse, 1988c).

Empirical study of labour markets
There has been considerable academic interest in the labour market in recent years, yet economists remain surprised at the coexistence of high unemployment and strong real wage growth, and policies to reduce unemployment to more acceptable levels are, at best, succeeding only slowly. It would appear that the reliance on empirical work carried out at the aggregate level may have obscured some of the detail of supply side adjustment. Explicit analysis of the behaviour of labour market participants, and the interactions between these, at lower levels of disaggregation seems essential in building a more sophisticated understanding of labour market adjustment and in developing more imaginative and informed policies to defeat unemployment.

The importance of wage-wage comparisons in wage-setting and of the transmission of price change along the chain of production through the costs of material inputs is clear in the real world. Yet aggregate empirical studies of the labour market are, by construction, simply unable to capture these effects. The estimated industrial systems mentioned above also serve as the basis for an empirical study of the importance of these inter-industry interactions. Simulation exercises were used to identify precisely the importance of different paths of transmission of supply side shocks. These indicated that complicated and protracted adjustments would be generated by policy intervention, but that there exists scope for increased government involvement, as a centralised, coordinating body, for influencing wage setting. These ideas are written up in the paper 'Labour market adjustment in a disaggregated model of the UK supply side' which was presented at the European meeting of the Econometric Society in Bologna, August 1988 (Lee, 1988a).

Other work in the area of labour economics has included revising the paper with V.K Borooah, 'Trade unions, relative wages and the employment of young workers' (CGP Discussion Paper No. 5) and a short paper on the modelling of wages in MDM7 (the latest version of the Cambridge Growth Project's macromodel) (Lee, 1988b). Both of these consider very topical issues: the first provides a stylised model of a union to try to explain the experiences of young people in the labour market over the recent past; and the second considers the lack of responsiveness of real wage inflation to unemployment levels and the basis of unemployment hysteresis, and asks how these effects can be accommodated into a macromodel such as MDM7.

Error equations in multisectoral models
In solving models such as MDM, which combine time-series and cross-section data, over the sample period it is possible to distinguish several sources of error. In particular the model can be made to generate many structural variables, for example consumers' expenditure prices from cross-section information on goods and services bought by consumers and indirect tax rates. The differences between the model solutions and the observed data on these variables has hitherto been ignored in most multisectoral models. The research first identified these errors and then proceeded to model them using standard autoregressive techniques. The work was presented to the Second International Conference on Economic Modelling, London, March 1988 (see Barker and Karshenas, 1988).

Structural change in the UK economy 1975-85
With the publication of the 1984 Input-Output Tables for the UK in 1988 a view can be taken of the detailed structural changes which have taken place in the period 1975-85. This work is being carried out with Professor Osmo Forssell. Forssell's methodological work has been written up in Discussion Paper 8 of the series on Structural Analysis of Economic Systems (Forssell 1988).

Measuring the effects of technical change
The detailed modelling of industrial structure in MDM also allows for the quantitative assessment of the effects of structural change. Preliminary work in this area was reported in a paper presented to a conference on 'New Markets in the 1990s and Beyond', held at Jesus College, Cambridge in June, 1988 (Barker, 1988a).

Cambridge Econometrics
Advice and help were given to staff of Cambridge Econometrics (CE) in data preparation, equation estimation and model solution of version 7 of the Cambridge Multisectoral Dynamic Model (MDM). The innovations introduced included
- allowance for changes in the value of dwellings in the consumers' expenditure equation
- forward-looking expectation variable, derived from results of the CBI investment intentions surveys, in the structural investment equations for buildings and works and plant and machinery
- data on financial assets and liabilities of institutional sectors.

CE has subsequently moved on to version 8 of the model, which is estimated in 1985 prices and which has a new industrial classification still based on the 1980 Standard Industrial Classification but which further disaggregates the service industries. In particular the new classification distinguishes banking, insurance and other business services.

Stocks and Flows in the Theory and Practice of Macroeconomics

Project members
W. Godley (on leave 1987/8)
M. Anyadike-Danes
K. Coutts

Sponsor
Leverhulme Trust

This new project represents an attempt to elaborate a framework within which macroeconomic analysis can proceed in a more orderly way. The first step has been to extend and elaborate the systems of National Accounts and a data set will be compiled to match it. The latter has its counterpart in theory, and important implications for model design. Work this year was in three main areas:

The theoretical model
This extends previous work done on developing an alternative framework to IS-LM macroeconomics, based on stock-flow principles. The earlier work was presented in September 1987 at a Conference in Denmark in honour of Sir John Hicks, 'Fifty years of IS-LM' (Coutts and Godley, 1987). The model comprises a minimum of five sectors (government, banks, firms, households and foreigners) based on a completely coherent set of accounting relationships with all balance sheet and flow variables consistently interrelated both at current constant prices. The model outlined in the conference paper was restricted to a closed economy, and this has now been extended to develop a stock-flow framework for the open economy, in a simplified treatment of external flows and assets.

Modelling an economy with a banking system
Ken Coutts and Michael Anyadike-Danes, studied alternative ways in which a banking system might be incorporated into a macroeconomic model constructed so as to preserve consistency between stock and flow variables. A banking system and inside money have rarely been given a positive function in macroeconomic models - inside money, if it appears at all, playing a passive role and related by a simple monetary multiplier to outside money. In our model the banking system meets two main functions: to provide credit for fixed and working capital and for expenditure on consumer durables; to provide financial intermediation in widening the choice of financial assets available, such that the desired composition of households' wealth is consistent with the debt instruments which the government and the corporate sector wish to create. The banks are motivated, implicitly, by a competitive profit maximising objective. A simple closed economy simulation model has been constructed to investigate the properties of such a system. A paper reporting simulation results will be available in mimeo (Anyadike-Danes and Coutts, 1988).

Empirical application of the model
Coutts made a short empirical study of changes in the net overseas assets of the UK. UK net external assets were about 6% of GDP in 1979; by the end of 1986 they were about £114 billion or about 35% of GDP. As a proportion of national wealth net external assets have increased substantially. The aim of the study was to identify how Britain's external net worth had grown so rapidly. The paper showed that between 1980-86 there was a cumulative shortfall of about £20 billion between the total export of capital and the identified sources of financing. It also showed that about two-thirds of the total increase in net wealth arose from capital gains due to the boom in world stock markets and to depreciation of sterling. The paper argued that the existence of net foreign assets did not automatically provide a source of finance for current account deficits unless either they were repatriated or provided collateral for foreign flows of the current account to capital flows and changes in the balance sheet (see Coutts, 1988).

Anyadike-Danes tackled the issue of the relationship between savings and inflation for the private sector as a whole by first considering the effect of inflation on the *measurement* of savings, and then investigating econometrically inflationary effects on savings behaviour. He demonstrated, using some simple inflation accounting rules, that there is a positive relationship between inflation and conventionally measured savings and then went on to uncover a distinct, statistically significant and very robust, positive behaviourial relationship between these two variables (see Anyadike-Danes, 1988a).

An implication of the positive relationship between inflation and private sector saving is that the decline in UK inflation since the early 1980s may, of itself, have made a contribution to the growth of private demand over the same period. For example, a fiscal policy setting which was unchanged in real terms can give rise to faster or slower growth depending on whether inflation is falling or rising. In order to quantify the contribution of inflation reduction to demand growth a very simply model was set up and some simulation experiments conducted. While the results are encouraging this project is not quite complete.

Open Economy Management

Project members
Professor J.E. Meade
A. Blake
M.R. Weale (Faculty of Economics)

Associate
Professor D.A. Vines (University of Glasgow)

Sponsors
Centre for Economic Policy Research

ESRC
Houblon-Norman Fund (Bank of England)
Department of Applied Economics

Members of this project, which has now terminated, have worked in three areas. The first, and main focus of the project has been on the design of economic policy for an open economy. Second, Andrew Blake has completed his PhD thesis showing how economic policy rules can be applied to HM Treasury model. Third, Martin Weale has continued to work on statistical techniques of data estimation and reconciliation.

During the year 1987-88 the results of the project were written up in a major study of the economic policy problems faced by a small open economy such as the United Kingdom. (Weale et al., forthcoming). The study makes three main points. First, it argues that policies which only pay attention to price stabilisation are likely to be rendered unstable, as a consequence of stock instability. This can be avoided if national wealth is made a focus of policy, in addition to an inflation target (which we represent by money GDP). In order to achieve both inflation and wealth targets, active use must be made of both monetary and fiscal policy. Second, it argues that monetary policy can be represented by means of the exchange rate as an intermediate and flexible target. And third, it demonstrates that the structure of the labour market is of crucial importance in determining the range of feasible economic policies. A stable real exchange rate cannot be maintained if wages are indexed to prices. These points are demonstrated by means of algebraic models and then illustrated by simulating a macroeconomic model. The simulations exploit a new means of solving complex computer models with consistent expectations.

Blake's thesis (Blake, 1988) presents an important application of the use of balanced realisation in obtaining a linear representation of HM Treasury's econometric model. He shows how the linear representation offers a powerful tool for investigation of issues of optimal policy design and time consistency. He demonstrates that 'optimal policies' lead to significant time-inconsistencies. On the other hand simple policy rules can be found which may avoid this problem and perform well in the face of a range of shocks.

Weale's work on the problems of data reconciliation has led to an important advance. Methods of reconciling inconsistent data have hitherto relied on exogenous knowledge of data reliability. Weale (1988b) describes a method which does not need independent knowledge of measurement errors, and it is hoped to develop this for practical use. The Central Statistical Office has taken a great deal of interest in this work. They hope to produce reconciled estimates of national income for the United Kingdom within the next six months, and have asked Weale to act as a consultant to the project.

Adjustment Problems and Policies in an Integrated World Economy

Project member
M. Panić

Sponsor
A Sainsbury Family Trust

The purpose of this project, which has been described in detail in previous *AnnualReports*, is to analyse the causes and the consequences as well as the institutional and policy implications (international and domestic) of global economic integration and interdependence. Over the last few years the project has evolved into three broad, interrelated parts.

The first part has covered the process of international integration, problems which arise when countries with similar aspirations but at different levels of economic development become increasingly interdependent, and institutional and policy requirements to enable these countries to achieve and/or sustain the desired levels of economic welfare. These issues are analysed at length in *National Management of the International Economy* (Panić, 1988a).

The second part deals with the role of finance in short-term stabilisation and long-term adjustments of the international economy. It differs in a number of important respects from the existing literature in this area. For instance, it starts off by developing an analytical framework which highlights the basic role and functions of an efficient financial system first at national and then at the international level. The framework is then used to analyse the origin, strengths and weaknesses of the Bretton Woods System and the so-called 'non-system' which has operated since 1973. (The same framework is also used to examine critically what really made the Gold Standard work.) The result is a book *The Postwar International Financial System - Its Origins and Evolution* which will be published towards the end of 1989.

The third part of the project analyses *Domestic Policy Options in an Open Economy*, again within a rather different analytical framework from that traditionally adopted in this context.

Trade Policy in the Inter-War Period

Project members
M. Kitson
S. Solomou (Faculty of Economics)

Sponsor
DAE

Research into this topic has been progressing in two areas, the impact of the British tariff and the impact of international trade warfare.

The study of the British tariff develops substantially the initial results of the project begun with the late Professor Lord Kaldor on 'The impact of import restrictions in the inter-war period' (see *Annual Report* for 1985-6). Analysis of the macroeconomic and industrial impact of the tariff has been extended. The results indicate that protection stimulated import substitution in many industries as well as expanding the level of domestic demand. Further work has been undertaken to place the tariff in the context of the overall growth record of the period and the impact of other policies and influences.

The main output of the above research will be a book to be published in 1989 by Cambridge University Press (Kitson and Solomou, forthcoming a). Additionally, an article has been accepted by the *Cambridge Journal of Economics* (Kitson and Solomou, forthcoming b).

Recent research has concentrated on the impact of uncoordinated trade policies in the inter-war period. The object is to consider the issue of retaliation by extending the sample of countries analysed. Interest in this topic developed while considering the impact of the British tariff in an international context. It was also apparent that not only were there many competing hypotheses but there was also a dearth of reliable and consistent data with which to evaluate them. This new project will start formally in January 1989.

World Macroeconomics and Financial Openness

Project members
A. Hughes
A. Singh
Dr. A.D. Cosh (Management Studies Group, Cambridge University)
Professor S. Chakravarty (Delhi School of Economics)

Sponsor
World Institute of Development Economic Research

The World Institute of Development Economic Research at Helsinki, which is part of the UN University, has embarked on a large research programme on world macroeconomic policies. It is a collaborative research effort involving economists from several countries, under the overall direction of Professor S.H. Marglin of Harvard University.

The second stage of the project began in July 1987. This stage is concerned with questions of economic openness and national autonomy in an increasingly interdependent world economy. Hughes, Singh and Cosh carried out an analysis of the impact of financial innovation and openness on the structure of the UK and other countries financial markets. This work focused in particular upon the changing role of financial institutions, the internationalisation of takeovers and takeover funding, and the changing nature of the links between domestic financial and non-financial institutions.

In addition, in a second study, Singh and Professor Chakravarty considered the question of desirable forms of economic openness in Southern countries in the present context of the world economy.

The preliminary results of work on these studies was presented at a WIDER seminar in Helsinki in July 1988, and are summarised in two papers (Cosh, Hughes and Singh, 1988; Chakravarty and Singh, 1988).

B SOCIOLOGY

The Importance of Social Stratification

Project Members
K. Prandy
R.M. Blackburn

Sponsors
ESRC
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This project is fully described in previous *Annual Reports.* The main body of the research is now completed, but work continues on specific topics and on the preparation of publications.

In addition the series of papers presented at the University of Alberta by Dr Blackburn (see below) drew substantially on this project.

Publications

Blackburn, R.M. (1988) Ideologies of work, in D. Rose (ed.), *Social Stratification and Economic Change,* Hutchinson.

Blackburn, R.M. (1988) Understanding unemployment: the need for a social perspective, *International Journal of Sociology and Social Policy.*

An Occupational Classification and Coding Scheme for Social Research

Project members
K. Prandy
R.M. Blackburn

Sponsor
ESRC

This project represents a radical new departure in the area of occupational classification, made possible by computerisation. It is described in detail in the *27th Annual Report.*

The current version of the occupational classification scheme enables automatic coding to any one of several official schemes used over the last decade or so, as well as to various social class schemes, both official and academic, and other variables. The most notable of these last, and a major stimulus for the development of the scheme, is the Cambridge scale, a measure of generalised advantage. The project has been extended to enable the extension backwards of the scheme so as to cover all of the Census classifications used this century. This should provide a very valuable resource for those making long-run comparisons involving occupational data especially if, as is hoped, it should also prove possible to provide associated Cambridge Scale scores for these earlier classifications.

A provisional version of the classification and coding scheme in machine-readable form has been lodged with the ESRC Data Archive. It is proposed to produce a printed version, probably comprising two volumes. The first would contain the index, preceded by a section giving advice on its use and on the general issue of interviewing for and coding of occupational data, while the second would contain the classified version of the scheme. The latter would enable reference to the volume proposed for the new Standard Occupational Classification, (SOC) which would contain descriptions and definitions of jobs, to the existing CODOT and to an equivalent 1927 volume. Thus our publications would complement the official ones, as well as providing considerably more than any of them. The need to wait for the final version of SOC (and perhaps also of the International Standard Classification of Occupations, currently being revised) is delaying publication, but the fact that the whole scheme is computer-based means that progress can be fairly rapid once the final form has been determined. An article by K. Prandy, 'The revised Cambridge scale of occupations', has been accepted for publication by *Sociology.*

In the longer term it is proposed to publish a book showing the use of the scale in a number of substantive areas, comparing it with other measures and drawing out the theoretical implications from the analyses. Parts of this work are in preliminary draft form. Work is also continuing on a book to be entitled *Theory and Measurement in Social Stratification.*

Review of CODOT

Project member
K. Prandy

Sponsor
Manpower Services Commission

Ken Prandy has continued as a member of the Steering Group overseeing the revision of the Classification of Occupation and Dictionary of Occupational Titles (CODOT). One advantage of this is that it enables him to keep up with developments in the proposed Standard Occupational Classification (SOC), so that this can also be incorporated in the Cambridge scheme. Several government departments, including OPCS, have had to turn to us as the only source of computer-based versions of their own indexes of occupational titles.

Index of Occupational Titles

Project member
K. Prandy

Sponsor
Manpower Services Commission

The object of the new project is to maintain a computer file of an alphabetical index linking job titles (as in the Classification of Occupations 1980 (CO80)) to the Standard Occupational Classification (SOC). The use of this index will greatly facilitate the harmonisation of the different existing Classification Schemes and the eventual production of the Office of Population Censuses and Surveys.

Other activities

The group has maintained its association with colleagues in other institutions. In particular Professor A. Stewart, Dr J. Siltanen and Mr J. Holmwood of the University of Edinburgh, and Dr L. Miller-Bernal of Wells College, have collaborated in our work. Dr Liliane Floge, Dr Steve Crawford, Dr J. Wajcman, Dr M. Waters and Mr A. Stewart and Dr L. Miller-Bernal were visitors to the Department. Dr C. Marsh (Social and Political Sciences) has also collaborated in our research.

As in previous years the group was host to the Cambridge Social Stratification Seminar.

Dr Prandy was a Visiting Fellow at the Australian National University. Dr Blackburn continued to act as the local representative for the ESRC Data Archive. He was also the DAE Data Protection Officer.

Dr Blackburn was a Distinguished Visiting Professor at the University of Alberta during September, to talk about the research of the Department. He gave a public lecture on 'Taxation and Democracy' and the following series of seminars.

Stratification Research. A Theoretical and Methodological Critique:
1. Off on the wrong track; the development of mobility studies
2. The stratification structure: resolving the contradictions of theory and measurement
3. The reproduction of social inequality

Education selection and social stratification

The working class in the Labour Market

Ideologies of Work

The employment, work and non-work of men and women

These were presented in the Departments of Sociology, Educational Foundations, Organisational Analysis, and Physical Education and Sports Studies.

The Monograph series *Cambridge Studies in Sociology* is edited by the group.

The Sociology group contributed to the joint DAE, Faculty and Social and Political Sciences Seminar Series.

Close links with Social and Political Sciences (SPS) were maintained. DAE sociologists contributed to graduate supervision, undergraduate teaching, examining and administration.

III DEPARTMENT PUBLICATIONS

Books

The following books were prepared in the DAE during the year:

The British Economy after Oil: Manufacturing or Services? edited by T.S. Barker and J.P. Dunne with a Foreword by Lord Ezra (208 pp.) was published by Croom Helm in January, 1988, price £25

The Cambridge Multisectoral Dynamic Model of the British Economy edited by T.S. Barker and W. Peterson (528 pp.) was published in March, 1988 by CUP in the *Cambridge Studies in Applied Econometrics Series,* price £27.50

Disaggregation in Economic Modelling, a selection of papers, edited by T.S. Barker and M.H. Pesaran, from a conference held at Queen's College, Cambridge in 1987, is being prepared for press and will be published by Routledge in 1989.

Industrial Structures and International Competition, by M. Landesmann, is being revised for the *DAE Occasional Papers Series*

Discussion Papers on Structural Analysis of Economic Systems

One title was produced in this series during the year. A second title (no. 8) will appear in November 1988.

7. Income Distribution, Consumption Patterns and Economic Outcomes in the United Kingdom
V.K. Borooah

8. A Decomposition Technique for Analysing Structural Changes in Production
Osmo Forssell

DAE Working Papers

A new series, DAE Working Papers, has replaced the DAE Economics Reprints. The following titles were produced during the year:

881. Industrial Pricing in UK Manufacturing Industry under Conditions of Stagflation
K. Coutts, W. Godley and J.C. Moreno-Brid

882. The Macroeconomics of Protectionism: A Case Study of Britain in the 1930s
M. Kitson and S. Solomou

883. The Consequences of Mrs. Thatcher for UK Manufacturing Exports
M. Landesmann and A. Snell

884. The Rise and Fall of the Golden Age
A. Glyn, A. Hughes, A. Lipietz and A. Singh

885. Export and Die: The Exchange Rate and Company Failure in a Macro-Micro Model
A.W. Goudie and G. Meeks

886. British Economic Growth, 1870-1913: Facts and Artefacts
S. Solomou and M. Weale

887. Wealth Targets, Exchange Rate Targets and Macroeconomic Policy
A. Blake, D. Vines and M. Weale

Discussion Papers in Economic Theory

The following papers were produced during the year:

115. Manager-Managed Firms
L. Anderlini

116. Wage Norms and Involuntary Unemployment
H. Sabourian

117. Some Notes on Rational Conjectural Equilibrium from a Game-Theoretic Perspective
H. Sabourian

118. International Trade Under Increasing Returns, Product Differentiation and Monopolistic Competition
K. Gatsios

119. Customs Unions and the Core: A Reciprocal Dumping Model
K. Gatsios

120. Preferential Tariffs and the 'Most Favoured Nation' Principle: A Note
K. Gatsios

121. R.I.N.C.E. Preferences
R.E.A. Farmer

122. Asset Structures and the Irrelevance of Government Financial Policy
P. Gottardi

123. On Monetary Theory
F.H. Hahn.

124. Testing for Regret and Disappointment in Tax Compliance Decisions
D. Kelsey and A. Schepanski

Sociology Reprints

The following title was added during the year:

14. Similarities of Life-style and the Occupations of Women
Ken Prandy

IV OTHER ACTIVITIES

DAE Library

During the period October 1987 to September 1988 the Department received 156 periodicals: 15 of these were in exchange for the Department's Working Papers and 47 were gifts, the remainder being purchased. The library has acquired 126 books, 771 pamphlets and 174 government publications.

Computing

The main development in computing in the last year has been the increasing use of personal computers in the Department, encouraged by further acquisitions of equipment and software. Members of the Department have continued to make extensive use of the University mainframe, although the growing availability of specialist PC software has led to some reduction in the scale of mainframe use.

Agreement was reached to standardise on WORD PERFECT 5 as the main word-processing software used in both the Department and the Faculty of Economics. This has allowed increased flexibility in the preparation of papers and other documents.

Teaching for the University

During the year members of the Research Staff gave lectures for undergraduate examination courses in the following areas:

The post-war international financial system

The state, the family and the labour market

Structural change and economic dynamics

Economics of uncertainty and information

Theory and measurement in social stratification

They also gave lectures and seminars for research and M.Phil students in the following areas:

Unemployment and labour

Philosophical issues in economics

Labour economics

The determinants of industrial performance

They also supervised post-graduate students for the degrees of M.Phil and Ph.D.

Teaching for Colleges

Nearly all members of the Research Staff undertook undergraduate teaching for Colleges. Nine members were Directors of Studies in Economics and two in Social and Political Sciences.

Service on University Boards and Committees

Members of the Department's research staff served on the following bodies during the year:

The Committee of Management of the Department

The Appointments Committee of the Department

The Faculty Board of Economics and Politics

V FINANCE

During the financial year (1 August 1987 to 31 July 1988) the Department's annual expenditure was £632,685 compared with £735,959 in 1986/87. Of this expenditure, 89.5% was on stipends, salaries and wages.

The University Grant rose from £299,511 in 1986/87 to £321,995 in 1987/88.

The following are the principal new or additional payments by outside bodies which have been accepted during the year for payment over various periods:

	£
Economic and Social Research Council	10,664
Leverhulme Trust	34,063
Manpower Services/Training Commission	28,658
European Economic Community	11,825
	£85,210

VI ECONOMICS RESEARCH PUBLICATIONS AND PAPERS

PUBLICATIONS BY RESEARCH OFFICERS

Books

Barker, T.S. and Dunne, P. (eds) (1988) *The British Economy after Oil: Manufacturing or Services?*, Croom Helm

Barker, T.S. and Pesaran, M.H. (eds) (forthcoming) *Disaggregation in Economic Modelling*, Routledge

Barker, T.S. and Peterson, W. (eds) (1988) *The Cambridge Multisectoral Dynamic Model of the British Economy*, Cambridge University Press

Landesmann, M. (forthcoming) *Industrial structures and international competition in the European Communities*, DAE Occasional Paper, CUP

Panić, M. (1988a) *National Management of the International Economy*, - Macmillan, London and St. Martin's Press, New York

Panić, M. (1988d) *The Postwar International Financial System - Its Origins and Evolution*, Macmillan, London and St. Martins Press, New York (forthcoming)

Rubery, J. (ed.) (1988f) *Women and Recession*, Routledge

Wilkinson, F. (ed.) (1988) *The Restructuring of Labour Markets*, special issue of *Labour and Society* (forthcoming)

Weale, M.R., Blake, A.P., Christodoulakis, N., Meade, J.E. and Vines, D.A. (forthcoming) *Macroeconomic Policy: Inflation, Wealth and the Exchange Rate*, Unwin Hyman

Chapters in books

Anderlini, L. and Sabourian, H. (1988) Some notes on the economics of barter money and credit, in Humphrey and Hugh-Jones (eds), *Money and Credit*, CUP (forthcoming)

Barker, T.S. (1988b) The Cambridge Multisectoral Dynamic Model and alternative strategies for full employment in the UK, in Hopkins, M.J.D. (ed.), *Employment Forecasting*, International Labor Office, Geneva

Barker, T.S. (1988c) International trade and the British economy, in Barker and Dunne (eds) (1988)

Dunne, P. (1988a) The structure of service employment in the UK, in Barker and Dunne (eds) (1988)

Glyn, A., Hughes, A., Lipietz, A. and Singh, A. (1988) The rise and fall of the golden age: an historical analysis of post-war capitalism in the developed market economies, in S. Marglin (ed.), *The Golden Age of Capitalism: Lessons for the 1990s*, OUP (forthcoming)

Hughes, A. and Singh, A. (1988) The world economic slow-down and the Asian and Latin-American Economies: A comparative analysis of economic structure, policy and performance, in T. Banuri (ed.), *No Panacea: The Limits to Economic Liberalization*, OUP (forthcoming)

Hughes, A. (1988) The impact of merger: A survey of empirical evidence for the UK, in Fairburn and Kay (eds), *Mergers and Merger Policy* Oxford University Press (forthcoming)

Hughes, A. (1988) Small firms, merger activity and competition policy, in J. Barber, J.S. Metcalfe and M. Porteous (eds), *Barriers to Growth*, Routledge (forthcoming)

Humphries, J. and Rubery, J. (1988) Recession and exploitation: British women in a changing workplace, in J. Jensen *et al.* (eds), *The Feminisation of the Labour Force*, Polity

Kitson, M. and Solomou, S. (forthcoming a) *Protectionism and Economic Revival: The Case of the British Inter-War Economy,* Cambridge University Press

Landesmann, M. (1988a) Demand versus supply determinants of disproportional growth in open economies, in M. Ciaschini (ed.), *Input-Output Analysis: Current Developments,* Chapman and Hall

Landesmann, M. and Snell, A. (1988a) Implications of a modernisation strategy for the UK economy, in W. Krelle (ed.), *The Future of the World Economy, Economic Growth and Structural Change,* Springer Verlag

Lee, K., Pesaran, M.H. and Pierse, R.G. (1988) Aggregation bias and labour demand equations for the UK economy, in Barker and Pesaran (eds), forthcoming

Pratten, C.F. (1987) Mrs Thatcher's Economic Legacy, in Minogue and Biddiss (eds), *Thatcherism: Personality and Politics,* Macmillan

Pratten, C.F. (1988a) A survey of economies of scale, in *Studies on the Economics of Integration, vol. 2, Basic Findings of Research on the Cost of Non-Europe,* Commission of the European Communities

Rubery, J. (1987) Women's wages, in Eatwell *et al.* (eds), *The New Palgrave,* Macmillan

Rubery, J. (1988a) Employers and the labour market, in Gallie (ed.) *Employment in Britain,* Blackwells

Wilkinson, F. (1987) Low pay, in Eatwell *et al.* (eds), *The New Palgrave,* Macmillan

Articles in journals

Anyadike-Danes, M. and Godley, W.A.H. (1989) Real wages and employment; a sceptical view of some recent empirical work, *Manchester School,* forthcoming

Begg, I.G. (1988) La Europa Urbana despues del Ano 2000 [Urban Europe beyond the year 2000], *Cuadernos de Economia Aplicada, Series C No. 2*

Begg, I.G. and Cameron, G.C. (1988) High technology location and the urban areas of Great Britain, *Urban Studies*

Blake, A.P. and Weale, M.R. (1988) Exchange rate targets and wage formation, *National Institute Economic Review, 124*

Brosnan, P. and Wilkinson, F. (1988) A national statutory minimum wage and economic efficiency, *Contributions to Political Economy, 7,* March

Burchell, L.J. and Burchell, B.J. (1988) The effects of unemployment in Youth Training Scheme leavers, *Journal of Youth and Policy, 24*

Cosh, A.D. and Hughes, A. (1987) The anatomy of corporate control: directors, shareholders and executive remuneration in giant US and UK corporations, *Cambridge Journal of Economics,* December

Deakin, B.M. and Pratten, C.F. (1987) The economic effects of the Youth Training Scheme, *Department of Employment Gazette,* October

Kitson, M. and Solomou, S. (forthcoming b) The macroeconomics of protectionism: the case of Britain in the 1930s, *Cambridge Journal of Economics,* Special Issue in Memory of Nicholas Kaldor, 1989

Landesmann, M. (1987) International competition - a computable model of disproportional growth in interdependent economies, *Osaka City University Economic Review*

Landesmann, M. (1988c) Technical change and dynamics, *Cambridge Journal of Economics,* March

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