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UNIVERSITY OF CAMBRIDGE

DEPARTMENT OF APPLIED ECONOMICS

THIRTEENTH REPORT
ACTIVITIES IN THE PERIOD
OCTOBER 1972 TO SEPTEMBER 1973



April 1974

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UNIVERSITY OF CAMBRIDGE
DEPARTMENT OF APPLIED ECONOMICS

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THIRTEENTH REPORT OF THE DEPARTMENT OF APPLIED ECONOMICS

(covering the year October 1972 to September 1973)

I. Research Activities

1. This section outlines the work done in 1972-73 on the twenty-four research projects being conducted, and lists the two new ones which start in the current academic year.

(A) ECONOMICS AND ECONOMIC HISTORY

GROWTH AND FLUCTUATIONS IN THE BRITISH ECONOMY: PROJECTIONS FOR PLANNING

2. This project is under the direction of Professor Stone. The main results of the research are published in the series *A Programme for Growth* (London, Chapman and Hall) in which eleven volumes have appeared.

3. The research staff working with Professor Stone during the period covered by this Report were as follows: Dr T.S. Barker, Mr A.S. Deaton, Mr M.A. King, Dr D.A. Livesey, Mr A.W.A. Peterson, Dr L.J. Slater, and Mr V.H. Woodward. Dr K.J. Wigley and Mr A.G. Armstrong are closely associated with the project. Visitors to the project during the year included Professor O.J. Firestone, Professor A. Ghosh, Dr D. Simpson, and Ms K. Kovacs.

4. The main research of the project is the investigation and analysis of the present structure and future prospects of the British economy. The approach of the project has been to build a computable, disaggregated model of the economy and use it to demonstrate possibilities for the future. The model provides and maintains coherence and consistency between different proposals and policies. During the year the model was reprogrammed in Fortran and used to project the future of the economy to 1975 with special attention to the effects of inflation.

5. During the year research has concentrated in seven areas: industrial pricing, consumers' expenditure behaviour, financial behaviour in the company sector, problems in controlling the economy, investment and employment functions, export functions, and the links between personal incomes and expenditures.

6. The project also continues to work on developing disaggregated statistics for the British economy. A complete revision of the data base of the model was started with the help of the Central Statistical Office. This was made necessary by the publication of the final results of the 1968 Census of Production and the revision of the National Accounts to a 1970 price basis.

7. Members of the project attended and presented papers at eight conferences during the year as follows:

The International Division of the Board of Governors of the Federal Reserve System, Conference on *Analysing the Effects of Exchange Rate Changes*, Washington, USA, December 1972:

T.S. BARKER, 'Exchange rate adjustments and the national economy: a computable model of the British economy'.

International Economic Association, Conference on *Long-term Planning*, Moscow, December 1972:

A.S. DEATON, 'Long-term projections of consumer demand'.

Association of University Teachers of Economics, *Annual Conference*, Warwick, March 1973:

T.S. BARKER, 'The "condensed form" of a large scale econometric model'.

Fifth Annual Southeastern Symposium on Systems Theory, Durham, North Carolina, USA, March 1973:

D.A. LIVESEY, 'The importance of numerical algorithms for solving economic optimization problems'.

NIESR/SSRC Conference on *Medium-term Assessments of the British Economy*, London, April 1973:

T.S. BARKER, 'An input-output model of the British economy'.

V.H. WOODWARD, 'The role of disaggregation in macro-economic medium-term assessments of the economy'.

International Federation for Automatic Control/International Federation of Operation Research Societies, *Dynamic Modelling and Control of National Economies*, Warwick, July 1973:

D.A. LIVESEY, 'Can macro-economic problems ever be treated as a quadratic regulator problem?'

D.A. LIVESEY, 'Some further results for a model of the U.K. economy'.

Econometric Society, European Meeting, Oslo, August 1973:

A.S. DEATON, 'Additive preferences and Pigou's law'.

M.A. KING, 'Economic growth and social development - a statistical investigation'.

M.A. KING, 'Corporate policy and the ownership of shares'.

Conference on Income and Wealth, Hungary, August 1973:

V.H. WOODWARD, 'The reliability of the U.K. national accounts and their use in medium-term assessments'.

8. The following articles by members of the project were published during the year 1972-73 (not including the papers listed above):

DEATON, A.S. 'Wealth effects on consumption in a modified life-cycle model', *Review of Economic Studies*, Vol. 39, pp. 443-53, October 1972.

DEATON, A.S. (with J.A.C. BROWN). 'Models of consumer behaviour: a survey', *Economic Journal*, Vol. 82, pp. 1145-1236, December 1972.

DEATON, A.S. 'The estimation and testing of systems of demand equations', *European Economic Review*, Vol. 3, pp. 399-411, December 1972.

LIVESEY, D.A. 'Optimum city size: a minimum congestion cost approach', *Journal of Economic Theory*, Vol. 6, pp. 144-61.

LIVESEY, D.A. 'The singularity problem in the dynamic input-output model', *International Journal of Systems Sciences*, Vol. 4, pp. 437-40.

STONE, RICHARD. 'Personal spending and saving in postwar Britain', in *Economic Structure and Development* (essays in honour of Jan Tinbergen), North-Holland, Amsterdam, 1973.

EFFECTS OF ECONOMIC POLICY

9. Work in this related group of projects, which had been accepted as a programme by the Social Science Research Council, continued throughout 1972-73 under the general direction of Mr W.A.H. Godley. Research staff working on the project during part or all of the period covered were as follows: Mr C.T. Taylor, Mr J. Rhodes, Mr B.C. Moore, Mr R.J. Tarling, Mr J. Llewellyn, Dr M.H. Pesaran, Mr T.F. Cripps, Mr K.J. Coutts.

10. The first stages of this programme were described in the last two Reports. So far as that part of the programme which deals with medium-term policy is concerned, a substantial forecasting exercise was carried out at the end of 1972, as a result of which two articles came out by Messrs Godley and Cripps in the *London and Cambridge Economic Bulletin*. The underlying figuring with extensive notes on how this was carried out was given quite a wide circulation in mimeograph.

11. The carrying out of this exercise, like that of the previous year, has continued to generate a substantial amount of back-up research. A paper by Mr J. Llewellyn on the Determinants of Import Prices will shortly be published in the *Economic Journal* and this work is to be extended to cover other aspects of export prices. Substantial papers by Dr M.H. Pesaran on output, employment, and productive potential, and also on the determinants of imports into the U.K., by Dr Pesaran are now at an advanced stage. Further work was done by Messrs Taylor and Coutts on the measurement of an index of potential output based on labour capacity and a paper with some results was given at the D.A.E./Faculty Seminar. A conference on medium-term forecasting financed by S.S.R.C. and organized by N.I.E.S.R. in April took papers from members of this project and there was an extended discussion of methodology with, in particular, members of the Cambridge Growth project and members of the Government Economic Service. The papers and proceedings are to be published shortly by N.I.E.S.R.

12. Work has continued on the evaluation of the effects of U.K. regional economic policy and in particular on an assessment of the Regional Employment Premium. Part of the evaluation will be based on an industrial enquiry which is almost complete, information having been obtained from over 300 manufacturing companies. This will supplement other analyses based on

published data. An article on 'Evaluating the effect of British regional economic policy' appeared in the *Economic Journal* in March 1973 and concluded that U.K. regional policy had been encouragingly successful in the 1960s. In January 1973, Mr B.C. Moore and Mr J. Rhodes gave oral evidence on the effects of regional policy to the Trade and Industry Sub-Committee of the Public Expenditure Committee. They were subsequently asked by the Committee to submit a written memorandum on the 'Economic and exchequer implications of regional policy' which was published in May 1973. During the year papers were given to the Royal Economic Society conference at Durham and to conferences on regional economic policy organized by the University of East Anglia and the Federal Bank of Minneapolis.

CURRENT ECONOMIC ASSESSMENTS

13. The London and Cambridge Economic Bulletin, which is published in *The Times Business News*, is mainly concerned with the current economic situation in the United Kingdom. Mr M.L. Mackie is Statistician and Secretary, and Mr E. Bougourd the Subscriptions Secretary.

14. At the Editorial meeting held in July 1973 it was decided that each winter issue should be contributed by a member of the group working on the effects of economic policy, the Chairman of which is the Director. The two Bulletins published last year were:

'Demand management and the balance of payments', by W.A.H. Godley and T.F. Cripps, January 1973.

'The case for a change in fiscal policy, mid-1973', by R.R. Neild, July 1973.

PRICING IN THE TRADE CYCLE

15. Work on this project started early in 1971 as a collaborative effort between Professor W.D. Nordhaus of Yale University and Mr W.A.H. Godley. The initial objective was to review the statistical evidence relating to costs and prices in manufacturing industry and to test the 'normal' price hypothesis first investigated by Professor Neild in 1963. A grant for the project was obtained from the Social Science Research Council to start from the beginning of the calendar year 1972, and since then Dr M.H. Pesaran and Mr K.J. Coutts have spent part of their time on it. The results of the preliminary investigation were written up in a paper which was published by the *Economic Journal* in September 1972. This paper, which treated non-food manufacturing industry as an integrated whole, concluded tentatively that the normal price hypothesis was confirmed. Work is now well advanced on the next stage of the project which is considering (in particular) the price behaviour of individual industries and the extent to which company taxation is passed on in whole-sale prices.

GROWTH IN INDUSTRIALIZED CAPITALIST ECONOMIES

16. This new project, supported by the S.S.R.C., is investigating and amplifying Professor Kaldor's analysis of growth in advanced countries. The work has been carried out by Mr T.F. Cripps and Mr R.J. Tarling. A study of productivity growth by sector was finished and published as D.A.E. Occasional Paper 40 in July 1973. This generally confirmed the proposition that in the economy as a whole the rate of growth of output per person employed is rather flexible. The rate of growth of demand then appears to be the main determinant of growth of output even in economies which are quite fully employed.

17. A parallel study investigating the sources of growth in aggregate demand in the same group of countries and periods has just been completed and is being prepared for publication. This study attempts to distinguish between induced and autonomous demand by estimating relationships between induced demands and total income. The estimation of these demand relationships raised interesting econometric problems which are thought to have been solved satisfactorily.

18. A third study which has been completed this year and awaits publication is on the characteristics of the flow of labour through the unemployment register. This has helped to throw light on processes of recruitment and job changing, confirming that from the point of view of success in finding jobs the labour force is extremely heterogeneous.

19. An investigation of the determinants of employment in retail and wholesale distribution is now in progress. The objective is to test a detailed model which could adequately explain the earlier

finding that the growth of employment in distribution has been rather stable in the postwar period both across countries and over time. It is planned to follow the study of distribution with parallel tests of detailed models for agriculture and manufacturing.

ANTI-TRUST AND INDUSTRIAL POLICY: U.K. AND E.E.C.

20. Work on this project began in October 1972, with Mr T.S. Ward carrying out the research under the direction of Mr K.D. George.

21. The enquiry consists of four main parts. Firstly, a comparative examination of certain aspects of industrial structure and performance in the U.K. and E.E.C. Secondly, a review of the development and application of anti-trust and industrial policy in the two areas. Thirdly, a detailed study of the interactions between industrial structure, performance, and policy in a selected number of fairly narrowly defined industries. Fourthly, an analysis of the possible alternative policies for a unified U.K.-E.E.C. market.

22. Work during the past year has been largely directed towards the first part of the enquiry, using the official statistics and published information available in various sources. The major focal point has been a comparison of the U.K. and West Germany. The main aspects covered include: an analysis of changes in manufacturing output, employment, and labour productivity over the period from 1953; a comparison of sizes of plant and changes over time; and an examination of the degree of concentration and the intensity of merger activity. This has been carried out largely in terms of two-digit industries. In addition, a more detailed analysis of the size of plants and firms and of concentration ratios has been undertaken for 1963 for a much larger number of more narrowly defined trades, covering France and Italy as well as the U.K. and Germany. Finally, a series of the largest 100 U.K.-E.E.C. industrial companies, compiled from the *Fortune* directory, has been used to look at changes in industrial composition, in each country's representation, in concentration and in intra-group mobility over recent years.

23. With the appointment of Mr George to the Chair of Economics in the University College of Cardiff, work on this project was transferred to Cardiff from 1 October 1973 and Mr Ward has ceased to be actively engaged in this research.

SOME ECONOMIC AND SOCIAL IMPLICATIONS OF IMMIGRATION INTO BRITAIN

24. This project was started in October 1972 and is being undertaken by Mr B.M. Deakin and Dr K. Prandy. Mr A.N.E. Jolley, of the University of Melbourne, is collaborating on the project.

25. The research is interdisciplinary. On the economics side the aim is to study the impact of all immigrants to Britain upon labour markets under various economic conditions in such markets, and also to use a Salter-type analysis to examine the performance of groups of industries with high and low immigrant employment densities. Special tabulations of data from the 1961, 1966, and 1971 Censuses of Population are being used.

26. On the sociology side the major part of the work is the analysis of data on over 100 local authorities from both the 1966 and 1971 Censuses. The main aim of this is to investigate the determinants of inequalities in socio-economic position, experience of unemployment, and quality of housing for the indigenous and various immigrant groups. A further one is to study the nature of residential segregation and its relationship to ethnic 'distance'.

SOVIET ECONOMIC MECHANISM

27. This project is being undertaken by Dr M.J. Ellman. The purpose was described in the *Twelfth Report*.

28. During the year work proceeded on the sociological, administrative, and historical aspects of the topic. The sociological material was included in the D.A.E. Monograph, '*Planning Problems in the USSR: The contribution of mathematical economics to their solution 1960-1971*', (1973).

29. The administrative material was published as an article 'Bonus formulae and Soviet managerial performance: A further comment', in *Southern Economic Journal*, April 1973. Two

further articles, one on the Soviet Cadastre, and the other in *Ost Europa Wirtschaft* on the reorganization of Soviet industry into Associations, are also to be published. The historical studies were concerned with the creation of the administrative economy during the First Five Year Plan (1928-32). It is intended to publish a paper on intersectoral resource flows during this period.

30. During the year Dr Ellman gave papers at seminars at Cambridge and London Universities, took part in two Open University radio programmes, and wrote 'The search for efficiency in Soviet planning', pp. 280-7 of Joan Robinson and John Eatwell, *An Introduction to Modern Economics*, McGraw-Hill (1973).

COMPARATIVE STUDY OF LABOUR PRODUCTIVITY

31. The project to study differences in labour productivity within international companies was started in January 1972 and completed in September 1973. A report of the study by Mr C.F. Pratten has been completed and will be published in 1974.

DIFFERENTIATION AND STRUCTURAL CHANGE IN PEASANT AGRICULTURE

32. Work continued along the lines described in the Twelfth Report; Mr D.M.G. Newbery remained in charge of the project.

33. Mr M. Cowen was appointed to a Research Fellowship at the Institute of Development Studies at the University of Nairobi from 1 November 1972, with the result that the S.S.R.C. grant mentioned in last year's Report was reduced by the amount of Mr Cowen's salary.

34. In the course of the year Mr Cowen presented a paper on 'Differentiation in a Kenya Location' to the Eighth Annual Conference of the East African University Social Science Council held in Nairobi in December 1972.

COMPARATIVE ECONOMIC STUDIES OF VARIOUS CODES OF PRACTICE PROPOSED FOR SHIPPING CONFERENCES

35. This research is being carried out by Mr B. M. Deakin.

36. The project arose from some earlier research undertaken at the D.A.E. on the organization and economic practices of shipping conferences. International negotiations were in progress throughout 1973 to reach agreement on a code of practice to regulate shipping conferences, and several substantially different proposals were advanced. Data on these and related matters were assembled and compared, and an analysis was made of some of the economic implications of the objectives and of several salient features of the various proposals. These include pricing policies, the admission of new members, revenue pooling, and trade sharing, and methods of selecting the criteria for determining general across-the-board freight rate changes. A paper containing the results of this analysis is being prepared for publication.

(B) INDUSTRIAL RELATIONS AND SOCIOLOGY

MANAGEMENT ORGANIZATION AND INDUSTRIAL RELATIONS

37. The aims of this enquiry, which was conducted by Mr D.J. Roberts under the supervision of Professor H.A. Turner, were outlined in previous Reports.

38. The enquiry involved a programme of in-depth interviews with selected firms (originally, a large sample covering strike-prone establishments in a number of industries on the one hand, and on the other a sample roughly comparable in all respects except that it displayed a comparative absence of recorded industrial disputes: but in the circumstances of the last few years the two samples became much less distinct). The interview programme was completed, despite the difficulties caused by the industrial disturbances of the period, but Mr Roberts left the Department before the results could be fully analysed and written up.

39. During the past year, however, Mr Roberts was released by the British Leyland Motor Corporation for a month to work on codifying the interview results. Preliminary analysis indicated a number of interesting (and in some cases, surprising) conclusions as to the relation between management organizational forms and the state of industrial relations at the plant level: the interview schedules have now been summarized in a form in which it is hoped they may prove amenable to computer analysis.

WAGE DETERMINATION AND WAGE DRIFT IN THE CONSTRUCTION INDUSTRY

40. The aims and methods of the work being conducted by Mr L.J. Handy, under the direction of Professor H.A. Turner, have been outlined in previous Reports.

41. The case studies of 'on-site' wage determination, which form the major part of the project, are nearing completion and a final report should be available in 1974.

LABOUR PROBLEMS IN UNDERDEVELOPED COUNTRIES

42. This study's aims and methods have been summarized in previous Reports: it is being conducted by Professor H.A. Turner and Mr D.A.S. Jackson.

43. A paper, 'How to Provide More Employment in a Labour Surplus Economy', by Mr Jackson and Professor Turner, based on research conducted specifically in Morocco and generally in a number of primarily subsistence agricultural countries, was published by *The International Labour Review* (I.L.O., Geneva), in April 1973, with French and Spanish translations. Material from the study was also the basis of 'Inflation, Strato-Inflation and Social Conflict', by Jackson and Turner (included in D.A.E. Occasional Paper No. 36).

44. In March Professor Turner was invited, on I.L.O. nomination, to become Chairman of a Commission of Enquiry of the East African Community. The Commission is to recommend common principles and machinery for pay policy in the various institutions and services of the Community - which apart from operating a Common Market and centralized tax-collecting system for the three countries, also runs much of the East African infra-structure - and for co-ordinating, if possible, the incomes policies of the three partner states. Mr Jackson was released for six months to serve as I.L.O. consultant to and a member of the Commission. Miss Patricia Fosh, Lecturer in Social Research Methodology at Sheffield University, was appointed as an additional consultant to conduct a survey of East African Community employee opinions and conditions. The Commission Report is currently being drafted by Professor Turner with Mr Jackson's help, for submission to the East African Community Finance Ministers in January and, it is hoped, for subsequent publication.

45. A considerable number of other papers and articles, which have been referred to in previous Reports, has already been published as a result of this project. The Overseas Development Administration has now made a grant of £1,000 to help a book on the project's results to be completed.

LABOUR RESTRICTIVE PRACTICES

46. In 1964-67 a study of demarcation rules and related labour practices in four industries (shipbuilding, engineering, printing, and construction) was made by Mr G. Roberts under Professor H.A. Turner's supervision. The study produced a substantial paper for the Royal Commission on Trade Unions, and an Occasional Paper (published as No. 14, *Demarcation Rules in Shipbuilding and Shiprepairing*); it also produced a great mass of other material, which was put in systematic form as a preliminary draft. At that time, however, Mr Roberts left to become Senior Industrial Relations Adviser to the National Board for Prices and Incomes. It was at first thought that he would be able to return after two years or so to complete the project to publication stage, and prepare what had always been intended as a second-phase project on labour restrictive practices in general; but he has subsequently remained in the Government Service.

47. Accordingly, a grant was secured from the S.S.R.C. to revise and update the earlier material by other means. Mr S.F. Wilkinson was appointed to undertake this, and a study of subsequent developments in shipbuilding has already been completed. In the event much change in what was historically a rigid traditional situation has occurred in the past few years, so that the interval since the initial study was made adds considerably to the enquiry's content. The new shipbuilding results have been embodied in a substantial working paper which is being reviewed for separate publication. When the process has been repeated for the other three industries, the question of a more general 'second-stage' project will again be considered. Mr G. Roberts continues to act as adviser to the study.

PRICES AND INCOMES POLICY

48. As reported last year, with the aid of a grant from the Nuffield Foundation, assistance was given to the Rt Hon. Aubrey Jones, who was a visitor to the Department in 1971-72, to complete his book on incomes policy. This has now been published (*The New Inflation: The Politics of Prices and Incomes*, editions by Andre Deutsch and Penguin).

49. A book by D. A. S. Jackson, H. A. Turner, and S. F. Wilkinson, *Do trade unions cause inflation?* incorporating the results of various studies in this and related areas, was published as Occasional Paper No. 36. A paper by Professor Turner, 'Wages and taxes: with some incidental comment on inflation, unemployment and industrial unrest' was presented (by Mr Wilkinson, in the author's absence in East Africa) to the Third World Congress of the International Industrial Relations Association in September 1973.

50. Other publications include:

'Incomes policy: the American comparison', by H. A. Turner, *New Society*, January 1973.

'British incomes policy: above freezing', by H. A. Turner, *New Society*, January 1973.

NATIONAL JOB EVALUATION

51. In 1967-71 some studies were made under Professor H. A. Turner's direction of the possibility of a national job evaluation system. The project's progress was considerably disturbed by turnover of research staff and difficulties in arranging certain enquiries in Communist countries, and a large part of its survey material was absorbed in a Report by the National Board for Prices and Incomes on job evaluation (for which Professor Turner was at that time the Board member responsible). However, in 1973, interest in this topic was revived by the latest phase of British government incomes policy and the activities of the new Pay Board. A postal survey was made by Mrs Craig among the sizeable number of large firms which had co-operated in a 1967 enquiry made through the D.A.E., with a view to establishing trends since the report was issued. The survey received quite an encouraging and useful response, and a number of firms declared an interest and willingness to co-operate in a possible more detailed follow-up enquiry. This is at present under consideration: if support could be secured for such a follow-up, it might be associated with a revisitation of the Dutch national job evaluation scheme (of which some study was also made under the original project) in a short survey by Mrs Craig, the results of which could perhaps be combined with the residual results of the earlier studies in a publishable form.

HUMAN PROSPECTS OF THE TROPICAL MINING AREAS

52. The object of this study is to examine an important contributant to the growth of unemployment and under-employment in developing countries and one which is notable in areas where mining is a major industry. Tropical mining areas have rapidly growing populations, which are largely detached from their traditional rural economy and environment, overwhelmingly dependent (directly or indirectly) on the mines for a livelihood, and have - at least compared with the population outside the mining districts - unusually high expectations in terms of community services and living standards. But the mines sometimes have a limited prospective life, while the growth of alternative employment in the mining areas tends to be deterred by the high wage levels set by the mines. There is thus a discrepancy between a rapidly growing population in the mining districts and a limited - sometimes declining - employment prospect.

53. In 1972 the Overseas Development Administration made a grant to Professor H. A. Turner for a pilot study of this question on the Zambian Copperbelt. The study was made by Mr L. J. Handy. On the basis of his report a proposal for a wider study, to include a selection of mining economies in Africa, Asia, and the Pacific, was submitted to the O.D.A., which has now offered a further grant for a two-year project on this topic.

LIFETIME EARNINGS PATTERNS

54. This study is the responsibility of Mrs J. C. Craig, under Professor H. A. Turner's supervision. Its aims and initial progress were referred to in the Twelfth Report.

55. Some further progress, particularly on the adverse effects of inflation on differentials between younger and older employees and on the latter's expectations, has been made since, but work on the project was temporarily suspended to enable Mrs Craig to write up the results of a previous study (commenced by her with Mrs Dorothy Wedderburn) on the comparative conditions and status of manual and non-manual workers. A draft book on this was completed by Mrs Craig during the summer as *Terms and Conditions of Employment: Some Aspects of Workplace Inequality*.

VARIATIONS IN TRADE UNION ORGANIZATION AMONG WHITE-COLLAR WORKERS

56. This project, carried out by Dr R. M. Blackburn, Dr K. Prandy, and Mr A. Stewart, was started in October 1967. The work is now substantially completed. One article, 'Measuring the class structure', by A. Stewart, K. Prandy, and R. M. Blackburn, was published in *Nature*, 26 October 1973; another, 'Concepts and measures: the example of unionateness', has been submitted for publication; and other articles in addition to the main Monograph are in preparation.

SOCIAL AND INDUSTRIAL DETERMINANTS OF WORKERS' ATTITUDES

57. The aims and methods of this project, which began in October 1968, were described in earlier Reports. The project is being carried out by Dr R. M. Blackburn and Dr J. M. Mann, Lecturer in Sociology at the University of Essex. The findings are being prepared for publication.

58. At the British Sociological Association Annual Conference the paper 'Constraint and choice: stratification and the market for unskilled labour', by R. M. Blackburn and M. Mann, was presented.

59. A contribution by the investigators entitled 'Ideology in the non-skilled working class' is to be published shortly in M. Bulmer (ed.), *Working Class Images of Society* (Routledge and Kegan Paul).

60. 'Some Economic and Social Implications of Immigration to Britain': see para. 24.

DEPRIVATION, WORK EXPERIENCE, AND THE LEGITIMATION OF AUTHORITY

61. This project began on 1 January 1973 and is being carried out by Dr K. Prandy. It is primarily exploratory work to determine the feasibility of developing adequate measures and methods of analysis for the study of attitudes towards and beliefs about questions of authority and reward-distribution. In particular, it is hoped to study the relationships between these and the individual's work experience.

62. Some re-analysis of earlier work in this field has been carried out, and the first set of pilot interviews are to be undertaken shortly.

SOCIAL STATUS IN GREAT BRITAIN

63. An outline of this project appeared in the Eleventh Report. Department staff engaged on it are Dr R. M. Blackburn and Mr A. Stewart, and associated with the research are Professor J. A. Banks and Mr D. Webb, University of Leicester, Mr K. Dixon, University of York, Mr D. Donald, Glasgow College of Technology, Mr M. Green and Mr J. Scott, University of Strathclyde. Mr Webb and Mr Scott have joined the team since the Twelfth Report.

64. The first part of the project was a re-analysis of data gathered on two other Departmental projects, 'Variation in trade union organization among white-collar workers', and 'Social and industrial determinants of workers' attitudes'. A scale of social stratification was established and used in both projects. Dr K. Prandy collaborated in this part of the research. An outline of the scale will appear in an article in *Nature* (26 October 1973).

65. A programme of 200 interviews as a pilot to the main study was completed in early summer 1973. The data have been extensively analysed and an internal working paper with approximately 175 tables and graphs is to be circulated. The main body of 6,000 interviews in four centres, York, Glasgow, Leicester, and Cambridge, is now under way.

66. A paper dealing with some of the theoretical issues informing the research, 'The Stability of Structural Inequality', was presented at the Annual Meeting of the British Sociological Association by Mr A. Stewart and Dr R. M. Blackburn.

ELITES IN THE BRITISH CLASS STRUCTURE

67. An outline of this project is contained in the Twelfth Report. The research team consists of Mr A. Giddens, director of the project, and Mr P. H. Stanworth. Mr G. Rendle has been of considerable help in processing certain data.

68. The principal concern in the second year of the project has been to continue the computation of data on those who have held elite positions in Britain between 1900 and 1970. Analysis of some of this information has commenced with particular emphasis on the examination of the business elite.

69. A conference, financed by the Nuffield Foundation, on 'Elites and power in British society', was held at King's College, Cambridge, in March 1973. A collection of papers delivered at the conference, edited by Stanworth and Giddens, will be published by Cambridge University Press in 1974. Other publications include:

'Elites in the British class structure', by A. Giddens, *Sociological Review*, Vol. 20, No. 3, 1972, and subsequently included in the Department's Reprint Series.

'Elites in British society', by A. Giddens, *U.K. Society*, P. Abrams (ed.), forthcoming 1974.

'Property, class and the corporate elite', by P. H. Stanworth, *British Political Studies Yearbook*, Ivor Crewe (ed.).

'Company Chairmen - a demographic portrait', by P. H. Stanworth and A. Giddens, *Elites in British Society*, forthcoming 1974.

(C) PROGRAMMING

70. A major task for the computing staff, under Dr L. J. Slater, arose this year from the need to translate all the existing programs in regular use in the Department from the language Autocode used on the old Titan I.C.L. computer to the language Fortran used on the new IBM 370/165 computer which now serves the University. To help with this reprogramming, the S.S.R.C. gave a grant to finance one junior research officer for one year: Mr Geoffrey Rendle was appointed to this post. The change of computers had to be completed by the end of September 1973, when the Titan was finally shut down.

71. In particular, two main program packages, 'Gem', the general economic matrix package, and 'Rex', the general regression package, were reprogrammed and new manuals were written on their use.

72. Practically every project in the Department made use of the services of the computing section. The Growth project, and the project on Effects of Economic Policy, were among the largest users of the computer in the University. Six data banks containing several megabytes of information about the British economy had to be transferred from the old one-inch magnetic tapes of Titan to the new half-inch magnetic tapes of the 370. They all had to be translated from the basic I.C.L. machine code into the basic IBM machine code, which involved writing and testing the various programs for this special purpose.

73. Dr J. M. Wheeler continued her work for the Sociology projects. She was also involved in the transfer of several large data sets and programs from the old computer to the new one.

(D) NEW RESEARCH PROJECTS

74. The following new research projects were planned to begin in 1973-74, the principal investigators being given in brackets:

Development in Egypt (1952-70) (Dr C. H. Feinstein).

Intensive Economic Growth in the U.S.S.R. (Dr M. J. Ellman).

II. Publications

MONOGRAPH SERIES

75. This series, which is published by the Cambridge University Press, contains reports of investigations which have been carried out by members of the Department's research staff and others directly collaborating in its work. The following appeared during 1972-73:

No. 22. *Programming and Interregional Input-Output Analysis*, by A. GHOSH in collaboration with A. CHAKRABARTI.

No. 24. *Planning Problems in the U.S.S.R.*, by M. J. ELLMAN.

Forthcoming titles include:

The Economic Impact of the Patent System, by C. T. TAYLOR and Z. A. SILBERSTON (published November 1973).

OCCASIONAL PAPERS

76. This series, published for the Department by the Cambridge University Press, is designed primarily for the rapid publication of research results which have topical interest. The following titles were added to those listed in previous Reports:

No. 32. *Effects of the Selective Employment Tax, Final Report*, by W. B. REDDAWAY and ASSOCIATES.

No. 36. *Do Trade Unions Cause Inflation?* by DUDLEY JACKSON, H. A. TURNER, and FRANK WILKINSON.

No. 37. *Shipping Conferences: a Study of their Origins, Development and Economic Practices*, by B. M. DEAKIN, in collaboration with T. SEWARD.

No. 38. *The Distribution of Consumer Goods: Structure and Performance*, by T. S. WARD.

No. 40. *Growth in Advanced Capitalist Economies 1950-1970*, by T. F. CRIPPS and R. J. TARLING.

Forthcoming titles include:

Production Conditions in Indian Agriculture, by KRISHNA BHARADWAJ.

Company Finance and the Capital Market, by EDWARD DAVIS and KEITH YEOMANS.

International Comparisons of Industrial Structure and Performance. I: The Steel Industry, by ANTHONY COCKERILL in collaboration with AUBREY SILBERSTON.

Exporting Workers: The Turkish Case, by SUZANNE PAINE.

The Costs of Trade and Tariff Policy: The Case of Ghana, by M. SHARPSTON.

The Effects of British Regional Economic Policy, by BARRY MOORE and JOHN RHODES.

A PROGRAMME FOR GROWTH

77. This series, published by Chapman and Hall Limited, describes the progress of work on economic growth undertaken at the Department under the direction of Professor Richard Stone. The twelfth volume in the series is being prepared for publication.

CAMBRIDGE STUDIES IN SOCIOLOGY

78. This series (together with Cambridge Papers in Sociology) is published by Cambridge University Press under the auspices of the Committee of Management of the Department. It comprises Monographs and collections of original articles on subjects of both theoretical and

social interest based on the finding of empirical sociological investigations. The following publications appeared in 1972-73:

No. 6. *Workers on the Move*, by MICHAEL MANN.

No. 7. *The Aristocracy of Labour*, by GAVIN MACKENZIE.

Forthcoming publications include:

Elites and Power in British Society, edited by PHILIP STANWORTH and ANTHONY GIDDENS.

CAMBRIDGE PAPERS IN SOCIOLOGY

79. This series, published by Cambridge University Press under the auspices of the Committee of Management of the Department, is intended to provide rapid publications of works which are between journal articles and Monographs in length, or important works based on more limited data than the Monographs. The first three volumes in the series have been published already. It is hoped to publish the following in the coming year:

Community and Occupation, by GRAEME SALAMAN.

REPRINT SERIES

80. These are selected papers which members of the Department's research staff and others working in direct collaboration with the Department have contributed to learned journals and other publications. The following titles were added in 1972-73:

No. 368. 'Inflation, Growth and Economic Policy in the Medium-Term', by T.S. BARKER and V.H. WOODWARD, *National Institute Economic Review*, No. 60, May 1972.

No. 370. 'Elites in the British Class Structure', by ANTHONY GIDDENS, *The Sociological Review*, Vol. 20, No. 3, New Series, August 1972.

No. 371. 'Primary and Secondary Indicators of Education', by MERVYN KING, *Social Indicators and Social Policy*, eds. Andrew Shonfield and Stella Shaw. Heinemann Educational Books, 1972.

No. 372. 'Changes in the Top Hundred Quoted Manufacturing Companies in the United Kingdom 1948-1968', by G. WHITTINGTON, *The Journal of Industrial Economics*, Vol. XXI, No. 1, November 1972.

No. 373. 'An Accounting System for the Current Expenses of Social Welfare and its uses in Social Planning', by DUDLEY JACKSON, *Social and Economic Administration*, Vol. 6, No. 3, September 1972.

No. 374. 'Markovian Education Model and Other Examples Linking Social Behaviour to the Economy', by RICHARD STONE, *The Journal of the Royal Statistical Society, Series A*, Vol. 135, Part 4, 1972.

No. 375. 'Wealth Effects on Consumption in a Modified Life-cycle Model', by A.S. DEATON, *The Review of Economic Studies*, Vol. XXXIX, No. 4, October 1972.

No. 376. 'Taxation and Investment Incentives in a Vintage Investment Model', by M.A. KING, *Journal of Public Economics*, Vol. 1, April 1972.

No. 377. 'Incomes Policy: The American Comparison and Above Freezing', by H.A. TURNER, *New Society*, 4 January 1973 and 25 January 1973.

No. 378. 'Optimum City Size: A Minimum Congestion Cost Approach', by D.A. LIVESSEY, *Journal of Economic Theory*, Vol. 6, No. 2, April 1973.

No. 379. 'How to Provide more Employment in a Labour Surplus Economy', by DUDLEY JACKSON and H.A. TURNER, *International Labour Review*, Vol. 107, No. 4, April 1973.

No. 380. 'The Fundamental Matrix of the Active Sequence', by R. STONE, Paper first presented at the Fifth International Conference on Input-Output Techniques, Geneva, 1971, and subsequently published in *Input-Output Techniques*, ed. A. Brody and A.P. Carter, London, North-Holland 1972.

No. 381. 'Foreign Trade in Multi-Sectoral Models', by TERENCE S. BARKER, Paper first presented at the Fifth International Conference on Input-Output Techniques, Geneva, 1971, and subsequently published in *Input-Output Techniques*, ed. A. Brody and A.P. Carter, London, North-Holland 1972.

No. 382. 'Enforcement of the Balance-Sheet Identity in Financial Analysis', by ALAN R. ROE, Paper first presented at the Fifth International Conference on Input-Output Techniques, Geneva, 1971, and subsequently published in *Input-Output Techniques*, ed. A. Brody and A.P. Carter, London, North-Holland 1972.

No. 383. 'The Evaluation of Pollution: Balancing Gains and Losses', by RICHARD STONE, *Minerva: A Review of Science Learning and Policy*, Vol. 10, No. 3, July 1972.

No. 384. 'Do We Still Need a Patent System?', by C.T. TAYLOR, Paper read to the Chartered Institute of Patent Agents and subsequently printed in *CIPA, The Journal of the Chartered Institute of Patent Agents*, Vol. 2, No. 7, April 1973.

No. 385. 'The Estimation and Testing of Systems of Demand Equations: A Note', by A.S. DEATON, *The European Economic Review*, Vol. 3, No. 4, December 1972.

No. 386. 'Thomas Hobbes' Theory of Taxation', by DUDLEY JACKSON, *Political Studies*, Vol. XXI, No. 2, June 1973.

No. 387. 'Bonus Formulae and Soviet Managerial Performance', Papers by WAYNE A. LEEMAN, FRANCIS W. RUSHING, MICHAEL ELLMAN, *The Southern Economic Journal*, April 1970, April 1972, April 1973.

No. 388. 'An Investigation into Alternative Methods of Teaching Elementary Mathematics to Students of Economics', by M.T. NICKSON and R.P. SMITH, *International Journal of Mathematical Education in Science and Technology*, Vol. 4, No. 1, 1973.

No. 389. 'The Small Sample Problem of Truncation Remainders in the Estimation of Distributed Lag Models with Auto-correlated Errors', by M. HASHEM PESARAN, *International Economic Review*, Vol. 14, February 1973.

No. 390. 'Transition and Admission Models in Social Demography', by RICHARD STONE (*Social Science Research*, Vol. 2, No. 2, August 1973).

No. 391. 'Evaluating the Effects of British Regional Economic Policy', by BARRY MOORE and JOHN RHODES, *Economic Journal*, Vol. 83, No. 329, March 1973.

No. 392. 'Productivity Growth in the Retail Trade', by KENNETH D. GEORGE and TERRY WARD, *Oxford Bulletin of Economics and Statistics*, Vol. 35, No. 1, February 1973.

III. Other Activities

SEMINARS

81. During the year six research papers, of which two were given by visiting economists, have been read at seminars held under the joint auspices of the Department and the Faculty of Economics and Politics.

82. Ten papers were given in the series of seminars on Mathematical Economics and Econometrics. Visiting economists contributed nine of these.

UNIVERSITY RELATIONSHIPS

83. Many teaching officers of the Faculty of Economics and Politics have directed, or otherwise taken part in, the research projects carried out by the Department. Members of the Department's staff have given lectures or taken classes for the Economics Faculty, and for the Social and Political Sciences Tripos, and nearly all of them are engaged in undergraduate and postgraduate teaching. The Department had provided Faculty teaching officers with secretarial and computing assistance, as well as advice on electronic programming and data analysis. It has also assisted research students attached to the Faculty.

83. Several of the Department's research staff are members of University committees, including the Faculty Board of Economics and Politics, and of the Social and Political Sciences Committee.

RELATIONSHIPS WITH OTHER BODIES

84. Financial assistance which the Department has received from outside bodies is dealt with in Section IV. Help of other kinds has come from many sources, including the Central Statistical Office, H.M. Treasury, The Overseas Development Administration, the Department of Trade and