

*Report of the*  
*Executive Board to the Governors*  
*of*  
THE ECONOMIC  
RESEARCH INSTITUTE  
*for the year ended 30 June 1965*

# THE ECONOMIC RESEARCH INSTITUTE

EXECUTIVE BOARD, 1964-65

*President of the Institute*

\* J. J. McELLIGOTT, M.A., LL.D.

*Chairman of the Executive Board*

\* G. O'BRIEN, D.LITT., LITT.D.

*Other Members of the Executive Board*

C. S. ANDREWS, B.COMM., D.ECON.SC., *Chairman, C6ras Iompair F6ireann.*

\* J. P. BEDDY, D.ECON.SC., LL.D. (H.C.), *Chairman and Managing Director, The Industrial Credit Company Ltd.*

R. D. C. BLACK, PH.D., *Professor, Department of Economics, The Queen's University, Belfast.*

\* G. A. DUNCAN, S.F.T.C.D., *Professor of Political Economy, Trinity College, Dublin.*

\* R. C. GEARY, D.SC., D.ECON.SC., *Director of the Institute.*

\* W. A. HONOHAN, M.A., F.I.A., *Secretary, Department of Social Welfare.*

\* M. D. MCCARTHY, M.A., PH.D., *Director, Central Statistics Office.*

\* J. F. MEENAN, M.A., B.L., *Professor of Political Economy, University College, Dublin.*

C. K. MILL, B.A., D.SC., *Managing Director, Arthur Guinness Son and Company (Dublin) Ltd.*

D. NEVIN, *Research Officer, Irish Congress of Trade Unions.*

L. O'BUACHALLA, M.COMM., *Professor, Department of Economics, University College, Galway.*

J. C. TONGE, *Federation of Irish Industries.*

T. WALSH, D.SC., *Director, An Foras Talintais.*

\* T. K. WHITAKER, M.SC. (ECON.), D.ECON.SC., *Secretary, Department of Finance.*

GERALD WILSON, *Director, Bank of Ireland, Dublin.*

\* Members of Executive Committee

# THE ECONOMIC RESEARCH INSTITUTE

## FIFTH ANNUAL REPORT

For the year ended 30 June 1965

In this Fifth Annual Report the following matters are dealt with :—

1. Publications of the Institute.
2. Lectures on Input-Output Analysis and Econometric Model Building.
3. Quarterly Industrial Survey and Statistics of Economic Level and Trend.
4. Conference Activity.
5. Training.
6. Library.
7. Staff.
8. Membership and Finance.
9. Summary Account of Future Research Activities.

### 1. Publications of the Institute

In this year's Report the publications of the Institute since it was started are set out in Appendix A in the categories :—

- I Books ;
- II Publication Series ;
- III Reprint Series ;
- IV Articles (other than at III) in outside periodicals.

The number of additional titles compared with the last Report is 14, most of which, however, are still in the publication pipeline, though in an advanced stage of preparation.

The fourteen are :—

Seasonality in Irish Economic Statistics (with printers)

C. E. V. Leser

The Irish Economy in 1964 and 1965 (stencilled, July 1965)

C. E. V. Leser

Housing in Ireland : Some Economic Aspects

P. R. Kaim-Caudle

A Statistical Study of Wages, Prices and Employment in The Irish Manufacturing Sector

C. St. J. O'Herlihy

Fuel and Power in the Developing Economy of Ireland	J. L. Booth
Prices, Costs and Imports: Aspects of Economic Expansion in Ireland, 1956-1964	G. G. Firth
Cost Functions of Selected Irish Firms and the European Common Market	J. E. Weinrich
Regional Employment Patterns in Ireland	T. J. Baker
Determinants of Wage Inflation in Ireland	K. Cowling
Do-It-Yourself Economics of the Firm: First Draft of a Statistical Scheme ( <i>Productivity Measurement Review OECD, February, 1965</i> )	R. C. Geary
Recent Demographic Developments in Ireland	C. E. V. Leser
New Approaches to Economic Analysis ( <i>Irish Banking Review, March 1965</i> )	C. E. V. Leser
Ex-Post Determination of Significance in Multivariate Regression when the Independent Variables are Orthogonal (in preparation)	R. C. Geary
The Average Critical Value Method for Judging Relative Efficiency of Statistical Tests in Time Series Regression Analysis (to be published in <i>Biometrika</i> )	R. C. Geary

From the time when an author presents his script, invariably after having had the comments of his Institute colleagues in and out of seminar, it is sent to a professional referee as well as to other outside experts. If the paper be accepted in principle for publication the author then revises his script for the printer, in the light of comments received. The procedure has latterly been altered with a view to improving the time schedule between completion of the script and publication. A particular reason for delay in publication is that papers are tending to be more elaborate; a few indeed of the later scripts have the dimensions of a book though, as far as possible, these will be published in parts.

## 2. Lectures on Input-Output Analysis and Econometric Model Building

Lectures were given in the Institute Lecture Hall by R. C. Geary on Input-Output Analysis during the Hilary Term and by C. E. V. Leser during the Trinity Term on Econometric Macro-Models.

The subjects were as follows:—

- (i) Input-Output Analysis
  - (a) The national income accounts as an IO system; some basic concepts of IO.
  - (b) The fundamental equations of IO for the solution of output and pricing problems.
  - (c) The structure of the coefficient matrix A.

- (d) The problem of import substitution and cognate problems.
- (e) Capital and dynamism in the IO system.
- (f) Regional IO.
- (g) Effects of change of coefficients on solutions.
- (h) Optimal aspects of IO.
- (i) Conclusion : some recent thoughts and theory.

(ii) Lectures on econometric macro-models

- (a) The consumption functions.
- (b) Identification.
- (c) Estimation.
- (d) Model building.
- (e) Forecasting.
- (f) A model for Ireland.

### 3. Quarterly Industrial Survey and Statistics of Economic Level and Trend

The Quarterly Industrial Survey is an average of opinions designed to show the thinking of manufacturers on current trends in their industries.

The Survey issued in May 1965 indicated that sales for the first quarter 1965 were higher in Metals, Engineering and Vehicles and Other Industries but were approximately the same as the first quarter 1964 in Textiles and Clothing. The quantitative prognostic for the year 1965 compared with 1964 was that Total Manufacturing expected production to increase by 4% and exports by 3%. The largest expected production increase was 10% in the Metals, Engineering and Vehicles industry.

The full impact of the import restrictions in the United Kingdom had not then been felt by Irish Manufacturing industry.

A quarterly series of "Statistics of Economic Level and Trend" was inaugurated during the year. Its purpose is to examine the main features of development more frequently than once a year. Circulation is restricted at present, during the experimental period. A feature of this series is that a wide range of current economic statistics is corrected for seasonality using C. E. V. Leser's method.

### 4. Conference Activity

Staff members attended conferences, etc., as follows :—

R. C. Geary : Econometric Society Conference, Zurich, September 1964 ; Conference on Regional Planning, Dublin, June 1965 ; Institute of Catholic Sociology, Dublin, June 1965.

C. E. V. Leser : Econometric Society Conference, Zurich, September 1964 ; L'Association d'Instituts Europeen de Conjoncture Economique, London, October 1964 and Liège, April 1965 ; Econometrics Conference, Manchester, April 1965.

- T. J. Baker : Conference on Regional Planning, Dublin, June 1965.  
 J. L. Booth : National Industrial Fuel Efficiency Service Conference,  
 Dublin, August 1964.

R. C. Geary addressed all three conferences listed, respectively, on "The Average Critical Value Method for Comparing Efficiency of Statistical Tests" (see below), "Some Aspects of Regional Planning" and "Some Thoughts on Wealth". C. E. V. Leser lectured on "The Role of Macro-Economic Models in Short-Term Forecasting" at the Manchester meeting.

All staff members and post-graduate students attended the Conference of Economists in Irish Universities, April 1965. C. E. V. Leser read a paper on "Recent Demographic Developments in Ireland" (see later).

Lectures were given in the Institute Lecture Hall by distinguished lecturers to selected audiences. Professor D. V. Glass, London School of Economics and Political Science, came in March 1965; his topic was "Present Day Demographic Problems and their Relevance for Ireland."

Professor D. J. Finney, University of Aberdeen, gave a lecture on "Screening Processes: Problems and Illustrations" in June 1965.

Professor K. Vonk, University of Amsterdam, came in March 1965 for consultation on a proposed study of "Research on Internal Surface Transport."

Weekly seminars were held in the Institute during the year. Staff members and students read short papers on their current research projects. The papers were followed by discussion. A guest speaker, Dr. Andrew Brody from Hungary, read a paper at one seminar on "A Simplified Growth Model." These seminars, which have proved useful, will be opened to University staff members and post-graduate students of economics during the coming academic year.

## 5. Training

The scholarship holders during the year were :

- D. McAleese : whose scholarship finished in August 1964. He obtained the M.Econ.Sc. degree with First Class honours and is now a lecturer at the University of Ghana.
- D. McCormack : whose scholarship finished also in August 1964. He obtained the M.A. degree with First Class honours and also the Travelling Studentship in Economics of The National University of Ireland. He is at present proceeding to the Ph.D. in Harvard, U.S.A.
- F. Boland : whose scholarship ended on 30 June 1965, was appointed to the staff of Trinity College, Dublin as Acting Lecturer.
- Miss M. Boland : was awarded a post-graduate scholarship in December 1964. Her chosen topic is "Labour's Relative Share in Income: A Theoretical and Empirical Investigation."

B. O'Loughlen : was awarded also a post-graduate scholarship in December 1964. He is interested in "The Impact of Public Authority Expenditure on The Irish Economy 1945-1965."

## 6. Library

There was a total of 6,286 volumes in the library at 30 June 1965. A large proportion of these has been acquired free of charge on an exchange basis. Staff and students of the Institute have received full cooperation from other libraries. In this connection it will not be invidious to record a special word of thanks to the Library of Trinity College, Dublin.

## 7. Staff at 30 June 1965

*Director* : R. C. GEARY

*Secretary* : MRS. M. DEMPSEY

*Research Professor* :

C. E. V. LESER

*Research Officers* :

T. J. BAKER

D. SIMPSON

*Temporary Assistant Research Officer* :

M. KAVANAGH

*Scholarship Holders* :

F. BOLAND

MISS M. BOLAND

B. O'LOGHLEN

*Visiting Scholars* :

G. G. FIRTH, *Professor, Department of Commerce, University of Tasmania, Australia.*

J. E. WEINRICH, *Professor, Department of Economics, University of Alberta, Canada.*

K. COWLING, *Senior Lecturer, Faculty of Economic and Social Studies, University of Manchester.*

There is a clerical staff of seven.

## 8. Membership and Finance

There are 236 Individual and 84 Corporate Governors of the Institute. Their names and addresses are listed in Appendix B. Appendix C gives the Balance Sheet and the Auditors' Report for the year ended 30 June 1965. The fifth instalment of \$56,000 (£20,027) of the generous

Ford Foundation grant, which made the work of the Institute possible, was received during the year. Subscriptions from Governors amounted to £2,936.

The Institute is grateful to the Government for a grant of £943.

Total expenditure for the year, including depreciation, was £31,956 which is an excess of £7,137 over income.

### **9. Summary Account of Future Research Activities**

The notes which follow represent the preliminary views of the Director and of the staff of the Institute on a number of topics on which they are either working at present or on which they hope to work in the near future.

#### **Econometric Macro-Model Construction**

Following the practice in recent years, an annual survey of the Irish economy was made by C. E. V. Leser (Publication No. 27). The emphasis has this time been on the use of econometric models in short-term forecasting.

So far the main application of econometric models has been to national accounts forecasting one year ahead. Later on, it is hoped to study relationships between other economic variables and their application to quarterly changes. The new seasonally corrected quarterly economics series was designed partly with a view to very short-term analysis. More long-term problems will be studied on analogous lines. In particular ; relationships between imports—or the balance of payments—and economic growth might be further investigated, though this will require a non-econometric as well as an econometric approach.

#### **Demographic Changes**

With the preparation of a paper by Leser for the Statistical and Social Inquiry Society, the first part of this project has been completed. Further work on this topic is not yet in progress but under consideration. At the same time, it is hoped that this paper will stimulate studies on the subject by research workers outside the Institute, as it seems desirable to make population studies from various angles.

#### **Econometrics Textbook**

C. E. V. Leser has revised his typescript, incorporating amendments suggested by various readers, and has submitted it to the publishers, Griffin & Co. It is at present being edited for publication in 1966.

#### **Regional Employment Patterns in Ireland**

The first draft of this paper has been completed by T. J. Baker. On the whole, the results obtained from cross-section regressions of county employment patterns in 1961 and 1951 appear to support the hypothesis originally put forward, namely, that economic activity in an area can be divided into "induced" and "autonomous" sectors, with employment in the former depending basically on employment in the latter sector.

The crucial factor appears to be the balance within the "autonomous"

sector between agricultural and non-agricultural pursuits. The greater the proportion of non-agricultural activities, the larger is the relative size of the "induced" sector. This effect is partly, but not entirely, explained by the tendency of agricultural cash incomes to rise as the relative size of the agricultural sector falls.

The non-agricultural "autonomous" activities can be divided into two main groups: (1) the commercial, comprising most manufacturing industry, hotels, sea and air transport, mining and a few small miscellaneous items—in other words those activities which can be regarded as serving the "export market" from the county point of view; (2) the social and administrative, comprising central and local government, and the social services, the levels of which, in relation to population, are set by national rather than local standards and the financing of which is also to a considerable extent a national responsibility.

In 1961 the proportion of the gainfully occupied population engaged in "induced" activities in any county could largely be explained in terms of this summary formula: ten per cent of the work force would be engaged in "induced" activities in the absence of any non-agricultural "autonomous" sector, while for each one per cent of the work-force in non-agricultural "autonomous" pursuits, a further two-thirds of one per cent would be engaged in the induced sector. Current work is principally devoted to analysing further the nature of this relationship.

Within the "autonomous" non-agricultural sector, government and social activities are more important than commercial in the poorer counties (10.5 per cent of the work-force vs. 7.0 per cent in the 11 poorest counties) while the reverse is true of the rest of the country (12.4 per cent vs. 16.7 per cent in the other 14 counties—excluding Dublin).

Several other interesting but relatively minor features emerge from the study, but the major interest remains the relationship between the "induced" sector and the non-agricultural "autonomous" sector. If the analysis of the paper is accepted, it means, broadly speaking, that a relatively small increase in "autonomous" employment either "commercial" or "public" will suffice to maintain "induced" employment unchanged in the face of a large decline in agricultural employment.

### **The Role of Marketing in some Irish Industries**

T. J. Baker intends to study this set of problems. It is generally accepted nowadays that most industries exhibit an L-shaped curve of long-run potential costs. In other words, beyond a certain threshold size, scale is not a crucial factor in determining the production costs of a firm. Obviously different firms will have different cost structures but these variations will reflect managerial efficiency, location, age of plant or some such factor, rather than simply the scale of productive capacity.

In an Irish context, it is probable that certain heavy or specialised industries are unlikely in the foreseeable future to become established at or above the threshold size where horizontal returns to scale become technically possible. However, for the majority of industries already established in Ireland, it seems likely that the present size of firms and plants is above

the threshold limit and that they are, in fact, operating on the horizontal section of the long-term potential cost curve.

In these circumstances, the international competitiveness of Irish industry in either the home or export markets becomes dependent primarily upon the nature and quality of the management of the firms involved. In attempting to assess the likely performance at home or abroad of Irish industrial companies under conditions of freer trade, *vis-à-vis* either the U.K. or the E.E.C., a study of Irish management structure and technique is clearly of the first importance.

Equally clearly, however, it is impracticable to carry out a survey concerning all aspects of management and covering all branches of industry. It is therefore proposed to restrict this inquiry to three or four industries, each of which competes with overseas industries in both the Irish and the export market. It is also proposed to concentrate in the first instance on the marketing function, as being probably the most important aspect of management under modern market conditions, although certain other facets of management must also be considered, although in less detail, so as to provide the background for the survey of marketing.

The industries to be studied have not yet been selected. Ideally they should all be of a nature where scale is not a decisive factor in cost levels; where both imports and exports currently take place; where the number of significant constituent firms lies between 3 and 12, and where the market for the products is far from perfect. If four industries are chosen, two preferably should produce consumer goods of different types, one an industrial intermediate product, and one a capital or construction good.

#### **Cost Function of Selected Irish Firms and the European Common Market**

During a short stint in the Institute, J. E. Weinrich inaugurated the study of this problem in Ireland.

Accumulating empirical findings tend to support an hypothesis that, contrary to long-held economic doctrine, after some critical size of firm necessary for lowest costs has been attained, a wide range of optimal scales of production exists for most kinds of manufacturing. The implications are many. For, if the hypothesis stands, that after an initial, and sometimes significant, decrease of long-run average costs, a firm approximately experiences neither a substantial decline or incline of costs, an alternative hypothesis is vitiated that concentration of power in giant firms is essential to economic efficiency. It would suggest to the Irish manufacturer that, neither in theory nor practice, is his American or European rival more efficient because of his greater size.

It would also strongly underscore the notion that theoretical and managerial economics and linear programming analysis would be better served if a more realistic L-shaped cost curve rather than the U-shaped curve of traditional analysis be incorporated into economic thinking.

To test the hypothesis of approximately constant costs over a wide range beyond some minimum optimal level of output, this paper will attempt to evaluate what is the minimum optimal size of output in selected

Irish industries, and to compare the results with studies of a similar nature undertaken in more advanced economies. Firms in the following Irish industries will be undertaken :

Bacon curing and meat packing,  
Dairy products,  
Tobacco,  
Woollens and worsteds,  
Grain milling,  
Boot and shoe,  
Clay products and cement, and  
Brewing.

These industries have been selected essentially because comparative data are available, and they represent some of the important industries of Ireland.

### Relationship between Quantity and Quality in Economic Change

The relationship between quantity and quality in economics is engaging the attention of D. Simpson. It has never been systematically investigated. Nineteenth century political economy, by inclination or by necessity, concentrated upon the qualitative factors in economic growth. At the present time most studies of economic development have adopted a crude quantitative approach. The word "crude" is used to describe quantitative statements of the following types :—

- (a) "A comparison of the *per capita* growth rates of gross domestic product in constant prices from 1953 to 1959 shows that the United States rate of growth was 1.6 per cent per annum while that of Italy was 5.1 per cent per annum."
- (b) "The output of transport equipment in Europe has increased by 500 per cent from 1860 to 1960."

Both of these statements describe aggregative indices. For analytical purposes it is certainly necessary to work with a small number of distinctive variables. But the purpose of analysis is to achieve an improved understanding of (in this case) the process of economic growth, and what may be important in that process is the very diversity of variables and their rate of change, which is obscured by the use of the aggregative indices. To put it simply, may not the rate of expansion of the *range* of available goods and services (i.e. the number of different *kinds* of goods available) be a more important characteristic of the process of economic growth than the rate of growth of output of a given number of goods or services ?

To give a concrete illustration of this point, consider statement (a) above. Without disputing the basis on which the figures have been computed, one cannot help wondering what they mean. Accepting the interpretation that the Italian economy has in some sense grown three times faster than the U.S. economy in the period in question, one wonders whether there were not more important developments characterising the

growth process of the two economies in the same period—developments which can be quantified. For example, the number of new goods marketed, and the increase in the number of hours voluntarily devoted to leisure.

The weaknesses of the second statement are perhaps more obvious, but that may only be because we have grown accustomed to statements of the first type. It is evidently quite important to distinguish, in the growth of "transport equipment," the difference between jaunting-cars and aircraft. If it is argued that each of these vehicles has been correctly weighted in this aggregate then, as Leontief has pointed out, "this only means that these long-term series do not describe directly the observed facts, but rather represent the results of more or less arbitrary numerical manipulations."

The methodology for this study must be quantitative in the broadest sense: only observation and measurement can yield conclusive results. A simple but direct approach to the first problem might be along the following lines. Prepare a time-series of household budgets, showing at each point the quantity of goods of different types consumed. It should be interesting to observe the variation over time in the number of different types of goods. The rate of qualitative change in capital goods can be expected to be faster than that in consumer goods, but again the results may be interesting.

There is sufficient *prima facie* evidence to justify beginning an investigation of certain aspects of the relation between quantity and quality. The first step is to establish some hypotheses which can be tested empirically, using Irish data.

### **Factors Limiting the Rate of Growth of the Irish Economy**

Overseas experience (writes G. G. Firth) suggests that growing economies are subject to two kinds of checks. One kind arises from the pressure of demand on productive resources, which results in a tendency for costs and prices to rise. The other kind (which is often associated with the first) arises from the spilling over of internal demand into external markets, which results in imports growing faster than the means of paying for them. Until quite recently, it had seemed that Ireland, throughout the period of growth which began in 1958, had been remarkably free from either kind of check to economic growth. One object of this research was to find out why this should have been so. With the publication of statistics for 1964 and for the first quarter of 1965, however, the Irish economy is now seen to have important symptoms of rapid growth, particularly accelerating cost-price increases and continuing increases of merchandise imports.

Notwithstanding the change in emphasis towards immediate short-term considerations, however, the longer-term questions still require to be answered: in what circumstances can the Irish economy sustain a comparatively rapid rate of growth without encountering on the one hand a too-rapid rate of internal cost-price increases, and on the other hand the rise of imports to a level at which they could not permanently be sustained?

The problem of the *internal balance* of the Irish economy raises the question whether "inflationary pressure" can exist when almost 50,000 persons are unemployed and significant emigration is continuing. Analysis of the occupational distribution of the males on the Live Register has shown that, about the time of the 1961 Census, the unemployment rate was very much lower amongst skilled and semi-skilled males than amongst males described as "labourers." The evidence seems strong enough to support the thesis that significant demand pressure can develop in this important section of the Irish labour market, and that this may explain the sharp upward movement of earnings since 1961.

Analysis of the *external balance* shows how the expansion of merchandise imports has been associated with the very large relative increase in imports of finished capital equipment and the large absolute increase in materials for current non-agricultural production. Further detailed work needs to be done on the end-uses of imports, particularly in the very large proportion represented by "materials."

### **Factors Affecting the Level and Expansion of Irish Exports 1958-1964**

M. Kavanagh is engaged on a study of Irish exports. In the year 1958, total domestic exports for the Irish economy amounted to approximately £126 million at current prices. At the end of 1964, this total had risen to approximately £196 million at 1958 prices indicating an increase of 55 per cent in real terms over the six-year period.

During this interval of time, the major export divisional classifications also registered large increases. Live animals exported increased in value (in real terms) from £47.3 million to £60.1 million (27 per cent increase); food, beverages and tobacco increased from £46.3 million to £65.6 million (42 per cent increase); raw materials and fuels increased from £7 million to £11.6 million (65 per cent increases); and manufactured goods increased from £17.5 million to £48.9 million (180 per cent increase). Increases of the magnitudes indicated are quite unprecedented for Irish exports as a whole or for the individual categories over any similar period in the past. The paper is concerned with an investigation as to the causes of this increase in export volume with a view to shedding some light on possible export policy prescriptions for the future. Research into the causes of Irish export volume increase over the period 1958-1964 has proceeded along the lines indicated below.

Initially, export experience for the period 1958-1964 must be examined in relation to the general trend of growth and development in the Irish economy as a whole. All macro-economic indicators for the Irish economy appear to show that the interval 1956-1958 was a period of recession if not stagnation in terms of growth and development. The overall growth rate of the economy has been accelerated from approximately 1 per cent to 4.2 per cent for the period 1958-63 and is estimated to continue at approximately the latter rate for at least the next few years. Attention is first directed to the thesis that the growth in Irish exports over the period 1958-1964 is a by-product of the overall expansion in the economy for this

interval and is so significant as to invalidate the hypothesis that this increase takes the form of a mere recovery from the recession of the pre-1958 period.

The invalidation of this hypothesis involves an investigation into the growth in the volume of individual export items with respect to particular market areas. Initially, conditions in the largest single market for Irish exports—the United Kingdom—are examined. Research has already indicated that many Irish exporters have considerably increased their market share in this major area over the period of the inquiry. Some attention is devoted to possible future trends in market shares with respect to the United Kingdom and the factors which may prove relevant in trend determination. Ireland's share in market areas other than the United Kingdom is so small as to warrant the feeling that considerable increases in Irish exports will meet with little market resistance. Accordingly, the notion is established that the growing volume of exports to these areas, as also to the United Kingdom, is a function of the effort expended by exporters in securing sales abroad.

### **Wage Inflation**

K. Cowling has been concerned with estimating the determinants of wage inflation at the industry and aggregate level. Year to year changes in wages over the post-war period are studied in seventeen individual industries and for the Transportable Goods Industries in aggregate. Wage earnings have been analysed at the industry level, while at the aggregate level wage rates, earnings and the gap between rates and earnings, have been separately examined.

Time series analysis of seventeen industries has shown that they fall into two groups with respect to the determinants of wage change ; one group being demand oriented, the other being profit and/or price oriented. The first group consists of nine industries (Agriculture, Bacon Factories, Bread, Brewing, Clothing (Women's), Linen, Milling, Mining and Woollen-Worsted) in which the level of unemployment is a statistically significant determinant of the rate of change of money wage earnings. The second group consists of five industries (Boot and Shoe, Electricity, Hosiery, Printing, Vehicles) where the level of profits, and/or the rate of change in the consumer price index, appear as important factors in determining wage earnings. The first group of industries generally have a relatively poorly organized labour force, such that the forces of supply and demand in the labour market are capable of being reflected in the price of labour. This is not so in the second group where labour is generally highly organized. Here the prosperity/bargaining power hypothesis seems to be important in wage determination and is capable of obscuring the impact of supply and demand.

### **Mathematical Statistics**

It is well-known that power function analysis for assessing the comparative efficiency of statistical tests, while theoretically impregnable,

suffers from the practical disadvantage that it is usually extremely difficult to derive the appropriate so-called "non-central" frequency distributions required. R. C. Geary has suggested that, as an alternative, what has been termed the Average Critical Value (ACV) method should be used. The ACV is the value of the parameter involved which for indefinitely large samples renders the test statistic equal to the null-hypothesis probability point. The method requires only the calculation of the first moment of the test statistic, as compared with the derivation of its frequency distribution necessary for full power treatment. It is shown to be closely related to power function theory for  $\text{power} = 0.5$ .

At the present time there is great interest in the problem of *ex post* selection of independent variables of greatest significance in regression relationship: given a series of observations of a dependent variable and many series of corresponding independent variables, one wishes to choose in the most efficient way a small number of independent variables in satisfactory relationship to the dependent variable. It appears that the only approach so far to the solution of this problem, of fundamental importance in the study of relationship between economic time series, has been empirical.

Work in the Institute has extended to the special case of orthogonal independents (including orthopolynomials and harmonic series), admittedly a much simpler case than the more general and typical one of correlated independent variables. A test of significance has been evolved for the identification of the presumed few independent variables, operational when the number of sets of variables is reasonably large. The theory is applied to a well-known set of data due to R. A. Fisher and F. Yates.

Geary is in communication with outside researchers working on the general problem. One or two approaches, partly empirical and partly theoretical, are being explored in the Institute. The problem is of great practical importance in economic time series analysis.

GEORGE O'BRIEN } *Members of the*  
R. C. GEARY } *Executive Board.*

## APPENDIX A

### LIST OF PUBLICATIONS ETC. OF THE ECONOMIC RESEARCH INSTITUTE

#### I Books

1. *Europe's Future in Figures* (North-Holland Publishing Co., Amsterdam, 1962). R. C. Geary (Editor and contributor)
2. *Textbook of Economic Analysis. Irish Edition* (MacMillan & Co., London, 1963). Edward Nevin
3. *Elements of Linear Programming with Economic Illustrations* (Charles Griffin & Co. Ltd., London, 1964). R. C. Geary and M. D. McCarthy
4. *Econometrics* (To be published in 1966 by Charles Griffin & Co. Ltd., London.) C. E. V. Leser

#### II Publication Series

1. The Ownership of Personal Property in Ireland (October 1961). Edward Nevin
2. Short Term Economic Forecasting and its Application in Ireland (November 1961). Alfred Kuehn
3. The Irish Tariff and The E.E.C. : A Factual Survey (January 1962). Edward Nevin
4. Demand Relationships for Ireland (April 1962). C. E. V. Leser
5. Local Government Finance in Ireland : A Preliminary Survey (May 1962). David Walker
6. Prospects of the Irish Economy in 1962 (June 1962). Alfred Kuehn
7. The Irish Woollen and Worsted Industry, 1946-59 : A Study in Statistical Method (July 1962). R. C. Geary
8. The Allocation of Public Funds for Social Development (August 1962). David Walker
9. The Irish Price Level : A Comparative Study (October 1962). Edward Nevin
10. Inland Transport in Ireland : A Factual Survey (November 1962). D. J. Reynolds
11. Public Debt and Economic Development (December 1962). Edward Nevin
12. Wages in Ireland, 1946-62 (February 1963). Edward Nevin
13. Road Transport : The Problems and Prospects in Ireland (May 1963). D. J. Reynolds
14. Imports and Economic Growth in Ireland, 1947-61 (June 1963). C. E. V. Leser

- |   |  |
|---|--|
| 15. The Irish Economy in 1962 and 1963, with Appendix Forecast of Agricultural Output 1963 (July 1963). | C. E. V. Leser<br>E. A. Attwood and<br>M. Ross |
| 16. Irish County Incomes in 1960 (September 1963).  | E. A. Attwood and<br>R. C. Geary               |
| 17. The Capital Stock of Irish Industry (November 1963).  | Edward Nevin                                   |
| 18. Local Government Finance and County Incomes (March 1964).   | David Walker                                   |
| 19. Industrial Relations in Ireland : The Background (May 1964).  | David O'Mahony                                 |
| 20. Social Security in Ireland and Western Europe (June 1964).  | P. R. Kaim-Caudle                              |
| 21. The Irish Economy in 1963 and 1964 (August 1964).   | C. E. V. Leser                                 |
| 22. The Cost Structure of Irish Industry, 1950-60 (August 1964).  | Edward Nevin                                   |
| 23. A Further Analysis of Irish Household Budget Data, 1951-1952 (August 1964).                         | C. E. V. Leser                                 |
| 24. Economic Aspects of Industrial Relations (February 1965).   | David O'Mahony                                 |
| 25. Psychological Barriers to Economic Achievement (February 1965).                                     | P. Pentony                                     |
| 26. Seasonality in Irish Economic Statistics (with printers).   | C. E. V. Leser                                 |
| 27. The Irish Economy in 1964 and 1965 (stencilled, July 1965).   | C. E. V. Leser                                 |

**To be published shortly:**

- |  |                     |
|--|---------------------|
| 28. Housing in Ireland : Some Economic Aspects.  | P. R. Kaim-Caudle   |
| 29. A Statistical Study of Wages, Prices and Employment in The Irish Manufacturing Sector. | C. St. J. O'Herlihy |

**In preparation:**

- |  |                |
|--|----------------|
| 30. Fuel and Power in the Developing Economy of Ireland.                             | J. L. Booth    |
| 31. Prices, Costs and Imports : Aspects of Economic Expansion in Ireland, 1956-1964. | G. G. Firth    |
| 32. Cost Functions of Selected Irish Firms and the European Common Market.           | J. E. Weinrich |
| 33. Regional Employment Patterns in Ireland.   | T. J. Baker    |
| 34. Determinants of Wage Inflation in Ireland.                                       | K. Cowling     |

**III Reprint Series**

- |   |                |
|---|----------------|
| 1. Commentary on <i>Europe's Future in Figures</i> (North-Holland Publishing Co., Amsterdam, 1962). | R. C. Geary    |
| 2. Forms of Engel Functions ( <i>Econometrica</i> , October 1963).                                  | C. E. V. Leser |

3. The Cost Structure of British Manufacturing, 1948-61 (*The Economic Journal*, December 1963). E. T. Nevin
4. The Life of Capital Assets : An Empirical Approach (*Oxford Economic Papers*, November 1963). E. T. Nevin
5. Estimation of Quasi-linear Trend and Seasonal Variation (*Journal of The American Statistical Association*, December 1963). C. E. V. Leser
6. The Pattern of Personal Expenditure in Ireland (*Journal of the Statistical and Social Inquiry Society of Ireland*, 1964). C. E. V. Leser
7. Some Remarks about Relations between Stochastic Variables : A Discussion Document (*Review of The International Statistical Institute*, 1963). R. C. Geary
8. Towards an Input-Output Decision Model for Ireland (*Journal of the Statistical and Social Inquiry Society of Ireland*, 1965). R. C. Geary
9. Do-It-Yourself Economics of the Firm : First Draft of a Statistical Scheme (*Productivity Measurement Review OECD*, February 1965). R. C. Geary

**Available shortly :**

10. Recent Demographic Developments in Ireland. C. E. V. Leser

**IV Articles (other than at III) in Outside Periodicals**

1. The Irish Economy in 1960 (*Irish Banking Review*, September 1961). Edward Nevin
2. Ireland and the Common Market : Some Basic Issues (*Studies*, Autumn 1961). Edward Nevin
3. Short Term Aspects of Growth in the Irish Economy, 1948-61 (*Irish Banking Review*, December 1962). Alfred Kuehn
4. Productivity (*Irish Banking Review*, March 1963). David Walker
5. Some Aspects of Inland Transport in Ireland (*Statistical and Social Inquiry Society of Ireland*, March 1963). D. J. Reynolds
6. New Approaches to Economic Analysis (*Irish Banking Review*, March 1965). C. E. V. Leser

**APPENDIX B**  
**Schedule of Governors**

**INDIVIDUAL**

- Aliaga-Kelly, C., Barnavara House, Glanmire, Co. Cork.
- Andrews, C. S., B.Comm., D.Econ.Sc., Chairman, Coras Iompair Eireann, Kingsbridge, Dublin 8.
- Barrington, T. J., Director, Institute of Public Administration, 59 Lansdowne Road, Dublin 4.
- Barrow, G. L., M.A., B.Sc. (Econ.), Tenebo, Sutton, Co. Dublin.
- Barry, R. G., M.Comm., F.A.C.C.A., A.C.C.S., General Manager, Cork Savings Bank, 1 Lapps Quay, Cork.
- Beddy, D. G., General Manager, General Textiles Ltd., Athlone, Co. Westmeath.
- Beddy, J. P., D.Econ.Sc., LL.D.(H.C.), Chairman & Managing Director, The Industrial Credit Co. Ltd., 26 Merrion Square, Dublin 2.
- Beere, Thekla J., M.A., LL.D., 79 Pembroke Road, Dublin 4.
- Black, R. D. C., Ph.D., Department of Economics, The Queen's University of Belfast, Belfast.
- Blayney, E., D.P.A., 57 Upper Churchtown Road, Dublin 14.
- Blythe, Ernest, 50 Kenilworth Square, Rathgar, Dublin 6.
- Boland, F. H., 60 Ailesbury Road, Dublin 4.
- Bourke, J. V., The National University of Ireland, 49 Merrion Square, Dublin 2.
- Bourke, P., M.A., B.L., Moyola, Bushy Park Gardens, Dublin 6.
- Breathnach, Michael, M.A., Department of Finance, Upper Merrion Street, Dublin 2.
- Breen, Cornelius, M.Econ.Sc., 7 Watermill Road, Raheny, Dublin 5.
- Brennan, Ciaran, 4 Lower Churchtown Road, Churchtown, Dublin 14.
- Briscoe, Brendan, Ardearn, 8 Roebuck Crescent, Clonskeagh Road, Dublin 14.
- Bristow, John A., B.A., 75 Wynchurch Road, Rosetta, Belfast 6.
- Broderick, J. B., M.Sc., Central Statistics Office, Dublin 2.
- Brosnan, William, M.Econ.Sc., Ph.D., 79 Clonkeen Road, Blackrock, Co. Dublin.
- Buitleir, Padraig de, Silverspring, Clonmel, Co. Tipperary.
- Callan, Paul, B.L., Longfield, Carrickmacross, Co. Monaghan.
- Callinan, Patrick, 15 Mespil Road, Dublin 4.
- Cannon, Patrick F. G., B.A., H.Dip. in Ed., N.U.I., Headmaster, Sandymount High School, 1 Herbert Road, Sandymount, Dublin 4.
- Carney, Paul, 45 Garville Avenue, Rathgar, Dublin 6.
- Carter, Charles F., M.A., Vice-Chancellor, The University of Lancaster, Bailrigg House, Lancaster.
- Carton, Andrew A., B.Comm., D.P.A., 12 Cill Eanna, Howth Road, Raheny, Dublin 5.
- Ceannc, Eamon, T., B.Comm. 1 Trees Avenue, Mount Merrion, Co. Dublin.
- Charleton, J., Bastow, Charleton & Co., Chartered Accountants, 7 Gardiner's Row, Dublin 1.

- Chubb, F. B., M.A., D.Phil., Professor of Political Science, University of Dublin, Trinity College, Dublin 2.
- Coe, W. E., M.A., F.C.I.S., 25 Cricklewood Park, Belfast 9.
- Coffey, J. J., Ph.D., L.P.S.I., 2 Springhill Park, Killiney, Co. Dublin.
- Coghlan, Noel J., M.A., 48 Burlington Lane, London W.4.
- Colbert, J. P., M.Econ.Sc., Carysfort House, Grove Avenue, Blackrock, Dublin.
- Colleary, Gordon, 92 Leinster Road, Rathmines, Dublin 6.
- Collins, Edward A., M.Econ.Sc., 12 Mayor's Walk, Waterford.
- Conlon, M. N., County Manager, County Manager's Office, Courthouse, Cork.
- Cooney, Sean F., M.A., 4 Wilton Terrace, Dublin 2.
- Corbett, Alan T., B.A., B.Comm., 343 North Circular Road, Phibsboro, Dublin 7.
- Costello, Declan, T.D., 8 Clonskea Road, Dublin 6.
- Counihan, Rev. T., S.J., Rathfarnham Castle, Dublin 14.
- Cox, P. G., M.A., 83 Ranelagh Road, Dublin 6.
- Cranley, M. J., M.Sc., F.R.I.C., F.I.C.I., Director General, Institute for Industrial Research & Standards, The Industrial Research Centre, Ballymun Road, Dublin 9.
- Crichton, A. C., Rossmore, Silchester Road, Glenageary, Co. Dublin.
- Cromien, S., Department of Finance, Government Buildings, Upper Merrion Street, Dublin 2.
- Crotty, T., B.E., Messrs M. Crotty & Son Ltd., Parliament Street, Kilkenny.
- Crowley, Niall, F.C.A., 4-5 Westmoreland Street, Dublin 2.
- Cunningham, A. C., Ph.D., 15 St. Brigid's, Clonskea Road, Dublin 14.
- Cunningham, J. V., General Manager, Donnelly Dublin Ltd., Bacon Curers & Sausage Manufacturers, Cork Street, Dublin 8.
- Davy, J. E., Government Stock & Share Brokers, 100/101 Grafton Street, Dublin 2.
- Deeny, Michael, M.Agr.Sc., Ph.D., Dunkeld, Portmarnock, Co. Dublin.
- Dempsey, J. F., B.Comm., LL.D., A.C.A., General Manager, Aer Lingus, O'Connell Street, Dublin 1.
- Dennis, R. J., M.A., 71 Park Avenue, Dublin 4.
- Devitt, F. J., B.A., A.C.A., R.T.V. Rentals Ltd., 40 Upper Baggot Street, Dublin 4.
- Dillon, James M., T.D., Dail Eireann, Leinster House, Kildare Street, Dublin 2.
- Dillon-Malone, P. J., M.A. (Oxon.), General Manager, Irish Tam Ltd., 21 Lower Baggot Street, Dublin 2.
- Dixon, F. E., 15 Terenure Road East, Rathgar, Dublin 6.
- Donaghy, Ciaran A., B.A., B.Comm., Cherry & Smalldridge Ltd., Seville Place, Dublin 1.
- Donnelly, J., 8 Nassau Street, Dublin 2.
- Dooge, James C. I., M.E., University College, Cork.
- Duncan, G. A., S.F.T.C.D., 7 Braemor Park, Dublin 14.
- Dunwoody, Alexander, B.Sc.Econ., 15 Lyndhurst Drive, Belfast 13.
- Eason, John C. M., 38 Elton Park, Dun Laoghaire, Co. Dublin.
- Farrelly, Peter, D.P.A., 3 O'Brien's Terrace, Prospect Road, Glasnevin, Dublin 9.
- Fay, James M., 19 Nutley Park, Ballsbridge, Dublin 4.

- Fell, Charles F., D.P.A., B.Comm., 82 Seville Place, North Strand, Dublin 1.
- Fennell, Rosemary, 114 Merrion Road, Dublin 4.
- Fitzgerald, Alexis, B.A., LL.B., 51 Fitzwilliam Square, Dublin 2.
- Fitzgerald, Garret, B.A., B.L. 75 Eglinton Road, Dublin 4.
- Flanagan, Thomas P., B.A., 95 O'Connell Street, Limerick.
- Flynn, John P., 117 Silchester Park, Glenageary, Co. Dublin.
- Forsyth, Harry H., LL.B., F.C.A., 4 Herbert Street, Dublin 2.
- Foyle, Joseph, M.A., 22 Leeson Park, Dublin 6.
- Freeman, T. W., M.A., Dudley House, Bowden, Cheshire.
- Galvin, John B., D.P.A., Department of Fisheries, 3 Cathal Brugha Street, Dublin 1.
- Garmany, J. W., M.A., Magee University College, Londonderry.
- Geraghty, J. B. A., M.A., 78 Willow House, Mespil Flats, Dublin 4.
- Gibney, Frank, M.T.P.I., 8 Clyde Road, Ballsbridge, Dublin 4.
- Gibson, N. J., Faculty of Economic & Social Studies, The University of Manchester, Dover Street, Manchester 13.
- Gillman, C. J., Rosslare Harbour, Co. Wexford.
- Gilroy, Dermot J., 30 Conquer Hill, Clontarf, Dublin 3.
- Gleeson, Neil, B.Comm., M.A., 38 Greygates, Mount Merrion, Co. Dublin.
- Gray, Randal A., Director, John Halliday & Son Ltd., Quay Street, Dundalk, Co. Louth.
- Greene, J. N., M.B., Levitstown House, Mageny, Co. Kildare.
- Gulick, Clarence S., 4702 de Russey Parkway, Chevy Chase 15, Maryland, U.S.A.
- Hall, F. G., Weston, Elton Park, Sandycove, Co. Dublin.
- Hall, R. W. G., M.A., "Wilmount", Killiney Hill Road, Killiney, Co. Dublin.
- Hannan, Eamonn, A.C.P.A., 154 Ballymun Avenue, Dublin 11.
- Harman, J. F., "Medina", Howth, Co. Dublin.
- Haughey, J., 76 Kenilworth Square, Rathgar, Dublin 6.
- Healy, Rowland, Commissioner for Oaths, 21 Molesworth Street, Dublin 2.
- Hegan, S., Lynton, Old Connaught Avenue, Bray, Co. Wicklow.
- Herlihy, D., General Manager, The Insurance Corporation of Ireland Ltd., 33-36 Dame Street, Dublin 2.
- Hogan, Sarsfield, Irish Steel Holdings, Haulbowline, Co. Cork.
- Honohan, W. A., M.A., F.I.A., 102 St. Moibhi Road, Glasnevin, Dublin 9.
- Horgan, J. J., 50 South Mall, Cork.
- Howley, John J., B.Comm., 70 Lower Kilmacud Road, Stillorgan, Co. Dublin.
- Hussey, D. R., B.Comm., A.C.A., Massey-Ferguson (Eire) Ltd., 134 Lower Baggot Street, Dublin 2.
- Hussey, F. P., A.R.C.Sc.I., 5 Sarto Road, Kilbarrack, Raheny, Dublin 5.
- Hyland, John P., B.Sc., 55 Adair, Sandymount Avenue, Ballsbridge, Dublin 4.
- Hyland, W., B.Sc., Flat 4, 77 Pembroke Road, Dublin 4.
- Jenkins, J. B., Vice-Chairman, W. & R. Jacob & Co. Ltd., Dublin 8.
- Johnston, J., S.F.T.C.D., University of Dublin, 39 Trinity College, Dublin 2.

- Jones, Gerard, 3 Rathdown Drive, Terenure, Dublin 6.  
 Kavanagh, Rev. James, 48 Westland Row, Dublin 2.  
 Kelly, P. G., M.A., A.C.A., 1 Arranmore Road, Ballsbridge, Dublin 4.  
 Kennedy, David M. T., M.Sc., Head of Operations Research & Methods Unit, Aer Lingus, P.O. Box No. 179, O'Connell Street, Dublin 1.  
 Kennedy, K. A., M.Econ.Sc., B.Phil., 19 Claremount Road, Sandymount, Dublin, 4.  
 Kenny, The Hon. Justice, 69 Nutley Lane, Donnybrook, Dublin 4.  
 Lawton, John J., 70 Pigeon House Road, Ringsend, Dublin 4.  
 Lenihan, J., Hodson Bay Hotel, Athlone, Co. Westmeath.  
 Leydon, John, LL.D., 141 Stillorgan Road, Donnybrook, Dublin 4.  
 Linehan, Thomas P., B.E., B.Sc., 26 Leinster Square, Rathmines, Dublin 6.  
 Lowe, John, M.A., B.Comm., A.C.A., 6 Lower Fitzwilliam Street, Dublin 2.  
 Lucey, Denis I. F., B.Agr.Sc., M.S., Department of Economics, Iowa State University, Ames, Iowa, U.S.A.  
 Lynch, Patrick, 50 Leeson Park, Dublin 6.  
 Lynch, P. J., B.Comm., 4 Rathfarnham Park, Dublin 14.  
 Lyon, Stanley, B.A., 62 Leinster Road, Rathmines, Dublin 6.  
 Meade, Bernard A., A.C.W.A., 10 Melrose Avenue, Fairview, Dublin 3.  
 Meenan, J. F., M.A., B.L., Albany House, Monkstown, Co. Dublin.  
 Mill, C. K., B.A., D.Sc., Woodside, Howth, Co. Dublin.  
 Moran, T. A., B.L., 83 Kenilworth Square, Rathgar, Dublin 6.  
 Morrison, A., F.C.I.S., M.Inst.T., 21 Weybridge Crescent, Glen Innes, Auckland E.2., New Zealand.  
 Morrissey, Patrick, M.Econ.Sc., 183 Mount Prospect Avenue, Clontarf, Dublin 3.  
 Mulcahy, R., Lissenfield House, Rathmines, Dublin 6.  
 Muldowney, S. J., F.C.A., 31 Upper Mount Street, Dublin 2.  
 Murphy, Declan J., 41 Highfield Road, Dublin 6.  
 Murphy, Edmond B., B.E., M.S., M.R.P., 77 Pembroke Road, Ballsbridge, Dublin 4.  
 Murphy, John, 23 St. Catherine's Park, Glenageary, Co. Dublin.  
 Murphy, J., Secretary, Dublin Port & Docks Board, Secretary's Office, 19-21 Westmoreland Street, Dublin 2.  
 Murphy, Nicholas A., B.A., 40 Cill Eanna, Raheny, Dublin 5.  
 Murray, C. H., 6 Washington Park, Templeogue, Co. Dublin.  
 Murray, John L., The Mews, 37 Fitzwilliam Square, Dublin 2.  
 MacAodha, Breandan S., Roinn na Tíreolaíochta, Coláiste na h-Iolscoile. Gaillimh.  
 McBride, Joseph, B.E., 25 Landscape Gardens, Churchtown, Dublin 14.  
 McCarran, E. P., B.L., Anerley, 45 Cowper Road, Rathmines, Dublin 6.  
 MacCarthy, C. J. F., M.Comm., F.I.I.S., F.A.C.C.A., 29 Washington Street, Cork.  
 McCarthy, M. D., M.A., Ph.D., Director, Central Statistics Office, Dublin 2.  
 McCarthy, Eugene, B.Sc.Econ., 39 St. Stephen's Green, Dublin 2.  
 McCauley, Leo T., 5581 North 16th Street, Arlington, Virginia, U.S.A.  
 McCormack, A., B.Comm., M.Econ., Shannon Free Airport Development Co. Ltd., Shannon Free Airport, Co. Clare.  
 McCormick, E. P., The Irish Creamery Managers' Association, 32 Kildare Street, Dublin 2.

- McDonald, M. B., D.P.A., 85 Willowpark Grove, Ballymun, Dublin 11.
- MacDonald, Sidney L., 17 Cherbury Gardens, Booterstown, Co. Dublin.
- McElligott, J. J., M.A., LL.D., Oak Lodge, South Hill Avenue, Blackrock, Co. Dublin.
- McEvoy, P. J., B.Comm., D.P.A., 4 Villa Park Road, Navan Road, Dublin 7.
- McGartoll, J., M.A., 15 Ramleh Park, Milltown, Dublin 6.
- McGuane, M. D., M.A., "Couvercle", Kilteragh Drive, Foxrock, Co. Dublin.
- McInerney, Marcus J., B.Agr.Sc., American Embassy, Ballsbridge, Dublin 4.
- McKenna, Rev. L., S.J., The Catholic Workers' College, Sandford Road, Dublin 6.
- McKevitt, Very Rev. P. Canon, P.P., Parochial House, Termonfeckin, Drogheda, Co. Louth.
- McKinley, J. G., B.A., B.Comm., Mount Avenue, Dundalk, Co. Louth.
- McNerney, Eamon, F.B.A.A., McNerney & Co., Auditors & Accountants, 2 John's Place, Birr, Co. Offaly.
- Nagle, J. C., M.Comm., 9 Winton Avenue, Rathgar, Dublin 6.
- Needleman, Lionel, M.A.(Oxon.), London School of Economics & Political Science, Houghton Street, Aldwych, London W.C.2.
- Nevin, Donal, 8 Taney Crescent, Dundrum, Dublin 14.
- Newe, G. B., Secretary, Northern Ireland Council of Social Service, Bryson House, 28 Bedford Street, Belfast 2.
- Newman, Rev. J., St. Patrick's College, Maynooth, Co. Kildare.
- Niland, Joseph A., 64 McKee Road, Finglas, Dublin 11.
- Nolan, N. G., Ph.D., 22 Ailesbury Drive, Ballsbridge, Dublin 4.
- O'Brien, E. A., B.Sc., 7 Castle Grove, Clontarf, Dublin 3.
- O'Brien, G., D.Litt., Litt.D., 3 Burlington Road, Dublin 4.
- O'Brien, John, Molesworth House, South Frederick Street, Dublin 2.
- O'Brien, Terence A., B.A., 1 Berlin 39, Heide Strasse 2, West Berlin, Germany.
- O'Broin, Coilin, "Glenmalure", Yellow Walls Road, Malahide, Co. Dublin.
- O'Brolchain, R., B.A., 11 St. Mary's Road, Ballsbridge, Dublin 4.
- O'Buachalla, L., M.Comm., Inis Ealga, Gaillimh.
- O'Carroll, F. M., M.Sc., 12 Dundela Avenue, Sandycove, Co. Dublin.
- O'Conneide, B., Ph.D., B.Comm., 21 Bothar Baile Mearnáin, Ath Cliath 6.
- Ó Coirbhín, Diorai, A.C.A., B.Sc.(Econ.), Corvin & Co., 140 University Street, Belfast 7.
- O'Conaill, S., B.A., 57 Allen Park Road, Stillorgan, Co. Dublin.
- O'Connell, E., Headmaster, Technical School, Newcastlewest, Co. Limerick.
- O'Connor, R., Ph.D., Central Statistics Office, The Castle, Dublin 2.
- O'Driscoll, T. J., B.A., LL.D., Evergreen Lodge, Military Road, Ballybrack, Co. Dublin.
- O'Flynn, Dermot J., M.Econ.Sc., "Loyola", Churchtown Drive, Dublin 14.
- O'Huiginn, Pádraig, 14 Firhouse Road, Templeogue, Co. Dublin.
- O'Keefe, P., B.Agr.Sc., Editor, The Irish Farmer's Journal, 24 Earlsfort Terrace, Dublin 2.
- O'Loughlen, Brian A., 12A Vesey Place, Dun Laoghaire, Co. Dublin.
- O'Loinsigh, D. S., 92 Vernon Avenue, Clontarf, Dublin 3.

- O'Mahony, David P., M.A., Ph.D., B.L., Department of Economics, University College, Cork.
- O'Muimhneachain, M., D.Econ.Sc., Governor, The Central Bank of Ireland, Foster Place, Dublin 2.
- O'Neill, D. J., Managing Director, Lunham Bros. Ltd., Cork.
- O'Nuallain, Labhras, D.Econ.Sc., Daimh na Tráchtála, Coláiste na h-Iolscoile, Gaillimh.
- O'Raghallaigh, Seamus, Dún Feannachaidh, Co. Dhún na nGall.
- O'Raifeartaigh, T., M.A., Secretary, Department of Education, Dublin 1.
- O'Regan, Liam, The Cottage, Cughadown, Skibbereen, Co. Cork.
- O'Reilly, P. J., Greyfort, Clonmel, Co. Tipperary.
- O'Reilly, T. D., B.Comm., 3 Cherryfield Avenue, Sandford Road, Dublin 6.
- O'Riordan, William K., M.Sc.(Econ.), "Lisieux", North Road, Finglas, Dublin 11.
- O'Súilleabhain, Michael, B.A., B.Comm., Bac.Sc.Oec., (23) Kiel, Grosser Kuhberg 47/49 111, Germany.
- O'Sullivan, John C., B.Comm., A.C.A., Secretary, Arnott & Co. Dublin Ltd., 7-15 Henry Street, Dublin 1.
- Palmer, W. H., "Little Trees", 65A Oaks Road, Great Glen, Leicester.
- Parfrey, P. F. B.Comm., Crawford Municipal School of Art, Emmet Place, Cork.
- Park, A. T., Tudor Lodge, Glen Road, Craigavad, Belfast.
- Parkinson, J. R., Department of Economics, The Queen's University of Belfast, Belfast.
- Reamonn, S., Chairman, Revenue Commissioners, Office of the Revenue Commissioners, Dublin Castle, Dublin 2.
- Rearden, J. V., Deputy Works Director, The Irish Dunlop Co. Ltd., The Marina, Cork.
- Reynolds, Thomas, B.C.L., LL.B., Director, The Federation of Builders, Contractors, & Allied Employers, of Ireland, 28 Earlsfort Terrace, Dublin 2.
- Richards Orpen, John, Monksgrange, Enniscorthy, Co. Wexford.
- Roberts, Ruadhri, 8 Clarinda Park East, Dun Laoghaire, Co. Dublin.
- Robinson, H. W., Polden Robinson & Co., Chartered Accountants, 2 Lower Merrion Street, Dublin 2.
- Roche, John D., B.Comm., 46 Lowrey Park, Dalkey, Co. Dublin.
- Rowe, David N., 4 Herbert Street, Dublin 2.
- Russell, G. E., T.D., Derravoher, Limerick.
- Ryan, Dermot J. A., B.A., Chairman, Ryan's Car Hire Ltd., 19/20 Pearse Street, Dublin 2.
- Ryan, Irene M., B.Comm., H.Dip. in Ed., South Quay, Newcastlewest, Co. Limerick.
- Ryan, John, "St. Anne's", Dublin Road, Arklow, Co. Wicklow.
- Ryan, W. J. L., Ph.D., 43 Nutgrove Park, Dublin 14.
- Senior, Brendan J., D.Sc., St. Catherine's, Leixlip, Co. Kildare.
- Sheehy, Seamus J., B.Agr.Sc., Ph.D., c/o Faculty of Agriculture, Glasnevin, Dublin 9.
- Simington, R. C., D.Litt., St. Joseph's, Finglas Road, Dublin 11.
- Simpson, J. V., B.Sc.(Econ.), 7 Jordantown Road, Newtownabbey, Co. Antrim.
- Smith, Cornelius F., 4 Grafton Street, Dublin 2.

Smith, Louis P. F., Ph.D., D.Econ.Sc., 6 Temple Villas, Dublin 6.  
 Somerville Large, P. T., Vallombrosa, Bray, Co. Wicklow.  
 Spain, Alexander J., 4 Herbert Street, Dublin 2.  
 Stewart, E. F., B.Sc.(Econ.), 6 Gransha Gardens, Glen Road, Belfast 11.  
 Stewart, J. T. H., B.Sc.(Econ.), 377 Cregagh Road, Belfast 6.  
 Swift, Hugh L., 21 Shanid Road, Harold's Cross, Dublin 6.  
 Sweetman, Gerard, T.D., 30 Lower Baggot Street, Dublin 2.  
 Thompson, G. C. M., Chairman, Hely Group Ltd., Swords Road, Santry, Dublin 9.  
 Thompson, Samuel F., 53 MacCurtain Street, Cork.  
 Tonge, J. C., Malo, Merrion Avenue, Blackrock, Co. Dublin.  
 Toole, Owen J., Curran House, 11 Fleet Street, Dublin 2.  
 Treacy, Patrick J., B.E., A.M.I.C.E.I., Scilly, Kinsale, Co. Cork.  
 Walls, J., 187 Philipsburgh Avenue, Fairview, Dublin 3.  
 Walmsley, James A., M.A., Harlech, Roebuck, Dublin 14.  
 Walsh, J. J., B.A., M.Econ.Sc., Industrial Development Authority, 7 Mount Street Crescent, Dublin 2.  
 Walsh, Patrick, "Pralou", Mount Merrion Avenue, Blackrock, Co. Dublin.  
 Walsh, T., D.Sc., Director, An Foras Taluntais, 33 Merrion Road, Dublin 4.  
 Wheeler, G. Martin, Forsyth & Co., 4 Herbert Street, Dublin 2.  
 Whitaker, T. K., M.Sc.(Econ.), D.Econ.Sc., 148 Stillorgan Road, Dublin 4.  
 Wilson, Gerald, Director, Bank of Ireland, G.P.O. Box No. 9, Dublin 1.

#### CORPORATE

Aer Lingus, O'Connell Street, Dublin 1.  
 The Agricultural Credit Corporation Ltd., Harcourt Street, Dublin 2.  
 Bailey Gibson Ltd., South Circular Road, Dolphins Barn, Dublin 8.  
 Bank of Ireland, G.P.O. Box No. 9, Dublin 2.  
 An Bord Baine, 13 Merrion Square, Dublin 2.  
 Bord Fáilte Eireann, Baggot Street Bridge, Dublin 2.  
 Bord na Mona, 28 Upper Pembroke Street, Dublin 2.  
 Bord Soláthair an Leictreachais, 27 Lower Fitzwilliam Street, Dublin 2.  
 Browne & Nolan, Richview Press, Clonskeagh, Dublin 4.  
 Cahill & Co. Ltd., 43 Parkgate Street, Dublin 8.  
 P. J. Carroll & Co. Ltd., Dundalk, Co. Louth.  
 Cavendish Furniture Co. Ltd., 28/29 Grafton Street, Dublin 2.  
 Ceimic Teoranta, 81 Merrion Square, Dublin 2.  
 Cement Limited, 19 Lower Pembroke Street, Dublin 2.  
 The Central Bank of Ireland, Foster Place, Dublin 2.  
 Chivers & Sons (Ireland) Ltd., Beech Hill Factory, Clonskeagh, Dublin 14.  
 Clondalkin Paper Mills Ltd., Clondalkin, Co. Dublin.  
 Comhlucht na h-Eireann um Árachas Teo., 12 Dawson Street, Dublin 2.  
 Coras Iompair Eireann, Kingsbridge, Dublin 8.  
 Dock Milling Co. Ltd., Barrow Street, Dublin 4.  
 Thomas Dockrell Sons & Co. Ltd., 38/39 Sth. Great Georges Street, Dublin 2.

Donnelly Dublin Ltd., Bacon Curers & Sausage Manufacturers, Cork Street, Dublin 8.  
 The Dublin Laundry Co. Ltd., Milltown, Dublin 6.  
 Dunnes Stores (Georges Street) Ltd., Sth. Great Georges Street, Dublin 2.  
 Eason & Son Ltd., 79-82 Middle Abbey Street, Dublin 1.  
 Edenderry Shoe Co. Ltd., Edenderry, Co. Offaly.  
 Esso Petroleum Co. (Ireland) Ltd., Stillorgan, Co. Dublin.  
 Henry Ford & Son Ltd., Cork.  
 Fry-Cadbury (Ireland) Ltd., East Wall Road, Dublin 3.  
 Gateaux Ltd., Finglas, Dublin 11.  
 The General Electric Co. of Ireland Ltd., A.E.T. Works, Dunleer, Co. Louth.  
 General Finance Trust Ltd., Ballsbridge House, 176 Pembroke Road, Dublin 4.  
 General Textiles Ltd., Athlone, Co. Westmeath.  
 W. & H. M. Goulding Ltd., 22 Molesworth Street, Dublin 2.  
 Arthur Guinness Son & Co. (Dublin) Ltd., St. James's Gate, Dublin 8.  
 Guinness & Mahon, 17 College Green, Dublin 2.  
 Gypsum Industries Ltd., Clonskeagh Road, Dublin 14.  
 The Hammond Lane Foundry Co. Ltd., 111 Pearse Street, Dublin 2.  
 The Hibernian Bank Ltd., Box 63, College Green, Dublin 2.  
 The Hibernian Fire & General Insurance Co. Ltd., 46-49 Dame Street, Dublin 2.  
 Imperial Chemical Industries (Export) Ltd., 3 South Frederick Street, Dublin 2.  
 The Industrial Credit Co. Ltd., 26 Merrion Square, Dublin 2.  
 The Irish Agricultural Wholesale Society, 151-156 Thomas Street, Dublin 8.  
 The Irish Cider & Perry Co. Ltd., River House, Clonmel, Co. Tipperary.  
 Irish Congress of Trade Unions, Lower Merrion Street, Dublin 2.  
 Irish Driver-Harris Co. Ltd., Corn Exchange Buildings, Burgh Quay, Dublin 2.  
 The Irish Dunlop Co. Ltd., Dunlop House, Lower Abbey Street, Dublin 1.  
 The Irish Farmer's Journal, 24 Earlsfort Terrace, Dublin 2.  
 The Irish Glass Bottle Co. Ltd., Charlotte Quay, Dublin 4.  
 Irish Life Assurance Co. Ltd., Mespil Road, Dublin 4.  
 Irish Metal Industries Ltd., 3 South Frederick Street, Dublin 2.  
 Irish National Insurance Co. Ltd., 5/9 South Frederick Street, Dublin 2.  
 The Irish Oil & Cake Mills Ltd., Marsh Road, Drogheda, Co. Louth.  
 Irish Pensions Trust Ltd., 38 Fitzwilliam Square, Dublin 2.  
 Irish Refining Co. Ltd., Whitegate, Co. Cork.  
 Irish Ropes Ltd., Newbridge, Co. Kildare.  
 Irish Steel Holdings Ltd., Haulbowline, Co. Cork.  
 Irish Worsted Mills Ltd., Commercial Buildings, Dame Street, Dublin 2.  
 W. & R. Jacob & Co. Ltd., Dublin 8.  
 John Jameson & Son Ltd., Bow Street Distillery, Dublin 7.  
 Johnston, Mooney & O'Brien Ltd., Ballsbridge, Dublin 4.  
 Peter Kennedy Ltd., 125 Parnell Street, Dublin 1.  
 Kingstons Ltd., 9/13 Upper O'Connell Street, Dublin 1.  
 Lever Brothers (Ireland) Ltd., P.O. Box 229, 68 Upper Sheriff Street, Dublin 1.  
 The Munster & Leinster Bank Ltd., Cork.

W. & C. McDonnell Ltd., P.O. Box 231, 68 Upper Sheriff Street, Dublin 1.  
McIntyres' Stores Ltd., Belmullet, Co. Mayo.  
The National Bank Ltd., 34 & 35 College Green, Dublin 2.  
National City Bank Ltd., 10 College Green, Dublin 2.  
Northern Bank Ltd., Belfast.  
O'Donnell, Earl & Partners Ltd., 22 Earlsfort Terrace, Dublin 2.  
Player & Wills (Ireland) Ltd., South Circular Road, Dublin 8.  
John Power & Son Ltd., John's Lane Distillery, Dublin 8.  
Provincial Bank of Ireland Ltd., 5 College Street, Dublin 2.  
Roadstone Ltd., Naas Road, Dublin 12.  
P. J. Roche & Sons Ltd., The Maltings, Enniscorthy, Co. Wexford.  
The Royal Bank of Ireland Ltd., Box 123, Foster Place, Dublin 2.  
Sunbeam Wolsey Ltd., Millfield, Co. Cork.  
Switzer & Co. Ltd., Grafton Street, Dublin 2.  
F. H. Thompson & Son Ltd., 53 MacCurtain Street, Cork.  
Ulster Bank Ltd., Belfast.  
Weir & Sons (Dublin) Ltd., 96 Grafton Street, Dublin 2.  
Messrs. Williams & Woods Ltd., 204 Parnell Street, Dublin 1.  
The Workers' Union of Ireland, Head Office, 29 Parnell Square, Dublin 1.

APPENDIX C

THE ECONOMIC RESEARCH INSTITUTE

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 30th JUNE, 1965

1964 £	EXPENDITURE	£ s. d.		1964 £	INCOME	£ s. d.	
		£	s. d.			£	s. d.
21,466	Salaries, Superannuation, Wages and State Insurance			19,981	Grant from Ford Foundation in respect of Expenses .. .. .	20,026	16 5
1,917	Scholarships			1,129	Government Grant in respect of Rent ..	943	0 0
1,129	Rent .. .. .			3,005	Membership Subscriptions .. .. .	2,935	11 0
2,011	Printing .. .. .			572	Interest Receivable .. .. .	461	18 3
3,221	Other Expenditure ..			240	Sale of Publications .. .. .	250	2 9
29,744							
	<i>Depreciation :</i>						
	Furniture and Equipment	550		226	Mathematical Economics and Econo- metrics Lectures .. .. .	201	12 0
733	Library Books .. .. .	149	7 1	25,153		24,819	6 5
				5,324	<i>Excess of Expenditure over Income carried to Balance Sheet .. .. .</i>	7,136	12 10
£30,477				£30,477		£31,955	19 3

**THE ECONOMIC RESEARCH INSTITUTE**

(COMPANY LIMITED BY GUARANTEE AND NOT HAVING A SHARE CAPITAL)

**BALANCE SHEET AS AT 30th JUNE, 1965**

1964	£		£	s.	d.	£	s.	d.
		<b>CURRENT LIABILITIES :</b>						
		Bank Overdraft* ..	2,563	15	11			
1,283		Members Subscriptions in advance .. ..	699	2	5			
2,300		Sundry Creditors and Ex- penses Accrued ..	853	7	5			
	3,043							4,110 5 9
		*(Secured by Letter of Undertaking from Department of Finance on behalf of the Minister of Finance)						
		<b>Less: CURRENT ASSETS :</b>						
7,401		Deposit with Minister for Finance .. ..						
412		Sundry Debtors and Prepayments .. ..	1,134	15	2			
117		Stock of Stationery ..	203	8	8			
		Stock of Publications ..	250	0	0			
50		Cash at Bank .. ..						
21		Cash in Hand .. ..	39	17	3			
	8,001							1,628 1 1
	£4,358	<b>NET CURRENT LIABILITIES</b>						£2,488 4 8
		<b>FIXED ASSETS :</b>						
		<i>Furniture &amp; Equipment :</i>						
		At Cost	7,666	10	7			
		<i>Less:</i>						
		Aggregate Deprecia- tion to date	2,766	10	7			
						4,900	0	0
		<i>Library Books:</i>						
		At Cost	1,358	7	1			
		Additions during year	409	7	1			
		At Cost						
			£1,767	14	2			
1,070		<i>Less:</i>						
		Aggregate Deprecia- tion to date	437	14	2			
	6,520					1,330	0	0
								0,230 0 0
	10,878	<b>NET TOTAL ASSETS</b>						3,741 15 4
		<i>Accumulated Fund :</i>						
		Balance as at 1st July, 1964 .. .. .	10,878	8	2			
		<i>Less: Excess of Expendi- ture over Income for year .. .. .</i>	7,136	12	10			
								3,741 15 4
	£10,878							£3,741 15 4

Signed: J. J. McELLIGOTT }  
W. A. HONOHAN } *Members of the Executive Board.*

## AUDITORS' REPORT

We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purposes of our audit. In our opinion proper books of account have been kept by the Company so far as appears from our examination of those books. The Company's Balance Sheet and Income and Expenditure Account are in agreement with the books of account and in our opinion and to the best of our information and the explanations given to us the accounts give the information required by the Companies Act 1963 and give a true and correct view of the state of the Company's affairs at June 30th 1965, and of the excess Expenditure for the year to that date.

Signed: BASTOW, CHARLETON & CO.  
*Chartered Accountants.*

23rd July, 1965.

*Printed by Cahill & Co., Ltd., Parkgate Printing Works, Dublin.*