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Studies on the Adaptation of Irish Industry

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2

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CONTENTS

		Page
	Abbreviations	(i)
	Introduction	(iii)
1.1	Committee on Industrial Organisation Reports on Manufacturing Industry and Comparisons with the Present	1
1.2	The Statistics of Manufacturing Industry in Ireland 1953-1976	14 ¹³
2.	Foreign Trade as an Aspect of Economic Adaptation	18
3.	Investment Policy	52
4.	Three Studies in Irish Industry	67
4.1	Irish Industrial Public Companies	69
4.2	Autonomous and Induced Employment	79
4.3	The Constituents of Irish Manufacturing Industry	84
5.	Conclusion	96
5.1	Finance	96
5.2	The Agricultural Situation	97
5.3	The Uncertain Future of World Employment	101
5.4	Recommendations	104

ABBREVIATIONS

AFF	Agriculture Forestry Fishing
AnCO	An Comhairle Oiliúna (The Industrial Training Authority)
CAP	Common Agricultural Policy (of EEC)
cc	correlation coefficient
CII	Confederation of Irish Industry
CIO	Committee on Industrial Organisation
CIP	Census of Industrial Production
CP	Census of Population
CPI	Consumer Price Index
CKD	Completely knocked down i.e. unassembled (motor-cars)
CRE	Constant rate expected
CSO	Central Statistics Office
CSET	Coras Siúicre Eireann Teo
CTT	Coras Trachtála Teo (Irish Export Board)
df	degrees of freedom
DME	Domestic Market Economies
depvar	dependent variable
EEC	European Economic Community
EFTA	European Free Trade Association
ER and O	Economic Review and Outlook
ESRI	The Economic and Social Research Institute
F	Significance of OLS relation
GATT	General Agreement on Tariffs and Trade
GDP	Gross domestic product
GDFCF	Gross domestic fixed capital formation
GNP	Gross national product
ICOR	Incremental capital/output ratio
ICTU	Irish Congress of Trade Unions
IDA	Industrial Development Authority
IFA	Irish Farmers Association
IO	Input Output
indvars	independent variables
JSSISI	Journal of The Statistical and Social Inquiry of Ireland
LP	Labour productivity
NHP	null hypothesis probability
NI	New industries
OPEC	Oil-producing exporting countries
SET	Special employment tax

SFADCo	Shannon Free Airport Development Company
SITC	Standardised International Trade Classification
TG	Transportable goods
TSI	Trade Statistics of Ireland
UK	United Kingdom
VAT	Value added tax
WME	World Market Economies
YITS	Yearbook of International Trade Statistics (United Nations)

Introduction

Studies on the Adaptation of Irish Industry, as the title implies, is a collection of articles around the theme of industrial adaptation. Considerations of size of the volume limit the range of problems and issues which can be tackled. It may be said that we should have dealt with problems facing the individual company or industry as the Irish economy moved from protection to free trade; or we should have developed the issue of the role of finance in adaptation or of the importance of factor markets in encouraging a particular type of industry. We decided however to confine the paper to discussion of some aspects of adaptation which we considered important and relevant, and for which statistics were available.

The changing international trade environment and its relationship to industrial adaptation is examined, particularly the dependence of the necessary economic expansion on large increases in exports and imported materials. The expansion of import substitution is considered a valid policy in view of the under-utilisation of labour in Ireland. A search is made for commodities production of which might be increased, bearing in mind the assumption that such production will tend to increase exports and decrease competitive imports. There should be expansion in processed meat as compared with live animal exports; cheese, vegetables, fish exported in greater quantities; motor vehicle and machinery parts should be developed. The methodology used in the paper could be applied in the search for products in large and increasing world demand.

The question is posed whether physical investment at great cost has been overdone, when priority might have been given towards labour-intensive rather than capital-intensive industries, towards more efficient replacement machinery, more competent workpeople, in fact greater examination of all facets of the situation before becoming involved in a net increase in fixed capital stock. The macro analysis suggests that there are many elements conducive to growth in real GDP other than net increase in capital stock. Increasing capital intensity is a world problem with especially grave implications in Ireland with its endemically high rate of unemployment.

The extent to which industry and other autonomous economic activity creates service type and other induced employment is discussed. The constancy of the percentage employment in manufacture to total non-agricultural employment at 25 in 1951 to 27 in 1976 is remarkable. The validity of the multiplier approach is questioned. Emphasis is placed on the fact of association rather than causation, implied by the autonomous-induced theory. It is argued that what is involved is the income multiplier. Expenditure of income takes over in the long run with equal inductive effect.

A consistency model is presented which suitably elaborated could be used to show if general policy at macro level is feasible, e.g. given an increase in output, the implications for the distribution of income between profits, wages etc. may be estimated. The model is extremely sensitive, showing immediately whether a given policy might be pursued or rejected. The model favours a 15 per cent annual increase in the volume of manufacture.

The final section of the paper comments that the amount of total grants made by semi-state bodies to industrial development was less than 2 per cent of GNP or 4 per cent of general government expenditure in 1976;

an amount considered inadequate having regard to the magnitude of the problem.

The report concludes with repeated emphasis on manpower as distinct from income and profit, priority in Government expenditure to the reduction of unemployment, and import substitution in the interest of employment and balance of payments.

This is primarily a statistical paper, based on data from well-known sources. Apart from inference based on statistics for the recent past, in the spirit of Broadsheet we venture into policy recommendations. Policy determination involves the future, hence uncertainty. Nevertheless it is rational to propound policy, in the light of past experience modified by changes, whether deliberate or uncontrolled but expected in the future.

From the narrow viewpoint of the paper, the statistics are the more important, indeed really all that matter. Our recommendations are based on our statistical findings; they are not "proved by statistics" - little of general importance in the social sciences can ever be - but neither are they contradicted by the statistics. Least of all do we presume to show how these recommendations are to be implemented. We would be well content if nearly all our recommendations were accompanied by a question mark. Even after more thoroughgoing investigation than our own, different policy decisions can validly be made. Our hope is that we have raised some of the right questions and that our statistical findings will narrow the scope of discussion.

There are elements of paradox, even contradiction in our recommendations pertaining to manpower, production volume, import balance, physical capital, import substitution, and others. We try to eliminate these faults or at least indicate our consciousness of them, but we must inquire if

paradoxes and contradictions are not inherent in any socio-economic system.

On one point in our philosophy for the nation we are adamant, from previous studies on unemployment: economic policy should be based primarily on employment. That so many of the labour force should be quasi-permanently unemployed is, to our thinking, intolerable, a statement we do not accompany with a query mark. This forthright asseveration will be regarded by thinking citizens as a truism, since invariably all statements about industrial development are accompanied by estimates of gains or losses of employment. This, however, is a far cry from basing policy on employment.

But in this attitude there is major paradox. Ireland's is a market economy impelled by the profit motive, with planning playing but a small part. Invariably in private sectors and to a large extent in the public sectors, maximization of profit or minimization of loss is paramount. Labour is regarded as a cost like any other and, with earnings largely outside the control of management, reduction in numbers employed is a holy and wholesome end, in the interest of efficiency, labour productivity, survival, competitiveness, the lot, with a kind word for labour only as something like an afterthought. In our several studies on unemployment, (of which the present is really a continuation) we have had no hesitation in recommending a policy of direct employment (mainly by the State) if a sizable dint is to be made in quasi-permanent unemployment, even if this is inconsistent with the tenets of a market economy and optimisation of national income. We take the view that permanent unemployment is inconsistent with human dignity which takes precedence of national economics. But here is paradox with a vengeance. The answer may be compromise.

So this paper is not an academic in any sense of the term. We want only to be useful in the mundane sense.

- 1 -

1:1 Committee on Industrial Organisation Reports on Manufacturing
Industry and Comparisons with the Present

First we summarise without comment the main findings of the Committee. * Then we compare realisation with the somewhat gloomy forebodings. Finally we comment very generally on the degree of success that has attended the labours of the investigation teams, and ask if this a priori excellent idea of expert investigation of economic activity be resumed and, if so, with what modifications in the light of experience.

The Committee on Industrial Organisation (CIO) was appointed by the Irish Government in June 1961 to make "a critical appraisal of the measures that might have to be taken to adapt Irish industry to conditions of more intensive competition in home and export markets, to undertake an examination of the difficulties which might be created for particular industries and to formulate positive measures of adjustment and adaptation". The Committee was set up when Ireland was considering the possibility of membership of the EEC and at a time when there was also an international movement towards conditions of freer trade.

To examine the problems of Irish industry the CIO organised survey teams to make detailed studies of 22 industries. The survey teams used published official statistics and discussed aspects of the industries with relevant organisations, e.g. trade unions, government departments. The greater part of the information contained in the Reports came from answers to a comprehensive questionnaire relating to all aspects of the firm: capital and buildings, labour, raw materials, management, markets at home and abroad, future prospects both at firm and industry levels. The final report of CIO emphasises that "The information obtained by these methods is subject to the limitation that it represents generally managements' own assessment of the situation".

The surveys covered a wide range of types of industry, with fairly marked variations in the size and number of firms in each particular industrial

* A Synthesis of Reports By Survey Teams on 22 Industries. Committee on Industrial Organisation. Stationery Office 1965 (Pr. 7883) Final Report. Committee on Industrial Organisation. Stationery Office 1965 (Pr. 8082)

group. Most of the firms employed under 500 people, although five firms employed over 1,000 each and many employed less than 10 people.

Firms were mainly organised as private companies; there were a considerable number of private firms and of the total 1,100 firms sampled, about 86 were public companies.

Industries were concentrated noticeably in Dublin and to a lesser extent Cork. It was found that widely scattered location of firms could be a significant disadvantage. There was a great dependence on imported raw materials and components for industry. The Assembly of vehicles and Wireless was very reliant on imports although some of the parts were home produced. Pottery, Electrical equipment, Paper firms, Chemicals and Fertilisers used raw materials which were almost all imported. The Chocolate industry was in the happy position of obtaining the bulk of its raw materials from home sources.

Most of the other industries could use raw materials either home or foreign produced. The home-produced materials were generally protected by tariffs on the imported supplies. The Footwear and Gowns industries were unhappy with the tariff system, claiming that home produced basic materials were not similar in quality and design to those available from abroad. The Printing industry suffered through delays in the granting of import licences, while Irish paper was not always readily available. Prices for Irish steel and wire were claimed to be between 15 and 30 per cent higher than for imported materials; in fact 75 per cent of the raw material needs for steel production was imported. The Furniture and Leather industries claimed to have trouble with Irish raw materials in the case of Furniture, the Irish wood was said to be imperfectly dried and in the case of Leather, hides were sub-standard.

There were special problems connected with the textile industries, namely, Cotton, Shirts, Miscellaneous clothing, Gowns, Knitwear, Wool, Readymade clothing and Men's outerwear. Most of the wool for spinning was imported. The survey teams investigating these industries found problems due to lack of variety of materials from home sources, higher prices for Irish than for imported raw materials. Irish firms suffered greatly from an inability to give large enough orders to benefit from quantity rebates; the small size of Irish firms thus constituted a definite disadvantage.

Transport difficulties, whether for raw materials or for finished products were important. All industries stated that costs were high and freight services, clearance of goods, and deliveries suffered from excessive time lags. Such complaints made were not always substantiated.

The total labour force of the 22 industries in 1961 was over 82,000 workers and an additional 3,500 outside piece workers employed in Knitwear and Other clothing industries.

Labour relations were generally good with few restrictive practices except in Printing and Furniture. These practices were due mainly to insistence on traditional demarcation lines leading to lack of flexibility and higher costs. In some industries, managements had to cope with a multiplicity of unions.

There were staff recruiting difficulties in 12 industries employing chiefly female labour. Difficulties were also encountered in recruiting skilled workers due to emigration to the UK where wages and social welfare benefits were higher. Training of operatives was not possible in many of the small and scattered Irish industries.

Productivity in the industries was generally lower than for other European countries. "The reasons for this lie mainly in less capital intensive methods of production, smaller scale and less efficient production methods and in poorer training rather than in the worker himself."

At the time of the survey many managements were not aware of the existence of Technical Assistance Grants and therefore made little use of such aids. There was not sufficient concentration on sales and marketing particularly in exports. It is possible that because of thirty years' protection policies, industries had become accustomed to a protected home market and were unable to adjust to the realities of a competitive scene.

Plant and machinery in many firms were found to be out of date, with little spare capacity and consequently inefficient. Buildings tended to be old and unsuitably designed for expansion.

Production runs were short and there were frequent changes from one type of product to another making production costly and inefficient and lowering the effective utilisation of capacity. The report comments that for example in the case of the Vehicles industry, "frequent changes to different types of car are not necessarily of great significance in increasing costs since jigs can be changed quite easily; but the small scale of production, and therefore virtual impossibility of using flow production techniques, increases costs." The wholesale price of small and medium cars was consequently £40-£120 per car higher than in the UK (exclusive of taxes).

In all the industries surveyed there was protection of the home market in the form of tariffs or quotas, the most usual tariff being 75 per cent and 50 per cent preferential. The home market was therefore virtually free of

competition from abroad. As a result there was less need for management to concentrate on excellence of design, marketing, sales or expansion. Due to the small size of the home market much production was undertaken on a scale less than optimum, resulting in a low degree of specialisation as firms diversified to provide as large a proportion of home demand possible.

All industries had exports but they were significant in only some. Only a few firms in most industries had any export experience, however. The report gave five basic reasons for the low level of export expansion: (i) lack of incentive to export because of the highly protected home market; (ii) lack of information and contacts outside Ireland and failure to use information available, from, for example, *Córas Tráchtála*; (iii) small Irish firms were at a disadvantage when in competition with established industries abroad; (iv) the existence of tariff and quota restrictions in other countries; (v) in the majority of industries costs including production and distribution costs were higher than in many competing countries.

The survey teams and managements of the firms attempted to assess the effect of freer trade on Irish industry. It was expected that in all industries except Fertiliser, foreign competition would make some gains in the Irish market. The Fertiliser industry had already made plans to inject new capital into plant and machinery in an effort to meet the changing structure of the market. The television boom was expected to maintain the Wireless industry, "however", the report states, "longer term prospects are not so encouraging since the home market will reach saturation point just as tariffs are substantially reduced, causing probable losses in sales."

Other industries expected varied amounts of losses. It was hoped that Printing could maintain employment at the prevailing level, in spite of some loss; in the Chocolate industry only marginal losses were expected. Cocoa beans at the time could be imported into Ireland free of duty whereas Britain and the EEC were not in such a favourable position. The Chemical industry was very

diversified but in most cases it was hoped to maintain markets. Leather and Gowns industries varied; some expected to lose most of their sales and some to retain most. Footwear manufacturers were faced with problems arising from the rate of technological development abroad.

Considerable losses in the home market were expected by most other of the 22 industries including Cotton, Paper, Shirts, Miscellaneous clothing, Steel, Knitwear, Pottery, Electrical equipment, Wool, Readymade clothing, Paper products and Men's outerwear. Several firms expected to go out of production completely while others hoped to arrange mergers, rationalise or concentrate on special orders. The Motor vehicle assembly industry was considered impossible to save; "Here the survey team concluded that the entire industry would go out of production in free trade conditions. The industry, which is largely under the control of foreign firms, only came into existence because of the imposition of a virtual prohibition on the import of completed vehicles. The disappearance of this restriction would remove all reason for separate assembly over here and the parent companies are therefore likely to cease production in Ireland entirely or to use the Irish firms merely as distributive outlets".

The Report concludes that "it is likely that a considerable number of small firms would go out of production in free trade conditions and that through mergers the scale of production of the remainder would increase nearer to an optimum size" and "... it is useful and important that the possible outside magnitude of the problem should be fully realised in order to ensure the best planning of preventive and adaptive measures".

The survey teams recommended several adaptation measures which would enable industries to meet increasing competition from abroad both in home and overseas markets, including structural organisation, new investment planning, examination of market possibilities and employment.

Adaptation Councils should be set up to help firms with the problem involved in structural organisation and co-operation; the Councils to be concerned with the following:-

- (i) promoting standardisation and specialisation, developing a competitive product policy, encouraging mergers or group co-operation;
- (ii) improvement of design;
- (iii) promoting an awareness of the benefits to be derived from industrial research;
- (iv) joint marketing arrangements ranging from informal agreements to formally constituted groups; joint participation in market research, trade exhibitions, promotional campaigns;
- (v) joint purchasing;
- (vi) factory design and working conditions;
- (vii) improved training of operatives and other personnel;
- (viii) problems of worker redundancy, re-training and re-settlement of workers.

The survey groups realised that for some industries the setting up of Adaptation Councils could be difficult. Where there was not a tradition of co-operation a great change in the attitudes of manufacturers could be necessary; the difficulties to be surmounted by firms faced with free trade, were so great that enormous efforts were deemed necessary.

In the case of 15 industries, which made estimates, "total complete modernisation of plant and buildings" would cost approximately £16-£18m, excluding the cost of new factories and processes. The cost of improvements would be highest in Printing £4 m, Chocolate £2 $\frac{1}{4}$ m. and in Cotton, Steel, Knitwear and Wool (about £1.5 million each). The raising of such capital sums could be a very serious problem for many of the firms.

In spite of the urgency for adaptation and modernisation, only 4 out of the 22 industries had made any positive plans at the time of the survey. There seemed to be no sense "of urgency on the part of most firms, despite the fact that the time period between decision to invest, delivery of equipment and full utilisation of it is, in some cases, a long one".

Home demand was analysed "under the assumption that the growth target adopted by the Government of a 50 per cent increase in gross national product between 1960 and 1970 is achieved". The basic price elasticity effects and the further impact of income elasticity on the final demand pattern were assessed. Home demand for all products should increase if GNP increased. The proportional size of increase in demand brought about by increases in income levels can be estimated.

C. E. V. Leser's* 1962 and 1964 work on income elasticities provided information for final consumption goods; estimates for the producer goods industries were made by the survey teams. Between the anticipated growth of home demand and improving competitiveness as a result of adaptation, it was hoped that future prospects for the 22 industries were reasonably favourable: "Apart from the Vehicle industry, which is likely to cease production in conditions of freer trade, the only industries likely to suffer substantial losses in the home market by 1970 are Cotton and Footwear". Estimates showed an expected increase of 25 to 60 per cent in the Wool, Chocolate, Gowns, Paper, Knitwear and Electrical Equipment industries; while the other industries were expected to remain steady or to show modest increases. It was stressed, however, that extra home income would be spent on Irish goods only if they were competitive. Therefore, estimates were valid only if the adaptation and modernisation measures recommended, were implemented.

The survey teams emphasised the need for the speedy expansion of export markets. Such emphasis would imply a considerable change in management attitudes. The reasons given for a general low level of exports were: "lack

* C. E. V. Leser, "Demand Relationships for Ireland", ESRI Publication Series, 4, 1962.

C. E. V. Leser, "A Further Analysis of Irish Household Budget Data, 1951-1962, ESRI Publication Series, 23, 1964.

of interest, lack of knowledge, not enough advertising or good design, tariffs and other factors out of the control of Irish industry (e. g. transport costs) and finally, and most important higher levels of costs".

Co-operation in developing export markets was recommended either between Irish firms or through international voluntary co-operative arrangements. Co-operation with firms abroad could make available to Irish firms the benefits of marketing experience and knowledge of local conditions in the foreign markets. A reasonably high degree of external association existed already in the Wireless, Chemicals, Chocolate and Electrical equipment industries. The Chocolate crumb firms exported 90 per cent of their production, which could be expanded by the collaboration of firms with An Bórd Baine and Córas Tráchtála whose expertise would provide help in opening and expanding markets in Continental countries.

Great Britain and Northern Ireland were expected to continue as predominantly important markets; other market possibilities were in the Middle and Far East and Africa. Hosiery and Knitwear were suggested as suitable products for marketing in Germany, Holland and Belgium.

The importance of adaptation measures in order to maintain employment was reinforced by an estimated 21,000 reduction in employment before 1970 in all but two or three industries representing over 25 per cent of total employment in the industries surveyed if adaptation measures were not undertaken. If adaptation measures were taken total unemployment in the surveyed industries was estimated at 5,000. The firms, in which unemployment was expected to be greatest were, in the Cotton, Footwear, Vehicles, Miscellaneous Clothing, Steel and Leather industries.

The fifth Interim CIO Report (1964)* estimated possible total redundancies in all industry covered by the Census of Industrial Production as 10,600 if adaptation measures were taken but 34,500 if rationalisation was not implemented: "In the circumstances, even if there is a substantial net increase in industrial employment at the same time as a certain amount of redundancy, a sizeable number of redundant workers may be unable to get alternative work. Older

* Certain Aspects of Redundancy. Fifth Interim Report Committee on Industrial Organisation. Stationery Office 1964 (Pr. 7846).

workers who become redundant are likely to present a special problem. Workers whose skills have become obsolete may also be difficult to place, unless they are sufficiently adaptable to absorb new skills."

The final summing up of the survey teams' reports; "... the reports make it clear that, if the adaptation measures recommended are undertaken speedily and energetically, the prospects of freer trade for Ireland are much better than appeared But it should be emphasised that the uncertainties with respect to future developments in both home and export markets are so great that the estimates given should be treated with caution. The co-operative action recommended in large areas of production and marketing requires considerable changes in attitude by the Irish businessman and will only be effective if he is prepared to make such changes."

The Committee on Industrial Progress (COIP) Reports

The Committee was appointed in 1968 "to assess the progress made by Irish industry in its preparation for free trade conditions, with particular reference to marketing and product policies."* The assessment was made on the basis of surveys carried out in 13 of the 22 industries reported on by the CIO. Thirteen reports were issued and the final report was published in September 1972.

The 13 industries studied were: Women's outerwear, Fruit and vegetable processing, Hosiery and Knitwear, Metal trades, Paper, paper products, printing and publishing, Tanning and dressing of leather, Men's and boys' outerwear, Electrical machinery apparatus and appliances, Footwear, Woollen and worsted, Shirtmaking, Cocoa, chocolate and sugar confectionery, Furniture. The majority of the firms covered in the survey were established for some time and tended to be largely dependent on the home market; the remainder were newly established "export only" firms and firms which had considerable exports.

*General Report Committee on Industrial Progress, Stationery Office, Dublin. Prl. 2927, 1973.

The General Report of COIP summarises the reports on the individual industries. In addition to assessing progress made by firms recommendations are made for improvement in output, exports, employment, management, marketing and product policy. Output, exports and employment were found to have experienced substantial growth from 1963 to 1971; volume of manufacturing output in that period increased by about 58 per cent, industrial exports at constant 1963 prices increased by 200 per cent; from 1963 to 1970 employment in manufacturing industry increased by over 17 per cent but decreased slightly during 1970-71.

The General Report commented: "Industry in general is now better able than in the 1960s to meet and to take advantage of free trade." The warning is given, however, that while individual firms were improving, some were not and the latter would probably not survive in conditions of free trade. The suggestion was made that firms which were unable to adjust successfully to changing conditions should participate in "measures of rationalisation including mergers with other firms".

The effects of technological advance and product development in Irish manufacturing industry were stressed and the necessity for industry to implement structural and attitudinal changes to meet such changing conditions. Consequently, changes in employment patterns follow. In EEC countries "about 200,000 jobs a year are affected by purely internal shifts within individual sectors of industry."* For example, a loss of one million jobs was experienced in declining industries in EEC countries during the ten year period 1958-'68 due to shifts within industrial sectors and the closedown of firms; there was however a net increase, at the same time of nearly 2 million jobs. The necessity for adjustment was crucial because of the higher proportion of people leaving the land and the high unemployment rate in Ireland, factors which underline, "not only the need for new job creation but the importance of the maximum endeavour by existing industry to take every step within its power to ensure that it can adjust to the new market situation. Table 1.1 gives the main features of sectors surveyed by COIP and is reproduced from the General Report.

* Op.cit. page 10

CIO and the Present

There have been many changes in the international scene which had an impact on Irish industry since the CIO Reports were issued in the early 1960s, in particular the preparation for and entry of Ireland into the European Economic Community (on 1 January 1973) with the consequent reduction in import duties; on most products duties have been abolished completely. There has been a great increase in the prices of oil and other basic energy; in addition there has been a world recession and a large decrease in the value of the pound sterling. Such external factors would in themselves, have had a profound effect on Irish industry; had there not been a wide measure of adaptation Irish industry could not have survived. But Irish industry has managed to survive and in some aspects to thrive in spite of the difficult external factors to which it was subjected.

The CIO Reports examined 22 industries. Four of these, namely, Wireless, television, telecommunications, Paper products, Men's protective clothing, Brushmaking; are included amongst the 18 industries, asterisked in Tables 1.2 and 1.3. Table 1.1, reproduced from the General Report of COIP, is comprehensive and scarcely requires special comment, except that it relates to a period preceding our entry into EEC.

The principal differences between the CIO analysis of prospects for the industries surveyed and actual average percentage changes between 1960 and 1973 are given in Table 1.4. In the last two columns of the Table, CIO's views are summarised.

The analysis of aggregate industrial growth rate by industry in the period 1960-1973 shows the growth of industry both by the expansion of surviving firms and the appearance of new firms. D. McAleese (1977)* distinguishes the trends for old and new manufacturing firms in his study of IDA grant aided industry. Some firms within industrial sectors have adapted and prospered, others, unable to adapt, have failed. CIO comments are dated ca. 1965, which means that the considerable development of new industry could not fully have been anticipated.

* Dermot McAleese, A Profile of Grant-Aided Industry. IDA, Dublin, 1977

Table 1.1
Main Features of Sectors Surveyed

Notes: (i) It was necessary to estimate 1971 output and employment; (ii) N.A.—not available

INDUSTRY	NUMBER OF FIRMS IN SECTOR		TRENDS 1963-1971						EMPLOYMENT	
	at time of survey	which participated	OUTPUT		EXPORTS		COMPETING IMPORTS		1969	1971
			Value	Volume	Value	Volume	Value	Volume		
Women's Outerwear ..	138	94	+153%	+60%	+184%	+66%	+500%	+500%	6,500 (est.)	6,200
Fruit and Vegetable Processing	15	15	+134%	+90%	+415%	N.A. (from 11% to 24% of output value)	+167%	N.A. (from 18% to 23% of home market value)	4,320	4,120
Hosiery and Knitwear ..	68	61	+183%	+178%	+333%	N.A. (from 18% to 28% of output value)	+900%	N.A. (from 11% to 32% of home market value)	9,460	8,900
Metal Trades (part of) ..	115	66	+366%	+89%	+677%	N.A. (from 16% to 27% of output value)	+142%	N.A. (from over 80% to over 40% of home market value)	7,600	7,800
Paper, Paper Products, Printing and Publishing	235	123	+111%	N.A.	+94%	N.A. (from 15% to 14% of output value)	+172%	N.A. (from 29% to 33% of home market value)	16,040	15,900
Men's and Boys' Outerwear	75	57	+73%	+7%	+200%	+84%	+1,400%	+500%	5,200	4,550
Tanning and Dressing of Leather*	14	12	+49%	+51%	+106%	+73%	Very little of imports are directly competitive with the types and qualities produced here.		1,263	1,300
Electrical Machinery Apparatus and Appliances	55	39	+225%	+73%	+805%	N.A. (from 21% to 69% of output value)	+275%	N.A. (from 21% to 38% of home market value)	11,090	10,600
Footwear	32	27	+61%	+7%	+150%	+76%	Until severe quota restrictions on imports were lifted in mid-1970, imports were negligible. Since then they have risen rapidly to 29% of home market by value and 30% by volume.		6,161	5,400
Woollen and Worsted (excluding carpets and carpet yarns)	47	42	+18%	+6%	+102%	+75%	+5%	-7%	5,700	4,800
Shirtmaking	33	13†	+86%	+24%	+187%	+60%	+900%	+900%	2,300 (est.)	2,400
Furniture	136	73	+84%	+16%	+300%	N.A. (from 3% to 7% of output value)	+322%	N.A. (from 9% to 20% of home market value)	3,650	3,450
Cocoa, Chocolate and Sugar Confectionery ..	33	15†	+77%	+33%	+149%	+85%	+759%	+592%	4,600	4,720

*The output and export trends are those in the main sector (bovine tanning) which represents over 90% of output. †It was not found necessary to approach all the firms in the industry.

* Reproduced from General Report, Committee on Industrial Progress. (1973).

Table 1.2: Index numbers of volume of production and employment, in manufacturing industry, 1960, 1966, 1973, 1976

Base: Year 1953 as 100

Manufacturing Industry	Volume of production				Employment			
	1960	1966	1973	1976	1960	1966	1973	1976
Bacon	107	132	148	127	113	131	127	116
Slaughtering	176	269	485	553	159	219	327	377
Creamery, butter etc.	108	177	316	394	99	131	178	180
Canning, fruit, vegetables	88	130	211	186	99	139	146	113
Grain milling	111	126	159	166	106	98	96	86
Flour, biscuits, etc.	83	122	193	157	90	92	87	79
*Sugar, cocoa, chocolate etc.	100	121	135	114	82	93	88	76
Margarine	98	128	147	140	175	89	113	102
Miscellaneous food incl. fish	147	237	459	703	92	273	496	496
Distilling	76	112	196	250	77	90	39	22
Malting	123	124	212	325	93	79	45	50
Brewing	111	116	161	150	102	108	100	96
Aerated, mineral waters	118	192	414	464	95	104	145	152
Tobacco	84	82	108	116	81	81	82	83
*Woollen & worsted	138	170	272	277	118	124	113	86
*Linen & cotton	220	266	296	236	150	136	96	70
Jute, canvas, etc.	194	229	692	695	130	137	169	162
*Hosiery	139	225	601	633	92	118	139	112
*Boot, shoe	116	152	139	105	88	95	77	51
*Men's, boy's clothing	82	93	122	110	95	87	96	70
*Shirtmaking	126	172	196	153	103	119	146	111
*Women's girl's clothing	128	194	283	292	108	114	109	103
*Miscellaneous clothing	123	141	154	105	113	107	75	69
Made-up textiles	172	257	492	447	150	150	232	256
Wood, cork	81	140	195	203	68	81	91	81
*Furniture etc.	117	157	232	236	91	97	103	97
*Paper, paper products	181	212	415	376	126	122	141	138
*Printing, publishing	126	159	207	202	108	111	125	116
Fellmongery etc.	101	134	151	172	93	100	86	88
*Leather, leather subs.	126	173	192	86	120	136	119	71
*Fertilisers	248	390	725	638	148	203	225	228
Oil paints etc.	118	163	264	246	117	121	125	129
*Chemicals	178	493	1313	2112	138	193	327	405
Soap etc.	112	139	176	122	105	109	111	94
*Glass, pottery	145	217	380	400	118	142	228	233
Clay products, cement	136	265	531	504	95	152	214	202
Metals	170	304	554	521	122	166	243	226
*Electrical machinery	209	287	404	448	151	164	256	280
*Manufacturing Electrical machinery	233	626	928	1159	166	317	458	419
Ship, boatbuilding	147	183	257	328	139	185	295	336
Railroad equipment	64	45	35	32	67	63	58	50
*Road vehicles	172	199	271	234	127	153	190	155
Other vehicles	81	138	170	142	89	171	180	172
Miscellaneous manufacturing	227	422	809	984	128	185	299	328
Total manufacturing	124	176	278	293	105	122	142	132

Source: Various Issues of Irish Statistical Bulletin CSO Dublin

* Committee on Industrial Organisation reported on these industries

12c

Table 1.3: Average annual percentage changes in value of production and employment, 1953-1960, 1960-1966, 1966-1973, 1973-1976

Manufacturing Industry	Volume of production				Employment			
	1953-60	1960-66	1966-73	1973-76	1953-60	1960-66	1966-73	1973-76
	1	2	3	4	5	6	7	8
Bacon	1.0	3.6	1.6	-5.0	1.8	2.5	-0.4	-3.0
Slaughtering	8.4	7.3	8.8	4.5	6.9	5.5	-5.9	4.9
Creameries	1.1	8.6	8.6	7.6	-0.1	4.8	4.5	0.4
Canning	-1.8	6.7	7.2	-4.1	-0.1	5.8	0.7	-8.2
Grain	1.5	2.1	3.4	-1.4	0.8	-1.3	-0.3	-3.6
Flour, biscuits	-2.6	6.6	6.8	-6.7	-1.5	0.4	-0.8	-4.6
*Sugar, chocolate etc.	0.0	3.2	1.6	-5.5	-2.8	2.0	-0.7	-4.8
Margarine	-0.3	4.5	2.0	-1.6	8.3	-10.6	3.5	-3.4
Miscellaneous food, fish	5.7	8.3	9.9	15.3	-1.2	19.8	8.9	0.0
Distilling	-3.8	6.7	8.3	8.4	-3.7	2.6	-11.3	-17.4
Malting	3.0	0.1	8.0	15.3	-1.0	-2.7	-7.7	3.6
Brewing	1.5	0.7	4.8	-2.3	0.3	1.0	-1.1	-1.3
Aerated waters	2.4	7.2	11.6	3.9	-0.7	1.5	4.9	1.6
Tobacco	-2.5	-0.4	4.0	2.4	-3.0	0.0	0.2	0.4
*Woollen, worsted	4.7	3.5	7.0	0.6	2.4	0.8	-1.3	-6.7
*Linen, cotton	11.9	3.2	1.5	-7.3	6.0	-1.6	-4.9	-10.0
Jute, canvas	9.9	2.8	14.3	5.5	3.8	0.8	3.0	-1.4
*Hosiery	4.8	8.4	15.1	1.7	-1.3	4.2	2.4	-7.0
*Boot, shoe	2.1	4.6	-1.3	-8.9	-1.8	1.1	-2.9	-12.8
*Men's, boys' clothing	-2.8	2.1	3.9	-3.4	-0.7	-1.5	1.4	-10.0
*Shirtmaking	3.4	5.3	1.9	-7.8	0.4	2.4	3.0	-8.7
*Women's girl's clothing	3.6	7.2	5.5	1.1	1.1	0.9	-0.6	-1.9
*Miscellaneous clothing	3.0	2.3	1.3	-11.9	1.8	-0.9	-5.1	-2.7
Made-up textiles	8.0	6.9	9.7	-3.2	6.0	0.0	6.4	3.3
Wood, cork	-3.0	9.6	4.9	1.3	-6.1	3.9	1.7	-3.8
*Furniture	2.2	5.0	5.7	0.6	-1.3	1.1	0.9	-2.0
*Paper, paper products	8.8	2.6	10.2	-3.2	3.4	-0.5	2.1	-6.7
*Printing, publishing	3.4	3.9	3.8	-0.8	1.1	0.5	1.7	-2.5
Fellmongery	0.1	4.8	1.7	4.4	-1.0	-1.2	-1.9	0.8
*Leather, leather subs	3.3	5.4	1.5	-23.5	2.6	2.1	-1.9	-15.2
*Fertilisers	13.9	7.8	9.3	-4.2	5.7	5.4	1.5	0.6
Oil, paints etc.	2.5	5.5	7.1	-2.3	2.2	0.5	0.5	1.1
*Chemicals	8.6	18.5	15.1	17.0	4.7	5.7	7.8	7.4
Soap etc.	1.6	3.6	3.5	-11.5	0.7	0.6	0.3	-5.4
*Glass, pottery	5.5	7.0	8.3	1.7	2.4	3.1	7.0	0.7
Clay products, cement	4.5	11.8	10.4	-1.7	0.7	6.3	5.0	-1.9
Metals	7.9	10.2	8.9	-2.0	2.9	5.3	5.6	-2.3
Machinery, ex. electrical	11.1	5.4	7.1	-1.2	6.1	1.4	6.6	3.0
*Electrical machinery	12.8	17.9	5.8	7.7	7.5	11.4	5.4	-2.9
Ship, boat building	5.7	3.7	5.0	8.5	4.8	4.9	6.9	4.4
Railroad equipment	-6.2	-5.7	-3.5	-2.9	-5.6	-1.0	-1.2	-4.8
*Road vehicles	8.0	2.1	4.5	-4.8	3.5	3.2	3.1	-6.6
Other vehicles	-3.0	9.3	3.0	-5.8	-1.6	11.5	0.7	-1.5
Misc. manufacture	12.4	10.9	9.7	6.7	3.6	6.3	7.1	3.1
Total manufacture	3.1	6.0	6.8	1.8	0.7	2.5	2.2	-2.4

Basic source: Table 1.2

Note
Annual average rates are geometrical

Table 1.4: Annual average percentage changes 1960-1973 for CIO Industries and CIO analysis of prospects.

Industries surveyed by CIO	Volume of production	Employment	CIO Analysis of Prospects	
			Production	Employment
Sugar, Chocolate	2.3	0.6	Small expansion if vigorous export marketing policy pursued.	Disemployment unlikely.
Woollen and worsted	5.4	-0.3	Net real increase of about 25% by 1970 on home market. Greater increase if exports improve.	Total employment static due to labour productivity increases.
Linen and cotton	2.2	-3.4	If industry to meet international competition "fundamental and extensive" action must be taken. Home market expected to decrease.	Possibility of maintaining employment by intensive training and increased labour productivity if output can be improved.
Hosiery	11.9	3.2	Profitable sales in Europe could be developed. Good market prospects.	If account taken of a possible growth of the industry, increased employment is likely.
Boot, shoe	1.4	-1.0	The industry not alive "to the possibility of radical technical development."	Without improvements disemployment "might go as high as 2,000". With improvements employment could be reduced by 1,000.
Men's, boys' clothing	3.1	0.1	Output could possibly increase by 20 per cent but adaptation essential.	If the industry "failed to improve its present rate of exports, namely one per cent of its total output" about 1,000 workers could be redundant. If improvement took place employment would be maintained at present rate.
Shirtmaking	3.5	2.7	Even with rationalisation substantial losses will occur on home market with advent of free trade but if exports doubled could maintain present production.	Employment could be maintained if exports substantially increased.
Women's, girls' clothing	6.4	0.1	The industry could expect a modest growth in production provided exports developed.	Will probably maintain a substantial proportion of present employment.
Miscell. clothing	1.7	-3.1	Markets abroad must be developed to compensate for anticipated losses on the home market.	If the Common External Tariff applied to Far Eastern imports, without other restrictions, the loss of employment may be at least 40 per cent of the 1961 figure.
Furniture etc.	5.4	1.0	Progress possible if adaptation measures taken.	Possibility of maintaining present levels of employment.
Paper, paper products	6.6	0.9	With rationalisation and improved production, distribution, marketing, could have considerable growth.	Expansion unlikely over total industry. Heavy unemployment in early stages of free trade.
Printing, publishing	3.9	1.1	Progress could be difficult with competition from abroad. Structural changes necessary.	Hope to maintain employment at existing level.
Leather, leather goods	3.3	0.1	If adaptation measures taken the industry could improve.	Could be some redundancy.
Fertilisers	8.6	3.3	The Irish industry not competitive with EEC countries at present. Efficiency measures taken to improve situation.	Not much change expected in employment.
Chemicals	16.6	6.9	Future of the industry uncertain. Could improve with considerable adaptation and re-organisation.	Hope that redundancy can be avoided.
Glass, pottery	7.7	5.2	If competitiveness improved, reasonable prospects for the industry.	Redundancies expected initially. Improvement if production increased considerably.
Electrical machinery	11.2	8.1	By 1970 production may have increased by 60 per cent over present levels.	By 1970 employment may have increased by 20 per cent over present levels.
Road Vehicles	3.6	3.8	Motor assembly industry expected to cease under free trade.	Considerable redundancy.

Source: Various Issues of Irish Statistical Bulletin, CSO Dublin, Reports of CIO Surveys. (1965).

The CIO method applied at intervals of years would a priori appear to have considerable usefulness in rational industrial planning. Obviously it enables industry to air its problems and difficulties, bringing these to public and government attention. But as an aid to forecasting, e.g. for capital investment? Businessmen are painfully aware of the element of uncertainty. Capital plans are notoriously affected by even small adverse winds of economic change. It is therefore important to decide whether the first CIO approach has been generally useful. Clearly this has been the case as regards industries' own citation of difficulties. But how about assessment of the future?

Complacency on our part is not to be implied from the statement of "success" at the outset of this section. Achievement in future must be on a greatly increased scale, as we shall show. Success so far will be interpreted as showing rather of what we are capable than of what we have as yet achieved.

1:2 The Statistics of Manufacturing Industry in Ireland 1953-1976

Tables 1.2 and 1.3 are fundamental as showing the recent trend in volume output and employment in Irish manufacturing industries. The reasons for selecting the years 1953, 1960, 1966, 1973 and 1976 are fairly evident: the period 1953-1960 is that just preceding the economic upsurge which began about 1960; 1960-1973 is the period of rapid growth preceding the depression, January 1973 also being the month Ireland entered EEC; and 1966 divides the period 1953-1976 into two roughly equal periods of years and marks the signing of the Anglo-Irish Free Trade Agreement.

We confine analyses to simple comment. From Table 1.2

we note that since 1953 output nearly trebled while employment increased by only one-third. The enormous variability in the 1976 indexes (1953 as 100) for output will be noted, in fact from 32 for Railroad equipment to over 2,000 for Chemicals. Industries which have increased most in output 1953-1976 are (in order)-

	Index		Index
Chemicals	2112	Miscell. food	705
Electrical mach.	1159	Jute, canvas etc.	695
Miscell. Industries	984	Fertilisers	638
Creameries	785	Hosiery	633
and least -			
Railroad equipment	32	Men's, boy's clothing	110
Leather etc.	66	Sugar, chocolate etc.	110
Miscell. cothing	105	Tobacco	116
Boot, shoes	105	Soap etc.	122

The "miscellaneous" headings in the earlier list probably include much of the newly-created and more esoteric industries. One notices the contrast between Hosiery with an index over 600 and the three clothing items which, in the 23 years, have barely held their own. The substantial increases in output of Distilling and Malting were accompanied by disastrous fall in employment. * These comments on individual industries are not exhaustive: in this regard the tables must speak for themselves, though some of the figures for particular industries are cited in Part 1.3.

* Commenting on this point Kieran A. Kennedy stated in a footnote to an Article with Tony Foley entitled Industrial Development. (Irish Economic Policy: A Review of Major Issues 1978):-

In the case of distilling, however, there is some doubt as to whether the loss of employment, and the rise in labour productivity, has been anything like as great as the CIP figures indicate. Inquiries from the manufacturers suggest that, while the number of workers located in the distilleries has been greatly reduced, there has been, however, a large growth in numbers of "headquarters" staff, dealing with such matters as marketing, finance, research, blending and distribution. Irish Distillers Limited claim, in fact, that they now employ nearly as many as in the industry in 1953, and that all employment is directly or indirectly related to distilling. Due to considerations of confidentiality, it has not been possible to ascertain from the CSO precisely how the CIP figure is derived. But it is possible that in distilling a significant number of service-type workers are excluded, which in the generality of industries would (properly) be included in the manufacturing sector

28

Table 1.3 is perhaps the more informative as in it the time element has been eliminated, i. e. in using annual average rates of change in output and employment. As regards summary output indexes, we note that the rates in increase of production at 6-7 per cent in the periods 1960-1966 and 1966-1973 are about double the rate in 1953-1960 but had receded to less than 2 per cent in the recession period 1973-1976. Regarding labour productivity (LP) rates as given approximately by the difference between output and employment rates, in the four periods these rates were, in succession, 2.4, 3.5, 4.6 and 4.2. The fall in 1973-1976 compared with 1966-1973 is obviously due to the recession for, as Kennedy (1969)* has shown, LP increases with increasing output and vice versa. Prior to the recession there can be no doubt about the reality of the increase in the LP rate, associated with increased capital per worker within each industry, as we show later, and possibly shift in the composition of industry towards capital-intensive processes. Improved industrial efficiency signalled by increasing LP is good for business at home and abroad but it is inimical to employment at least in the short-run, our major problem, unless accompanied by quantum output increase at a greater rate than hitherto. This "conflict of interest" between LP and employment will appear in many forms throughout this study.**

There are 44 manufacturing industries listed in Table 1.3 so that 176 (=44 x 4) comparisons can be made between rates of increase in production and employment. In 34 cases (or one-fifth of the 176) the annual rate of increase in employment exceeds that of production.

We proceed with some econometrics applied to Table 1.3, the variables numbered 1-8 as shown at the column heads, the variables being X with these subscripts. First is the relationship between the rates of change in employment and production volume in the four time periods. (Note that we regard production as indvar, i. e. as the cause of employment.)

* Growth of Labour Productivity in Irish Manufacturing 1953-1967, Kieran A. Kennedy. Journal of The Statistical And Social Inquiry Society of Ireland 1968-69.

** It could be argued that increased LP increases employment rather than reduces it, insofar as if LP in industries did not increase in Ireland then, in the presence of foreign competition, these jobs would be simply wiped out. On a global basis the the argument re the relationship between LP and unemployment is however stronger.

Following are the regressions (t values in brackets):-

	F
1953 - 60: $X_5 = -0.66 + 0.54 X_1$ (1.7) (8.2)	64.6
1960 - 66: $X_6 = -1.05 + 0.62 X_2$ (1.1) (4.7)	21.5
1966 - 73: $X_7 = -1.12 + 0.43 X_3$ (1.1) (3.2)	10.0
1973 - 76: $X_8 = -2.38 + 0.53 X_4$ (3.3) (6.7)	43.0

The c. c. s are:-

- r (15) = .78
- r (26) = .58
- r (37) = .44
- r (48) = .71

All relations are highly significant, r (37), the smallest, being near but below the NHP = .001 point. Note that the relationship is weaker in the two middle periods of great industrial progress than in the other two periods.

The most remarkable result is the persistence not only of the form of the relationship, but the values of the coefficients and intercepts in the very different economic conditions of the four periods. While the values of the intercepts are not statistically significant in the two middle periods their practical identity makes them so. The normal average relationship thus emerges: in manufacturing industry in Ireland percentage increase in employment is half that in volume of production minus one.* Of course there are many exceptions to the rule, as Table 1.3 clearly shows, but enough truth in it to make it a criterion in planning.

Applying the formulae, using the actual total percentage increases in volume of production shown at foot of Table 1.3 we find:

Actual and estimated annual average percentage increase in employment

	Actual %	Estimated %
1953 - 60	0.7	1.0
1960 - 66	2.5	2.7
1966 - 73	2.2	1.8
1973 - 76	-2.4	-1.4

* At the same time this result cannot be used too literally. There can be little doubt about the reality of the coefficient, of approximately one-half. The intercept is another matter: only the latest is significantly different from zero. At least it seems reasonable to argue that the intercept is negative and the persistence of the value -1 during the period 1960-1973 of industrial upsurge is our reason for our tentative adoption of it.

We do not know if the value of about -2.4 for the period 1973-1976 is or is not a feature of the recession, or whether the regular increase (in absolute value) is an indication of trend: in 1976-1980, say, will the intercept be still greater (in absolute value)? Such a trend would, ceteris paribus, be against the nation's interest as inimical to increased employment.

Our use, hereafter, of the formula will be interpreted in this spirit.

Although the actuals are weighted averages and the regression - estimated unweighted, the correspondence for the first three periods is quite good. As regards the last, it would appear that in a period of recession there has been a tendency to shed more workpeople than might have been expected. But the evidence is slender. It could also have been due to structural change in actuality. Note, however, that the 1973-76 intercept is statistically highly significant.

We also used Table 1.3 to examine whether during the period since 1953 there was a persistent tendency towards large or small percentage increases in volume of production of industry. The relevant c.c.s are as follows:

$$r (12) = .40$$

$$r (23) = .52$$

$$r (34) = .48$$

For 42 d.f. all are significant at $NHP = .01$. An industry with a high (low) percentage increase in output in one period is likely to be followed by a high (low) increase in the next: the maintenance of the relation in the recession will be observed. Of course, as Table 1.3 itself shows, there can be exceptions to the rule. But these simple results justify the approach in the next section, namely that systematic study of the trends of world foreign trade in the recent past is likely to indicate the kind of commodities which will be in demand in future and which accordingly we should set about producing in quantity.

2. Foreign Trade as an Aspect of Economic Adaptation

In relation to GDP Ireland has one of the largest foreign trades in the world. Economic expansion depends on further large increases in exports and imported materials required therefor. It will be a long time, if ever, before the home market is big, wealthy and efficient enough for a rapid absorption of our increased potential production, though the expansion of import substitution is a valid policy in view of our labour surplus problem.

Our approach here is strictly statistical based on Irish External Trade Statistics and the UN Yearbook of International Trade Statistics. There are two main approaches (i) direction of trade and (ii) selection of commodities to trade in. The device of international comparison is used, mainly with our EEC partners, some of whom are twice as prosperous as we are; we infer, if not in strict logic that what we do, if differing from what they do, may be a cause of our lowly status and, to improve, we should imitate them.

We are so accustomed to Ireland's geographically lop-sided foreign trade that we tend to take it for granted. We cannot do so in any consideration of national buying and selling efficiency to which the present paper is devoted.

Countries

In 1976 the visible import excess amounted to £478m (a doubling* of the £223 m of 1970, the period 1970-1976 spanning our entry-on 1 January 1973-into EEC). By main areas the 1976 figures are given in Table 2.1.

Table 2.1 Trade of Ireland 1976 (£million)

Area	Total exports	Imports	Import balance
UK	906.5	1,153.3	246.8
Rest of EEC	502.2	469.1	-33.1
Rest of World	448.7	713.3	264.6
Total	1,857.4	2,335.7	478.4

Source: External Trade December 1976 - Provisional Figures, CSO January 1977.

* Though with a fall in relation to real value as measured by import unit value which nearly trebled (actually increased by 181 per cent) between 1970 and 1976.

The large visible import balance is a serious economic problem, and is getting worse: the 1976 figure is near double that of 1975 (£258 million), itself very large. The magnitude of the UK balance in 1976 is exceptional. This was partly due to importers sensibly shifting purchases from other countries to UK under the impact of devaluation. Obviously a large part of our problem of imbalance relates to our trade with non-EEC countries.

The total imbalance of visibles is the reason for our chronic overall import balance of trade, since the export balance on current invisibles is always substantially positive.

Table 2.2 Visible Trade of EEC countries 1974 (\$ billion) on import-export ratios.

EEC Country	Exports E	Imports M	Ratio M/E
Ireland	2.6	3.8	1.452
UK	38.6	54.1	1.401
France	45.1	52.2	1.156
Belgium-Lux.	28.3	29.7	1.051
Netherlands	32.8	32.6	0.994
Germany, FR	90.6	70.2	0.775
Italy	30.3	40.9	1.353
Denmark	7.7	9.9	1.279
Total EEC	276.0	293.4	1.063

Source: UN Yearbook of International Trade Statistics 1974, Volume 1.

Ireland has the highest import/export ratio, followed closely by UK (Table 2.2) Ireland is far and away the poorest country in EEC, with Italy and UK next in order. We hesitate to infer a causal relation between poverty and imbalance of trade; nor can it be dismissed. The three countries mentioned suffer from high unemployment and underproduction, Ireland relatively worst in these regards. Imbalance of trade and poverty have a common cause, underproduction at home, and over-consumption of imports.

19A
33
Table 2.3 Visible trade of Ireland in 1976 specifying countries other than EEC with total trade exceeding £10 million

Country	£ million		
	Exports	Imports	Import excess
Australia	17.8	3.5	-14.2
Austria	6.1	6.6	0.4
Brazil	0.8	9.5	8.6
Canada	21.0	29.7	8.7
Finland	5.0	21.7	16.6
Hong Kong	2.0	8.4	6.4
Iran	9.5	38.7	29.1
Japan	23.6	51.5	28.0
Knwait	2.4	19.5	17.1
Nigeria	17.0	3.0	-14.1
Norway	10.1	11.6	1.5
Poland	5.8	15.4	9.6
Portugal	6.9	7.0	0.1
Saudi Arabia	4.4	22.3	17.9
South Africa	5.5	8.5	3.0
Spain	12.7	16.1	3.4
Sweden	21.9	41.8	19.9
Switzerland	11.6	17.6	6.1
U.S.A.	129.0	199.2	70.2
U.S.S.R.	1.8	21.1	19.3
Other (except EEC)	133.8	160.6	26.8
Total (except EEC)	448.7	713.3	264.6

Source: same as for Table 2.1.

Note

Countries are those explicitly mentioned in reference. There may be others with trade exceeding £10 million amongst "Other Countries" in the reference.

34
Amongst the twenty countries specified in Table 2.3 we have an export excess only with two. Since "Other" has an import balance of only £27 million (in a total of £265 million), clearly the solution to the problem of improving the 'non-EEC balance (if the word "improving" is not begging a question) is to be found amongst the countries specified.

We pause to remark that our attitude about this geographical imbalance of Irish foreign trade is not chauvinistic nor indeed, in any sense of the word, political. It is quite possible that, having regard to comparative advantage and to buying in the cheapest, and selling in the dearest, markets, a considerable lack of balance could ensue, not inconsistent with an optimal trading situation. This may be especially true of a small country. We do not think it is true of Ireland. Having regard to all the circumstances, the national economic strategy should be directed towards a substantial reduction in the import excess of each of these twenty countries for the very simple reason that the chronic import excess in our overall current balance of payments (visible and invisible) is a constraint on economic development and the best way to cope in principle is to increase exports to all countries. Even at a sacrifice in price, within reason, should not purchases be shifted from high deficit countries towards lower or no deficit countries on the principle that we should promote the interests of our customers? No country more than Ireland should be in a stronger position for claiming most favoured nation treatment for its exports.

Amongst the twenty-three OPEC countries account for £64 million (a substantial reduction on the £83½ million of 1975) of the total non-EEC import balance of £265 million, or 24 per cent. What efforts are Irish exporters making to gain a foothold in these countries, now with vast resources and with Ireland's advantage of devaluation? As we shall see, a good start has been made. Even so, it is clear that a substantial reduction in the import balance can be effected by energy conservation.

* This raises the question of how such a policy could be implemented. It could finally mean asking the taxpayer to subsidise high-cost foreign producers and therefore should be applied with discretion. If the policy is of doubtful validity and difficult of implementation, it is a good argument for forcing deficiency countries to buy our exports.

Table 2.4 Percentage distribution of foreign trade of Ireland other EEC countries, and certain other countries, 1974

	1	2	3	4	5	6	7	8	9	10	11	Other Countries	EEC (1-8)	Rest of World	
	EXPORTS														
1. Ireland	-	56.4	3.2	3.3	4.1	5.9	1.6	0.3	10.0	0.8	1.5	13.8	74.3	25.2	
2. United Kingdom	5.0	-	5.5	4.9	5.9	6.0	3.1	2.6	10.6	1.9	2.9	51.6	33.0	67.0	
3. France	0.4	6.6	-	11.5	5.4	17.5	11.8	0.7	5.0	1.0	0.9	39.2	53.9	46.1	
4. Belgium - Luxembourg	0.3	5.4	20.1	-	17.2	21.5	4.5	1.1	5.6	0.5	0.8	23.0	70.1	29.9	
5. Netherlands	0.4	7.9	10.1	14.5	-	32.6	6.0	1.6	3.5	0.6	0.4	22.4	73.1	26.9	
6. Germany, FR	0.3	4.8	11.9	7.6	10.2	-	8.1	2.0	7.5	1.4	0.8	45.4	44.9	55.1	
7. Italy	0.2	5.2	12.6	3.4	4.5	18.5	-	0.7	7.6	1.1	1.0	45.2	45.1	54.9	
8. Denmark	0.4	17.1	3.4	1.6	3.1	12.7	4.3	-	5.8	1.0	1.2	46.7	45.3	54.7	
9. USA	0.2	4.6	3.0	2.3	4.0	5.1	2.8	0.4	-	10.8	20.2	46.6	22.4	77.6	
10. Japan	0.0	2.8	1.3	0.9	1.9	2.7	0.8	0.4	23.3	-	2.9	63.0	10.8	89.2	
11. Canada	0.1	5.9	1.0	1.1	1.2	1.7	1.4	0.1	66.5	6.9	-	14.1	12.5	87.5	
	IMPORTS														
1. Ireland	-	46.6	5.4	2.2	3.4	7.7	2.1	0.9	6.5	1.3	1.5	22.4	68.3	31.7	
2. United Kingdom	3.5	-	5.7	2.8	6.9	8.1	3.1	2.5	9.5	2.4	4.1	51.4	32.6	67.4	
3. France	0.2	4.3	-	10.3	5.7	19.5	7.6	0.5	7.8	1.8	1.0	41.3	49.1	50.9	
4. Belgium - Luxembourg	0.2	5.7	17.4	-	16.3	22.4	3.8	0.5	6.5	0.9	1.2	21.3	70.1	29.9	
5. Netherlands	0.2	5.2	8.1	14.1	-	28.1	3.5	0.8	9.0	1.3	0.7	29.0	60.0	40.0	
6. Germany, FR	0.2	3.3	11.8	8.9	14.2	-	8.4	1.4	7.8	2.0	1.1	40.9	48.2	51.8	
7. Italy	0.1	3.0	13.2	3.3	4.3	17.8	-	0.8	7.7	1.1	1.4	47.3	42.5	57.5	
8. Denmark	0.1	9.8	4.0	3.8	6.3	19.5	2.8	-	6.4	0.4	2.8	46.1	44.3	55.7	
9. USA	0.2	4.0	2.3	1.7	1.4	6.4	2.6	0.5	-	12.4	22.1	46.5	19.1	80.9	
10. Japan	0.0	1.4	1.0	0.4	0.4	2.3	0.7	0.2	20.4	-	4.3	68.9	7.4	93.6	
11. Canada	0.1	3.6	1.2	0.5	0.5	2.4	1.0	0.3	67.4	4.5	-	18.5	9.6	90.4	
Total value of imports from rest of world (\$ billion)	3.8	54.1	52.2	29.7	32.6	70.2	40.9	9.9	107.1	62.1	32.3	350.5	293.4	552.0	

Basic Sources: Ireland: TSI; other countries: UNYITS, Vol. 1, 1974.

Note: The Y in the regression (formula (1) in the text) are the 56 percentages in rows 2-8 and columns 1-8 and last column of the exports section of the table;

Government can scarcely be blamed for failure to promote exports. Export policy is tripartisan. In fact, a considerable measure of success has attended this policy, as we shall see. Exports are encouraged by tax remission, a substantial contribution by IDA, particularly for foreign companies export-oriented, *Córas Tráchtála* is a state organisation designed to assist exporters in every conceivable way and the Irish diplomatic service should find a large part of its justification in promoting exports. The question must be posed bluntly: are Irish industrialists active enough in promoting sales in foreign markets? Are they producing enough of the right goods?

What should Ireland's geographical trading pattern be like, on EEC norms? To begin the search for an answer, see Table 2.4, in which percentage distributions of foreign trade are shown for Ireland, other EEC countries, and three other important countries (1974).

(Table 2.4)

Of the eleven, the only country resembling Ireland in its concentration of foreign trade on a single country is Canada, two-thirds of the trade of which is with the USA, natural enough when one considers the size of the US market and the length of the land boundary between the two countries. None of the other countries show anything like Ireland's one-half of both exports and imports to and from the UK. (It may be remarked that of Denmark's 55 per cent of exports to non-EEC, 25 per cent is to Scandinavia; with imports the percentages are 56 and 22.)

Percentage-wise Ireland's foreign trade has changed between 1970 and 1975-1976 as follows:-

	<u>Percentage Shares</u>					
	<u>Exports</u>				<u>Imports</u>	
	<u>1970</u>	<u>1975</u>	<u>1976</u>	<u>1970</u>	<u>1975</u>	<u>1976</u>
United Kingdom	65.8	54.2	48.4	53.5	48.7	49.4
Rest of EEC	11.7	25.2	27.4	17.8	20.4	20.1
Rest of world	22.4	20.6	24.2	28.7	30.9	30.5

Contrary to what had been anticipated, Ireland has done more "flooding" of EEC (ex UK) markets than vice versa, exports increasing from 12 per cent to 27 per cent of the total in the six years mainly by transfer from UK.

Comparatively, the geographical pattern of imports has changed little.

To answer our question of some paragraphs ago, what Ireland's geographical trading pattern should be like, we have set up a regression as follows:-

Y = percentage in 1974 exports towards other EEC countries and Rest of the world for all EEC except Ireland; (See Note to Table 2.4.)

X₁ = total imports in 1974 in \$ billion;

X₂ = dummy: contiguous - 1, other EEC 0, Rest of world 1.

The data for Y and X₁ are given in Table 2.4. With Luxembourg and Belgium as a unit, the number of sets of observations is 56 (=n). The hypothesis

involved in the regression is obvious: percentage exports towards any

country should depend on total imports into that country and should be the

larger ceteris paribus the greater the contiguity, i. e. the "shorter the distance".

The regression is:-

$$(1) \quad Y = 1.1047 + 0.1011 X_1 - 8.6406 X_2 + e \quad R^2 = .85$$

Using this formula (omitting e) for Ireland expected percentages compare with actual as shown in Table 2.5.

Table 2.5 Ireland's percentage exports to other EEC countries and Rest of world, expected (as calculated and adjusted) and actual, 1973

Country	Calculated		Actual
	Original	Adjusted	
1	2	3	4
United Kingdom	15.2	16.3	56.4
France	6.4	6.9	3.2
Belgium - Luxembourg	4.1	4.5	3.3
Netherlands	4.4	4.8	4.1
Germany, FR	8.2	8.8	5.9
Italy	5.2	5.6	1.6
Denmark	1.0	1.1	0.3
Total EEC (ex UK)	29.3	31.7	18.4
Rest of world	48.3	52.0	25.2
Total	92.8	100.0	100.0

Notes: Col.2: by substitution of Irish values for X_1 and X_2 in formula (1).

Col.3: Col.2 and adjusted to add to 100.

Col.4: actual (derived from UNYITS).

That the calculated (Table 2.5) percentages add to as close to 100 as 92.8 is satisfactory, so that the formal proportionate adjustment to total 100 does not make much change in the originals. Contrasting Cols. 3 and 4, the great change-over would be from UK to Rest of world. Each of the other EEC countries would take an increased percentage, the aggregate increasing from 21 to 32.

(Table 2.6)

Table 2.6 in which certain important zones are distinguished, shows a marked improvement in equalisation in the visible trading situation of Ireland in the last two years, as indicated by the ratio R: if there was a slight recession in the All Countries ratio for 1976, for the two years 1975-1976 the figure was 0.825 significantly higher than the figures for 1970 and

Table 2.6 Total exports, imports and ratio, Ireland 1970 and 1974-1976
 E = Total exports; M = Imports; R = E/M. (Values in £m).

Area		1970	1974	1975	1976
United Kingdom:	E	283.9	634.2	781.3	906.4
	M	349.6	758.2	828.2	1,153.3
	R	0.81	0.84	0.94	0.79
Other EEC:	E	50.6	206.5	363.1	502.2
	M	115.9	352.6	347.0	469.1
	R	0.44	0.59	1.05	1.07
USA - Canada:	E	49.6	119.1	104.6	149.9
	M	56.2	129.9	140.1	228.9
	R	0.88	0.92	0.75	0.65
Japan:	E	4.0	9.5	9.1	23.6
	M	6.4	21.7	29.9	51.5
	R	0.63	0.44	0.30	0.46
4 OPEC*:	E	0.7	3.7	8.8	23.2
	M	20.5	86.1	92.5	86.3
	R	0.03	0.04	0.10	0.27
Other countries:	E	42.4	151.0	174.5	252.0
	M	105.1	278.3	261.9	346.6
	R	0.40	0.54	0.67	0.73
All countries:	E	431.2	1,124.0	1,441.4	1,857.4
	M	653.7	1,626.8	1,699.6	2,335.7
	R	0.66	0.69	0.85	0.80

Basic Source: Trade Statistics of Ireland.

*Iran, Iraq, Kuwait, Saudi Arabia.

1974. In 1975 and 1976 trade was favourable with Other EEC, the ratio having more than doubled since 1970. The marked fall in 1976 in the most important ratio of all, that for UK, leaves the joint 1975-1976 situation slightly better than the figures for 1970 and 1974. For USA-Canada the near-equality of 1970 has receded to two-thirds in 1976. The Japanese ratio, having declined in 1975 recovered in 1976.

Perhaps the most intriguing showing is that for OPEC where the ratio increased ninefold in six years, though the import excess amounted to £63 million in 1976, compared with £20 million in 1970.

The rapid increase in the ratio for Other countries from 0.40 to 0.73 in the six years holds the promise of near equality ($R = 1$) in a further short term of years. What is really encouraging about the showing of Table 2.6 is the magnitude of export achievement even in the years of depression 1974-1976 and making due allowance for inflation. However, the nation cannot continue to cope with the 1976 import excess of nearly £500 million.

Are we not living beyond the standard to which our skills, industry and natural resources entitle us?

What this analysis so far has shown is that goods acceptable as exports are produced and marketing skill to sell them is already available in large quantity: all that is needed is improvement.

Emphasis so far has been almost exclusively on exports, to improve our economic situation. Import substitution is not less important, especially under the wide-ranging condition of free trade within EEC. It goes without saying that reduction of imports (below what these would otherwise be) will also increase the export-import ratio.

Actual and Expected Exports

The question arises: from the purely geographical point of view (i.e. disregarding commodity distribution), have Ireland's exports been as large as they should have been in recent years? To answer, we consider the two separate years 1970 and 1974. In 1970 there were 16 countries to which Ireland exported more than £1 million. Exports to these countries amounted respectively to £391 million and £1,021 million, ratio 2.61. The £/\$ exchange rate in 1974 (1970 as 1) was 0.9798, so that in \$ terms the ratio was 2.56. But if Irish exports to these 16 countries was exactly proportional to their \$ total import ratios, the ratio ("expected") would have been 2.50, so that actual/expected was 1.024. Reversing the

calculation, i.e. with 1974 as base (i.e. using the 26 countries with exports from Ireland, exceeding £2 million) actual/expected is 1.00. We conclude that between 1970 and 1974 Irish exports closely kept pace with imports of the countries to which we exported.

Commodities

Characteristic of primitive economies is a large export of one or two unprocessed commodities to pay for most other non-food requirements, as imports; this means a vast disparity commodity-wise in the patterns of exports and imports. At the other extreme, that of an advanced economy, a certain similarity in patterns of exports and imports is to be expected, though with some commodity groups favoured in accordance with the principle of comparative advantage. Lowering or abolition of tariffs (in particular within EEC) should accentuate such similarity. Advanced economies make nearly everything except certain primary products, for some of which indeed they are finding manufactured substitutes. USA might seem an exception to the foregoing generalisation in view of its large export of grain: exports of "cereals and preparations"- 04 in SITC - were valued in 1973 at \$8½ billion, or 12 per cent of total exports; it must always be recalled that the foreign trade of USA, though the largest in absolute world magnitude is but a small fraction in relation to its GDP, in marked contrast to most other advanced economies.*

At the beginning of a search for commodities of which Ireland might produce more (for export or for import substitution) we therefore assign a role to the current value ratio of imports to exports. Has diversity (i.e. in the ratios between different groups of commodities) changed appreciably in recent years? In Table 2.7 we compare the ratios in 1970.

* The US foreign trade performance is exceptional in many ways. For example, according to the Central Bank calculations in their second quarter 1977 Bulletin the United States had by far the slowest rate of increase in unit wage costs (adjusted for exchange rate variations) of all developed countries over the period 1970-1977. If unit wage costs were that critical a feature of competitiveness, the present huge U.S. trade deficit would be unexplainable in theory.

26H
42
Table 2.7 Ratio of values of imports to exports, Ireland 1970, 1975 and 1976
for one-digit and certain two-digit SITC commodity groups

SITC commodity group	Ratio		
	1970	1975	1976
00 - Live animals	0.362	0.114	0.163
01 - Meat and preparations	0.005	0.017	0.024
02 - Dairy products, eggs	0.011	0.045	0.044
R0 - Rest of group O	1.652	1.313	1.195
0 - Food and live animals	0.413	0.297	0.343
1 - Beverages, tobacco	0.671	1.131	0.961
2 - Raw materials, ex. fuel	1.205	1.052	1.407
3 - Mineral fuels etc.	5.118	12.764	25.366
4 - Animal, veg. oils, fats	1.776	1.527	1.558
5 - Chemicals	3.194	1.773	1.536
65 - Textile yarns, fabrics etc.	1.765	1.225	1.136
66-69 Metals, non-metals and manufacturers	3.327	2.179	2.326
R6 - Rest of group 6	2.328	1.605	1.657
6 - Manufactured goods	2.391	1.651	1.655
71 - Machinery (non-elect.)	5.600	2.530	2.148
72 - Elect. mach., goods etc.	2.603	2.203	1.776
73 - Transport equipment	10.048	3.582	4.227
7 - Mach. and trans. equipment	5.574	2.600	2.340
8 - Manufactures, n.e.s.	1.156	1.123	1.184
9 - Parcel post and special transactions	1.468	0.741	0.776
Total trade	1.516	1.179	1.258

Basic source: TSI

Notes

Exports are total, i.e., they include re-exports. R before a single digit means "rest of group". Group 7 contains only the two-digit heads cited.

1975 and 1976 at the one-digit SITC level generally but with a few important two-digit ratios as well.

(Table 2.7)

At the high level of aggregation represented in Table 2.7 it is not to be inferred that the group content of imports and exports is the same, as regards the detailed commodity descriptions. Thus group 65, consisting of textile yarn and fabrics may have different proportions of yarn and fabrics in imports and exports. Clearly, the greater the refinement in commodity detail the greater the disparity in the ratio.

Table 2.7 scarcely needs any statistical finesse to make the point that there has occurred a large reduction in import-export disparity since 1970. Of course group 3 - mineral fuels etc - is an obvious exception and we notice that group 1 - beverages, tobacco - in 1970 with a marked export advantage has now moved to near equality. The large reductions in the ratios for groups 5, 66-69, 71 and 73 (all with a high degree of manufacture) will be noted.

Heads 00 - live animals - and 01 - meat and meat preparations - may be considered from a different angle. In 1970 the ratio in value of exports of 01 to 00 was 1.32, in 1976 the ratio was 2.23, a trend greatly to be welcomed. We shall suggest later that there is further scope for development in the meat trade (while maintaining the very valuable live cattle trade), thus creating employment, the country's direst need.

It may well be that this tendency towards import-export ratio balance in advanced economies depends on the size of the country; so, in Table 2.8, comparison is confined to the four smaller countries of EEC, (with Belgium-Luxembourg as one trading unit) at the SITC unit-digit level

Table 2.8 Import-export ratios for Belgium-Luxembourg, Denmark, Ireland, Netherlands
at SITC single-digit commodity level, 1973; ratios for total trade, 1970-1973

SITC commodity group	Belg.- Lux. (S)	Denmark (G)	Ireland (G)	Netherlands (S)
0 Food and live animals	1.228	0.336	0.337	0.608
1 Beverages and tobacco	2.098	1.395	1.070	1.069
2 Crude mats. excl. fuels	2.577	1.318	1.531	1.310
3 Mineral fuels etc.	2.974	6.217	11.818	1.008
4 Animal, veg. oils, fats	1.717	0.422	1.908	1.018
5 Chemicals	0.718	1.838	2.102	0.561
6 Basic manufactures	0.586	3.016	1.728	1.151
7 Machines, transport equipment	1.241	1.355	3.590	1.259
8 Misc. manufactures	1.001	1.033	1.192	1.500
Total (incl. SITC 9) 1973	0.979	1.297	1.311	0.970
" 1972	0.972	1.166	1.305	0.994
" 1971	1.038	1.272	1.403	1.071
" 1970	0.979	1.335	1.515	1.138

Basic Source: UN Yearbook of International Trade Statistics 1974, Volume I

Notes

At column heads (S) is special trade (i.e., excluding re-exports), (G) is general trade. Ratios for SITC commodity group 9 ("Goods not classified by kind") are omitted as lacking significance. Ratios for group 3 may not be comparable - see text.

of commodity aggregation. The nearer the ratio to unity the lower the disparity.

(Table 2.8)

We are not adopting a mercantilist attitude* ("to export is good, to import bad") in regard to Table 2.8 or anywhere else in this chapter on foreign trade. We simply wish to show that countries twice as prosperous as Ireland (on a dollar GNP per head basis) have a more balanced trade than we have. It is to be expected that the advanced economy is big in every activity, industrial, trading (including foreign entrepôt trade, i. e. re-exports) and other services. To repeat, we use this ratio approach to indicate the lines in which we might be engaged to a greater extent than we are, by comparison with more advanced economies than ours.

In regard to Ireland's persisting problem of the aggregate import balance of trade, i. e. the increase in foreign indebtedness, we note from Table 2.8 that in all four years shown the total (visible trade) Irish ratio is greatest of the four, though sometimes (and significantly) approached by that for Denmark. Clearly a valid aim of Irish economic policy would be to bring the ratio nearer to unity, as in the case of Belgium - Luxembourg and Netherlands. There are certain similarities in the ratio systems of Denmark and Ireland: the group 0 figures are identical, the group 3's are far larger than for the other two countries and, as already remarked, the total ratios are not very different.

As to diversity we have made the following unweighted calculations from the group ratios of Table 2.8 (omitting group 3 - for reason see later):-

	Belg.- Lux.	Denmark	Ireland	Nether- lands
Mean	1.40	1.34	1.68	1.06
Standard dev.	0.69	0.85	0.95	0.33

* The exact opposite is nearer the truth. Exporting is the sacrifice we make to obtain the imports we need.

46 The mean Irish excess of imports and the disparity between groups (indicated by the standard deviation) are largest in the case of Ireland; had we included group 3 ratios in the calculations the contrasts (between Ireland and the others) would have been much greater.

Petroleum

The outstanding ratio for Ireland in Table 2.8 is that of 12 for group 3, of which the principal constituent is, of course, petroleum. The magnitude of the ratio depends on the treatment of this product in Irish foreign trade statistics which, as we have noted, are compiled on the general principle, i.e., exports include re-exports. We understand that, however, the trade in crude petroleum through Whiddy Island is treated in a special way. Instead of formally including the values for both imports and exports of petroleum gross, only a single net figure is included in exports for value added (cost of loading, unloading, warehousing, depreciation, etc.) at Whiddy. Very reasonably the view is taken that formal gross treatment would impart a vast distortion not only to the single item but even to total trade. But this treatment may render comparability (of absolute figures for value of imports, exports or their ratio for petroleum or any item including petroleum) with other countries invalid. Despite these statistical difficulties there seems to be prima facie a case for the large development of petroleum product industries in Ireland, so that the figures, such as they are, must be looked at a little further.

It seems obvious that the problem of increasing the processing of petroleum in Ireland should be examined as a matter of urgency. Availability of crude in unlimited supply at Whiddy must be an advantage. We are aware that petroleum industries are highly capital-intensive and, as such, are not to be favoured in view of our chronic condition of surplus labour supply. We suggest that this is a case in which purely economic considerations must prevail over the social in view of the magnitude of the sums involved. Clearly the argument for a petroleum industry would be strengthened by the discovery of native supplies.

Motor Vehicles

We call attention also to the Table 2.8 group 7 ratio for Ireland of 3.59, some three times as large as for the other countries, even Denmark. Its Irish Adaptation Committee's forecast for the Irish motor assembly industry was gloomy to the point of suggesting that it might have no future at all.

Happily this prospect has been negated to some extent. Modern motor works everywhere are all assemblies on a vast scale: we read of some having as many as a hundred sub-contracts. So we suggest a policy of encouragement with a view to a marked increase in the motor vehicle industry, or some specialised sections thereof: if we cannot be a major world manufacturer (of motor vehicles or anything else), why should we not be sub-contractors for bits and pieces? Later we shall find evidence of the astonishingly large part the motor industry plays in world trade. To thrive we must have some share in heavy industry.

Individual Commodity Exports

We pause to remark that in this paper we have no pretension to examining Ireland's foreign trade even as regards statistics, but only to seek some guidelines as to our future foreign trade policy. In this section we consider possible expansion of exports. This we do simply by comparing the current value of Irish commodity exports (using the SITC at different levels) with world and EEC imports similarly classified. We seek policy only, not detail, and raise questions rather than try to provide answers. Even the most detailed (i.e. the five-digit) SITC will not be precise enough for an interested possible exporter who must do market surveys to discover precise varieties demanded and countries of import.

Do we try to expand in commodities in which exports are already large (i.e. almost certainly in accordance with the principle of comparative advantage), or do we develop in export lines at present small but for which world demand is large or increasing? Policy must favour the former, as the less risky. With the former there may be natural advantages (our matchless grasslands for livestock and livestock products and recent discovery of minerals existing unused capital structure and expert labour (so that any increase in exports may be marginal production at low cost), and marketing expertise. But change is of the essence of economic development: policy must

48

have regard to changes in demand even for our traditional products and to changes in methods of production and marketing. Ireland is perhaps fortunate in its specialisation in agricultural products in which demand has altered less than in other products; but great change has occurred in production methods with which we must keep abreast even to hold our markets. Ireland is less fortunate in the prospect of increased exports of its traditional products in that the income elasticity of demand for these products is generally less than unity, in marked contrast to other and to new products. So policy and planning must take account of all products in current and probable future world demand. In this connection, it is encouraging to think that we now export commodities we hardly knew existed (or did not exist at all) even at the beginning of the industrial upsurge (ca. 1960). Most of these new exports may be due to foreign firms towards whom we have no chauvinistic objection but whom we shall like even better when they use more Irish materials instead of imports, retain more of their Irish profits for development in Ireland and train more Irish citizens in production and marketing.

Besides agricultural products, textiles and (to a certain extent) clothing are traditional Irish exports. In our efforts to join our EEC partners as an advanced economy should we not reconsider our policy in regard to these? All countries have an interest in the economic development of the so-called "developing countries" (but developing too slowly, except in OPEC), not merely on humanitarian grounds but because, better-off, they will be more lucrative markets for our produce. Now, developing countries (as Ireland did) probably start with light, or merely assembly industries, low in capital and high in manpower, unskilled or semiskilled, textiles in particular. Should policy not consider a gradual drift away from such products except by the most efficient firms, e.g., in woollen textiles produced entirely from Irish wool, or by specialist brands. While wages will certainly rise considerably in developing countries (and it is to our

advantage in the long run that they should), for some time to come they can undercut us in price in these typical "beginners' products". Do we let them and leave for other fields?

In 1973, regarded as a boom year in Ireland, world imports amounted to \$588.4 billion* and Irish exports to \$2,131 million or 0.36 per cent of the world total. For the market economies, with which we shall be exclusively concerned, imports were \$526.3 billion, of which Irish exports were \$2,094 million or 0.40 per cent. EEC imports (including those of Ireland) were \$214.6 billion, of which Irish exports were \$1,620 million or 0.75 per cent. Irish exports to U.K. amounted to \$1,166 million or 3.00 per cent of U.K. imports. These Irish export percentages will be borne in mind in assessing commodity balances. Ireland is a small country which, by past standards, has recently done well with its exports. Still, these minute percentages show that there is vast scope for further improvement.

Exports of Food and Live Animals

In Table 2.9 we show Irish exports as a percentage of total imports into (i) all market economies, (ii) EEC, (iii) U.K. for certain SITC three-digit commodities in group O-Food and live animals, which, as deriving from agriculture, would appear to afford the greatest potential for export expansion.

Experts regard Ireland as capable of considerably increasing its quantum output** of agriculture and elsewhere*** we argue that a large increase in agricultural output will be necessary to stem the flow of workers from agriculture, which flow exacerbates the problem of the non-agricultural unemployment. Without such increase in agricultural output, anything like full employment will be

* Except as otherwise indicated, all basic figures quoted are derived from UNYITS 1974

** An Analysis Of Recent Policies For Beef And Milk. Robert O'Connor, Journal Of The Statistical And Social Inquiry Society of Ireland 1969-70.

*** R. C. Geary; and M. Dempsey: "Relief of Unemployment in Ireland" ESRI Broadsheet Series No. 14, 1977.

Table 2.9: Irish exports and (i) world market economy, (ii) EEC and (iii) U. K. imports of certain commodities in SITC group O with percentages for Ireland, 1973

SITC No. and Commodity	Imports (\$ million)			Irish exports per cent imports of -			World export order	
	World mkt. ec.	EEC	UK	World mkt. ec.	EEC	UK	Ireland	Denmark
001 - Live animals	3,008	1,874	197	6.9	10.6	81.2	3	11
011 - Meat, fresh, chilled, frozen	8,014	4,701	940	3.5	4.4	10.4	9	5
012 - Meat, dry, salted, smoked	596	509	465	5.0	5.2	5.7	2	1
013 - Meat, tinned nes or prepared	1,515	700	349	1.2	2.2	4.4	13	2
022 - Milk, cream	969 ^x	626	38	2.7 ^x	4.5	47.0	7	8
023 - Butter	891	631	336	5.7	6.7	12.1	8	5
024 - Cheese, curd	1,342	916	152	3.2	4.7	27.5	8	4
025 - Eggs	442	271	26	0.0	nq		nr	8
031 - Fish, fresh, simply prepared	3,978	1,007	143	0.6	nq		nr	4
032 - Fish, etc. tinned, prepared	1,086	477	181	0.1	nq		nr	9
041 - Wheat, unmilled	2,758 ⁺	1,503	414		nq		nr	12
043 - Barley, unmilled	965	532	29	0.6	1.0	17.7	15	7
045 - Cereals nes unmilled	883	231	21	0.0	nq		nr	17
048 - Cereal etc. preparations	1,051	409	38	1.1	1.8	18.1	12	10
051 - Fruit, fresh, nuts fresh dry	4,782	2,684	500		nq		nr	nr
052 - Dried fruit	429	234	103	0.0	nq		nr	nr
053 - Fruit preserved, prepared,	1,671	1,017	319	0.2	nq		nr	nr
054 - Veg. etc. fresh, simply prepared	3,223	1,933	333	0.4	nq		nr	nr
055 - Veg. etc. preserved, prepared	1,287	734	127	0.4	nq		nr	nr
061 - Sugar, honey	4,200	944	416	0.1	nq		nr	nr
062 - Sugar preps., non-chocolate	308	139	12	1.6	2.6	17.3	13	7
073 - Chocolate and products	469	291	46	6.9	10.3	65.3	5	15
081 - Animal feeding stuff	4,561	2,920	378	0.6	0.8	5.7	22	8
091 - Margarine, shortening	223	127	74	0.1	nq		nr	9
099 - Food preparations nes	733	276	46	1.8	2.4	14.1	12	8

x 1971, + 1972

Basic Source: UNYITS 1974, Volume II

NOTES

nq: not quoted in basic source amongst some 60 market economy countries

nr: not ranked, i.e., not in first 22 in value of exports in 1973 amongst market economy countries

Several items in the SITC group O are omitted because there seems to be no prospect of Ireland's ever achieving an export (or even re-export) trade in them.

Impossible of achievement without emigration on a large scale. These general remarks are a background for what follows.

To repeat, our approach in this section is to identify the commodity groups in which we might increase our exports by having regard to the magnitude of imports of the world, EEC and UK groups, in relation to Ireland's recent exports. In Table 2.9 our basic source will be seen to be the UNYITS. While we could have obtained actual entries for positions marked "nq" and "nr" in the table from TSI, actually the symbols are better suited to our purpose: it is enough to know that the actual values so marked were small in 1973.

That our great traditional export of live animals (001) constituted in 1973 only 7 per cent of world imports will come as a surprise, as will the fact that the two countries with larger exports are France and Germany FR, two of the most advanced economies: other leaders in this export are like a roster of the wealthiest economies since, following Ireland we find USA, Netherlands, Belgium, U.K. and Canada. In fact, Ireland has always rather deprecated its great export of live cattle as wasteful of home employment: the view taken was that the animals should be converted into beef before export.*

At the same time, on the world pattern, the increase in meat exports (011) should be vastly greater than the export of live cattle. We note that the market economy world import was, in 1973, a magnificent one of \$8 billion and, with increasing world prosperity, is certain to increase in real terms. We notice that in world imports the ratio of meat imports (011 + 012 + 013) to live

* One of us recalled that at a trade conference he heard a UK official rather overfrankly remark "The only thing we want from Ireland is its store cattle". Long may it remain so, and the world to think likewise! We must foster this export which probably leads for Ireland as that in which we have the greatest comparative (i.e., natural) advantage. Though the profit per acre is lower than for other agricultural products at present, this may not be the case with improvement of grassland to carry more cattle.

animal imports (001) was 3.4. The corresponding ratio for Irish exports was 1.6. It is suggested, therefore, that policy should be directed towards a great expansion of meat exports, while at least maintaining live cattle exports.

Comparisons with Denmark are traditional in Ireland, of world rankings compared to Ireland's. We show up very well in dairy products (022, 023, 024). Denmark appears in the ranking, however, oftener and usually higher than we do.

Sadly we recall the eminent Irish statesman's assertion that "we shall drown the British in eggs" in looking at the entries for item 025. Its world market is now small and UK's import negligible; still, it is hard to understand the difference between Denmark's export in 1973 of \$11 million and Ireland's \$0.2 million.

Ireland's showing in the two fish headings 031 and 032 is unimpressive, considering that length of coastline is one of the few characteristics in which we loom large in EEC. One of us has recently written to the press asking whether a policy of using Ireland's magnificent geographical position as an entrepôt for seafish caught by trawlers of all nations in the North Atlantic (for re-export raw or export prepared), would not be vastly preferable, from the employment viewpoint, to the favoured policy of trawler expansion which (including also concomitant fishery protection) is so undesirably capital-intensive. Geary would like to add that it now appears that the North Atlantic is over-fished and that a prior policy, consistent with any longer-term policy for Irish sea fishing, would be conservation, with the aid of the navies of all our EEC partners. Exports by Denmark (also with a long coastline but not nearly as long as Ireland's) under the two heads (which, by the way, include inland as well as seafish) was \$264 million, exactly ten times Ireland's.

We intervene to repeat that, in regard to fish or anything else mentioned, we do not advocate particular policies but we present, in a reasonably systematic way, based only on foreign trade statistics, aspects which may be

helpful in the determination of prudent policies, in particular to ensure that none will be overlooked, even if somewhat outré as a possibility to start with. To repeat, we must be on the qui vive for change in a rapidly changing world, as regards products, methods of production and direction of trade.

As regards the fruit and vegetable heads 051 to 055, while world, EEC and UK imports are very large, that Irish and Danish are unimpressive is probably a matter of climate. Still, it is hard to understand why Ireland has only 0.4 per cent of the \$3 billion market for fresh vegetables etc. (SITC 054).*

Our impressive ranking of 5th in world exports of SITC 073 (while world imports are small) is satisfactory and prompts the reflection that production by Irish subsidiaries of foreign concerns (producers of chocolate have been a long time in Ireland - *ipsis hibernis* ... ?) need not be a constraint on Irish export

Here and elsewhere in this chapter we have selected the years 1970 and 1973 for comparison of trend in the latest period of more or less normal development of foreign trade, i. e., preceding the more recent years of depression. During this period have Ireland's SITC group 0 exports increased as much as WME generally? The answer is No: on the latter ("expected")** basis Ireland's exports in 1973 would have been \$923 million; actual export \$859 million. The shortfall of \$64 million has more than accounted for the fall in exports of items 001, 011 and 012, i. e., live animals and meat, in turn mainly due to a cyclical decline in the supply of Irish cattle, a phenomenon with a long history and still not understood. On the other hand, exports of dairy products (022, 023, 024) have done much better than expected (actual \$182 million, expected \$123 million). Creameries will probably be aware that the world market for 022 (milk and cream) and 024 (cheese and curd) are each now much larger than for 023 (butter) and have grown more in WME between 1970 and 1973.

* A non-Irish colleague comments: "This finding is fully compatible with the very low standard of vegetables both in Irish shops and in Irish restaurants. The consumers of vegetables on the home market are apparently not that discriminating, but it would be far more difficult to foist these goods onto foreign markets."

** Using formula $\frac{IE_{70}}{WM_{70}} \times \frac{WM_{73}}{WM_{70}}$, \leq over 25 items with Irish exports specified, but omitting some products with no Irish export potential, IE = Irish exports, WM = market world imports.

We conclude this commentary based on Table 2.9 with the remark that we could have said much more as regards even the statistical aspects, (production, prices, etc. of the products indicated) but this would lead us too far afield. In general, the showing of Table 2.9 is satisfactory from the Irish point of view: in several products our world export ranking is high. Clearly we must foster those exports in which our exporters must have acquired great skills in production and marketing knowledge, and large capital investment. We must not be censorious; a small country with high rankings in some products must be low in others.

If we were asked about an optimal export policy based on SITC group 0, having regard to size of world market, but without regard to dozens of other aspects (including profitability, skilled manpower, etc.) our order would be (1) 011, meat, (2) 022-024, dairy products, (3) 081, animal feed, amongst highly developed products, (4) 031-032, fish, (but with more emphasis on marketing than production), (5) 054 - vegetables amongst the less developed products.

Exports other than Animals and Food

In our continuing search for commodities which might be capable of export development (expansion of old, or discovery of new lines) we adopt even a simpler approach than in Table 2.9: using only the invaluable UNYITS 1974 Vol. II we investigate, at SITC three-digit or over level (where these are given), (i) magnitude of world market economy imports in 1973 and (ii) growth in three years 1970-1973. Commodities or groups large in both (i) and (ii) qualify for consideration, except, of course, those obviously with no Irish export potential. For completeness we include group 0 products, already dealt with in this approach.

Motor Vehicles

Overwhelmingly the largest import item at the three digit SITC level is 732 - Road motor vehicles with world market economy (WME) imports of \$38 billion in 1973, a reminder of the dominant role of this industry in the advanced economies, both as a symptom (or effect) and a cause of general

economic weal or woe. This import was 7.2 per cent of WME imports in 1973 and its value increase in 1970-1973 was 87 per cent, somewhat larger than the total WME import increase of 79 per cent.

As already stated, the CIO Survey team report for the Irish motor assembly industry in 1968 foresaw no useful role for this industry in the future economy of the country:- "Here the survey team concluded that the entire industry Motor vehicle assembly would go out of production in free trade conditions. The industry, which is largely under the control of foreign firms, only came into existence because of the imposition of a virtual prohibition on the import of completed vehicles. The disappearance of this restriction would remove all reason for separate assembly over here and the parent companies are therefore likely to cease production in Ireland entirely or to use the Irish firms merely as distributive outlets."* Despite such a gloomy prognosis the industry continues to exist. The question arises: can a small modern economy function without a substantial motor vehicle industry? We seek enlightenment, as before, by comparison in Table 2.10 with the foreign trade experience of our EEC partners.

Table 2.10: Foreign trade of EEC countries in SITC commodity group 732 - road motor vehicles. Values in \$ billion

EEC country	Imports 1973 M	Exports 1973 E	Ratio E/M	Export increase 1970-73 %	Nature of trade
Germany FR	2.44	9.11	3.7	94	S
Belgium - Lux.	2.39	2.22	0.9	107	S
France	1.90	3.78	2.0	100	S
Netherlands	1.34	0.41	0.3	125	S
Italy	1.26	1.96	1.6	67	S
UK	1.60	2.70	1.7	35	G
Denmark	0.54	0.42	0.8	88	G
Ireland	0.18	0.01	0.1	328	G

Main source: UNYITS 1974 Volume 11.

Notes

In final column S is special, G is general, trade, i. e., exports respectively exclude or include re-exports. SITC group 732 includes parts of road motor vehicles.

While it is true that there was great percentage increase in Irish exports between 1970 and 1973, even in 1973 these amounted only to \$9.6 million and (see Notes to Table 2.10) this sum included re-exports. Of course, it cannot be inferred that, because Ireland is by far the poorest and has the lowest exports of motor vehicles,

* Committee on Industrial organisation. A Synthesis of Reports by Survey Teams on 22 Industries. Stationery Office Dublin 1965.

there is a casual relationship between the phenomena; notice the comparatively low export figure (including re-exports) for the very prosperous Netherlands, which, however, in 1973 was some forty times that for Ireland (including re-exports)

While, as indicated in the last paragraph, the present analysis does not prove that there is a necessary relationship between prosperity and a thriving motor industry, it lends support to such a theory which is commonly accepted abroad. We are glad to note that the IDA give this aspect particular attention.

Exports of SITC 732 in 1975 amounted to £8.1 million (= \$16.4 million), still small (allowing for inflation). In 1976 exports of SITC 73 - transport equipment - increased to £37 million, compared with £26 million in 1975 but the much larger imports increased even more with the result that the import-export ratio increased to 4.2 from 3.6.

As a general remark (applying to the motor vehicle industry in particular) it is evident that industrial prosperity depends on a country having heavy industry, yet obviously a small country cannot have such an industry in toto. It must be content with having parts of such industry. To repeat, the modern motor vehicle industry has hundreds of sub-contracts; we could aspire to some of them, for specialised export. We realise the danger of specialisation, as so vulnerable to vast changes in demand. In the future of industrialisation attention must be directed to product flexibility to avoid unemployment due to change in demand; not only when crisis occurs but as a continuing strategy. Workpeople must be trained for change, and machines and tools must be capable of adaptation to making different products. English experience in the past of unemployment and poverty in whole towns with specialised industries is an example of what to avoid.

But why, instead of always following the band, should not Irish genius lead into the future? Has the road motor vehicle industry about reached its limit? Is there anything revolutionary in the wings (or on the

Table 2.11: Particulars for 1-digit SITC commodity groups, WME imports and Danish and Irish exports, 1973

SITC commodity group	WME imports (\$ billion)	Exports (\$ million)		Exports % WME		Ratio Dan./Ir. Exports	WME increase 1970-73 %
		Denmark	Ireland	Denmark	Ireland		
1	2	3	4	5	6	7	8
0-1 Live animals, food, beverages, tobacco	68.52	2008.4	921.6	2.93	1.35	2.18	85
2 Raw materials, except food	47.80	397.1	123.0	0.83	0.26	3.23	75
3 Min. fuels, lubricants, related mats.	59.01	132.1	16.1	0.22	0.03	8.21	129
4 Animal, veg. oils, fats	3.52	48.0	8.1	1.36	0.23	5.93	67
5 Chemicals	36.29	371.3	143.9	1.02	0.40	2.58	68
6-8 Manufacturers ex machinery, transport	144.05	1326.5	576.8	0.92	0.40	2.30	76
7 Machinery, trans. equipment	143.91	1652.4	210.0	1.15	0.15	7.87	82
Total SITC 0-8	503.10	5935.9	1999.5	1.18	0.40	2.97	84

Basic source: UNYITS 1974, Volume I, Special Tables B and D, and Country Tables

Notes

Exports of Ireland and Denmark are general, i.e., they include re-exports.

Col.1: Grouping is that of UNYITS Group 9 - Goods not classed by kind are excluded because not comparable between Denmark and Ireland, since Ireland included all of exports from Shannon under this head. See text.

Col.5: Col.3 per cent col.2

Col.6: Col.4 per cent col.2

Col.7: Quotient col.3 ÷ col.4

Col.8: Percentage increase of col.2 on corresponding figures for 1970. Unit value and quantum indexes to base 1970 as 100, classified by commodity groups, are:-

	0-1	2-4	3	5	6-8	7	Total*
Unit value	149	145	166	127	135	141	142
Quantum	124	124	136	148	128	131	129

* Including SITC group 9

wing!) comparable with the Model T or even the VW? Are the people to tolerate any longer the cost of making and upkeeping the modern major road? Why should Ireland not lead in the production of the cheap, popular, straight take-off, nuclear-powered aeroplane which obviously will follow the road vehicle? Unless, of course, patents are already in the cold storage of a great motor manufacturer, fearful of his present investment being rendered obsolete. Ireland missed the bus (at last a metaphor that is apt) twice before: once when Ford set up in Detroit instead of Cork and once when Dunlop went to Coventry because in the 1900s the denizens of Merrion Square thought they would have to endure the smell of burning rubber. Some will argue that such misses were not disasters, to which the answer will be "Ireland must have more industry for the employment it gives and modern industry is not the ugly thing so much of it was once".

Table 2.11 (using the single-digit SITC as adapted by UNYITS) introduces an approach to our search for non-food commodities (though groups 0-1 are included for completeness) which might have an improved export potential for Ireland. The notion of the absolute magnitude of a world market is less significant perhaps than the percentage increase showing the commodities in increasing or decreasing demand.

As already indicated, Denmark has been traditionally held up to Ireland as an example to follow in agriculture. Here we use it to a similar end in non-foods. In 1973 Denmark's GDP was 4.2 times, GNP a head 2.5 times, total exports 2.8 times that of Ireland. The point in using it here is that industrially Denmark is far more advanced than we are while its economy and size are more similar to ours than is the case with any other EEC country.

It may have trodden an industrial path that we might follow. While exports in SITC Group O-Food and live animals (the characteristic agricultural group) in 1973 were 41 per cent of all Irish exports, the percentage for Denmark was only 32. We leave the table to speak for itself.

A Search for Commodities of Which Ireland Might Produce More

We have in mind both exports and import substitutes with the underlying assumption that commodity production will have its impact of foreign trade, increasing exports and decreasing competitive imports.

Our approach is based almost entirely on the contents of Volume II of UNYITS 1974; if simple, our search is systematic. Our source shows SITC (i) 3 digit and (ii) 4 and 5 digit commodity groups, classified by (usually) 60 leading market economy countries with largest values of imports and exports for the commodity group. We omitted all single digit zero commodity groups (i.e. food and live animals), already dealt with.

The general idea is to compare statistics for Irish exports and imports, by commodity groups with the experience in 1973 of (i) the world market economy and (ii) our exemplar, Denmark. Our hope is that by our tests certain commodity groups will stand out. We should not go so far as to recommend that production in these groups should be increased but only that they should be subjects for feasibility studies. Both Irish and Danish foreign trade statistics are compiled on the "general" principle, i.e. exports include re-exports which means that exotic commodities, not economically produceable at home, can appear as exports. The country should not reject the purely selling role for goods, involving warehousing but not manufacture, but recognising that employment per £million sales will usually be much lower than in the case of manufacture, so that purely selling turnover must be large to be of real worth. We have, for instance, already suggested

Ireland's being the entrepôt for fish caught in the North Atlantic.

Exports

The UNYITS 4 and 5-digit commodity group table comprises particulars for 168 commodities, excluding SITC group 0 - food and live animals. We eliminated 14 as having little apparent Irish potential - e.g. the first eliminated was 11212 - wine of fresh grapes. The UNYITS particulars included value (in thousand US \$) for the years 1970 to 1973 (or 1974) of imports and exports for each of these commodity groups (described as "selected"). Data were usually given for 60 leading countries, with aggregate trade for the whole developed market economy and subtotals for EEC, EFTA etc. Clearly the UNYITS intention was to select the most important commodities in international trade, fairly specifically described. Imports of the 154 commodity groups accounted for little less than half imports of the world developed market economy.

Punch cards were prepared for the 154 commodity groups showing the following:-

- o SITC number;
- o Value (in \$ million) of exports from Ireland in 1973;
- o Percentage increase in world market economy imports 1970-1973;
- o Ratio Danish/Irish exports 1973; Value (in \$ billion) world developed market economy imports in 1973.

In extracting the data for the UNYITS table a statistical anomaly therein became apparent. While exports for Denmark (if in a few cases small) were always given, they were entirely missing in no fewer than 38 cases (out of 154) for Ireland, while the quite minute values were often given for other countries, amongst the identified 60. Reference to TSI 1973 and CSO revealed that in 36 of the 38 missing cases Ireland had exports in 1973, for a few commodities small it is true, but generally far larger than values for countries with data displayed. Would UNYITS and CSO

Table 2.12: Data for 154 SITC 4 and 5 digit commodity groups classified according to (a) total DME imports in 1973, (b) percentage increase in DME imports 1970-1973, (c) ratio of Danish to Irish exports 1973, showing for each class, number of commodity groups, value of DME imports, value of Irish exports 1973.

1	2	3	4	5	6
Classification	No.	DME im- ports 1973 (\$ billion)	Irish ex- ports 1973 (\$ million)	Percentage col. 3	Percenta col. 4
(a) Total DME imports in 1973 in \$ billion					
0.4 or less	23	8.0	37.0	3.9	6.1
0.5 and 0.6	30	16.3	80.2	8.0	13.3
0.7 - 0.9	31	24.1	108.6	11.8	17.9
1.0 - 1.4	26	30.5	48.0	14.9	7.9
1.5 - 1.9	20	34.0	133.9	16.6	22.1
2.0 or over	24	91.5	197.7	44.8	32.7
(b) Percentage increase DME imports 1970- 1973 -					
Less than 50	26	26.2	64.6	12.8	10.7
50-74	48	44.3	137.7	21.7	22.7
75-99	36	66.0	148.3	32.3	24.5
100-124	18	28.9	126.4	14.1	20.9
125 or over	26	39.0	128.4	19.1	21.2
(c) Ratio Danish to Irish exports 1973					
0.0 - 0.9	38	48.6	286.1	23.8	47.3
1.0 - 1.9	17	16.0	120.4	7.8	19.9
2.0 - 2.9	17	17.0	70.8	8.3	11.7
3.0 - 5.9	24	32.8	76.9	16.1	12.7
6.0 - 9.9	12	29.9	26.4	14.6	4.4
10.0 or over	46	60.1	24.8	29.4	4.1
Total	154	204.4	605.4	100.-	100.-

Basic sources: UNYITS 1974 Volume II, TSI, CSO.

Notes

In classifications (a) and (c) the principle of classification influences the percentages, thus in column 5 for (a) and in column 6 for (c).

Norms: (b) percentage rise in world exports to market economics (excluding SITC nos 0 and 1) = 83.7.

(c) Ratio Danish, to Irish exports (excluding SITC nos. 0 and 9) = 3.54.

62

please note ? Countries asking (as we hope many in serious imbalance in trade with Ireland will be forced to ask) "What can we buy from Ireland?" could be misled by the table as it stands.

Attention is directed to Tables 2.12 and 2.13. The underlying idea is that commodities that loom large in world trade and/or are rapidly increasing in value and/or have large exports from Denmark are worthy of consideration for expansion of Irish production for export. Table 2.12 shows that the pre-depression export situation in the Republic was a healthy one, at least in aggregate. As to (a) of the table, we were well represented amongst the larger world import commodity groups with more than 50% in the \$1.5 billion or over class. As to the (b) distribution, we were ahead of the general average amongst commodity groups that advanced 100% or over. Section (c) of Table 12 shows that in the case of nearly half (actually 47%) Irish special exports exceeded Danish in value. In many commodity groups, however, Danish exports vastly exceeded Irish exports in value.

It is in Table 2.13 that we try to become more specific, in our prima facie case-making. All the commodity groups shown qualify for consideration. Of course, even at the 5-digit level these descriptions (if given in full, which they are not here) are not detailed enough for a prospective exporter: they merely indicate the "commodity area".

Column 4 indicates how variegated the export pattern is, the ratio ranging from 0.0 to 23.3. Double the ratio norm of 2.7 (see Notes) are group numbers 7352, 7293, 65164, 84111, 84112. Groups below the norm are, however, very numerous. Column 2 of section (a) of Table 2.13 gives some indication of the commodity areas we should head for, with motor vehicles and petroleum products high on the world list but low in Irish exports, as we might expect, from earlier analysis. Some of

63
4-217

Table 2.13: Leading commodity groups according to classifications (a), (b) and (c) of Table 12, showing 1973 value of DME imports, Irish export value and per thousand DME imports.

SITC commodity group	DME imports 1973 \$ billion	Irish exports 1973 \$ million	3 as per \$ 1000 of 2
1	2	3	4
(a) Largest DME imports 1973			
7321: Pass. motor vehicles ex. buses	18.0	2.2	0.1
7328: Motor vehicle parts n. e. s.	9.8	0.8	0.1
6672: Diamonds non-ind. unset	4.8	0.0	0.0
2432: Lumber shaped conifer	4.4	0.0	0.0
3323: Distillate fuels	4.0	0.7	0.2
5812: Polymerizing products etc	3.7	11.4	3.1
7353: Ships and boats non-war	3.4	24.8	7.3
68212: Coffee refined	3.3	1.9	0.6
3324: Residual fuel oils	3.3	6.4	1.9
7293: Transistors, valves etc	3.1	17.2	5.5
84144: Outerwear knit non-elastic	3.1	12.0	3.9
7143: Statistical machines	3.0	14.4	4.8
3214: Coal ex. briquettes	3.0	0.8	0.3
(b) Largest percentage increase DME imports 1970-73.			
5151: Radio-active elements etc.	0.3	0.0	0.0
65352: Synthetic discontinuous fibres	1.2	3.4	2.8
3323: Distillate fuels	4.0	0.7	0.2
65164: Yarn, thread of synt. fibre, disc. non-retail	0.6	14.0	23.3
2433: Lumber shaped non-conifer	1.2	0.2	0.2
7143: Statistical machines	3.0	14.4	4.8
6861: Zinc, alloys unwrought	0.7	0.2	0.3
3321: Motor spirit, gasoline	2.0	0.2	0.1
28311: Copper ores, ex. matte	1.6	4.9	3.1
72492: Microphones loud spkrs. ampfrs	0.6	0.2	0.3
65210: Grey woven cotton fabric	0.9	10.6	1.2
71142: Aircraft engines, jet, gas turbine	1.6	2.6	1.6
7241: Television receivers	1.8	3.8	2.1
6672: Diamonds non-ind. unset	4.8	0.0	0.0
84111: Men's outerwear not knit	1.9	12.3	6.5
64122: Coated printing paper	0.5	0.6	1.2
63121: Plywood veneers inlaid	1.4	0.2	0.1
84112: Women's outerwear non-knit	2.0	23.3	11.6
68121: Printing paper not newsp. uncoated	0.8	0.6	0.8
2423: Saw, veneer logs, non-conifer	2.5	0.1	0.0

42B
64
Table 2.13 (continued)

(c) Largest Danish to Irish export ratios 1973

68422: Aluminum plates sheet, strip	0.6	0.1	
6747: Tinned plates, sheets	0.5	0.0	
3322: White spirit kerosene	0.7	0.0	
3321: Motor spirit, gasolene	2.0	0.2	
72492: Microphones, loud speakers amplfrs	0.6	0.2	
6672: Diamonds non-ind unset	4.8	0.0	
72501: Domestic elect. refrigerators	0.5	0.1	
71919: Heating cooling, equip. n.e.s.	0.8	0.2	n.c.
6871: Tin, alloys unwrought	0.7	0.0	
67411: Heavy plates, sheets	1.2	0.3	
1433: Lumber shaped, non- conifer	1.2	0.2	
2432: Lumber shaped, conifer	4.4	0.0	
3323: Distillate fuels	4.0	0.7	
6534: Jute fabrics, woven	0.3	0.0	

Basic sources: as in Table 12.

Notes

All three sets in descending order of classifier

- (a) Commodity groups specified with DME imports in 1973 exceeding \$ 3 billion
- (b) Commodity groups specified with DME percentage increase imports 1970-1973 exceeding 130.
- (c) Commodity groups specified with Danish to Irish export ratio 1973 exceeding 50. Verbal descriptions are abbreviated. See full SITC.

Column 4 norm: Irish exports per \$1000 DME imports (excluding SITC nos. 0 and 1) 1973 = \$2.72

42c
65
Table 2.14: Particulars of Irish and World ME 3-digit SITC commodity group imports 1973.

SITC commodity group	Irish Imports 1973 (\$ million)	% increase in imports 1970-1973	
		WME	Ireland
(a) Largest imports into Ireland 1973			
732: Road motor vehicles	175.4	87	86
719: Machines n.e.s. non-electric	156.5	75	99
332: Petroleum products	109.0	95	120
581: Plastic materials etc.	77.7	101	98
653: Woven textiles non-cotton	68.6	75	106
651: Textile yarn and thread	66.6	87	96
541: Clothing not of fur	62.3	108	124
718: Machines for special industries	56.8	56	31
641: Paper and paperboard	56.7	62	74
561: Fertilisers manufactured	56.6	78	192
712: Agricultural machinery	55.2	90	71
331: Crude petroleum etc.	54.9	126	4
735: Ships and boats	46.8	102	409
541: Medicinal etc. products	45.7	67	65
243: Wood shaped	44.1	115	81
724: Telecommunication equipment	42.4	103	142
729: Electrical machinery n.e.s.	39.3	92	101
674: Iron steel universals, plates, sheets	37.0	68	135
714: Office machines	36.0	65	84
722: Electrical, power machinery	32.5	77	41
861: Instruments, apparatus	31.4	82	51
673: Iron, steel shapes	30.1	61	88
121: Tobacco, unmanufactured	30.1	51	227
(b) Smallest Danish to Irish import ratios 1973			
261: Pulp, waste paper	0.2	167	
264: Jute	1.8	0	-9
282: Iron, steel scrap	2.2	37	
262: Wool, animal hair,	29.6	113	109
521: Coal, petroleum chemicals	3.7	31	615
532: Dyes, n.e.s. tanning products	0.6	41	28
244: Cork raw and waste	0.4	61	
263: Cotton	5.1	65	76
421: Fixed vegetable oils, soft	5.1	74	51
612: Leather etc. manufactures	4.1	105	81
267: Waste of textile fabrics	1.0	76	49
271: Fertilisers, crude	8.4	45	33
265: Vegetable fibre, ex-cotton, jute	4.6	52	97
411: Animal oils, fats	3.7	44	119
422: Fixed vegetable oil, non-soft	5.6	75	126
274: Sulphur etc.	2.3	0	-40
697: Base metal household equipment	11.2	80	85
677: Iron, steel wire ex-wire rods	9.6	58	279
896: Works of art etc.	4.2	176	69
211: Hides, skins, undressed	7.6	115	188
283: Non-ferrous base metal ore, conc.	0.6	44	53
551: Essential oil, perfume etc.	3.4	77	100
561: Fertilisers manufactured	56.6	78	192
266: Synthetic, regenerated fibre	12.9	107	98
541: Medicinal etc. products	45.7	67	65
897: Gold, silverware, jewellery	4.6	89	97

42 d
66
Table 2.14 (continued)

SITC commodity group	Irish imports 1973 (\$ million)	% increase in imports 1970-1973	
		WME	Ireland
(c) Largest percentage increase imports 1970-1973			
515: Radio-active etc. material	0.1	178	80
896: Works of art etc.	4.2	176	69
261: Silk	0.2	167	∞
842: Fur etc. clothes, products	0.7	164	79
731: Railway vehicles	2.4	161	92
733: Road vehicles, non-motor	9.0	146	94
686: Zinc	2.8	136	130
631: Vencers, plywood etc.	16.2	136	87
667: Pearl, precious, semi-precious stone	0.3	135	10
632: Wood manufactured n.e.s.	6.2	135	110
821: Furniture	12.6	129	171
331: Crude petroleum etc.	54.9	126	4
831: Travel goods, handbags	3.2	120	72
611: Leather	12.2	118	92
243: Wood shaped	44.1	115	81
211: Hides skins undressed	7.6	115	188
262: Wool and animal hair	29.6	113	109
657: Floor covering, tapestry etc.	14.9	111	200
726: Electro-medical, x-ray equipment	2.2	110	57
341: Gas, natural and manufactured	3.0	110	121
(d) Largest percentage increase Irish imports 1970-1973			
261: Silk	0.2	167	∞
212: Fur skins, undressed	0.1	74	∞
282: Iron, steel scrap	2.2	37	∞
244: Cork raw and waste	0.4	61	∞
284: Non-ferrous metal scrap	0.8	29	∞
241: Fuel wood, charcoal	0.1	46	782
242: Wood rough	12.1	103	708
521: Coal, petroleum etc. chemicals	3.7	31	615
221: Oil seeds, nuts, kernals	16.0	94	556
735: Ships and boats	46.8	102	409
111: Non-alcoholic beverages n.e.s.	0.5	105	396
553: Perfumes, cosmetics etc.	6.7	96	282
677: Iron, steel wire ex. wire rods	9.6	58	279
121: Tobacco, unmanufactured	30.1	51	227
851: Footwear	17.9	85	216
657: Floor coverings, tapestry etc.	14.9	111	200
561: Fertilisers, manufactured	56.6	78	192
554: Soaps, cleaning preparations etc.	7.2	72	192
211: Hides, skins, undressed	7.6	115	188
821: Furniture	12.6	129	171

Basic source: UNYITS 1974 Volume II. Notes

All four sets in order of magnitude, (a), (c), (d) decending, (b) ascending

- (a) (a) Irish imports 1973 exceeding \$30 million
 (b) Danish to Irish import 1973 ratio 1.5 or less
 (c) Percentage increases 1970-1973 WME imports 110 or more
 (d) Percentage increases 1970-1973 Irish imports 150 or more; ∞
 in last column means "very large", i.e. 1970 figure very small

Norms last two columns

Increase in imports 1970-1973:-

WME imports (ex-SITC group 0 and 1) 83.7%

Irish imports (ex-SITC groups 0 and 9) 81.1%

Verbal descriptions are abbreviated. See full SITC.

the groups listed may appear to have no export possibilities. For instance, the only item appearing on all three lists is 6672: non-industrial unset diamonds! This may seem bizarre until we recall that Irish exports (like Denmark's) include re-exports. In fact, in 1973 Denmark's exports of this commodity were valued at only \$27, 000; however, Ireland's are vestigial.

In each of the three classifications in Table 2.13 the cut-off points are quite arbitrary and the descriptions provided are much abridged. Truth to say, we are concerned mainly to indicate a systematic approach to the identification of possible export lines. These remarks also apply to Table 2.14 dealing with imports. In such searches UNYITS will be invaluable. To repeat, Irish economic policy must be directed towards increasing exports and diminishing imports.

Imports

For Table 2.14 UNYITS 3-digit classification was used. Particulars are given for 142 commodity groups. We eliminated only three as having no possibility of production. Indeed the same might be said of many that remained - see, for example, 263-cotton on Table 2.14, retained because it might be possible to substitute other fibres for it.

With regard to imports, distinction between producer goods (including capital) and consumer good imports is traditional, the former being worthy as helping employment, the latter being much less so. There was a point in the distinction at the beginning of industrialisation but latterly there is little difference between them as to which kind of goods we should make more of. So in this section we make no reference to "use" classification.

All the groups listed in Table 2.14 are candidates for our importing less, and making more at home. The thinking behind the four principles of selection in Table 2.14 are fairly evident:-

- (a) largest imports
- (b) the low ratio means that Irish imports are large compared to Danish
- (c) the point here, as regards imports, is less evident; it is that we should be making goods for which there is increasing world demand - see (b) of Table 2.13 with similar scope but using the SITC 4- and 5- digit classification.
- (d) we should consider producing more of goods in rapidly increasing Irish demand.
- (e) the scope for employment creation.

To repeat points made earlier: the 3-digit classification is too generalised for practical use, it indicates only areas of possible interest; the approach may be regarded as an exercise of methodology for search of import substitutes.

As always, motor vehicles and petroleum products force themselves to our notice. We shall allow Table 2.14 to speak for itself. Clearly there are other enormous imports in commodities we already produce and export in large quantities, e.g. textiles, clothing, fertilisers, chemicals, machinery. We give merely indications: by extending the analyses on these lines we might discover other and more practical import substitution zones.

We pause to remark that this examination of both export and import substitution possibilities savours of mercantilism which every right-thinking economist condemns as being theoretically suboptimal, i.e. as regards material prosperity. We argue, in reply, that Ireland is a special case in its appalling and apparently insoluble (by methods used up to now) unemployment and underemployment situation. So we must contemplate an optimum possibly in conflict with the economic one, namely one that will ensure maximum employment. Government policy is well attuned to the

need for promoting exports by any and every means; clearly these efforts must be intensified. But the argument for reducing imports is equally compelling. Why should not the inducements to increase exports be offered also to foreign manufacturers to produce import substitutes in Ireland, to the extent that our own industrialists cannot fill the bill?

It might be difficult to devise a system whereby tax relief would be applied to import substitution without major repercussions on the taxation of industry generally; although means could probably be found of relating tax relief to employment creation in industry which could effectively circumvent objections advanced by the EEC to export profits tax relief. As the Irish market is on a small scale, effective import substitution would tend to require access for the products concerned to export markets in order to attain economies of scale.

10
457A

Table 2.15: Percentage distribution of Irish foreign trade between UK, rest of EEC and other countries, import balance as percentage of imports, exchange rate, quarterly and annual 1975 and 1976

Quarter and year	Exports			Imports			Import excess per cent imports	Exchange rate \$ / £
	UK	Rest EEC	Other	UK	Rest	Other		
I 1975	55.1	23.1	21.7	47.4	21.7	30.9	26.0	2.39
II "	56.1	25.5	18.3	47.8	21.1	31.0	21.8	2.32
III "	56.0	25.8	18.1	48.0	20.1	31.9	5.6	2.13
IV "	50.5	25.9	23.6	51.3	18.9	29.8	7.9	2.04
<u>Year 1975</u>	<u>54.2</u>	<u>25.2</u>	<u>20.6</u>	<u>48.7</u>	<u>20.4</u>	<u>30.9</u>	<u>15.2</u>	<u>2.22</u>
I 1976	49.3	27.0	23.7	50.1	20.1	29.8	33.9	2.00
II "	47.5	27.0	25.5	49.4	21.6	29.0	20.6	1.81
III "	49.3	25.7	24.9	47.6	19.4	33.0	15.5	1.77
IV "	49.1	28.2	22.7	50.2	19.4	30.4	14.0	1.64 ^x
<u>Year 1976</u>	<u>48.8</u>	<u>27.0</u>	<u>24.2</u>	<u>49.4</u>	<u>20.1</u>	<u>30.5</u>	<u>20.5</u>	<u>1.80</u>

x October - November

Basic sources: TSI, International Financial Statistics, January 1977, rh series

Note

There are sterling area countries in the two areas other than UK but correction by including such countries with UK in the table would have made little change in the percentages.

Effect of Devaluation on the Irish Geographical Trading Pattern

Table 2.15 starts with the first quarter of 1975 because the then dollar exchange rate had changed little for several years before.

(Table 2.15)

A considerable change has taken place in the pattern of exports: exports to UK fell from 55 to 49 per cent between I 1975 to IV 1976, percentages to the other two zones increasing correspondingly. There is little evidence of any systematic change in trend in the case of imports: compare the percentage for the years 1975 and 1976. Regressing the quarterly UK percentages on linear time we find the following F values, with (1, 6) d.f.: -

	Significance
Exports F = 15.74	Significant at .01 prob.
Imports F = 1.36	Insignificant

In current value terms there is, therefore a downward trend in the percentage borne by exports to UK and hence a significant trend upwards in the percentage for exports to non-UK. Such trends are entirely missing in the case of imports.

Exactly the opposite is the case with quantum trade. In what follows we abstract inflation other than that due to devaluation, allowing for the rate of exchange, in fact assuming that this non-devaluation inflation was much the same in the three zones in the eight quarter period.

From the viewpoint of exporters and importers devaluation is a rise in prices in countries other than UK, the "price index" being the reciprocal of the exchange rate in the last column of Table 15, with base I 1975 as unity.* As an example of this quantum approach consider the export figures for II 1975:-

* A devaluation/revaluation is, however, a change in currency values only. Due to the impact of currency changes on profit margins there may be a consequent realignment of markets.

	Actual value (£m)	Exchange price index	Deflated Actual	%
To UK	183.9	1	183.9	56.8
elsewhere	143.8	1.0302	<u>139.6</u>	<u>43.2</u>
			323.5	100-

A similar procedure was adopted for imports. The full series of percentages for UK were:-

		Exports	Imports
I	1975	55.1	47.4
II	"	56.8	48.6
III	"	58.9	50.9
IV	"	54.5	55.2
I	1976	53.7	54.6
II	"	54.4	56.3
III	"	56.8	55.1
IV	"	58.4	59.5

Regressing these percentages on linear time F values with (1, 6) d.f. are:-

Exports F = 0.11	Significance Insignificant
Imports F = 46.73	Very significant

Any important shift away from UK for exports and toward UK for imports should be brought to light by the foregoing procedure, admittedly approximative. There is no such indication in the case of exports: we went on just as before. There was a considerable drift towards UK with imports. Importers seem to have been more percipient in adapting themselves to this devaluation situation. Part of the reason may have been that exporters were under far longer term contract than were importers many of whom, in this small country, experience little delay in fulfilment of orders.

Conclusion

In this chapter we address ourselves to a purely economic aspect of our problem of adaptation. We start with recognition that the visible import balance in recent years (nearly £500 million in 1976) is too large. We are living beyond our means. We must tackle the problem of increasing exports and decreasing imports, i. e. increase production of goods on a far more intensive scale than hitherto adopted, even since the economic upsurge that started in 1960.

We have not dealt with social aspects at all, the most serious of which is unemployment and underemployment: possibly the 1975 Labour Force Survey will reveal an unemployment figure (including school-leavers and others not in receipt of State payment) of 15 per cent of the labour force. So clearly the manpower is available to produce more. The country appears still to be credit-worthy as regards home and external loans for tangible capital development.

There is not the faintest possibility of increased production for export and import substitution on the scale required without industrial efficiency, in which the main elements are price and salesmanship.

We have made considerable use of the ratio of the value of imports to exports to discover the countries and commodity groups of interest for expansion (positive as regards exports, negative for imports). We also make use of international comparison, usually with our EEC partners and other countries at an advanced stage of economic development. We

74
find that the ratios for commodity groups, and in toto for such countries, are far better balanced than for Ireland. As such a phenomenon can be logically justified we suggest that it be adopted as a guide-line for Irish foreign trade policy.

We have no intention of adopting the usual censorious attitude towards Ireland's actions and attitudes in our recommendations. Especially since ca. 1960 (and even later, since 1970) we have found many excellent features, especially in exports, for instance in the improvement of the ratio during the last few years.

Foreign trade must be brought into better balance with our trading partners, i. e. a nearer to equality in value of exports and imports. Improvement in this direction has certainly happened since 1970, i. e. a lowering in the ratio of imports to exports with some countries. In the text it has been suggested that the device should be used of shifting of our purchases (imports) of given commodities from poor to good customer countries for Irish goods. Promotion of Irish exports should be the principal duty of Irish diplomats abroad, eking out the efforts of competent and assiduous salesmanship.

As regards commodity lines for expansion, we claim only to have made a prima facie case. It is for experts to make a choice. Our methodology for discovering lines we should be "in" has been merely exemplified in Tables 2.13 and 2.14.

There should be great expansion in the meat trade as compared with live animal exports. This need not mean a shift from live

to dead exports: on the contrary there might be expansion in the live trade as well. The point is that in a great increase in the output of live animals by agriculture a higher proportion of animals should be slaughtered at home.

Attention might be directed towards increasing exports in already well developed food lines like dairy products (but towards cheese* and away from butter and milk), and animal feed. Amongst the less developed products there are sea fish (but with stress on the entrepôt trade on a world or at least European scale) and vegetables, fresh and processed.

The country must have a larger share in motor vehicles, machinery and other heavy industry. This will not mean such industries in their entirety, but rather pieces thereof. Could we not make a stronger "set" on great industrial countries outside EEC towards our being their Fifth (industrial) Column inside EEC? Our principal asset therefor is a comparatively large available supply of trainable labour.

There are two aspects to the gigantic petroleum problem, conservation and home processing, both of which must be developed to the full.** Having regard to the magnitude of imports, we consider that the savings to be effected by conservation alone would have an appreciable effect on the import balance.

As to processing, comparison with our EEC partners alone has shown how essential it is to develop refining and petrochemical industries.

We have mentioned only a few of the possibilities of expansion for export and import replacement, though possibly the largest. There are literally hundreds of commodity lines and thousands of varieties

* The scant removal of the Government subsidy on cheese will not help.

** We are glad to note that our ESRI colleague, E.W. Henry, is actively engaged with other bodies, Irish and international, in studying the problem of conservation of energy.

76

which could be brought to light by the methods we have adopted here, which involve a search for products in large and increasing world demand, and in large production by developed economies.

Increase in exports and in import substitution involve increased home production. Diminution of imports of certain lines may result in reduced home consumption (as we hope, in the case of conservation of energy) but in the large majority of cases will mean shift from import to home production.

Great attention has been devoted to increasing exports in this country, as in all others. The result has been that Irish exports have had a creditable record, though we here suggest consideration of attention to new lines. At least equal attention, official and private, should now be directed towards imports, with a view to diminution.

3. Investment Policy

Between 1960 (which may be regarded as the year when the economic upsurge in Ireland began) and 1973 (i. e. before the economic recession of the last few years), GDFCF in real terms increased by 222 per cent while GDP increased by only 74 per cent. More relevant is the fact that the GDFCF constituent, machinery other than agricultural, increased by 321 per cent while volume of industrial output increased by 122 per cent. The increase in GDFCF has been vastly greater than increase in output. Has physical investment at great cost been overdone, as distinct from recourse to other means of increasing output and labour productivity? These means include structural change away from capital-intensive and towards labour-intensive industries, more suitable raw materials, more efficient replacement machinery, better management, more competent workpeople etc. 17

The figures quoted merely raise the question but do not supply the answer. In fact, any year's GDFCF includes replacement of existing stock (through scrapping of old machinery or obsolescence) and net increase in stock. The single figure of GDFCF tells nothing about the magnitude of the two constituents though it is an essential element in their estimation. It is even conceivable that all of GDFCF is replacement, i. e. involving a larger-scale scrapping of old physical capital (buildings, machinery, vehicles etc). This may even have been the case with some older concerns remaining in business. It cannot, however, have happened in the case of the many new firms home and foreign, mostly established here with IDA assistance. It is essential to note, at the start of the discussion, that replacements if new (though some may be second hand imports) must be assumed to include all the latest improvements, which means that replacement alone must be conducive to increased output ceteris paribus (improved quality in a given

article is equivalent to increased output, statistically "the same" in quantity).

Estimates of GDFCF at constant prices are usually made by dividing (i.e. deflating) the current value estimate by a price (or unit cost) index. Now the latter must assume unchanged quality which, strictly speaking, is unreal: if part of the capital is a typewriter which has to be replaced, the new machine may be the same price as the old but must embody improvements which experience has shown to be desirable but which do not justify a change in price: improvements may not be costly or competition may not allow a price increase. A price index would show no change, though the new machine would be a better one; if quality were to be assumed unchanged there should have been a fall in price. In price index methodology and in consequence volume estimating it is rarely possible to correct for quality changes, especially when these are small. They can, however, be very numerous, so that, in aggregate, the effect may be appreciable. In practice, (i.e. with no correction for quality improvement), therefore, the price indexes for capital goods are too high so that constant price (volume) estimates are too low. Ignoring (or after correction for) inflation, a manufacturer who, by repairs and maintenance and replacements as required, over a period of years regards his situation as that of keeping his plant at the same quantum level throughout, may in reality have improved it and this improvement should be reflected in increased output, his staff and overheads remaining unchanged, though variable costs (other than staff) will have increased.

While, as already indicated, the GDFCF constituent, machinery other than agricultural at constant prices quadrupled between 1960 and 1973, employment in industry increased by only a quarter. This violent contrast raises an even more fundamental question than that cited above (if not implicit in it?): is Ireland with surplus labour power being forced towards

a policy of capital-intensive industry, in competition with, or in imitation of, advanced market economies, in which (until the recent recession) manpower was the scarce resource?

The rise in factor (i. e. labour and capital combined) productivity not accounted for by rises in quantities of factors is much discussed in the literature, for which see S. Hollander (1965).^{*} Following is a quotation from that work:-

"The recognition of the phenomenon of highly productive though relatively modest replacement expenditures lends support to the view expressed by some macroeconomists concerned with economic growth that considerable attention should be devoted to the rate at which the existing stock of capital is altered to introduce technical change, rather than simply to the variables which determine the rate of expansion of the capital stock.

"The recognition of the efficacy of replacement investment incorporating technical change is important both in accounting for certain anomalous features of past experience and for throwing light on current policy issues relating to economic growth".

Contribution of Factors to Output at the Macro Level

The factors are labour and physical capital and (except where otherwise indicated throughout this chapter) output is in volume, i. e. constant price, terms. Considerable attention has been devoted in USA to the problem of accounting for the fact long since noted that factors, presumed unchanged in efficiency, appear to account for only a small proportion in the continuing increase in volume output over long terms of years. Some of the best known names in US national accounting (including Denison, Goldsmith, Kendrick, Kuznets, Solow) have been associated with research in trying to find an explanation of this phenomenon, i. e. to apportion credits for the

^{*} S. Hollander "The Sources of Increased Efficiency: A Study of Du Pont Rayon Plants" Massachusetts Institute of Technology. USA 1965.

possible causes of this improved factor productivity. Apart from separating out (i) change due to factors of presumed unchanged in quality and (ii) all the rest, we are not satisfied that a full causality has yet emerged: (ii) remains what M. Abramovitz called it, a "mysterious phenomenon".

To discuss the problem in its Irish aspect we require annual statistics of aggregate capital stock at constant prices. These are not available, so we shall have to make our own estimates. Before doing so, however, we shall exhibit the phenomenon in its UK aspect, at the macro level.

Like the Irish constant price series, the UK series are expressed in 1970 prices. The year 1970 is therefore convenient for the setting up of our constant price series. In that year GDP was apportioned as follows :-

	£m
(1) Remuneration of employees and self-employed	34,199
(2) Other GDP (at factor cost)	<u>9,381</u>
Total GDP (at factor cost)	43,580*

We also note, for 1970, the following:-

(3) Labour force at work (000)	24,735
(4) Average capital stock ⁺ (£ million)	176,300

We then find, as quotients:-

(5) Remuneration per worker	£1,382
(6) Other GDP per £ capital stock	£0.05321

Note that all the labour force at work have been deemed equivalent to "employees" and that (2) profit etc has been assigned to capital, an assignment near enough for our present purpose. It should also be noted that heads (1) and (2) do not represent

* This differs slightly from the official figure of £43,489 million by what is described as a "residual error" of £91 million.

+ Average of end of year estimates for 1969 and 1970. Here and hereabouts we have not rounded off figures used. As in national accounting generally, there is not suggestion that precision to the last digit is to be inferred.

the "shares" due to labour and capital. We do not believe it possible to make such segregation; labour is helpless without tangible capital, and vice versa. The two resources are inextricable.

We are concerned only to estimate for a number of years what quantum output would be at the rates obtaining in 1970, given quantities of labour and capital in those years. Thus in 1966 (3) and (4) above were respectively 25,357 and £149,800 million, so that estimated GDP at constant (1970) prices at factor cost, assuming 1970 rates for factors is:-

$$£(25,357 \times 1,382 + 149,800 \times 0.05321) \text{ million} = £43,014 \text{ million}$$

Estimated and actual factor cost GDP at 1970 prices are then:-

Year	GDP (£ million) UK	
	Constant factor output	Actual
1966	43,014	39,370
1967	42,857	40,416
1968	42,988	41,902
1969	43,391	42,600
1970	43,580	43,489
1971	43,490	44,488
1972	43,896	45,243
1973	45,078	47,891
1974	45,629	48,089

Obviously the constant factor output series is almost static, while the actual series has unbroken growth. Fitting exponentials to both, i. e.

$$Y = ae^{bt}$$

we find $b = 0.0073$ for the former and 0.0253 for the latter: in the UK in the years 1966-1974, factors with unchanged factor output rates accounted for only 29 per cent (i. e. 0.73 per cent of actual 2.53 per cent rate of increase), the remaining 71 per cent being due to all other causes, including better replacement capital, greater efficiency in labour and management, better materials etc.

In the foregoing very simple approach we are concerned only to show the great discrepancy between the two series and to point the moral therefrom without reference to figures. So, we do not consider it necessary to refine our calculations (in particular by attempting to correct gross capital estimates by subtraction of capital not in use, almost impossible anyway), a remark that applies throughout this chapter.

For Ireland, as relevant data at the macro level, we have only GDP, GDFCF and depreciation. We need capital stock at the end of one year (say 1970), and to estimate consecutive end year to end year changes therein from GDFCF, the other constituent in the latter being replacement capital. We seek guidance from the UK figures.

For UK in 1970 the capital-output ratio was very close to 4; ^{*} in fact average capital stock was £176.3 billion and GDP at factor cost £43,489 million. As Irish capital stock includes that of agriculture we think this ratio too low and try 5 instead, which, since factor cost GNP was £1,400 million gives an estimate of capital stock £7,000 million, deemed to apply to the end of the year 1970.

As to the estimation of addition to capital stock included in GDFCF, it remarkably happens that in UK in the eight years 1966-1973, addition to capital was equivalent to either 73 or 74 per cent of GDFCF, remarkable because of the constancy of this percentage. This would mean that replacement was only a quarter of GDFCF. We consider the latter too low a fraction for Ireland. In fact in 1970 depreciation (£133.0 million) was 37 per cent of GDFCF (£361.1 million). So we decided to accept depreciation as actual replacement capital.

* Note that these values are aggregate and not incremental capital/output ratios. The ICORs would be much less.

During the period 1960-1973 the Irish labour force at work was practically constant at 1.1 million; in 1970 it was estimated as 1,055,000. In the Irish NIE the distinction is made (see NIE 1974 Tables (A and B) 2) between (i) remuneration of employees and (ii) other. This is purely a formal distinction: (i) relates to those with a contract of service. For production function purposes (Cobb-Douglas *et al*) labour (and by implication its remuneration) should extend to the whole labour force at work. So should labour income. We cannot give effect to this fully for Ireland. We do not need to do so. What we have done is to define labour income as the whole income of AFF together with remuneration of employees in non-AFF. In fact in 1970 the Irish versions similarly numbered as those given about for UK are:-

(1)	Labour income (£ million)	1,025.1
(2)	Other GDP (at factor cost) (£m)	374.6
(3)	Labour force at work (000)	1,055
(5)	Remuneration per worker (£)	972
(6)	Other GDP per £ capital stock (£)	0.0544

Depreciation (to be used as capital replacement) is given in NIE only at current prices; we have converted these figures to 1970 prices by deflating by the GDFCF implicit price deflator.

We now have all we require to estimate Irish factor cost GDP at 1970 prices assuming unchanged factor output. In 1970 depreciation was £133.0 million, GDFCF £361.1 million, hence addition to stock during 1970 was £228.1 million. Therefore capital stock end 1969 was £6,770.4 (= 6,998.5 - 228.1) million and average stock in 1970 was £6,884.5 million. All average capital stock estimates at 1970 prices for the years 1960-1973 were derived in a similar way. Using (5) and (6) above, as in the UK case, as constant multipliers, estimates of GDP, assuming constant (1970) rates of factor output, were derived. Such estimates and corresponding actual estimates are as follows:-

Year	GDP (£ million) Ireland Constant factor output	Actual
1960	1,316.1	972.5
1961	1,319.0	1,012.5
1962	1,330.5	1,049.4
1963	1,344.0	1,083.0
1964	1,352.5	1,138.9
1965	1,356.3	1,152.7
1966	1,368.9	1,169.7
1967	1,371.6	1,229.2
1968	1,384.0	1,311.5
1969	1,398.3	1,366.7
1970	1,400.1	1,399.7
1971	1,416.1	1,479.0
1972	1,420.1	1,549.1
1973	1,439.3	1,647.8

Exponential rates of growth in three periods (i. e. $100b$ in $y = ae^{bt}$)

are:- Period	C Constant factor output	A Actual	C as % of A
1960-1966	0.676	3.194	21
1966-1973	0.704	4.692	15
1960-1973	0.670	3.903	17

It does seem that for the comparable period the rate of growth for Ireland unexplained by labour and capital input (85 per cent, 1966-1973) was even greater than that for UK (71 per cent, 1966-1974).

As already remarked, we are not concerned to defend the foregoing estimates of Irish capital stock or the figuring depending on these. We use it to make some non-statistical points which we conceive to be of fundamental

importance for Ireland, to be discussed later. We mention one point only here, applying also to UK: the social implications of a nearly constant labour force at work and the regular increase in capital stock at constant prices (2.8 per cent a year in the period 1960-1973, on our estimates). This tendency, however (as some think) economically inevitable, is detrimental to the social ideal of full employment. And, as we shall see, it has the economic disadvantage that physical capital increase has a large import content, therefore tending to increase foreign indebtedness.

Our macro analysis suggests (if it does not prove because of the dubiety of our figures) that there are many elements conducive to growth in real GDP other than net increase in capital stock. This is highly encouraging as a guide to action: every effort should be made to increase output with existing capital stock and without recourse to new capital. Or otherwise, capital stock should be increased only after the fullest investigation of increasing output with existing capital. When examining the capital output ratio over the last decade, attention should be paid to the effect of the abolition of tariff barriers and the relative movements of average hourly labour costs between Ireland and the UK. It seems that a considerable amount of capital has had to be expanded in order to maintain output levels as high tariffs are abolished. We leave such investigation to others.

Individual Industries

We are in a somewhat stronger position in trying to apply the essentially macro ideas in the foregoing section to individual industrial groups. This is because there are available estimates of capital for such groups, at constant (1958) prices, for each year 1953 to 1968 inclusive.* These estimates were made using the perpetual inventory method. We use them here in less detail than the authors, as we wish to associate them with the Input-Output industrial grouping of the CSO 1964 92 - Sector table, which is somewhat different. Our classification is merely illustrative and not exhaustive.

* See source Table 3.1. Since our calculations were made these estimates have been revised by R. N. Vaughan. We are of the opinion that these revisions would not alter the qualitative conclusions of this chapter.

Table 3.1: Derivation of percentage surplus for industrial groups, 1953-60 and 1960-1968.

820
100
11

Notes

Industrial group	1964		Output inc. % per year				% surplus	
	Work- force	Cap- ital	1953 - 60		1960 - 68		1953	1960
			Actual	CRE	Actual	CRE	-60	-68
1	2	3	4	5	6	7	8	9
	000	£m						
1. Stone, etc.	3.1	6.3	6.3	2.9	15.1	8.4	55	46
2. Slaughter inc. bacon	6.7	7.9	3.5	3.5	6.2	5.4	1	13
3. Creameries	5.0	13.5	1.6	5.7	5.1	11.2	a	a
4. Animal feed	2.4	4.9	3.7	3.4	7.1	2.4	9	66
5. Bread	9.5	15.4	-2.2	-0.3	1.8	1.0	a	42
6. Sugar, confectionery	5.2	7.9	-5.4	-1.3	5.6	2.1	a	62
7. Drink	7.9	27.8	1.1	1.8	2.9	3.3	a	a
8. Woollen; worsted	6.9	8.8	5.2	2.9	5.0	2.3	45	54
9. Hosiery	6.7	7.9	4.5	-0.4	11.3	6.1	108	46
10. Shoes, leather goods	7.0	3.6	2.2	-1.0	13.9	1.6	146	89
11. Other clothing	16.4	5.1	1.5	0.9	5.5	2.2	40	60
12. Printing	9.6	10.8	4.5	1.4	5.3	2.3	69	56
13. Fertilisers	1.6	6.6	13.8	9.2	7.4	13.8	34	a
14. Chemicals, drugs	2.9	5.5	5.9	4.9	16.1	6.8	18	58
15. Glass, etc.	2.9	3.0	5.6	3.3	7.9	5.5	40	30
16. Cement, etc.	4.3	12.7	4.6	3.1	12.7	10.1	33	20
17. Metal products	10.7	14.5	8.0	3.1	9.5	7.0	61	26
18. Machinery not elect.	2.7	3.8	11.2	5.1	4.3	3.4	54	21
19. Elect. machinery	7.2	6.1	13.2	8.6	15.8	10.9	35	31
20. Vehicles	6.3	6.7	8.0	3.4	3.9	4.1	57	a
21. Construction	44.4	27.8	-2.3	-4.0	8.8	4.6	b	48
22. Electricity Supply	9.3	152.7	8.3	3.0	10.1	4.7	64	53

Col. 1: Groups are illustrative and not comprehensive.

Col. 2: Numbers are averages.

Col. 3: Capital is valued at constant (1958) prices. Figures shown are simple averages of end of year values given by Henry and Scott.

Cols 4,6: Figures are based on gross output; see text.

Cols 5,7: Based on CRE outputs. CRE outputs are those which would be expected, given particular years average workforce and physical capital, at the rates of pay per worker and profit per £ capital in 1964.

Col. 8: Percentage surplus = 100 (col. 4 - col. 5) / col. 4 for 1953-1960. Here and elsewhere calculations were made using more digits than shown in the table. a means that CRE exceeds actual percentage. b means that actual exceed CRE percentage but both were negative.

Col. 9: As in col. 8 but applying to years 1960-1968.

Basic sources: (1) Estimated Levels of Capital Stock in Irish Industry 1953 - 1968 by E.W. Henry and S. Scott, ESRI Memorandum Series, 1971.

(2) Input-Output Tables for 1964. Compiled by CSO. Pr. 985, 1970.

a: CRE exceeds actual. b: CRE less than actual, both negative.

In Table 3.1 the main object is to compare the annual average rate of change of actual volume output of each industrial group with what the rate of change would have been had the units of the factors (i. e. wages per unit labour and profit per £1 capital) been unchanged (in fact at their 1964 levels). For our purpose we term these CRE (for constant rate expected) outputs. Actual output should be net, in fact added value but statistics of net output at constant prices for individual industries are not available, so we have used gross output indexes for rates of change instead. At the level of precision and the degree of aggregation at which we are working we think that estimates of rates of change based on gross output are a sufficient approximation for the net output rates. For methodology see Notes to Table 3.1.

(Table 3.1)

We define surplus as the excess of actual rate over CRE rate and surplus as percentage of actual rate is shown for two periods of years in cols. 8 and 9 of the table. It is at once clear that the surplus phenomenon is very pronounced in Irish industry: amongst the 22 groups in 1960-1968 there are only four exceptions to the rule of positive surplus. The four are interesting: creameries, drink, fertilisers and vehicles. These are the industries in which physical output did not match physical factor input in a period of general growth and the factor element was mainly capital. The surplus percentages varied greatly: in 1960-1968 the highest was for group 10, shoes and leather groups with 89, also largest, with 146, in 1953-1960. There is only a slight tendency for the surplus phenomenon to affect industries in much the same degree: in the two time periods: $r = .48$ for the pairs in cols. 8 and 9 (omitting the 7 cases of non-growth in either), with null hypothesis significance lying between .05 and .10 probabilities. Also the percentage surpluses will be seen to be generally lower in the later period than in the earlier period of lower economic growth: simple average percentages for the 15 growth industry

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61A

Table 3.2: Capital stock (£000 at 1958 prices) per unit labour at work for industrial groups,
1953, 1960, 1968.

Industrial group	Capital stock per unit labour (£000)			Percentage Increase	
	1953	1960	1968	1953-60	1960-68
1. Stone etc.	1.72	2.44	2.65	42	9
2. Slaughter inc. bacon	0.80	0.88	1.46	10	66
3. Creameries	1.42	2.88	3.67	61	61
4. Animal feed	0.97	1.25	2.85	29	128
5. Bread	0.91	1.33	1.98	46	42
6. Sugar, confectionery	0.93	1.55	2.17	67	40
7. Drink	1.81	2.80	4.26	55	52
8. Woollen, worsted	0.90	1.02	1.43	13	40
9. Hosiery	0.57	0.99	1.36	74	37
10. Shoes, leather goods	0.36	0.41	0.68	14	66
11. Other clothing	0.21	0.26	0.41	24	58
12. Printing	0.87	0.96	1.39	10	45
13. Fertilisers	1.06	2.18	7.75	106	256
14. Chemicals, drugs	1.34	1.63	2.13	22	31
15. Glass, etc.	0.79	0.95	1.64	20	73
16. Cement, etc.	1.62	2.68	4.06	65	51
17. Metal products	0.79	0.88	1.75	11	99
18. Machinery not elect.	1.30	1.08	1.95	-17	81
19. Elect. machinery	0.71	0.89	1.00	25	12
20. Vehicles	1.07	1.06	1.37	-1	29
21. Construction	0.26	0.54	0.78	108	44
22. Electricity supply	11.80	17.26	18.01	46	4

Basic source: (I) of Table 3.1.

cases were respectively 52 and 45. Positive percentage surpluses were much more uniform in 1960-1968 than in 1953-1960, standard deviations being respectively 37 and 21.

The lack of obvious relationship between factor input and gross output (i. e. between cols. 4 and 5 - or between cols. 6 and 7 - of Table 3.1) is so evident that it is with something like relief that we discover that there is any relation at all. In fact $r = .58$ (significant at null hypothesis probability level .01) for the 1960-68 period. This value of r is far lower than might be expected.

The most significant conclusion from this part of our analysis is that a large part (and possibly the greater part) of industrial output in the Irish upsurge period 1960-68 cannot be accounted for by quantum growth in the combination of labour and capital.

Capital per Unit Labour

While the statistical analysis in this chapter was designed to examine only this problem of surplus it brought to light a far more serious aspect of recent Irish industrial development which, indeed, requires more analysis than we have been able to give it, namely the growth of capital compared to that of manpower in industry, i. e. the factor shift from manpower to machinery, and its implications.

(Table 3.2)

Table 3.2 shows that far and away the most capital intensive industry is electricity supply in 1968 followed, though at long remove by fertilisers, drink, cement and creameries. Percentage growth in the ratio in 1960-1968 was greatest in the case of fertilisers. There is not a single exception to the rule of growth in the ratio in 1960-68 and only two cases of decline (both small) in 1953-1960. Though 1953-1960 was a period of slow industrial growth it is

Table 3.3.

Capital stock per unit labour (1), earnings per worker (2), ratio of numbers of female to male workers(3), classified by industry, 1968.

Manufacturing Industry	Capital per worker 1968	Earnings per worker/year 1968	Female/Male ratio 1968
	£000	£	
5. Bacon	1.69	670	0.312
6. Slaughtering	1.47	718	0.178
7. Creameries	3.95	718	0.119
8. Canning Veggies.	1.83	538	1.279
9. Flour	3.97	723	0.280
9A. Other Milling	2.99	762	0.280
10. Bread	1.94	723	0.280
11. Sugar	3.50	897	0.045
12. Sugar Confec.	2.23	642	1.725
13. Fish	1.94	536	0.918
14. Margarine	2.44	661	0.936
15. Misc. food	3.12	536	0.918
16. Distilling	3.87	736	0 *
17. Malting	3.36	834	0 *
18. Brewing	5.08	1108	0 *
19. Mineral waters	2.24	772	0 *
20. Tobacco	2.65	778	1.422
21. Wool & worsted	1.50	589	0.799
22. Linen & Cotton	2.11	600	0.416
23. Jute & Canvas	1.93	585	0.503
24. Hosiery	1.46	533	1.792
25. Boots	0.65	556	1.002
26. Mens Clothing	0.45	465	3.248
27. Shirt Making	0.36	364	8.313
28. Womens Clothing	0.43	416	5.383
29. Misc. clothing	0.38	408	3.871
30. Made Up Textiles	1.25	442	4.363
31. Wood	1.62	647	0.080
32. Furniture	0.70	650	0.080
33. Paper	2.30	699	0.614
34. Printing	1.46	863	0.324
35. Tanning	2.05	764	0 *
36. Leather Goods	1.01	496	1.381
37. Fertilisers	8.01	1084	0 *
38. Oil Paints	2.53	827	0 *
39. Chemicals	2.19	562	1.073
40. Soap	2.30	749	1.115
41. Glass	1.68	746	0.275
42. Struct. Clay etc.	4.17	830	0 *
43, 44. Metal	1.81	772	0.125
45. Machinery except to test	2.08	749	0 *
46. Elect. Machinery	1.05	658	0.921
47. Ship & Boat B.	2.43	915	0 *
49. Land & Road	1.40	986	0 *
50. Other Vehicles	1.43	1053	0 *

Basic sources: (1) of Table 3.1 and individual industry reports from CIP 1968 in ISB (for last column)

* No female workers in these industries or less than .005 ratio.

Note

Figures for capital stock per unit labour above differ from similarly described figures for 1968 in Table 3.2 because of (i) grouping and (ii) figures in Table 3.2 are based on averages of capital figures at beginning and end of year and in Table 3.3 capital figures are for the end of 1968.

evident that capital intensity was well on its way. With growth during 1960-1968 there was a considerable increase in capital intensity: the simple average of the percentage increases (including negatives) was 38 in 1953-1960 (7 year changes) compared with 60 in 1960-1968 (8 year changes).

What is utterly unexpected is the entire absence of relationship between the increase in the ratio and the actual rate of growth in gross output amongst the 22 industrial groups. For 1953-1960, $r = -.21$; for 1960-1968, $r = -.27$. Both negative signs are perverse; anyway neither value is significant even at the .1 NHP level.

Earnings and Capital

As a general rule men were better paid than women in 1968 and capital-intensive industries are also male-intensive. Table 3.3 was prepared as a basis for measurement of these phenomena. As already indicated, the rather remote reference year 1968 is the latest for which we have the Henry-Scott capital statistics.

[Table 3.3]

The very considerable range of values for each variable will be noted.

The correlation coefficients are as follows:-

$$r_{12} = .6317$$

$$r_{13} = -.4616$$

$$r_{23} = -.6831$$

Subscripts indicate variables involved, as shown at head of Table 3.3.

For 42 d.f. the .001 NHP critical point is .4589 so that all three coefficients may be regarded as highly significant.

The really significant correlation is what happens when the female-male ratio is constant, in fact $r_{12.3}$. The value is .4883. For 41 d.f. the .01 NHP critical point is .3890 so that the positive relationship between capital intensity and average earnings sex-corrected is emphatic.

The OLS regression is -

$$X_{IC} = -1.04 + .0047X_2 - .048X_3$$

(1.06) (3.75) (0.35)

t-values in brackets. F = 14.0, significant at NHP of .001.

$R^2 = .4007$. Inclusion of X_3 (= female/male ratio) does not improve the regression; in fact omitting it gives a simple regression with $R^2 = r_{12}^2 = .3990$ nearly equal to the value for the two indvar version. On reordering the residuals according to the magnitude of indvar X_2 , tau is found to be 26 (out of 44 sign changes) giving no indication of residual auto-regression. At the same time, the earnings "explain" only two-fifths of the variance of capital per worker. It is of interest also that the intercept in the two indvar regression is not significantly different from zero.

Causation is perhaps more plausible from regression of X_2 on X_1 , i.e. of earnings per worker on capital per worker. The regression is $x_2 = 79.3x_1$, with $x_i = X_i - \bar{X}_i$. $R^2 = .4007$, as before. An increase of £1,000 in capital (at 1958 prices) per worker would increase earnings per worker by £79 at 1968 rates.

What is happening to an appreciable extent is as follows. Tangible capital is replacing labour at an increasing rate, i.e. constantly fewer workers are required for a given quantum output. More workers are made redundant than would otherwise be the case. The real earnings of those at work are greater than they would have been without increase in capital. Another interpretation would be that, when real wages increase a lot, firms feel they have no choice but to have recourse to new investment embodying the latest technology to increase production.

Policy Implications

The foregoing statistical analysis has shown clearly:-

- (1); At the macro level in UK and Ireland some three-quarters of recent growth is unexplained by quantum input of labour and capital; there is a large proportion of industrial growth in Ireland not accounted for by factor (capital in particular) growth.
- (2) Capital intensity (in relation to labour) is increasing and industrywise is unrelated to growth.

Both findings are relevant to a consideration of the role of physical capital in future economic and, perhaps more important, social development in Ireland. The implications of the second showing are of fundamental significance, as we hope to show. Both points support our main thesis, which is that, as a matter of national policy, net additions to fixed capital stock be reduced to a minimum*, i. e. that such increase be resorted to only after the most intensive examination of the potential of existing stock, if necessary with replacements, increased output being achieved by improved management and labour, increased shift working, improved materials, skilled marketing, change of products in accordance with demand, in fact every device except net increase in capital. Objections to increasing capital are mainly the increasing current cost of depreciation (tending to increase the competitive cost of the article) and the large import content of capital goods used in Ireland - direct and indirect possibly 70 per cent - inimical to our serious balance of payments problem.**

We remind the reader once more that all the comment in this chapter relates to constant price series of variables. Price inflation is not

* A colleague comments: "I suspect that Government policy should be devised in such a way as to influence the composition of capital- that is, halt the recent trend towards labour-saving capital and seek to increase capital complementary to labour at all skill levels". Of course we agree.

** Would the energy industries please note, and authority for the vast building industry recognise that many more buildings can be reconstructed than new-built within a given sum available for capital investment?

a direct element here though it does, of course, affect output, foreign trade etc. in their physical aspect. Inflation is an arch-agent for the misdirection of economic activity away from social optimality.

As to point (1) above, the surplus phenomenon is, of course, a good and it is satisfactory to note that Ireland is well to the fore in its exploitation. All that seems to be required is that the fact enter the consciousness of planners, public and private. The slogan might be "more output is possible from your existing capital stock" (apart, of course, from present depression levels)*. In this respect individual firms would do well to try to imitate their best exemplars, always bearing in mind the Linehan 1962 showing, that in a given industry in a given year net output per person engaged can vary in the ratio 4:1**.

As to (2), increasing capital intensity is a world problem for which we do not presume to know the answer. The marked tendency towards substitution of machines for labour is specially grave for Ireland with its endemically high rate of unemployment which (including unregistered) at present may amount to one-seventh of the work force. The tendency is, of course, good for exporters of capital goods, typically the economically advanced countries. We had this aspect in mind when, in the previous section, we recommended that Ireland should seek a larger share in heavy industry, if only in its small parts.

We are emphatically of the opinion, that almost exclusive acceptance of the profit motive in the private zone will not solve the Irish unemployment problem, or lead to even a sizable reduction in the present level during the next few years. Government must intervene. To repeat a point made in previous papers:*** in future planning emphasis should be on volume of employment rather than on income. Faced with a choice, we would prefer a situation of a lower rate of increase of real income per head (including unemployed and unemployment pay) and a low rate of unemployment, than the contrary. The personal preferences of the writers do not matter. We merely pose the problem which must be faced.

* This observation is based on limited investigation, for instance underutilised capital capacity may be related to profitable use of the capital stock.

** The Structure of Irish Industry T. P. Linehan, Journal Of The Statistical And Social Inquiry Society of Ireland 1961-62: comment by R. C. Geary

*** R. C. Geary and J. G. Hughes: Certain Aspects of Non-Agricultural Unemployment in Ireland ESRI Paper No 52, Dublin 1970.

4. Three Studies on Irish Industry

This paper on Irish industrial adaptation led us rather far afield. Following are three mutually independent aspects which we think worthy of retention. The first, based on financial accounts of Irish public companies, redresses to a certain extent the balance of official statistics which make no distinction between native and overseas enterprises, the latter so important in recent years, dealt with by D. McAleese.*

The second is a contribution to the very vexed question of the extent to which industry and other autonomous economic activity creates service-type and other induced employment. Like other writers we refrain from suggesting a multiplier.

The near-constancy over the years of the percentage employment in manufacture to total non-agricultural employment is notable:-

1951	1961	1966	1971	1976 (estd.)
25	27	27	27	27

The provincial ratios are almost equally remarkable for their constancy: 28 per cent in Leinster, Munster and the three Ulster counties in 1971, if only 17 per cent in Connacht. It is quite likely that the Connacht ratio has increased since 1971, due to the promotional activities of IDA and SFADCO.

We are concerned with national as distinct from local induction with which Baker, Black and Jefferson deal - see later. Will the multiplier of nearly 4 persist in non-agriculture, i.e. that 27 extra jobs in manufacturing industry will result in a total of 100 extra jobs, i.e. 73 extra jobs? We need not mention induction (which really begs a question) but simply the fact of the constant ratio. A more prosperous agriculture will promote jobs in non-agriculture. But will the fact of so much of the new industry being "forced" by IDA grants and tax holiday militate against the maintenance of the multiplier?

*D. McAleese A Profile of Grant-Aided Industry, IDA, Dublin, 1977.

We do not attempt answers but we suggest that these important aspects merit investigation. Indeed we think that authorities, should give as much attention to the promotion of service-type employment^{*} locally and nationally as they now give to the economic aspects of industry and AFF. Even from the narrower viewpoint of induction, we hint at a multiplier of 2. We are convinced it is much larger but we cannot even conjecture how much.

The third paper uses data derived from E. W. Henry's IO Table to display certain general relationships pertaining to Irish manufacturing industry in 1974.

*We understand that the IDA give attention to the promotion of service industries but our point is that in view of the vast employment potential perhaps more emphasis on this aspect may be desirable.

4.1 Irish Industrial Public Companies

Our basic source here is the annual summary of public companies published by The Irish Times. The statements we use are those for 1971, 1973 and 1976, those for 1971 and 1976 prepared by Bill Murdoch and that for 1973 by Anthony Keogh.* Notoriously, financial accounts of companies are not suitable as statistical documents and the compilers have done wonders in endowing them with statistical form. Through no fault of the compilers, the inadequacies are manifest. The twelve months to which the accounts relate differ in considerable degree. Particulars are missing in a number of cases. Rounding-off in the case of our principal variable, number of employees, indicates imprecision. We do not think that there is much point in giving exact descriptions of the variables we use, beyond those given by the compilers. We did not expect to find many significant relations in our analysis. If lack of relationship is due to statistical inadequacy in the basic data we can at least argue that if we had exact data, at best the relationships could not be very strong. One can at least assume that the lack of relation is correct and in some cases this is informative.

Before 1973, the return related to the "Top 50 Companies" and in 1973 it was expanded to include "all industrial companies with a Stock Exchange quotation", and additions made to the amount of information provided. Most of the heads of information are clear enough from their titles, except perhaps in a single case, capital employed, defined as follows:

it is the sum of issued capital, reserves, loans, bank overdraft, minority interests and future tax, less any goodwill.

We make two analyses - (i) 1971-1973 and (ii) 1973-1976, the idea in (i) being a period of relative prosperity and (ii) a comparison of a good year with a bad. In our OLS regression our depvar was percentage change in number of employees. In (i) we included 34 companies, all those with unchanged names, though they may have changed in structure from take-overs etc. We also omitted

* The 50 Largest Irish Industrial Companies 1971. Compiled by Bill Murdoch Irish Times December 1971. The Irish Times - Irish Industrial Companies 1973 Compiled by Anthony Keogh. Irish Times December 1973. The Irish Times - Irish Companies 1976. Compiled by Bill Murdoch Irish Times: December 1976.

a few companies which we didn't think qualified as "industrial".

1971-1973

In full, our variables for (i) are:-

- 1. Number of employees, percentage change 1971-1973.
- 2. Profit, before interest and tax, percentage change 1971-1973.
- 3. Capital (as defined above), percentage change 1971-1973.
- 4. Number of employees 1971, as measuring size.
- 5. Percentage of exports 1973.

Percentage of equity held -

- 6. by director and family interest.
- 7. outside the State.
- 8. Equity market capital, percentage change 1971-1973.

Regression of variable 1 on the remaining seven was highly significant: $F = 3.89$ almost exactly at the NHP of $.005$ for $d.f = (7, 26)$. This significance was entirely due to a single variable 3, change in capital, the coefficient for which was 0.43 ($t = 4.98$), none of the other coefficients (including constant) being near NHP = $.10$ significance level. This means that an increase of 10 per cent in capital (as defined) resulted in an increase of about 5 per cent in employment.

Of the 28 correlation coefficients (r) only four proved significant at NHP = $.10$ level.

Variables	r	NHP significance
(1, 3)	.700	.001
(2, 8)	.475	.01
(3, 5)	.375	.05
(6, 7)	-.533	.001

The last is obvious and requires no comment. The first has been dealt with. One would perhaps expect the r (2, 8) to be ever stronger. The significant value of r (3, 5) shows that faster growing companies export a higher proportion of their output than do smaller companies.

The non-significances are more interesting. They can be inferred from what has gone before. We mention three only. Size (variable 4) is unrelated to any of the other variables, including export propensity; neither is variable 6, percentage of equity held by family and directors, except to the obvious variable 7. That symbol of economic virtue, propensity to export, had little, if any, effect on employment. In fact $r = .22$ (at least the sign is plus!) with NHP = .10, $r = .29$. Exporting firms were not significantly more successful increasing profits in 1971-1973 than were other firms; in fact $r = .15$ between variables 2 and 5, far below NHP significance of .1, but with a positive sign.

1973 - 1976

The Irish Times coverage for these years was much more complete than before 1973. Two extra variables were provided:-

9. Turnover, percentage change 1973-1976.
10. Borrowing as a percentage of shareholders funds 1976.

Our main interest being change between the two years we had to contend with many gaps, particularly in turnover in 1973. As will be seen, variable 9 was found to be important in the study of relationship and filling the gaps was little better than guess-work. We were able to include 61 industrial firms, similarly named, in our comparisons of 1973 and 1976, to repeat, between a good year and a bad year.

In Table 4.1 we provide simple analyses of the data before consideration of statistical relationship, concentrating on classification by size (number of employees in 1976). Total employment in these public companies fell by 9.7 per cent. This compares with a fall of 6.2 per cent for all transportable goods (TG) industries. The TG experience is the better because it does not include the Construction industry (with some firms amongst the public companies) and includes the added employment from firms coming into existence between 1973 and 1976.

Table 4.1. Comparison in 1973 and 1976 between employment, value of equity market capital and profit of Irish industrial public companies classified by size (number of employees, 1976)

Class: Size: Number of companies:	I 5,000 + 3	II 2 - 5,000 4	III 1 - 2,000 16	IV 500 - 1000 13	V Under 500 25	All sizes 61
Employment (000)						
1973	16.1	13.2	25.4	10.6	9.1	74.4
1976	17.5	11.7	21.4	9.3	7.4	67.2
Percentage change	+10.8	-11.8	-15.5	-12.6	-18.5	-9.7
Equity market capital (£ million) at end of year						
1973	74.7	36.1	86.9	45.0	26.0	268.7
1976	91.1	16.3	60.5	22.9	13.7	204.5
Percentage change	+22.0	-54.8	-30.4	-49.2	-47.4	-23.9
Profit (£ million) before interest & tax						
1973	12.9	5.9	17.5	8.7	3.5	48.5
1976	24.5	6.5	20.3	10.0	4.1	65.3
Percentage change	+89.4	+9.2	+16.2	+14.0	+17.2	+34.5

Basic source: The Irish Times annual reports on Irish Industrial Companies, 1973 and 1976.

It is obvious that the three large class I firms had a far more favourable experience generally than other public companies, in respect of all three factors. We cannot argue that their success was due to their size. It may be nearer the truth that their size is due to their success in the past.

In interpreting the equity and profit figures it is necessary to take inflation into account, the most suitable measure of which is the CPI which increased by 66.8 per cent between 1973 and 1976. Accepting CPI as a deflator, the real equity and profit situations can be summarised as follows:-

Real percentage changes 1973-1976

Size class of company	I	II	V	All sizes
Equity market capital	-26.9	-65.0		-54.4
Profit	+13.5	-31.3		-19.4

These figures indicate a low state of confidence in the Irish capital market in 1976. Even the excellent profit showing of the three large class I companies evoked only a poor equity response.

Exports had to be treated separately since there were so many data gaps.

Table 4.2 Exports of Irish industrial public companies 1973 and 1976

Size class	Number of companies	Exports (£ million)		Change per cent
		1973	1976	
I	3	16.7	31.1	+ 86.6
II	4	11.6	57.2	+393.1
III	14	27.8	67.0	+140.8
IV	5	7.0	15.6	+123.9
V	11	6.2	7.1	+ 14.9
All sizes	37	69.2	178.1	+157.2

Basic source: Same as Table 4.1.

Total exports from Ireland, except of live animals (hence "industrial" in some sense) amounted to £748.5 million and £1749.6 million in 1973 and 1976 respectively, an increase of 134 per cent, compared to 157 per cent for the 37 companies in Table 4.2. Obviously the export record of the 37 was comparatively satisfactory except with the smallest grade V companies. Exports of the 37 was almost exactly one-tenth of total exports (except livestock) in 1976.

The 37 companies were only those for which data was available for both years 1973 and 1976. There was a great improvement in availability in 1976. In fact, no fewer than 64 companies supplied particulars of exports (if often nil or very small). They were distributed by magnitude of exports as shown in Table 4.3.

Table 4.3. Irish public companies classified by size of exports in 1976

Size of exports (in £ million)	No. of firms	Total value of -		Exports as percentage of turnover
		exports	Turnover	
£ million				
5 or over	9	139.6	387.7	36.0
1 - 5	16	40.7	237.1	17.2
0 - 1	21	7.7	166.5	4.6
No exports	18	0	178.3	0
Total	64	188.1	969.6	19.4

Export distortion is evident: the nine companies (out of 64) with largest exports account for three-quarters of Irish public company exports but for only two-fifths of turnover. Encouragement and help to all these companies to improve their export performance might substantially reduce the half-billion visible trade balance.

OLS regression of variable 1 on the remaining nine variables was as follows:-

$$X_{1c} = -25.9 + 0.1787 X_3 + 0.0786 X_9 + (\text{terms in other 7 indvars})$$

(2.50) (2.54) (2.74)

F = 4.75 $\bar{R}^2 = .360$, n = 61.

Only the two indvars shown had coefficients significantly different from zero (near NHP = .01). The F-value indicates NHP = .001 significance. The seven omitted values add nothing to the regression since $\bar{R}^2 = .421$ for the regression of X_1 on X_3 and X_9 alone. On the other hand inclusion of both variables is useful since $\bar{R}^2 = .322$ for X_1 on X_3 alone and $\bar{R}^2 = .367$ for X_1 on X_9 .

In words: percentage change in number of employees 1973-1976 is positively related to a combination of percentage changes in capital and turnover.

Of the 45 correlation coefficients (r) between the ten variables 11 proved significant at NHP = .1, as follows:-

Variables	r	NHP significance
(1, 2)	.416	.001
(1, 3)	.577	.001
(1, 9)	.614	.001
(2, 3)	.504	.001
(2, 8)	.508	.001
(2, 9)	.713	.001
(2, 10)	.216	.10
(3, 9)	.651	.001
(4, 5)	.232	.10
(4, 7)	.228	.10
(6, 7)	-.330	.01

The system is a fairly highly intercorrelated one. The only variable missing is no. 5, percentage exports 1976. There was no significant relationship between this variable and changes in employment, profit or any other variable considered. That some of the relations are as they should be, is statistically reassuring.

Comparing with the 1971-1973 period variable no. 3 (percentage change in capital) appears as a significant indvar in both. Three of the four 1971-1973 correlation coefficients appear amongst the eleven for 1973-1976. Altogether, the results for the two periods are consistent, generally stronger in the later period.

Of particular interest is the fact of a significant positive correlation between changes in employment and profits (variables 1 and 2). But we also notice that as we might expect, each is highly positively correlated with change in turnover. What happens with change of turnover constant? We find $r_{12.9}$ insignificantly different from zero. The relationship between changes in employment and profits is entirely due to the fact that each is related to turnover.

Turnover turns out to be a strong variable in the 1973-1976 system. But, as noted earlier, the companies with missing figures for 1973 which had to be guessed were uncomfortably numerous, so it was decided to rerun the data omitting the 16 missing companies. Most of these were small. The following results relate therefore to Irish public companies on average larger than the 61 already reported on for 1973-1976. The regression is

$$X_{1c} = -26.8 + 0.2196X_3 + 0.0835 X_9 + (\text{terms in other 7 indvars})$$

(1.86) (2.46)

$$F = 3.68, \quad \bar{R}^2 = .359, \quad n = 45.$$

The two indvars picked out as significant are the same as previously and the coefficient values are not seriously different. The F value is lower but still indicates equation significance but now at NHP = .005. By the \bar{R}^2 test the seven indvars other than X_3 and X_9 contribute nothing to the regression.

As to the correlations, variable no. 5 (percentage exported) is not significantly related to any of the other nine variables. Our main interest is, however, variable no. 9, the reason for the re-computing. Its significant r - values now are

$$r (1,9) = .629$$

$$r (2,9) = .731$$

$$r (3,9) = .716$$

Though all are slightly larger than in the previous experiment, they are not significantly so.

Of course there are many other aspects of relationship between profits, turnover exports etc. that could have been discussed but in the interest of brevity cannot be developed in this paper.

4.2 Autonomous and Induced Employment

Official policy to create employment in Ireland has always concentrated on industry proper. It is recognised that concomitantly employment in service-type economic activity should expand, without much promotional effort. In fact there never was any prospect of attainment of full employment (without large scale emigration), or anywhere near it, through increased employment in industry alone. Policy concentration on industry (as distinct from services) is natural: industry units are typically larger in employment than service units, and hence promotionally more rewarding per unit created. Policy decisions to establish industry, either in private or public sectors were not however based primarily on employment potential but on prospect of profit in the private sector, and on social and economic need in the public sector; rather, in cliché terms, "regard was had" to employment.

Vast sums have been spent officially on helping agriculture but never in the expectation of increasing employment. Ever since the Population Commission^{*} there has been tacit acceptance of the notion that income was all that mattered and average incomes were to be increased by reduction of manpower (the denominator) rather than by substantially increased aggregate income (the numerator). We have expressed our strong disagreement with such toleration, being of the opinion that unless the flow of manpower from agriculture can be staunched there can be no hope of reducing the chronically high level of unemployment.

To start a statistical examination attention is directed to Table 4.4 Building and services (3) are now more than half total employment; despite the

* Commission on Emigration and Other Population Problems 1948-54. Stationery Office Dublin 1954, Pr 2541.

** R. C. Geary and M. Dempsey (1977): "A Study of Schemes for the Relief of Unemployment in Ireland." ESRI Broadsheet No. 14.

Table 4.4 Numbers (000) at work in broad branches of economic activity, Ireland
1951, 1961, 1971 and 1976

Economic activity	1951	1961	1971	1976
1. Agriculture, forestry, fishing	498	380	273	243
2. Other production	195	198	238	228
3. Building, construction, services	524	475	544	564
4. Total at work	1,217	1,053	1,055	1,035
3 per unit of -				
1 plus 2	0.76	0.82	1.06	1.20
2	2.69	2.40	2.29	2.47

Basic sources: CP (1951, 1961, 1971); ER and O June 1977 (1976)

depression their number is estimated to have increased by 20,000 since 1971. Number in agriculture etc (1) has halved since 1951. Our main interest is, however, in the quasi-multipliers in the last two rows. The contrast will be noted: the considerable and regular increase in the ratio of building etc and service to production employment in the twenty-five years and the comparative constancy of the ratio of services etc to what is mainly employment in manufacturing. If we wished to formulate a theory of causation for employment, with production the cause and services etc. the effect we would be inclined to regard 2 above as having a far stronger effect on the level of 3 than has 1 and 2 together or, more simply, that agriculture has a comparatively small effect on the demand for services. Admittedly this train of argument is weak but the conclusion agrees with that of T.J. Baker (1966)^{*}, the pioneering Irish researcher in this field, as regards locally induced employment. W. Black and C.W. Jefferson (1974)^{**}, on the contrary, found that in Northern Ireland

"There is very little evidence that the inductive power of agricultural employment is significantly lower than the inductive power of non-agricultural employment in Northern Ireland. There is no evidence that farmers spend a lower proportion of income on induced activities than the rest of the community."

* T.J. Baker: Regional Employment Patterns in the Republic of Ireland. ESRI Paper No. 32. 1966

** William Black and Clifford W. Jefferson: Regional Employment Patterns in Northern Ireland, ESRI Paper No. 73, 1974.

The difference at the time may be partly due to average agricultural income in Northern Ireland being larger than in the Republic. What is really wanted is a multiplier to convert each unit of causitive employment created into total employment. Neither Baker, nor Black-Jefferson nor Baker and Ross provide such an estimate, we consider wisely, as a result of own investigation reported here.

The multiplier is here basically an income concept (though originally an employment concept), as Black-Jefferson have emphasised and from which, indeed, they have evolved a useful definition: induced employment in a district is that of persons whose incomes arise in the district, the autonomously employed are all others at work, i.e. those whose incomes come from outside the district.

Baker made a careful allocation of numbers in the categories autonomously induced locally, based on CP industrial statistics of persons at work, his district units being the twenty-five counties, excluding Dublin. His allocation would, in the main, agree with the Black-Jefferson income source definition just cited. There could, of course, be differences of opinion even within the allocation of individual industry numbers to either category but breaking down such numbers would be arbitrary and the statistical results would probably not be significantly different. So, in our investigation, we have adopted for 1971 the Baker allocations of individual industries, as far as we could.**

Table 4.5 Numbers (000) at work in autonomous and induced employments, Ireland 1951, 1961 and 1971

Category	1951	1961	1971
1. Agriculture, forestry, fishing, turf	502	384	278
2. Non-agricultural autonomous	315	324	392
3. Induced	400	345	385
4. Total at work	1,217	1,053	1,055
4 per unit 1 plus 2	1.49	1.49	1.57
2 plus 3 per unit 2	2.27	2.06	1.98

*Terence J. Baker and Miceal Ross: Employment Relationships in Irish Counties, ESRI, Dublin 1975.

**There were some changes in industrial classification at the 1971 CP compared with 1961. Autonomous industries 183 and 228 (employing together merely 2,600 in 1961) had disappeared in 1971. Their implicit erroneous inclusion in "induced" in 1971 could make no difference to our results.

It may come as a surprise (Table 4.5) that the non-agricultural autonomous employed (2) have persistently increased despite the showing (in 1971-1976) of Other production (2) in Table 4.4. The main reason is that head 2 in Table 4.5 large service-type branches are included, the principal being Public administration and defence. (If, from one point of view postal services, in particular, would be regarded as induced, by the Black-Jefferson "outside income" standard they are clearly autonomous.)

The last two rows of Table 4.5 are multipliers of a sort, the first implying that agricultural employment has inductive power equal to that of non-agriculture, the last row implying that it has none. The figures are given "without prejudice". In what follows we question the validity of this type of multiplier approach.

We calculated the percentage changes in number at work between 1961 and 1971 for twenty-five counties (excluding Dublin) for the following

1. Induced employment

Autonomous employment:-

2. Non-agricultural

3. Total (i.e. including agriculture; forestry, fishing, turf)

The following correlations (and their significance with 23df) were found -

$r(1,2) = .20$, not significant at NHP = .10

$r(1,3) = .40$, significant at NHP = .05

Although number in agriculture etc fell in every county (and in a remarkably uniform way - on which we comment later) inclusion of this economic activity has a marked effect on relationship. Agriculture, with greatly increased income in 1971, now seems to have some effect in inducing local employment, in agreement with the Black-Jefferson finding for Northern Ireland.

Disregarding the autonomous - induced aspect, we also obtained the correlations for the main industrial group percentage changes in numbers at work 1961-1971, the twenty-five counties being again the units. The groups are--

	Coefficient of Association*
1 Agriculture, forestry, fishing	.21
2 Manufacture	.02
3 Building, construction	.25
4 Electricity, gas, water	.14
5 Commerce, finance	.30
6 Transport, communication, storage	.02
7 Public administration, defence	-.10
8 Professions	.14
9 Other, or industry not stated	-.00

The column of coefficients will be dealt with later. There are 36 correlation coefficients, of which 9 (all positive) proved significant at NHP = .10 by the conventional standard. In descending order of magnitude the 9, with their NHP significance were

Groups	r	NHP conventional significance
1, 5	.66	.001
5, 8	.64	.001
3, 5	.58	.01
3, 4	.55	.01
1, 3	.41	.05
3, 8	.38	.10
1, 8	.38	.10
4, 5	.37	.10
2, 6	.36	.10

The strong relationships between commerce (5) with agriculture (1) and building (3) are of interest.

* The co-efficient of association for an industrial group is the simple average of its 8 ccs. included whether conventionally significant or not.

The most surprising showings are the low rating of Manufacture (2) and the high rating of Agriculture (1). Even though the employment experience in agriculture 1961-1971 was uniformly decreasing county-wise, there was a marked difference between counties which declined least and those that declined most in agriculture in the effect on local non-agricultural employment power. Note that agriculture occurs in three of the significant ccs cited above, the value of $r(1, 5)$ with commerce (5, with the highest association) being the largest in the series. Manufacture has but one mention ($r(2, 6) = .36$) of which the "significance" is only $NHP = .10$.

It is not unexpected that Public administration and defence (7) and Other (9) are the only groups unmentioned amongst the significant ccs and their carrying negative signs amongst the coefficients of association is of no importance.

We have been careful to emphasise the fact of association rather than causation (implied by autonomous - induced theory), which is not to imply that causation does not operate to some extent. We think that, in the main, what is involved is the income multiplier, as Black-Jefferson have suggested, the employment effects being national as well as local. It may be that in the short run autonomous enterprise may induce employment outside the enterprise but then expenditure of income takes over, with equal inductive effect whatever the source of income. We were not very successful in our attempt to "explain" the induced employment percentage increase over the period 1961-1971, the depvar (no. 1) using OLS regression, our four indvars being

Percentage change in employment 1961-71:-

- 2. Non-agricultural autonomous
- 3. AFF and turf
- 4. Percentage in AFF in 1961
- 5. Average income 1965*

As before the units were the 25 counties. The F value was 2.38, significant only at NHP = .10 for (4, 20) d.f. The individual ccs. are more interesting.

Of the ten, four are significant at NHP = .05, as follows

Variables	r	NHP conventional significance
4, 5	-.86	.001
1, 3	.51	.01
3, 4	-.45	.05
3, 5	-.43	.05

The highlighting of the agricultural variables (nos. 3 and 4) is very marked, the high negative relationship between percentage numbers in agriculture (4) and average county income (5) specially so. Poverty in agriculture (pre-EEC, it will be noted) was obviously the main reason for exodus. Most relevant to the present inquiry is r (1, 3): counties with least decline in numbers in agriculture were best inducing local employment.

So our last word in this section must be on agriculture.

In the present analysis, nothing has struck us more forcibly than the uniformity of decline in numbers at work 1961-1971 in AFF. The (weighted) average decline was 27.9 for the whole Republic and the range amongst the 26 counties was only from 23.4 (Kildare) to 35.1 (Leitrim). The main inference from this uniformity is the strength of the force of shedding of manpower in agriculture, independent of geography, type of husbandry and everything else, during a period of unprecedented economic advance in non-agriculture.

The first essential for the economic wellbeing of the nation is that average farm income should be increased by a vast increase in quantum

* Mícheál Ross: "Personal Incomes by County 1965." ESRI Paper No. 49, 1969.

output, obtained by properly exploiting our main national asset, the land.

Thus present numbers will be retained on the land, enabling non-agriculture to cope with the endemically high level of unemployment, draw in the slack of underemployment on farms and, by increased agricultural exports, enabling the country to cope with another of our disasters, the import balance.

The analyses in the present chapter, in showing the positive relation between change number in agriculture and number in non-agriculture, demonstrates that nothing would be more conducive to local employment in non-agriculture than an improved manpower outlook in agriculture.

4.3 The Constituents of Irish Manufacturing Industry

The basic data in this section are derived from a 1974 Input-Output table prepared by E. W. Henry* and described by him as consisting of "rough estimates"; as such they suit our immediate purpose which is only to display orders of magnitude.

<u>Irish manufacturing industry, 1974</u>		£	Percentage of output
1.	Gross output, including interindustry and VAT	2,234	116.8
2.	Interindustry transactions	321	16.8
3.	Output	1,913	100
4.	Materials and services from outside mfg. ind.	1,302	68.1
5.	Added value	611	31.9
6.	Paid to government, incl. VAT, net of subsidy	104	5.4
7.	Depreciation and saving	81	4.2
8.	Employee compensation, disposable	346	18.1
9.	Net profit, disposable	80	4.2

Notes

Relations: $3 = 1 - 2$; $5 = 3 - 4$; $5 = 6 + 7 + 8 + 9$.

* "An Input-Output Approach to Cost-Benefit Analysis of Energy Conservation Methods," E. W. Henry Economic and Social Review Vo. 9 No. 7 October 1977. We are also very much indebted to Henry for advice and supplementary estimates in connection with what follows in this section.

The outstanding feature of the foregoing table is what seems to be the meagre reward to owners (of capital) at some 4 per cent of output. ^{*} If the sum set aside for capital replacement and development, also seems far too low. On this showing, owners of manufacturing enterprises must surely lack incentive to develop and it is a cliche in business that to stagnate is to die. The livelihood of the 220,000 persons at work in manufacturing industries in 1974, as well as the prospects of employment of those seeking work in these industries (the LR alone for these industries numbered 16,000 in 1974) depends on the outlook of the comparatively few people who run these industries. If decision to expand or not (i.e. employ more or fewer people) is now made largely by managers (who are technically employees), owners are the source of funds. A small shift in the percentage from employee compensation (8) and government (16) (which need not mean any absolute reductions in a growing economy) could make a great difference to the percentages at items 7 and 9, and hence towards capacity and disposition to expand. Most (if not all) increased net income of owners must accrue from tax reduction which, of course, cannot be confined to owners (though weighted in their favour) but, by increasing their net incomes, will act as a fillip to workpeople and managements as well. The principle of differential taxation is now firmly established but is still far from fully serving the nation's economic ends. Why, for instance, should exports be so favoured taxwise when successful competition against imports serve exactly the same economic ends?

Henry's input-output table also enables analyses of some of the foregoing figures to be made, e.g.,

3. Output		4. Materials		£m	%
	£m	%			
3.1 Home sales	934	48.8	4.1 Home purchases	693	53.2
3.2 Exports f.o.b.	979	51.2	4.2 Imports c.i.f.	609	46.8
3 Output	1,913	100	4 Materials	1,302	100

As regards both sales and purchases of materials and services, home and foreign are about equal. While output had a substantial direct import content (nearly one-third in fact) the export balance was quite

* This is a matter of opinion with which indeed a colleague demurs, pointing out that: "This profit/sales ratio is in fact in line with historical experience, being 4.4% in 1956 and 4.6% in 1967. Such a markup may imply a rate of return on shareholders funds of around 15% which is adequate reward. I would not necessarily agree with the authors that a 4% markup is too low." We let our statement stand for further discussion.

Table 4.6 Input to manufacturing industries 1974 (excluding purchases from other manufacturing industries) classified by industrial group and type of input

Manufacturing industrial group	Purchases		Indirect taxes less subsidies	Depreciation and saving	Employee comp. before tax	Profit before tax	Total input = output
	Home	Imported					
	1	2	3	4	5	6	7
Actual values (£ million)							
1. Food, drink, tobacco	511.2	112.1	-42.6	29.8	134.8	37.1	782.4
2. Textiles, clothing, shoe, leather	50.4	93.0	5.7	11.8	72.0	10.7	243.6
3. Wood, furniture, paper, printing	20.6	43.5	3.7	6.4	43.0	5.1	122.3
4. Chemicals, rubber, plastics	28.4	65.2	4.7	9.3	46.5	18.8	172.9
5. Petroleum refining	3.5	90.0	0.4	1.4	3.0	3.1	101.7
6. Clay, cement, pottery	23.8	15.7	3.1	8.0	26.0	7.0	83.6
7. Metals, machinery	40.4	106.4	5.5	10.6	63.0	15.7	241.6
8. Vehicles	15.5	82.8	14.0	3.6	41.0	8.4	165.3
Total, manufacturing industry	693.8	608.7	-5.5	80.9	429.3	105.9	1913.4
Percentages							
1. Food, drink, tobacco	65.3	14.3	-5.4	3.8	17.2	4.7	100
2. Textiles, clothing, shoes, leather	20.7	38.2	2.3	4.8	29.6	4.4	100
3. Wood, furniture, paper, printing	16.8	35.6	3.0	5.2	35.2	4.2	100
4. Chemicals, rubber, plastics	16.4	37.7	2.7	5.4	26.9	10.9	100
5. Petroleum refining	3.5	88.8	0.4	1.4	3.0	3.0	100
6. Clay, cement, pottery	28.5	18.8	3.7	9.6	31.1	8.4	100
7. Metals, machinery	16.7	44.0	2.3	4.4	26.1	6.5	100
8. Vehicles	9.4	50.1	8.5	2.2	24.8	5.1	100
Total, manufacturing industry	36.3	31.8	-0.3	4.2	22.4	5.5	100

Source: E.W. Henry's ESRI Seminar Input-Output table 1974.

healthy for manufacturing industry, equalling £370 million.

But, as will transpire, it must be increased substantially, for it is on manufacturing, almost equally perhaps with agriculture, that the responsibility falls of reducing or eliminating the present intolerably high level of the import balance.

Details of payments to government are as follows:-

	£m	%
6.1 Social insurance contributions	29.3	28.2
6.2 Corporate profits tax	12.8	12.3
6.3 Income tax	67.4	64.8
6.4 Indirect taxes	18.8	18.1
6.5 <u>Less</u> subsidies	-59.0	-56.7
6.6 V. A. T. etc.	<u>34.7</u>	<u>33.4</u>
6 Paid to government	104.0	100

Item 6.3 includes income tax paid by employees as well as shareholders or owners. No account has been taken of customs and excise revenue duties (principally on drink, tobacco and petroleum products) amounting to £180 million, as it is considered unlikely that any reduction in these taxes to improve profits is likely or desirable.

[Table 4.6 here]

Notes

- Cols. 1,7: inputs from manufacturing industries excluded
- Col. 2: imports are c.i.f.
- Col. 3: includes VAT, conjecturally estimated

Table 4.6 shows that while 1 Food etc has the largest Irish content (i.e. imports are comparatively small) it is proportionately a poor creator of labour and indeed, of added value generally.

Table 4.6 contains many policy directives. That two-thirds of direct input of Food etc (1) is home-produced (mainly from agriculture, of course) is in wide contrast to the other groups shown. Clearly the industrial infrastructure exists for the material absorption of a great quantum development in agriculture, with emphasis on meat etc, as distinct from live cattle exports, as suggested in section 2.

We have already remarked that manufacturing industry has a substantial export surplus. This does not alter the fact that direct imports of this sector amount to nearly one-third of output or to two-fifths when Food etc (1) and Petroleum refining (5) (an obviously exceptional case) are omitted. Note that these proportions relate only to direct imports: if, in the logic of IO, indirect imports were allowed for, the latter might be nearly one-half. Clearly there is much scope for non-food industrial material development.

Petroleum refining (5) can scarcely be said to be an industry at all with its some 8 per cent added value. Ireland's future industrial association with petroleum should clearly be in other petroleum industries. The country's remarkable success in the chemical industry generally, already noted in section 1, seems a good augury.

An Experimental System of Non-Stochastic Linear Equations

Our system is extremely simple and designed merely as an illustration using the data in section 4.3. We shall have 11 variables pertaining to manufacturing industry, of which 8 will be endos and 3 exos, the 8 determining equations or accounting identities being linear. The variables are all real per unit changes between consecutive years: we introduce price changes in the theory but eliminate them in the arithmetical application. The base year is taken as 1974, per unit changes relating to 1974-75. We envisage 1974-75 unit changes not as they had been but as they would have been if manufacturing industry were advancing on the scale required to attain national ends, the principal of these being, in our view, employment increasing on a scale required to make a sizable negative impact on unemployment.

Variables and Equations

All variables are at the macro level, i. e. they relate to manufacturing industry as a whole, except where otherwise indicated. Subscript t , current time, is omitted; superscript ($^{-1}$) means previous year value, hence predetermined. The system is nonstochastic.

Variables with Henry's 1974 I-O values for manufacturing as a whole are:

	1974 value £m
X_1 : Output	1,913
X_2 : Home sales	934
X_3 : Exports	979
X_4 : Home materials and services	693
X_5 : Imported materials and services	609
X_6 : Employee compensation, disposable	346
X_7 : Paid to government	104
X_8 : Depreciation and saving	81
X_9 : Profit disposable	80
X_{10} : $X_8 + X_9$	161
X_{11} : Export ⁹ excess	370

The X_i are current values so that, according to our convention, the figures shown, will be dubbed X_i^{-1} . Let real current values be Y_i so that

$$X_i = P_i Y_i,$$

P_i being price index, previous year unity. Introducing lower case letters x_i, p_i, y_i for unit changes, taking natural logs and differentiating we have, approximately

$$x_i = p_i + y_i \text{ with}$$

$$y_i = (Y_i - Y_i^{-1}) / Y_i^{-1} = \Delta Y_i / Y_i^{-1}$$

and similarly for the other variables. Obviously $Y_i^{-1} = X_i^{-1}$ and $P_i - 1 = p_i$. The y_i are the variables in our equations and identities.

$$X_1 = X_2 + X_3, \text{ whence}$$

$$\Delta X_1 = \Delta X_2 + \Delta X_3 \text{ or}$$

$$(i) \quad X_1^{-1} (p_1 + y_1) = X_2^{-1} (p_2 + y_2) + X_3^{-1} (p_3 + y_3).$$

This is the first of 8 equations in the y 's. We eliminate the terms in p_i later for reasons given. The next two equations are also derived from identities

$$(ii) \quad X_{10}^{-1} (p_{10} + y_{10}) = X_8^{-1} (p_8 + y_8) + X_9^{-1} (p_9 + y_9)$$

$$(iii) \quad X_{10}^{-1} (p_{10} + y_{10}) = X_1^{-1} (p_1 + y_1) - X_4^{-1} (p_4 + y_4) - X_5^{-1} (p_5 + y_5) - X_6^{-1} (p_6 + y_6) - X_7^{-1} (p_7 + y_7).$$

The fourth equation says that real output increase depends on real profit and saving:-

$$(iv) \quad y_1 = b_{1,10} y_{10}$$

Here and elsewhere the b 's are coefficients to which values will be assigned; in general they are to be regarded as of + sign. Note that with the y_i notation implying change in original linear equations in Y_i one can dispense with the constant in the latter. Of course some of the equations (like (v)) originate in the y_i and have a constant.

Equation (v) is the crucial relation between rates of increase in real labour cost (= number of labour hours with labour productivity unchanged) and output.

$$(v) \quad y_6 = -b_{6,0} + b_{6,1} y_1.$$

Rate of increase in real annual capital charge exceeds that of labour by a constant positive amount.

$$(vi) \quad y_8 - y_6 = b_{8,6}.$$

The ratio of input to output is given, or

$$Y_4 + Y_5 = b_{4,5} Y_1 \text{ or}$$

$$(vii) \quad X_4^{-1} y_4 + X_5^{-1} y_5 = b_{4,5} X_1^{-1} y_1,$$

recalling that the X^{-1} and Y^{-1} are the same.

By definition

$$X_{11} = X_3 - X_5, \text{ hence}$$

$$(viii) \quad X_{11}^{-1} (p_{11} + y_{11}) = X_3^{-1} (p_3 + y_3) - X_5^{-1} (p_5 + y_5).$$

There would, of course, be other elements in such a balance but we ignore them for simplicity.

Prices

The p variables occur only in the identities (i), (ii), (iii) and (viii). If they were all assumed equal, as they might be for this arithmetical exercise, it is clear that the p terms vanish from the equations: e.g. in (i) $X_1^{-1} = X_2^{-1} + X_3^{-1}$. But while equality of the p's is a sufficient condition it is not a necessary one, since, e.g. in (i), we might define P_1 as given by

$$X_1^{-1} P_1 = X_2^{-1} P_2 + X_3^{-1} P_3.$$

For our purpose it will suffice to assume that approximately all p terms vanish.

Values of Coefficients

The values of the X^{-1} are as given above. As to the b's.

the value of $b_{1,10}$ in (iv) was derived from somewhat elaborate process, described in the next paragraph. [In (v) the values of $-b_{6,0}$ and $b_{6,1}$ will be taken as -0.01 and 0.5 respectively from page 4 in Chapter 1.] For equation (vi) we rely on the last column of Table 2.2, relating to 1960-68. With such variable percentages we take the median value which, on an annual basis is about 5 per cent. Accordingly we take $b_{8,6}$ as 0.05. In 1974 $b_{4,5}$ was 0.68.

Value of $b_{1,10}$

It was decided to base this coefficient value on the relationship between changes, at constant prices, in output and remainder of net output (i.e. gross output less materials etc. less employee compensation), the latter as a proxy for gross profit. The basic data was for transportable goods from CIP during the period 1960-1973. Indexes for remainder of net output at constant prices were found by deducting values of employee compensation from values of net output. The latter process was in two ways (i) using 1960 weights, (ii) using 1973 weights, i.e. those at the beginning and end of the estimation period. The indexes were then averaged (to base 1960 as 100).

We then regressed $\log_e X$ and $\log_e Y$, (X and Y being indexes of output and remainder at constant prices) on time t to find

$$\log_e X = \text{const.} + 0.0635t$$

$$\log_e Y = \text{const.} + 0.1201t$$

so that

$$d \log_e X / dt = dX / X dt = 0.53 dY / Y dt$$

Experimentally we decided to give $b_{1.10}$ three values 0.3, 0.5 (corresponding to 0.53 "actual 1960 - 1973" above) and 0.7. Such a wide variation seemed desirable since the estimates of the two sets indexes of remainder of net output (i.e. (i) and (ii)) above were widely different.

Actual Equations

The equations in arithmetical terms after reduction in some cases are as follows. Most of the coefficients are based on the 1974 values, i.e. the X^{-1} given at the beginning of this sub-section. Note that it is necessary only the the basic "1974" values should be merely proportioned to the actual 1974" values shown, and not exactly equal to these.

$$(i) \quad y_1 = 0.49 y_2 + 0.51 y_3$$

$$(ii) \quad y_{10} = 0.50 y_8 + 0.50 y_9$$

$$(iii) \quad y_{10} = 11.88 y_1 - 4.30 y_4 - 3.78 y_5 - 2.15 y_6 - 0.65 y_7$$

$$(iv) \quad y_1 = b_{1.10} y_{10}$$

$$(v) \quad y_6 = -0.01 + 0.50 y_1$$

$$(vi) \quad y_8 - y_6 = 0.05$$

$$(vii) \quad 0.68 y_1 = 0.36 y_4 + 0.32 y_5$$

$$(viii) \quad y_{11} = 2.64 y_3 - 1.65 y_5$$

In these 8 linear equations there are 11 y_i 's, so that three variables had to be selected as exogenous, or policy-oriented. There could be no hesitation in determining two of these y_7 , pertaining to taxation etc. and y_{11} to export excess from manufacturing. As to the third, exo, we decided on variable No. 1, output, the macro policy variable recognised as first in importance in all discussions about manufacturing, by CII in particular.

Even for such a simple nonstochastic exercise as this, we would have wished to have many more equations and variables. We did indeed start with a much larger system including equations e.g. for home demand, export demand, a Cobb-Douglas production function and two wage-price equations, the famous Keynes negative relationship between real wage increase and employment increase and extra variables included explicit variables p and such other y variables as business optimism, home and export sale pressures. While we could have evolved statistical series for some of these extra variables there would have been too many unknown coefficients for us to handle. The foregoing series is designed to adjudge the feasibility of increasing manufacture to cope with unemployment and lessening, if not eliminating the overall import balance by lower taxation and other government action.

We are aware that there are several elaborate stochastic simultaneous equation systems in preparation and we wish them every success. Implicit in their methodology is that the parameter system that obtained in the past is to continue into the future. We, on the contrary, while not denying the relevance of the past in planning the near future, consider a revolutionary approach essential if a sizable lessening of unemployment is to be attained. This renders the parameter system as a whole derived from past experience as somewhat irrelevant; policy should be directed towards deliberate change of some parameters.

These remarks apply particularly to equation (iv). It is doubtful if any such relationship is ascertainable from past experience at the macro level we postulate, though we do use coefficient values very loosely based on the past in our solutions. Profit, distributed and undistributed, is, of its nature, a residual and per unit change in profit was not in fact closely related to unit change in output. We suggest that in future such a relation should be sedulously cultivated, as a matter of government and IDA policy.

Our method was to invert the 8 x 8 coefficient matrix (with variables ordered 2, 3, 11) three times, i. e. for three values of the coefficient $b_{1.10}$. We then gave the exos several sets of values and solved in the endos y 's for each set. There were sets of solutions based on the following experimental values.

- (i) $b_{1.10} = 0.3, 0.5, 0.7$
- (ii) $y_1 = 0.05, 0.10, 0.15, 0.20$
- (iii) $y_7 = 0, -0.10, -0.20, -0.30$
- (iv) $y_{11} = 0, 0.50, 1.00$

The computer (with the invaluable cooperation of E. W. Henry) produced 144 (= 3 x 4 x 4 x 3) sets of values of the eight endos. As to the three exos, the variables numbered 1, 7 and 11, we sought what would transpire from every combination of increases of 5 to 20 per cent in volume 0 to 30 per cent reductions in taxation and 0 to 100 per cent increases in net exports, all in constant price terms in relation to manufacturing output.

The results can only be described as surprising. By the test of what we may describe as "balanced change" we had no trouble in rejecting at sight the vast majority of sets of endo values. Even though the foregoing sets of exos proposed may have seemed reasonable as grounds for policy, most of the "answers" were outré in the extreme.

Incomparably the best-behaved set is that we term Set 4, as follows ($b_{1.10} = 0.3$)

<u>Set 4</u>	
Exo %	Endo %
$y_1 = 15.0$	$y_2 = 13.5$
$y_7 = -10.0$	$y_3 = 16.4$
$y_{11} = 0.0$	$y_4 = 5.0$
	$y_5 = 26.2$
	$y_6 = 6.5$
	$y_8 = 11.5$
	$y_9 = 88.5$
	$y_{10} = 50.0$

Policy involved, here implies a 15% increase in output, which is about equally balanced between increase in home sales and exports. There would be a reduction of 10% in taxation. Less desirable features are no increase in export excess (var. 11),* a much larger increase in imported materials (var. 5) than in home materials (var. 4) and an increase of 11½ per cent in gross saving (var. 8) may not be enough.

We are not concerned to argue that this approach of ours, which we believe to be new, will ever be a complete determinant of policy. We do suggest that, suitably and considerably elaborated, it can be used to show whether a general policy, at macro level, is feasible or not: we again stress the element of sensitivity which shows immediately whether a policy is worth pursuing or not. We even suggest that using the computer to produce vast numbers of sets of answers may be more useful than the more familiar linear or multiple programming which is subject to the objections that it produces only a single answer; one doubts if any socio-economic system behaves optimally and the single objective function allows little flexibility. Of course there is no need for rivalry: try every approach, stochastic and non-stochastic as regards the statistical aspects, and these may not be the most important.

As regards elaboration we may point out that the present is a simplified version of Geary's experimental input-output model, also non-stochastic, which took the different economic sectors into account.* If the present approach be found worthy of further investigation it is suggested that it be extended to full input-output treatment.

The present analysis gives good reason for the adoption of a policy of 15 per cent increase annually of manufacturing output accompanied

* We note that the January 1978 Government White Paper on the economy contemplates an increase in the import excess until 1980.

** R. C. Geary "Towards an Input-Output Decision Model for Ireland" ISSISI 1965 ESRI Reprint No. 8.

(and encouraged) by a 10 per cent decline in taxation. It is interesting to note that the 15 per cent increase has been advocated by CII which, no doubt, has its own good reasons. The present model takes no account of stimulus which a reduction of 10 per cent in taxation (or an equivalent subsidy) would give to industry.

From equation (v) an annual increase in volume of manufacture would lead to a $6\frac{1}{2}$ per cent increase in employment. With employment in manufacturing industry at about 220,000 in 1974, this would amount to nearly 15,000. Induced employment might be at least as much again. An annual increase in employment of 30,000, together with a lessening of the flow from agriculture must make a sizable impact on unemployment and underemployment.

5. Conclusion

We absolve ourselves of the customary task in a final chapter of summarising our findings, since the study is prefaced by such a summary. Instead we introduce a number of new topics, including the crucial one of finance and we end with recommendations, revolutionary in character, for action, mainly by Government.

5.1 Finance

This section is about the shortest in the study but we deem it the most important. It is based on the single Table 5.1. While in inflated £ million terms government aid to industry seems impressive, the picture is different when constant price figures are used. Section (3) shows that total grants were less than 2 per cent of GNP or 4 per cent of general government expenditure in 1976; an improvement, it is true since 1974. No account has been taken of government aid in the form of tax remission, which has been substantial.

We take the view (often repeated!) throughout this study that the success or failure of economic policy is to be adjudged by the effect on increasing employment and (what is not the same thing) sizable reduction of the present LR total of jobseekers. With this end in view we agree with the past and present policy outlook that the main panacea is to be sought in industrial expansion. It seems obvious to us from the table that aid to industry is inadequate, having regard to the magnitude of the problem*. We could clearly afford far more from our own resources (having regard to national priorities), the financial requirements of the agricultural revolution we ask for and the massive additional external loans we consider necessary, as we hope on a once-for-all basis, to give the economy the initial momentum it rather desperately needs.

We confidently leave to our diplomats the task of persuading EEC acceptance of further flagrant recourse to subsidisation of home industry, even to the point of special aid from EEC. As we showed elsewhere** Ireland is the

*We stress that we are particularly concerned with industries with a high job content.

**R. C. Geary and M. Dempsey with an Appendix by E. Costa: "A Study of Schemes for the Relief of Unemployment in Ireland", ESRI Broadsheet No.14, 1977.

Table 5.1 Government Grants paid to organisations directly assisting industry
1970-76

	1970-71	1971-72	1972-73	1973-74	1974	1975	1976
(1) Total Government Grants by Organisation (£m)							
AnCO	1.5	2.0	2.8	3.0	3.6	6.0	10.0
IDA	19.3	29.1	28.9	26.8	28.9	44.7	56.8
IPC	0.1	0.2	0.2	0.2	0.2	0.3	0.3
IMI	0.1	0.2	0.4	0.3	0.3	0.3	0.3
Coras Trachtala	1.6	1.8	2.0	2.4	2.3	3.1	3.6
Kilkenny Design Workshops	-	-	-	-	0.3	0.3	0.3
IIRS	0.8	0.9	1.3	2.0	2.3	3.0	3.2
SFADCO	1.2	1.1	1.5	1.4	1.6	1.6	2.2
NDA	0.0	0.0	0.0	0.0	0.0	0.1	0.2
Total current prices	24.5	35.3	37.1	36.1	39.5	59.4	76.9
Total constant (1968) prices	21.5	28.3	27.4	24.0	22.4	27.9	30.6
(2) IDA Grants by Object (£m)							
New Industry	11.9	18.4	14.2	9.4	11.5	20.4	33.0
Adaptation	0.9	0.9	0.4	0.2	0.0	0.1	0.1
Small industries	1.0	1.0	0.8	0.9	1.2	1.5	2.0
Re-equipment	3.7	5.5	6.0	7.9	5.1	9.0	10.2
Research and development	-	0.0	0.1	0.1	0.1	0.3	0.4
Industrial estates	1.4	1.8	2.9	6.2	10.1	8.9	7.4
Joint ventures and service industries	-	-	-	-	0.0	0.4	0.3
Total current prices	18.9	27.6	24.4	24.7	28.0	40.6	53.4
Total constant (1968) prices	16.6	12.2	18.0	16.4	15.9	19.0	21.2
(3) Total Government Grants (1) as percentage of -							
(a) Gross National Product	1.47	1.85	1.63	1.32	0.99	1.61	1.73
(b) General Government	3.88	4.81	4.31	3.26	2.14	2.99	3.67

Basic sources: Estimates of the Public Services; IDA Annual Reports

Notes

1974 figures are nine-monthly grossed to annual (i.e. x 4/3). For constant price series the deflator was CPI (base November 1968 as 100). For section (3) (a) data for 1970-71 to 1973-74 was treated as if for calendar years 1970-73.

poor man of EEC with no prospect of let-up in future if policies continue on their present scale. As it happens, Ireland is the least delinquent in point of number of arraignments before the European Court; we have been the most law-abiding member of the Community as recent statistics show.

We repeat that, from every point of view, import substitution is as worthy of government support as exports, as regards tax remission and/or subsidy. We commend this viewpoint to IDA, if necessary for suasion of foreign firms.

The principle of differential taxation is now firmly established. In fact Ireland used it long ago by reduction of rates on agricultural land in favour of small farmers and the maintenance of employment on larger farms. Industries that are good employers should be tax-favoured in Ireland compared with capital intensive industries.

We are glad to note that the NI economy is to receive additional subsidies of £600 - £1,000 million. This gives some idea of the order of magnitude of the sums required here for agriculture and industry.

Finally we would appeal to Government firmly to establish orders of priority in its expenditures from loans or taxation. Improvement of the economy should come first, thus enabling far better provision later than would otherwise be the case for all worthy objects.

5.2 The Agricultural Situation

At several points in this study we have emphasised our viewpoint that public policy should be directed toward optimisation of employment rather than of profit or employee income. While we deal primarily with manufacturing industry, this employment viewpoint has forced us increasingly

towards consideration of the agricultural aspect. In fact, the economy is indivisible. That truism of Irish economic history that "agriculture is our principal industry" is as true today as ever, if some would like the "is" in the quotation to be changed to "should be". Proportionately to the whole economy, in added value, quantum output, exports and, most notably manpower, agriculture has receded in the past half-century and in nearly every sub-period thereof.

It has always been taken for granted, notably by the Population Commission of 1948-1954,* that future reduction in manpower in agriculture was inevitable. It was regarded as the only way to cure the chronically low income and underemployment situations in the sector. Economic salvation was to be found in non-agriculture, industry in particular. Something very like this has happened in the last quarter-century, if in lesser degree than anticipated and hoped. While real incomes and labour productivity in agriculture have improved, they are still comparatively low and non-agriculture, while it has advanced notably, has been unable to cope with the lowering of manpower in agriculture, in increasing unemployment, exacerbated latterly by the lessening in emigration. We see no prospect of full employment (with a non-agricultural unemployment rate not exceeding 4 per cent and low net emigration) in Ireland unless and until employment in AFF can not only be stabilised but appreciably increased.

Censoriousness towards agriculture is a common attitude in nonagriculture. This is not conducive to improvement, for criticism, even if constructive in intention, is prone to create its barriers amongst the putative improvees. It is alien to our social science philosophy which is that there are reasons why things should be as they are; we must know these reasons before presuming to advise change. Most of them are well known, including

- poverty, resulting in low savings and so in under-capitalisation in the industry and a propensity to leave the land for better-paid employments away from it;
- too many too small farms;
- traditional acceptance of a low standard of living, in fact weakness of demand on the part of agriculturists for tangible capital, materials and consumption goods;
- low income elasticity of demand for most agricultural products.

There has been a marked improvement in all these respects in recent years, particularly under the influence of CAP of EEC. And we must not exaggerate the labour shedding effect: in AFF in five years 1971-1976 this amounted to 6,000 a year, despite the lowering of net emigration; the effect on the level of total nonagricultural unemployment must have been small. Of course, there is no certainty that, with improvement in the world economy, emigration, particularly affecting rural areas, will not be resumed.

The preference of agriculturists here and elsewhere for improvement in income through prices rather than increased quantity production is natural enough, dispensing, as it does, with increased labour, worry about increased expenditure on producers' goods and the risk of inevitable fall in prices due to increased supply. The Intervention policy of EEC, so much criticised, has at least the merit of protecting farmers from the disastrous slumps in prices due to the bounty of nature in the not so distant past, facts well entrenched in the folk memory of people on the land.

Yet the situation is anomalous. The vast sums expended by the State specifically designed to improve agricultural technique have had disappointing results. In the past, most of the alumni of the agricultural schools aspired to become inspectors of the Department of Agriculture or Agricultural Instructors instead of actual participation in agricultural enterprises: we hope there has been a change in this direction in recent years.

Many years ago Geary (1956)^{*} stressed the vast range of output on Irish farms of the same size, indicative of very low income and output on thousands of farms and recent statistics published in regard to the national farm survey conducted by the Agricultural Institute show that many incomes are still inadequate. One wonders why such farmers don't "sell out" at the remarkably high prices ruling for farms. The Department of Agriculture should be able so to ease off incompetent operators and substitute therefor properly trained farmers. Making all due allowance for those clichés like "agriculture is a way of life" and "farmers attach more importance to ownership of land than to income from it," under modern conditions, many thousands of farmers could obtain far larger incomes from interest on investment of sale money than from operation of farms. Competence in operation should be a prime condition one would think, in renting or selling land now vested in the Land Commission. A far more active role should be adopted in future than in the past in improving farming efficiency. There is more to this than economics. The land of the nation is sacred: no one has a right to misuse it. There is, of course, no question of compulsion. Improvement on the lines indicated (and there are many more) can be shown to be in the interests of everyone, the dispossessed, the farming community generally, the State itself.

Farmers are entitled to a reply to a question "Why pick on us?" It is perfectly true that wide variability in competence is a characteristic of every walk of life in Ireland and elsewhere: in 1958 the effective range in net output per head in most industries was 4:1^{**} (1961). The difference between agriculture and other sectors lies not only in the foregoing emotional (but real) consideration but on the fact that market forces cannot be relied on to weed out incompetence in agriculture, which now operates almost entirely under the condition of administered prices; in the past when prices were market prices depending on supply and demand standards of living were poor, in thousands of cases near subsistence level, so that low income did not necessarily lead to elimination.

* "Variability of agricultural statistics on small and medium-sized farms", JSSISI, 1956-57.

** Contribution of R. C. Geary to Discussion of T. P. Linchan's paper "The Structure of Irish Industry", JSSISI, 1961-62.

We welcome the finding in a recent report* of NESC (1977) that a rapid rate of growth in agriculture, particularly if it could be augmented by more intensive processing, could provide up to 23,000 direct in-factory jobs by 1985. Our own comment would be that the best form of industrial expansion would be that which is upstream or downstream to an expanded agriculture.

We admit that to expect an increase or even a maintenance of direct employment in agriculture savours of hope as well as experience. R. O'Connor and P. Kelly** argue that increasing the output of agriculture further would almost certainly mean a greater rate of decline in such employment. We might add that weeding out of bad farmers and increasing size of holdings would, on past experience, have the same effect. All this is but another aspect of the conflict between employment and income policies.

5.3 The Uncertain Future of World Employment

When we embarked on this enterprise, we were inclined to regard the present employment situation as a temporary recession. We never wavered in our oft-repeated view that the Irish problem was primarily to find jobs, an object which might be in conflict with maximising the real income of the nation. If choice has to be made, our philosophy is a preference for a lower gross national income with many jobs than a large income and fewer jobs, even with the generous treatment of the unemployed which through taxation a large national income would make possible. We have expressed a preference for emigration to jobs abroad on the part of persons who would be jobless at home.

A quarter century ago learned discussion centred on automation. The age of leisure had arrived for all in advanced countries, with shorter hours, electronically controlled machines doing most of the work, the only production workers being machine minders, great material wealth for all, the main social

* Alternative Growth Rates in Agriculture. National Economic and Social Council No. 34 1977.

** Irish Economic Policy: A Review of Major Issues, Edited by B. R. Dowling and J. Durkan, ESRI (1978)

problem to be how to use increased leisure. As to leisure, it was scarcely a coincidence that there have been vast advances in popular entertainment starting perhaps with the cinema, on to radio, then television, the whole range of professional sport and the motor car a conventional necessity even amongst lower income earners.

Then, up to about three years ago, this prognosis for advanced countries began to seem all wrong. Registered unemployment reached unprecedentedly low levels, e.g. under one per cent of the insured population in UK. The shortage was in manpower, particularly skilled manpower, and not in tangible capital. Mention of automation and its problems ceased. When first the recession came it was interpreted in traditional fashion as a normal phase in the business cycle: there was even mention of the Kondratiev wave, to say nothing of shorter waves.

At first in the present recession there were some traditional features, though output volume never fell away as it did during the Great Depression of the 1930's. Then, during the past twelve months, a quite new phenomenon appeared: unmistakable recovery in output generally with little or no effect on employment. From a recent article:-

"In 1974 there were 3 million out of work in the Common Market; a year later it was 5 million; now it is likely to reach 6 million before Christmas - 5.5 per cent of Europe's working population.

"Young people are the worst hit, accounting for between half and quarter of the jobless. Complaints that modern youth does not want to work or has not the skills are as common on the Continent as in Britain - and as valid.

"Immigrants are widely blamed for adding to the problem, but measures to stop immigration in some countries and encourage them to return home are not improving the situation.

"Nobody believes any longer that the problem can be put right overnight if governments would only get their economies moving. Higher production will not bridge the gap. Production has been rising across Europe for two years, with no effect. Indeed, industries that would benefit from more orders are having trouble finding enough skilled workers."

"In other words the present unemployment problem is quite different from what we have seen before."* The article also quotes the comment of German Minister Hans Apel: "Our worry is not the 960,000 out of work today but the millions who will be if we don't get productivity up." At first sight this viewpoint might seem paradoxical, assuming that by "productivity," is meant "labour productivity", for the latter is associated with capital intensity. But increased productivity implies a greater increase in production, hence some (if a lesser) increase in employment: we have seen that in Ireland x percentage in year-to-year increase in output of manufacturing industry occasions $(x/2 - 1)$ per cent in employment. Also increased labour productivity, for its lowering effect on prices, increases demand.

We must be on our guard against "insipitated gloom" even in this, the poorest EEC country with the highest unemployment rate. Thomas Carlyle's dismal science is invariably at its most dismal in depressions or, as they are now more politely called, "recessions". Human ingenuity seems to be at its best in bad times (to make them better) and, even if the present recession is "different", so have many been in the past from which countries have recovered, to an always increasing gradient of material prosperity. We must also avoid fatuous optimism. What may have improved, compared with the past, is that, drawing on past experience, recovery inevitable in the long run can be speeded up in the short, by cooperation and sacrifice within nations and internationally. Our own oft-repeated and indeed fairly obvious suggestion that unemployment be regarded as a specific

* K. Richardson: "The dole queues that stretch across Europe" The Sunday Times, 23 October 1977.

134
- 104 -
problem in Ireland, to be given priority over the general economic problem, may be found worthy of examination by other countries.

Recommendations

We confine our recommendations to those affecting manufacturing industry, though we ventured to commend to the authorities our earlier remarks in this chapter on agriculture which, on the whole in our opinion, is more in need of attention than is the rest of the economy. Having regard to Chapter 1 we do not claim originality for any of our suggestions except as regards emphasis on (i) manpower as distinct from income and profit (ii) priority in Government expenditure and taxation-subsidy policy adapted, if necessary differentially, to specific national ends; (in particular such policies should be directed towards the reduction of unemployment (iii) import substitution as a policy equal to that on exports in the interest of employment and balance of payment. We stress that throughout we have been more concerned with methodology than with detailed findings, which will require far more expert specificity than we could presume to give them. Without any repetition of our fairly elaborate statistical analyses we are confident about the following:-

- Funding of IDA should be on a vastly increased scale, one hopes once-for-all, after which industry should increase on its own momentum.
- Foreign policy should be more strongly directed towards the reduction of import excess countrywise, so formidable in some cases.
- The search, on a world basis commoditywise, should be systematic for industries (i) with a future potential based on performance in the recent past and other very detailed analyses and (ii) labour intensive.
- At SITC two-digit level there should be greater equality in imports and exports.
- Concomitantly with increase in output volume in agriculture there should be great development in industries using materials for, and products of, agriculture.
- Examination of the recent foreign trade statistics of advanced economies shows that Ireland should aspire to strong and rapid development in (i) petroleum industries other than refining (ii) vehicle and other heavy industry, most likely as parts therefor, mainly for export. Admittedly these are capital intensive industries but they should be developed because of their magnitude and hence their likely contribution to reducing the trade balance.
- Study of the 1974 IO table strongly endorses policies of quantum agricultural development of materials for processing by Irish industry, import substitution of materials for home non-food industry and for development of petroleum industries.

A friendly critic has pointed out that our recommendations do not follow from our statistical analyses, a major point we readily concede, and in a deeper sense than that "nothing is ever proved by statistics". Statistics help in policy making and we have usually to be content with the negative version: the statistics we have (and usually there are lacunae) do not invalidate the policies proposed; or where there is conflict of interest amongst sections of the public (as there always is) "the greater good of the greater number," with mitigation of the loss to the minority.

There are principles enshrined in the recommendations and principles (the most important - oft repeated - being that economic policy should be based on maximisation of employment) are not susceptible of proof, statistical or other.

Except for the first two sections of chapter 1 the analysis is heavily statistical, with comment and policy inference reduced to a minimum. Truth to say, we were more concerned with statistical methodology than with comment (other than explanatory or cautionary) for the analyses being available, comments may be made and comments, especially as regards policy inferences, may differ. Very much a case in point is the demonstration, quantum-wise for UK and Ireland of the phenomenon of actual output percentage increases being several times greater than increases expected from factor input. We argue that this phenomenon, might be exploited to lower capital inputs and increase labour inputs. Our critic cogently remarks that this excess phenomenon would be non-existent without input of capital. We think the viewpoints can be reconciled but do not insist.

Another critic has questioned our argument that it is not necessarily true that Ireland should always sell in the dearest and buy in the cheapest markets without regard to the necessity for the reduction of import excess in our trading with some twenty countries. The contra argument made

by our critic is that country balances are not on the whole "that important". He comments "The criteria of projected growth of market, hardness or softness of the currency and ease of access with an eye to cost competitiveness are probably more important to native and foreign entrepreneurs in Ireland than correcting an imbalance in yen or drachmas."

We would agree with our critic in general principle, but regard must be had to Ireland's special situation at present: a visible import excess of £500m which shows no sign of abatement - until economic catastrophe! We have shown that in this regard we compare unfavourably with our smaller EEC partners and all our EEC partners have better balances with other countries than we have. If we cannot prove that the policy we advocate is the best, how is the latter argument to be answered? The principle is valid but only when we have brought our trade into better balance.

Our hope is that our statistics and others like them will help in the formulation of prudent policy. However inadequately, we deal with immensities in this paper.

We have had very many valuable internal (to ESRI) and external criticisms, to all of which we have given close attention, resulting in useful additions or other alterations to the original text. Without exception these criticisms related to our policy recommendations or other treatment, our comment being based largely on the statistics. It is notorious that different policies can validly be based on the same set of statistics and other facts. Our hope is that we have raised the principal problems which require decision and that our statistics will narrow the field of argument. We followed where the statistics led and we realise that this has not led to tidiness of treatment of the many topics dealt with.