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National Economic and Social Council
An Chomhairle Náisiúnta Eacnamíoch agus Sóisialach

An Analysis of Job Losses in Irish Manufacturing Industry

No. 67
March, 1983

NATIONAL ECONOMIC AND SOCIAL COUNCIL
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1 The main task of the National Economic and Social Council shall be to provide a forum for discussion of the principles relating to the efficient development of the national economy and the achievement of social justice, and to advise the Government, through the Taoiseach on their application. The Council shall have regard, *inter alia*, to:

(i) the realisation of the highest possible levels of employment at adequate reward
(ii) the attainment of the highest sustainable rate of economic growth
(iii) the fair and equitable distribution of the income and wealth of the nation,
(iv) reasonable price stability and long-term equilibrium in the balance of payments,
(v) the balanced development of all regions in the country, and
(vi) the social implications of economic growth, including the need to protect the environment.

2 The Council may consider such matters either on its own initiative or at the request of the Government.

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Ten persons nominated by the Confederation of Irish Industry and the Irish Employers' Confederation,
Ten persons nominated by the Irish Congress of Trade Unions,
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6 The Council shall have its own Secretariat subject to the approval of the Taoiseach in regard to numbers, remuneration and conditions of service.

7 The Council shall regulate its own procedure.

NATIONAL ECONOMIC AND SOCIAL COUNCIL

An Analysis of Job Losses in Irish Manufacturing Industry

by

JOHN BLACKWELL
GERARD DANAHER and
EOIN O'MALLEY

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COUNCIL PREFACE

The Council has already published four reports in its review of industrial policies. The study published through this report is the final part of this review. The first report to be published was a survey of the literature and of policy changes in Irish industrial policy since the early 1960s. It was undertaken by Mr Eoin O'Malley of the Institute of Development Studies, University of Sussex. Mr O'Malley's findings are published in Report No. 56 of the Council.

The second published report was an evaluation of the infrastructural constraints which hamper existing Irish firms and might act as a barrier to the attraction of new industrial projects to Ireland. The focus of the study was on physical infrastructure and it was decided to concentrate on three basic services – roads, telecommunications and water supply. The study was undertaken by Professor Christopher Foster, Mr Jim Dorgan, Mr Stephen Dewar and Dr Nick Segal of Coopers and Lybrand Associates. Their findings are published in Report No. 59 of the Council.

The third report was an evaluation of existing Irish industrial policy. This study was undertaken by a team from the Telesis Consulting Group, led by Mr Ira Magaziner. The results of their study are contained in Report No. 64 of the Council.

The Council's own comments on industrial policy were published through the report *Policies for Industrial Development: Conclusions and Recommendations* (Report No. 66). The Council's comments took into account all the other studies, including the study of job losses which was, at the time of preparation of the Council's comments, available to the Members in draft form.

The Study of Job Losses

The study published through this report is an analysis of job losses in Irish manufacturing industry. The study was undertaken by Mr J. Blackwell of the Resource and Environmental Policy Centre UCD,

Mr G. Danaher of the Council Secretariat and Mr E. O'Malley of the Institute of Development Studies, University of Sussex.

The objective of the study was to determine the extent and nature of job losses in manufacturing industry and to identify the factors contributing to these losses. The report is, in essence, a technical exercise, with the policy implications being drawn out in the Telesis Report and in the Council's own comments on industrial policy.

Any interpretation of the results presented in the study must consider the approach used to examine the relative importance of the factors contributing to job losses. This involved a succession of comparisons between job losses on the one hand, and a particular explanatory factor on the other.[1] This methodology renders it difficult to allow for the impact of a number of factors operating simultaneously. In addition, it should be remembered that job losses are only one component of change in the labour market. Job gains need to be considered also in forming an overall view.

The nature of the study is such that only factors for which data are available are examined in the report. Factors which are not readily quantifiable, for example, deficiencies in management are not examined. In order to assess factors of this type more micro level analysis would be required.

The Council believes that the report extracts as much meaningful information as is possible from the aggregate data and considers that any further analysis or conclusions would need to be based upon a more detailed examination of particular sectors or firms.

[1] The nature of the analysis and available data resulted in net employment change being used as a proxy for job losses in some instances.

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ACKNOWLEDGEMENTS

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CHAPTER 1

INTRODUCTION

Background to Subject

The issue of job losses, and the related theme of the adaptation of Irish industry to changes in market conditions including the lowering of trade barriers, has been the subject of discussion in a number of reports. In the 1960s and 1970s the issues were evident from the reports of the Committee on Industrial Organisation (1965), and of the Committee on Industrial Progress (1973), respectively. Job losses have also been the subject of comment in a number of reports of the National Economic and Social Council (NESC). In a recent report, the Council referred to the relatively high rate of job loss in manufacturing as "one of the disquieting features of recent industrial performance", while conceding that an unknown proportion of these jobs is subsequently regained, as firms increase activity (NESC, 1980a, p. 16).

In a number of respects, the extent and nature of job losses are relevant to industrial policy. *First*, industrial policy must deal with structural change in industry, and its adaptation to changed conditions. Job losses can occur as a result of these structural changes – or indeed, as a result of a failure of firms to adapt to changed conditions.

Second, calculations are regularly made of the net increase in non-agricultural employment needed to reach full employment, given projections of labour supply: the most recent published figures by the NESC are in a report of 1977 (NESC, 1977b). Related to this, Government programmes and industrial plans of the Industrial Development Authority (IDA) have contained employment goals. A Government White Paper published prior to the IDA Industrial Plan 1978-82 set a target for net change of 10,000 per annum in manufacturing industry as a whole in the three year period 1979-1981 (inclusive) (Ireland, 1979). The IDA Plan noted the Government target and said that the related IDA target for the five year period 1978-1982 (inclusive) was 15,000 new grant aided jobs per annum in manufacturing[1]: "when

[1] This is in grant-aided industry; job creation in manufacturing industry which is not grant-aided is not significant. In 1979, 82 per cent of job gains in manufacturing industry were in firms grant-aided by the IDA.

combined with gains and losses in existing firms should yield White Paper targets" (IDA, 1979, p. 13). The net increase, in any year, is the net result of job gains and losses. Thus, the greater the extent of job losses, the larger the target which is needed for the gross increase in employment.

Third, the question arises of the likely rate of job losses in the foreseeable future. Has a "once-for-all" reduction in employment in certain sectors occurred? If this is the case, annual losses might be expected to be lower in future. In order to try to answer this question, an attempt must be made to arrive at the underlying reasons for the job losses which have occurred.

Related issues on labour policy, especially on manpower policy, arise but are not dealt with here. For example, there is the question of the specific characteristics, and the training needs, of those who are permanently laid off. However, it is hoped that this study will suggest the magnitude of the problem, and thus will have indirect implications for manpower policy.

Terms of Reference, and Scope of Study

The terms of reference for the study are as follows:

> To examine the extent of job loss in Irish industry in recent years, and the nature of this job loss; to attempt to identify the contributing factors to the rate of job loss which has been experienced – for example, the contributions of the world recession, trade liberalisation, productivity trends, technological change and changes in unit costs.

The study is restricted to manufacturing industry. There can, however, be implications for other sectors. For example, increases in unemployment lead to increased Government expenditure on income maintenance and may reduce the scope for job creation or job preservation through other Government expenditure, or may require increased taxation with adverse effects on employment.

In addressing the terms of reference which are set out above, the following questions are relevant. Have the high rates of loss in 1974 and 1975 and again in 1980 been of a "once-for-all" type of adaptation to lowering of trade barriers or increases in costs, involving a sudden adjustment to changed conditions, or do they herald higher long-run rates of loss in the foreseeable future? Did job losses tend to be lower in the second half of the 1970s because of fairly rapid adjustment to free trade in 1970-1975, especially with entry to the EEC, and because of the adverse impact of the 1973-1975 recession? Has there been an increase in cost-reducing rather than capacity-expanding investment, i.e., investment designed not so much to increase capacity but to increase productivity and to lower unit costs? Is the underlying rate of job loss rising? Is there a "normal" rate of job loss which could be expected, with a higher rate indicating that firms may be losing market share, for one reason or another?

The first part of the terms of reference is concerned with establishing the scale and nature of job loss. This is dealt with in Chapters 2 and 3. The second part of the terms of reference deals with underlying causes, and is dealt with in subsequent chapters.

Structure of Report

Chapter 2 gives an overview of trends in job losses, in the context of employment change in recent years. In Chapter 3, there is a detailed examination of job loss in manufacturing industry in the period since 1973, classified by sub-sector of manufacturing, by nationality of firm, and by period. Chapter 4 gives a detailed outline of the possible underlying reasons for job losses, and of the way in which these effects occur. Following a Chapter on past research results, subsequent Chapters test the strength of the links between job losses and the possible underlying reasons. The implications of recent technical change in micro-electronics are examined in Chapter 11. That Chapter is different in orientation from the earlier chapters which deal largely with explanatory factors. Chapter 11 is more forward-looking, in outlining current and future vulnerability to job losses. In Chapter 12, the results of all the earlier Chapters are used to derive conclusions to the questions which are posed in this study. In view of the summary nature of Chapter 12, no independent summary of the entire report is given.

CHAPTER 2

AN OVERVIEW OF TRENDS IN JOB LOSSES

Employment and Unemployment

Job losses comprise one type of adjustment which occurs in the labour market. While the focus of this study is on job losses, the context in which job losses take place is important and is as follows. *First*, the labour force consists of those who are employed, together with those who are unemployed, ideally measured not by the Live Register but by the numbers who are seeking employment.[1] *Second*, employment, in turn, is dependent on output levels in the economy. *Third*, the labour force itself is not constant but changes when population or activity rates (labour force as a proportion of the population in specific age groups) change. When the unemployment rate falls, the labour force tends to rise, since activity rates tend to rise and/or net migration into Ireland tends to increase.

The underlying forces which affect employment will also affect job losses. Appendix I considers the relation between employment change and job losses. If the trend in net employment change is similar for all firms in a sector, there will be a good correlation between job losses and net employment change.

In cases where job losses in some firms are balanced by job gains in others, statistics on net employment change can cloak the problems of adjustment which arise, since the job losers are likely to differ from the gainers. This is especially the case in the short run. In the long run, there is a greater likelihood that displaced workers would find jobs.

Unemployment is the difference between the labour force and employment. Hence, other things equal, increases in unemployment should accompany increased job losses, and this has been the case (Whelan and Walsh, 1977). However, they could move in opposite

[1] Data on unemployment from the Census of Population are based on self-reporting; by contrast, the Live Register enumerates those who register for unemployment assistance or unemployment benefit. The Live Register does not count certain married women and school-leavers, who do not qualify for benefits but who would work if jobs were available, while some who are not able and willing to work may be included. On balance the Live Register should tend to underestimate the "true" level of unemployment. These issues are discussed by the Interdepartmental Study Group on Unemployment Statistics (Central Statistics Office, 1979).

directions. For instance, job losses could fall, but an upsurge in the labour force could lead to an increase in unemployment, given the level of demand for labour. This is shown in Appendix I.

Some level of job losses can be expected to be a feature of any economy which is not static. Depending on training and retraining, and on the mobility of labour, certain levels of job loss can occur without any sustained increase in unemployment occurring. Firms and industries expand and contract over time. Some job losses may reflect declines in market share by certain firms which are compensated for by increased market share of their domestic competitors. Other job losses may reflect shifts of demand between products. For instance, as real incomes increase, the volume of consumer spending on most products tends to increase, but in the case of some products there is relatively little additional consumption. Yet other losses may reflect market saturation which can occur (for instance, when ownership of consumer durables reaches a peak). Thus, the relation of job losses to net employment change and to the change in unemployment must be considered in any evaluation of job losses.

The Nature of Job Loss

This study is concerned primarily with job losses which occur as a result of the actual size of the work force of a firm being greater than the desired size. The firm may reduce its employment immediately, or may subsequently fail to replace workers who leave or retire. But these job losses are only part of the whole. In the widest sense, whenever employment in a firm falls between two dates, job losses occur in the intervening period. They can be classified into the following four types:

(i) sustained job losses due to firm closures and due to discharges of workers;
(ii) sustained job losses due to non-replacement: where workers leave voluntarily or due to their reaching retirement age, and are not, or will not be, replaced by the firm;
(iii) temporary lay-offs, due to a temporary decline in demand for the output of the firm;
(iv) frictional job losses; where workers who have left, or who have retired, have not yet been replaced by the firms, but will be replaced.

Cases (i) and (ii) cover the two different methods by which firms reach their desired, and lower, level of employment. No job losses occur in cases where firms react to a decline in demand by labour hoarding. Firms may hoard labour not just because of employment protection legislation, as a result of which firms face costs when they let workers go, but also be-

cause of search and recruitment costs which firms will face when the volume of output picks up.

In principle, there should be a close correspondence between the sum of sustained job losses and temporary lay-offs, i.e., cases (i) to (iii) inclusive, and "redundancies", as defined in the *Redundancy Payments Act* 1967 (amended by the 1971 Act). Under the Act, a redundant employee is one who loses a job *either* because the establishment closes down, *or* there is need for fewer employees, *or* there is a change to a method of work for which the employee is insufficiently skilled. However, in practice, the published data on redundancies cover only part of all redundancies, as will be explained later in this chapter.

Under case (iii), temporary lay-offs, employment in a firm declines at first, and subsequently rises. However, those particular workers who are hired in the recovery period need not be the same workers who earlier lost their jobs. This raises issues of manpower policy, which are outside the scope of this study. These lay-offs may occur in certain cases where there is a pronounced seasonal pattern in output in an industry.

Calculations of job losses in this study pick up some temporary lay-offs and some frictional job losses. If sufficient data were available, it would be desirable to exclude frictional job losses, but this is not possible.

One difficulty in interpreting the data on job losses and job gains arises because, when frictional job losses are filled and when temporary lay-offs are restored, these numbers appear as *job gains* in following years. Thus, it can be misleading to add annual data on job losses (or, indeed, data on job gains) in order to arrive at a total for, say, a five year period. Hence, in this study, job losses are calculated by comparing the employment levels of each firm on two dates which are a number of years apart, for example, January 1973 and January 1980. In this way the magnitude of frictional job losses, and of temporary lay-offs, is minimised. Moreover, unless there are marked changes over time in the incidence of either frictional losses or temporary lay-offs, reasonably firm conclusions can be drawn about the trend over time in sustained job losses, which is the most important aspect for policy purposes.

However, if data for two separate years are compared, there may be need to allow for cyclical effects. *First*, on the upswing of the economic cycle, labour turnover can be expected to increase as workers change employment more often. *Second*, and more importantly, a comparison of, say, a year in which output was at a peak with a year in which output was at a low can lead to an overestimation of the underlying trend of job losses. During a downturn in the business cycle, output tends to fall faster than employment (NESC, 1980a) as short-time working precedes job losses. Conversely, output tends to rise faster than does employment in the upturn. (This is taken into account in Chapter 3.)

Since January 1973 and January 1980 mark roughly similar points in the economic cycle (Fig. 1) there is no need to allow for cyclical effects.

The number of voluntary quits, which affects category (ii), is likely to have increased in recent years, for the following reasons. *First*, in a number of instances, firms which wished to lower their employment gave incentives to early retirement, in the form of lump sum payments. (This is over and above the statutory lump sum which employees who volunteer for redundancy can receive under the Redundancy Payments Acts.) Information is not available on the extent of this encouragement to early retirement. *Second*, there has been a marked fall in activity rates of those aged 55 and over in the period 1975-1979 (Blackwell and McGregor, 1982). This is consistent with either an increased incidence

Table 2.1

Employment by Broad Sector, Labour Force and Unemployment, at mid-April, 1966-1980 (a)

000

	1966	1971	1975	1976	1977	1978	1979	1980
Agriculture, forestry and fishing	334	273	238	232	228	226	223	220
Industry (b)	294	323	337	325	336	350	365	372
Of which: Manufacturing	198	214	224	218	226	231	239	243
Services (c)	439	459	498	507	519	534	557	571
Of which: Public sector services (d)	n.a.	n.a.	n.a.	n.a.	270	276	290	297
Private services (e)	n.a.	n.a.	n.a.	n.a.	249	258	267	274
Total employment	1066	1055	1073	1064	1083	1110	1145	1163
Unemployed (f)	67	80	88	105	104	100	85	85
Labour Force	1133	1135	1161	1169	1181	1210	1234	1252

Notes: n.a. : not available.

(a) Data embody the revisions in employment for the years 1975, 1977, 1979 and 1980 which were issued by CSO on 19 December 1980.

(b) Mining, quarrying and turf production; manufacturing; building and construction; electricity, gas and water.

(c) Commerce, insurance and finance; transport, communication and storage; public administration and defence; other.

(d) Civil Service; Gardai; Defence Forces; Teachers; Health Boards and other health sector staff; Local Authorities; State-sponsored Bodies.

(e) By residual.

(f) Includes an estimated 15,000 seeking regular work for the first time.

Sources: *Economic Review and Outlook, Summer, 1981; The Trend of Employment and Unemployment.*

of voluntary quitting, "encouraged" retirement, or – most likely – a combination of both. In part, however, the fall in activity rates could also have been due to workers who lost jobs and dropped out of the labour force because of a perceived lack of job opportunities.

The Data

There are two sources of information on employment. Data on employment by sector of manufacturing industry are issued by the Central Statistics Office in the *Irish Statistical Bulletin*. Based on this information, net change in employment over time can be calculated. As indicated in Chapter 1, some of the work on testing the strength of underlying causes of *job losses* must test the relative importance of various causes of *net change in employment* by sector of manufacturing industry: this is because of the availability and compatability of data. Net employment change reflects job gains in some firms, job losses in others – indeed, it may reflect gains and losses within the same firm or within the same establishment. It is assumed that the work on net employment change in this study indicates the relative importance of the likely causes of *job losses*.

Data on employment are also available from employment surveys carried out in January of each year since 1973 by the Industrial Development Authority. Job losses are calculated from IDA data. The decline in employment in each of those firms which showed a reduction in employment in the period in question is computed. These declines are summed up within each industrial sector of manufacturing industry to give the information by sector which is in Chapter 3. Appendix II compares the coverage of the IDA data with that of the CSO data. IDA rather than CSO data are used as the basic source for job losses, because the CSO does not make available data on net employment change at the firm level, i.e., on job losses as calculated in this study.

In addition, there is a series on redundancies, published by the National Manpower Service in *Manpower Information Quarterly*. This covers those whom firms *propose* to make redundant. Only employees who qualify under the Redundancy Payments Scheme are covered. Excluded are employees with less than two years of eligible service with an employer, those under 16 years of age, those who have reached the qualifying age for the old age pension, and those who work less than 20 hours a week. (In the UK, payments under the redundancy legislation are also not available to workers who have been with their employer for less than two years or those who are over the statutory retirement age; studies have suggested that at least half of all employees made redundant in Britain did not receive redundancy payments: Noble, 1981.)

Since a number of those who lose jobs are likely to have less than the eligible service with an employer, the published redundancies will be

less than the sum of sustained job losses, temporary lay-offs and frictional job losses. Moreover, if there is a rule of "last in, first out", the *trend* in notified redundancies can understate the trend in job losses. For these reasons, this series on redundancies is not used, except in passing.

The data cannot take account of jobs which were foregone because firms did not locate in Ireland. Nor can they take account of jobs foregone because domestic firms did not find it worthwhile to make an investment.

An Overview of Trends in Employment and Unemployment

In the period since 1966, the proportion of employment in agriculture declined, while the proportion in all industry, in services, and in manufacturing industry increased (Tables 2.1, 2.2). Between 1966 and 1980, total employment increased by 97,000, employment in manufacturing industry rose by 45,000 and employment in services increased by 132,000. Information on public sector services (as defined in Table 2.1) is available for a shorter period: in the period 1977-1980, 52 per cent of the increase in service employment occurred in public sector services.

Table 2.2

Proportion of Employment in Each Broad Sector, at mid-April, 1966-1980

%

	1966	1971	1975	1980
Agriculture, forestry and fishing	31.3	25.9	22.2	18.9
Industry	27.6	30.6	31.4	32.0
Of which: Manufacturing	18.6	20.3	20.9	20.9
Services	41.2	43.5	46.4	49.1
Total	100.0	100.0	100.0	100.0

Source: Table 2.1.

Table 2.3 shows the employment trends for sectors within manufacturing. Most notable are the relative declines of employment in textiles, and in clothing and footwear over 1966-1979, and the relative increases in chemicals and chemical products, clay products, glass and cement, and in metals and engineering. Within metals and engineering, there has been a good deal of turnover in job gains and losses, with a substantial increase in employment in some sub-sectors in recent

Table 2.3

Employment by Industrial Sector, in March Each Year, 1966-1979 (a)

Sector	1966		1971		1975		1979	
	000	%	000	%	000	%	000	%
Food	38.2	22.1	41.9	21.3	41.8	21.4	41.9	20.4
Drink and tobacco	10.1	5.8	9.9	5.0	9.8	5.0	10.0	4.9
Textiles	21.9	12.6	25.2	12.8	20.2	10.3	20.6	10.0
Clothing and footwear	22.1	12.7	23.3	19.7	18.3	9.4	16.0	7.8
Wood and furniture (including brushes, brooms)	7.6	4.4	8.1	4.1	8.1	4.1	7.4	3.6
Paper and printing	14.9	8.6	16.7	8.5	16.5	8.5	15.6	7.6
Chemicals and chemical products	7.2	4.2	8.1	4.1	9.5	4.9	11.1	5.4
Clay products, glass, cement, etc.	7.8	4.5	10.3	5.2	11.7	6.0	12.9	6.3
Metals and engineering (including vehicles)	33.0	19.0	38.8	19.7	43.7	22.4	48.6	23.7
Other manufacturing industries	10.6	6.1	14.3	7.3	15.7	8.0	21.0	10.2
Total manufacturing industries	173.4	100	196.6	100	195.2	100	205.1	100

Notes: (a) Data are not seasonally adjusted. Numbers engaged include proprietors, administrative, technical and clerical staff and industrial workers but exclude outside piece workers. Data are based on the pre-NACE classification, in order to provide a comparison back to 1966. (Data based on NACE are available only for the September quarters between 1973 and 1976 inclusive and for each quarter from March 1977 onwards.) Numbers employed in manufacturing are lower than those in Table 2.1. This is partly due to revised numbers on employment which are in Table 2.1 (see note (a) to that Table) and because the deta in this table are grossed up from a quarterly inquiry.

Source: *Irish Statistical Bulletin.*

years. In the cases of both metals and engineering, and textiles, there have been considerable gains and losses within the sectors. This is shown in Table 2.4, which shows the employment change over time for sub-sectors of sectors where a good deal of structural change evidently occurred (leaving aside food), or where considerable job losses occurred, as shown below. Table 2.4 shows that, within sectors, there were considerable differences in net employment change at the sub-sector level.

An Overview of Trends in Job Losses

The first part of the terms of reference is concerned with establishing the magnitude of job losses in recent years. As a background to the subsequent chapters, a broad overview of job losses over time is given. It is not possible to go back before 1968 for data on notified redundancies nor before 1973 for data on annual job losses. Notified redundancies in manufacturing increased in each year from 1968 to 1972, declined in 1973 to 3,400, increased in 1974 to 5,700 and jumped to

Table 2.4

Employment in Certain Industrial Sub-Sectors, in March Each Year, 1966-1979 (a)

	000				
	1966	1971	1975	1979	Net change 1966-79
Textiles:					
Woollen and worsted (excl. clothing)	6.7	7.5	5.1	4.5	−2.2
Linen and cotton	3.7	3.2	2.5	1.9	−1.8
Jute, canvas, rayon, nylon, etc.	3.8	4.1	4.4	6.5	2.7
Hosiery	6.9	9.3	7.2	6.6	−0.3
Clothing and footwear:					
Boot and shoe	6.1	5.5	4.3	3.6	−2.5
Clothing – men's and boys'	4.8	5.2	4.5	3.0	−1.8
– shirtmaking	2.4	2.8	2.5	2.7	0.3
– women's and girls'	7.8	8.6	6.3	6.1	−1.7
– miscellaneous	1.1	1.1	0.8	0.6	−0.5
Made-up textile goods (excl. apparel)	0.7	1.1	1.0	1.1	0.4
Wood and Furniture:					
Wood and cork (except furniture)	3.6	3.8	3.8	3.6	0.0
Furniture and fixtures; Brushes and brooms	4.0	4.3	4.2	3.7	−0.3
Chemicals and chemical products:					
Fertilisers	2.6	2.3	2.7	2.4	−0.2
Oils, paints, inks and polishes	1.4	1.3	1.5	1.5	0.1
Chemicals and drugs	2.4	3.7	4.7	6.7	4.3
Soap, detergents and candles	0.7	0.7	0.6	0.6	−0.1
Metals and engineering:					
Metal trades (except machinery and vehicles)	10.3	12.4	14.8	16.4	6.1
Manufacture and assembly of machinery (except electrical equipment)	2.6	3.3	4.3	4.8	2.2
Manufacture of electrical machinery, etc.	8.2	10.0	10.8	14.7	6.5
Ship and boat building and repairing	1.2	1.7	2.3	2.1	0.9
Manufacture of railroad equipment	2.3	2.3	2.1	1.6	−0.7
Mechanically propelled road and land vehicles	6.7	7.6	7.6	7.2	0.5
Other vehicles	1.6	1.5	1.8	1.8	0.2

Notes: (a) As in note (a) to Table 2.3.

Source: Irish Statistical Bulletin.

11,400 in 1975 (Table 2.5). Since 1975 they have varied between 4,300 in 1979 and 10,800 in 1981.

Table 2.5 shows the job gains and job losses in recent years, from IDA data. The data on job losses in the Table comprise the sum of cases (i) to (iv) inclusive, listed above. The difference between job gains and job losses in any year is the net increase in employment in

Table 2.5

Job Gains and Job Losses in Manufacturing Industry, 1968-1981

		1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
(1)	Gross jobs created (a) (b) 000	n.a.	n.a.	n.a.	n.a.	n.a.	21.2	16.8	15.7	21.1	24.6	23.6	25.7	19.5	20.3
(2)	Gross job losses (a) 000	n.a.	n.a.	n.a.	n.a.	n.a.	11.6	19.7	27.5	18.0	18.7	16.6	15.6	27.3	24.3
(3)	Gross job losses as % of employment in January of year (IDA data)	n.a.	n.a.	n.a.	n.a.	n.a.	5.1	8.3	11.7	8.1	8.3	7.2	6.6	11.0	10.1
(4)	Net change in employment (1-2) 000	n.a.	n.a.	n.a.	n.a.	n.a.	9.8	−3.2	−12.0	2.8	6.3	6.7	9.9	−9.2	−4.0
(5)	Employment in January of following year (IDA data) (c) 000	n.a.	n.a.	n.a.	n.a.	227.4	237.0	234.1	222.3	225.3	231.2	238.2	248.3	240.4	236.5
(6)	Employment in December each year (CSO data) (d) 000	188.6	198.2	198.9	195.8	199.7	210.4	208.6	195.6	200.4	204.8	212.5	221.1	212.1	207.3
(7)	Net increase in employment in calendar year (year to year change in (6)) 000		9.6	0.7	−3.0	3.9	10.7	−1.8	−13.0	4.8	4.4	7.7	8.6	−9.0	−4.8
(8)	Notified redundancies (e) 000	1.4	1.5	1.8	4.2	5.2	3.4	5.7	11.4	7.3	7.6	5.1	4.3	8.3	10.8
(9)	Notified redundancies as % of gross job losses	n.a.	n.a.	n.a.	n.a.	n.a.	29	29	41	41	41	31	28	30	44

Notes: n.a. not available.

(a) Data cover the calendar year, e.g., the data for 1980 cover the period between January 1980 and January 1981.

(b) Data include "first time new jobs" and recoveries of jobs which were lost temporarily in previous years. In 1980, of the 19,500 job gains, 12,200 were first time new jobs in firms grant-aided by the IDA. See also footnote 1 on page 16.

(c) This data point is chosen so that data in row (5) can be compared with data in row (6). Hence, IDA data of 227.4 in January 1973 compares with CSO data of 199.7 in December 1972.

(d) Data are not seasonally adjusted. See last sentence of footnote (a) to Table 2.3 for an explanation of discrepancies between data on employment in manufacturing from CSO quarterly inquiry, and those in Table 2.1.

(e) Redundancies notified under the Redundancy Payments Scheme during each year; data refer to proposed redundancies, rather than actual redundancies; for further qualifications, see text. There were changes in conditions of the scheme which led to a big increase in numbers in 1970 and 1971. The main change was in the requirement that to be eligible there was need to be in insurable employment at some time in the previous two years: in 1971 this was changed to any time in the previous four years. In 1979 there were two changes: the upper age limit for eligibility was lowered from 70 to 66, and the minimum number of hours per week for eligibility of part time employees was reduced from 21 to 20.

Sources: Industrial Development Authority (for data in rows (1), (2), (5)); Central Statistics Office and *Irish Statistical Bulletin* (for data in (6)); National Manpower Service, *Manpower Information Quarterly*; National Manpower Service; *Irish Statistical Bulletin.*

that year. A comparison with the year-to-year change in employment in manufacturing industry, from CSO data, yields a reasonable correspondence with the net change from the IDA data. Despite the qualifications made above on the redundancies data, the year-to-year relative change in notified redundancies follows the year-to-year relative change in job losses from IDA data with the exception of 1981. On average, notified redundancies amounted to 36 per cent of gross job losses over 1973-1981.

Based on the IDA Employment Survey (with due qualification about comparing data for one year with those in another), job losses rose steadily between 1973 and 1975, from 11,600 to 27,500, and fell to 18,000 in 1976. In the period between 1976 and 1981 (inclusive), job losses varied between 15,600 in 1979 and 27,300 in 1980. While the *rate* of job loss in Table 2.5 is not a true rate, since it does not allow for re-gains, the years 1975, 1980 and 1981 stand out as years with relatively high rates.

Notwithstanding the difficulties of comparing data across years due to the re-gain of jobs, and the deficiencies in the data on redundancies, there was evidently a higher yearly rate of job loss, and of redundancies, after the 1974-1975 recession, than in the early 1970s.

While not as high as in 1974-1975, job losses continued to be perceptible in the years 1976-1979 inclusive. While some of these losses were regained in subsequent years, they occurred despite the recovery in output in manufacturing industry which began in the third quarter of 1975 after six successive quarterly declines and lasted until the third quarter of 1979, *and* despite a strong growth in the volume of industrial exports, which increased by 15.5 per cent a year on average between 1976 and 1980. However, this seeming conflict between job losses and industrial growth in the period since 1975 can be explained, at least in part, by change in industrial structure. Most of the growth was contributed by the influx of new overseas firms. This is strongly suggested by the fact that much of the increase in the volume of industrial exports was contributed by firms in chemicals and metals and engineering: sectors where many new overseas firms began operations. This highlights a problem of interpretation, in cases where net changes in employment are used. These net changes can mask the extent of job losses, and can understate the extent of job losses in older established firms which lose markets. The net result of the job gains and job losses has been that, despite the influx of many new firms, employment in manufacturing industry in the period 1971-1980 increased by only 3,200 a year, on average: from 214,000 to 243,000 (Table 2.1).

Table 2.6 compares job losses by sector with net employment change by sector in the 1973-1980 period. This confirms the point of the preceding paragraph: in sectors where a good deal of structural

change took place, relative trends in job losses and in net employment change can differ. There is a reasonable relation between the relative scale of job losses in textiles, clothing and footwear, and wood and furniture, and the relative employment change. But in the cases of food, and metals and engineering, where much structural change occurred, relatively high job losses occurred together with increases in employment.

Table 2.6

A Comparison of Job Losses with Net Employment Change by Sector, 1973-1980

Sector	Job losses	Net employment change
Food	11011	+2153
Drink and tobacco	1370	+ 376
Textiles	9933	−5465
Clothing and footwear	11239	−3838
Wood and furniture (incl. brushes, brooms)	3749	+ 975
Paper and printing	3088	+2400
Chemicals and chemical products	3667	−400
Clay products, glass, cement, etc.	2805	+1888
Metals and engineering (incl. vehicles)	13732	+7052
Other manufacturing industries	4762	+ 101
Total manufacturing industries	65356	+5242

Note: Employment at January each year.
Source: Industrial Development Authority (for both sets of data).

CHAPTER 3

STATISTICAL PROFILE OF JOB LOSSES

Introduction

The main purpose of this chapter is to examine the extent and nature of job loss in Irish manufacturing industry in recent years. The chapter is set out as follows:

(i) a discussion of the primary data source for job losses, i.e. the IDA Employment Survey;
(ii) a discussion of the method used for calculating job losses;
(iii) an examination of the rate of job loss in all manufacturing industry and in individual categories and the extent to which job loss is accounted for by closure and labour shedding;
(iv) an examination of the effects of the 1974-1975 recession on the rate of job loss; and
(v) an examination of the hypothesis that the longer established of the foreign grant-aided firms in Ireland are experiencing a rising rate of job losses due to closure. This hypothesis is outlined more fully under the heading of competitiveness in Chapter 5.

Data Source

Using data published by the CSO on employment levels by sector, net employment change by sector can be derived. However, this conceals an enormous diversity in growth and decline at the firm level. Net employment change is the net result of the following occurrences at plant level:

Plant openings
Plant closures
Plant expansions
Plant contractions

Data have been provided by the IDA, based on the IDA Employment Survey which enable these individual components of change to be isolated. Using this data it is also possible to analyse the components of change by sector, for foreign and indigenous industry, cross-classified

by grant type.

A brief description of the conventions adopted by the IDA in *classifying* the employment data in the Employment Survey is now given to provide a better understanding of the categories analysed in this Chapter. The conventions employed in *compiling* the data and the reasons for differences between CSO and IDA data are given in Appendix II. It should also be noted that the CSO is the official source of data relating to manufacturing employment while the object of the IDA Survey is to monitor the achievement of first time grant-aided job targets in the IDA Plan.[1]

The classification system used in the IDA Employment Survey is hierarchical. The first tier in the hierarchy is new industry; any firm which received a new industry grant is included here, for example, firms which received a new industry grant *and* a re-equipment grant are included in the new industry category. The next tier is small industry, i.e., any firm which received a small industry but not a new industry grant is included here. The next tier in the hierarchy is re-equipment grant-aided industry, i.e., any firm which received a re-equipment grant but not a new or small industry grant is included here. The final tier, entitled "other industry", is composed of non-grant-aided industry and industry grant-aided by Gaelterra Eireann and the Shannon Free Airport Development Company (SFADCo).

It is also possible to classify each of these categories by nationality, i.e., indigenous and foreign. *Indigenous industry* is composed of companies owned in majority by Irish interests. *Domestic industry* is composed of indigenous industry and foreign industries which have received grants for further expansion after their initial establishment in Ireland. The domestic industry category is used when classifying job approvals rather than actual employment and hence is not used in this report. Employment levels by sector, cross-classified by grant type and nationality are provided in Appendix III. A brief summary is provided in Table 3.1.

The IDA data are available for the forty-four detailed sub-sectors under the old census of industrial production classification. However, the IDA data are presented here only at the ten sector level. The ten sector breakdown in the IDA Employment Survey is similar to that of the CSO. However, the definition of firms which go into the various sectors differs, particularly for the early part of the 1973-1980 period. For example, if a company is in a mixed business, part service, part manufacturing, the CSO includes only that part which is in manufacturing whereas the IDA includes all employment in the firm if over 50% is engaged in the manufacturing part. Attempts by the IDA and the CSO to bring their definitions into agreement have resulted in a greater degree of similarity in the latter part of the 1973-1980 period.

[1] First time grant-aided jobs are those jobs coming into existence for the first time in IDA grant-aided firms. They exclude recoveries of jobs previously lost in grant-aided firms and non-grant-aided new jobs.

Table 3.1

Employment in Manufacturing Industry Classified by Nationality and Grant Type, 1973 and 1980

Grant Type	Nationality	1973	1980
New Industry	Foreign	34043	59419
	Indigenous	64320	66399
Small Industry	Foreign	784	1456
	Indigenous	11868	21321
Re-equipment Industry	Foreign	13800	11200
	Indigenous	55331	47160
Other Industry	Foreign	10424	8355
	Indigenous	26722	28603
Total	Foreign	59051	80430
	Indigenous	158241	163483
Total	Total	217292	243913

Note: Data for 1973 refer to January 1973, data for 1980 refer to January 1980. Similarly, in subsequent tables.

Source: The figures for total manufacturing employment in this table are lower than the figures in row 5 of Table 2.5. This is due to the fact that the data in Table 2.5 include an estimate for non grant-aided firms with less than fifty employees in the Dublin region in 1973 which were not surveyed at that time and still existed in January 1978. In addition, the data in Table 2.5 include employment in some grant-aided non-manufacturing companies which was of the order of 5,000 in 1980.

The purpose of this chapter is to provide a profile of job losses, i.e., the extent to which they occur in particular sectors and grant categories. A number of hypotheses are also examined. Because of the large body of data which is available in the IDA Employment Survey, it is necessary to be selective in the number of hypotheses which are tested. However, as much of the basic data as is practicable is presented in Appendix III. As outlined in the previous chapter, all data other than employment data relating to manufacturing industry, e.g., output data, are compiled by the CSO and hence only comparable with CSO employment data.

Method of Calculating Job Losses

The data base is the IDA Employment Survey 1973-1980 which was first undertaken in 1973 and has been undertaken on 1 January each year

since then. The data therefore relate to the period 1 January 1973 to 1 January 1980 and cover individual establishments or plants, e.g., an overseas company with three subsidiaries in Ireland is taken as three plants, not as one firm. Job loss in this study is calculated as follows. Employment by establishment is available for a base year and for some subsequent terminal year. A job loss is taken to occur when employment in the terminal year is less than in the base year and the extent of the job loss is the difference between these levels of employment (see Appendix I). Employment levels in any intervening year between the base year and the terminal year are disregarded. By calculating job losses in this manner, any firm which commenced operations after the base year and which experienced job losses or closed within the period is excluded from the calculation. The job losses are aggregated for all establishments within a sector, are expressed as a percentage of base year employment in that sector, and the average annual rate of job loss (compounded annually) is calculated.

In calculating job losses in this manner, any losses which occur between the base year and any intervening year but are regained before the terminal year are not captured. This, however, is an advantage – in that losses which are subsequently regained within the period are either temporary or frictional – since this study is more concerned with the underlying trend of job losses (see Chapter 2).

It is important to distinguish between job losses due to a reduction in the work-force of a plant and job losses due to plant closure. Plant closure erodes the productive base of the economy. Where plant closure is the result of a temporary fall in demand, any subsequent recovery of demand may generate inflationary pressures in the economy or increased imports. In addition, start up costs, either if the plant is to be re-opened or if an indigenous/foreign firm is attracted in its place, are likely to be substantial. In the case where losses are due to adverse movements in competitiveness, closure indicates an almost irreversible situation whereas a reduction in the plant work-force may indicate rationalisation efforts, subsequent to which employment may even grow.

In calculating job loss due to closure, the technique is similar to that used for a reduction in employment. However, one point should be noted: the employment loss due to closure is *not* the employment level in the plant at the time of closure but the employment level in the base year. For example, if one is examining job loss due to closure in the 1973-1980 period, and if a plant closes in 1976, then the job loss is the employment level in 1973. This more closely approximates the actual loss due to closure since firms generally tend to shed significant amounts of labour in the years immediately preceding closure (see McAleese, 1977, page 78).

As outlined in Chapter 2, job losses are likely to vary over the

business cycle with the rate of loss being higher during the recessionary phase. A number of these losses are short-term losses which are subsequently regained. If the base year chosen corresponds to the peak of the cycle and the terminal year corresponds to the trough of a recession, job losses calculated over this period will exaggerate the underlying rate of loss. Conversely, if the base and terminal years correspond to the trough and peak respectively, job losses are likely to be understated. This study aims to examine structural rather than short-term influences on job losses. The problem can be overcome by selecting a base and terminal year which are at similar stages of the business cycle. This principle of comparing data at similar points in the cycle has to be set against the principle of having as long a period as possible between the base and terminal years to get a reliable estimate of the underlying rate of job loss. This results in the choice of 1 January 1973, as the base point and 1 January, 1980 as the terminal point. Figure 1 shows that while the terminal year corresponds to the peak of the cycle, the base year is some time before the 1973 peak. This is likely to result in a marginal under-estimation of the trend rate of job loss.

Job Losses in Total Manufacturing Industry

Table 3.2 provides details of the extent of job loss over the period 1973-1980. Job losses in total manufacturing industry over the 1973-1980 period were 65,356, approximately half of which resulted from plant closure. A comparison of this number with the aggregate of the losses calculated on an annual basis in Table 2.5 (155,000) indicates the extent of temporary losses and "job re-gains". Over the entire period, 89,644 jobs were lost and subsequently regained, indicating substantial short-term labour turnover. The bulk of the 65,356 losses were accounted for by the textiles, clothing and footwear, food, and metals and engineering sectors. In the former two sectors this is due to a high *rate* of job loss, while in the latter two sectors their large absolute size in employment terms accounts for the high absolute job losses.

The average annual rate of job loss (hereinafter referred to as rate of loss) over the period 1973-1980 was 5.0%, implying that approximately 30% of the jobs, which existed in 1973 had been lost by 1980.

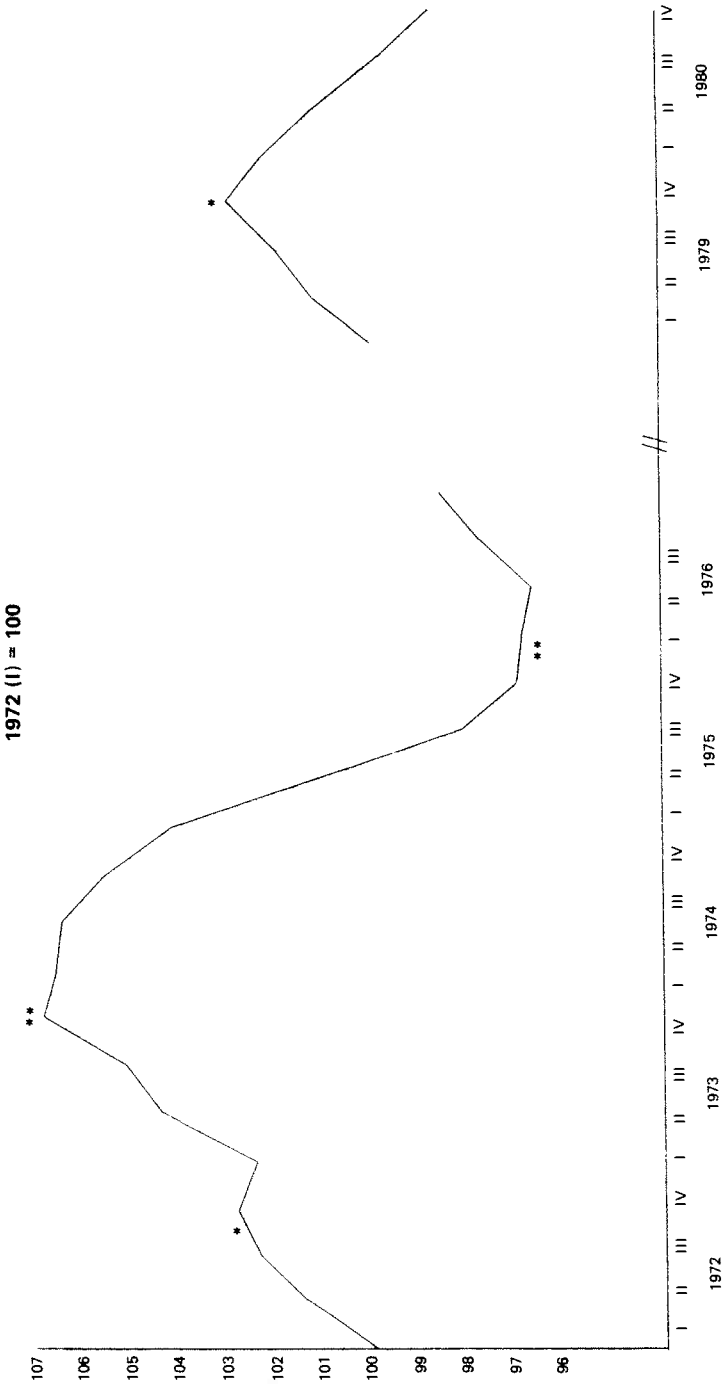
A priori, one would not expect different economies to experience similar rates of job loss in any given time period, given the multiplicity of factors which influence the rate of loss and the variability of these factors across countries. Among these factors are the stage of economic development, the extent of structural change which an economy is experiencing, the sectoral composition of an economy, and the degree of openness to international trade.

An attempt to put the Irish rate of job loss in an international setting is now attempted. Birch (1979) using the components of change out-

Figure 1

Manufacturing Employment Indices; 1972 (I) – 1976 (III), 1979 (I) – 1980 (IV)

1972 (I) = 100



... Points of comparison for 1973-1980 job losses

... Points of comparison for 1974-1976 job losses (i.e. recession phase)

Source: CSO Irish Statistical Bulletin.

lined earlier, carried out an analysis of the job generation process in the US, utilising a data file on 5.6 million establishments, encompassing approximately 82% of all private sector employment. This analysis was carried out on a State basis for three sub-periods: 1969-1972, 1972-1974, and 1974-1976.

There are, however, a number of problems with attempting to compare Birch's findings with the results for Ireland. Birch's main conclusion is that "the rate of job loss due to the other two processes causing loss (closures plus contractions) is about the same everywhere and is quite high – 8% per year". However, from the data base presented in Birch (1979) it is not clear how the 8% number was arrived at. The major difficulties with the figure are as follows:

(i) It appears to include the following: farming, manufacturing, trade and services and 'other';

(ii) It is unclear to which period the 8% refers: if it refers to any of the sub-periods then it does not capture a long-run trend. If it refers to the period 1969-1976 and if it was arrived at simply by adding the results from the three sub-periods, it does not allow for job regains and therefore does not give a long-run trend. Since the basic data are not provided for the 1969-1976 period it is impossible to verify the figure;

(iii) Birch does not elaborate on how he calculates job loss due to closure, i.e., whether it is the employment level of the establishment at the time of closure or in the base year.

These considerations plus the general problems of comparing job losses for different countries indicate that the Birch findings are not suitable for comparison with the Irish results.

Following Birch's research in the US, a similar exercise was undertaken by Fothergill and Gudgin (1979) for one region of Britain, viz., the East Midlands. Their data base consisted of all manufacturing establishments operating in the region in 1968 and 1975. Although their data cover only one region (a relatively prosperous one in 1975) and the comparison faces the same general difficulties as other international comparisons outlined earlier, at least the basic data are provided and relate to manufacturing only.

They found an average annual rate of job loss of 4.2% and a 1.8% rate of loss due to closure. The percentage of total job loss due to closure was 46%.

The rate of job loss in Irish manufacturing industry of 5.0% is slightly higher than that found by Fothergill and Gudgin for the East Midlands with the percentage of job loss due to closure also being marginally higher at 52%.

Table 3.2

Job Losses in Manufacturing Industry by Sector, 1973-1980

Sector	Job losses	Job losses due to closure	1973 Employment level	Average annual % job loss (compounded annually)	Average annual % job loss due to closure (compounded annually)	% of job loss due to closure
Food	11011	4761	46856	3.7	1.5	43.2
Drink and Tobacco	1370	291	10790	1.9	0.4	21.2
Textiles	9933	4898	23003	7.7	3.4	49.3
Clothing and Footwear	11239	7902	24769	8.3	5.3	70.3
Wood and Furniture	3749	2009	10771	5.9	2.9	53.6
Paper and Printing	3088	999	14503	3.4	1.0	32.3
Chemicals	3667	2170	11253	5.5	3.0	59.2
Clay and Cement	2805	1046	15552	2.8	1.0	37.3
Metals and Engineering	13732	7272	42513	5.4	2.6	52.9
Other Manufacturing	4762	2408	17282	4.5	2.1	50.6
Total	65356	33756	217292	5.0	2.3	51.6

Source: IDA Employment Survey.

Job Losses in New Grant-Aided Industry

Table 3.3 presents details of job losses in foreign and indigenous new grant-aided industry.

It is difficult to hypothesise what might be the outcome of a comparison of job loss rates between indigenous and foreign industry grant-aided under the new industry scheme. The consequences of the move to free trade – in the mid 1960s (AIFTA) and the early 1970s (EEC) – for output and employment in indigenous Irish industry which served the local market in the pre 1960s protectionist phase, and which was unable or unwilling to adapt to free trade, has been well documented elsewhere.[1] However, foreign firms which located subsidiaries in Ireland to serve the local market in the pre-free trade era are likely to have rationalised operations in a free trade environment. Thus, the move to free trade in the mid 1960s is likely to have had similar consequences for foreign and indigenous industry. However, anticipation of EEC entry may have prevented non-UK foreign firms from closing down operations entirely.

Of more relevance to job loss data for 1973-1980 is the consequence of EEC entry for indigenous and foreign industry. One factor likely to influence job loss rates is the market orientation of the firm. McAleese (1977) found that "new overseas enterprises tend to export a much larger proportion of their output than new Irish enterprises". The greater reliance of indigenous industry on the domestic market would be likely to result in a higher rate of job loss in indigenous industry consequent upon free trade.

An examination of Table 3.3 does not support this expectation. The rate of job loss is virtually identical in foreign and indigenous industry as also is the rate of loss due to closure. In metals and engineering, which accounts for over a third of foreign industry employment in Ireland, the rate of job loss is higher in foreign than in indigenous industry. One notable feature of the table is that 70% of the job losses in foreign clothing and footwear resulted from closure.

Job Losses in Re-equipment Grant-Aided Industry

The arguments put forward in the previous paragraphs regarding job loss rates in new foreign and indigenous industry might more properly be discussed in the context of re-equipment grant-aided industry. The re-equipment scheme was designed to encourage the modernisation of existing industry, indigenous industry in particular, in order to enable it to adapt to free trade conditions. Details of job losses in re-equipment grant-aided industry are presented in Table 3.4. The rates of job loss for *individual sectors* in the foreign category should be treated with

[1] For a review of the literature on this topic, see O'Malley (1981).

extreme caution because of the relatively small base employment level.

The rate of job loss in indigenous industry grant-aided under the re-equipment scheme is greater than that for foreign industry. The absolute level of job loss is also much greater, a result of the combination of the higher rate of loss and the greater number of indigenous firms grant-aided under this scheme.

A priori, the rate of loss would be expected to be higher for industry grant aided under the re-equipment scheme than under the new industry scheme, since the former is associated with rationalisation and re-structuring, which is often accompanied by employment decline (although if the re-equipment were successful in aiding competitiveness one might expect a subsequent increase in employment). It would also be expected that the bulk of the job loss would be due to work-force reduction as distinct from closure since re-equipment grant aid is essentially an aid to undertake defensive investment (likely to be of a labour-saving nature, designed to reduce the cost per unit of output, rather than capacity expanding).

A comparison of the figures in Tables 3.3 and 3.4 shows the rate of loss in new foreign industry (4.2%) to be very similar to that in foreign re-equipment grant-aided industry (4.0%). A comparison of the two in indigenous industry shows the rate of loss in re-equipment to be marginally higher (5.1% against 4.1%). The results for indigenous industry are therefore in the direction expected, i.e., the rate of loss is greater in re-equipment industry.

The rate of loss due to closure is similar in indigenous (2.0%) and foreign (1.8%) re-equipment grant aided industry while the percentage of total job loss due to closure is broadly similar for both. The expectation that the bulk of the job loss in re-equipment grant-aided industry would result from work-force reduction as distinct from closure is tested by comparing the percentage of job loss due to closure in new and re-equipment industry for both indigenous and foreign industry. However, no significant difference is found.

In indigenous re-equipment grant-aided industry, the rate of job loss is very high in clothing and footwear with 83% of the losses due to closure. The rate of loss is also significantly above average in textiles, chemicals and metals and engineering, although the percentage of loss due to closure is much less than in the case of clothing and footwear.

These results on job losses in re-equipment grant-aided industry do not permit strong conclusions to be drawn on the efficacy of re-equipment grants. Further analysis of a more detailed nature dealing with aspects other than job loss is required to appraise the re-equipment scheme.[1]

[1] It is understood that this is presently being undertaken by the relevant Government Department.

Table 3.3

Job Losses in Manufacturing Industry by Sector, Grant Aided under the New Industry Scheme by Nationality, 1973-1980

Sector	Foreign			Indigenous		
	Total absolute job losses	Average annual % job loss (compounded annually)	Average annual % job loss due to closure (compounded annually)	Total absolute job losses	Average annual % job loss (compounded annually)	Average annual % job loss due to closure (compounded annually)
Food	356	2.5	0.4	2825	2.5	0.8
Drink and Tobacco	0	—	—	76	1.0	0.03
Textiles	576	2.8	1.3	5164	8.2	3.5
Clothing and Footwear	1273	8.5	7.4	3216	5.5	2.1
Wood and Furniture	127	4.3	1.3	915	7.4	3.5
Paper and Printing	366	4.5	0.9	617	2.4	0.8
Chemicals	685	3.1	0.02	299	2.6	2.5
Clay and Cement	230	4.1	1.6	615	2.5	1.1
Metals and Engineering	3815	5.0	2.6	1896	3.1	1.3
Other Manufacturing	1453	3.4	0.9	803	4.1	1.7
Total	8881	4.2	1.9	16426	4.1	1.7

Source: IDA Employment Survey.

Table 3.4

Job Losses in Manufacturing Industry by Sector, Grant Aided under the Re-equipment Scheme by Nationality, 1973-1980

Sector	Foreign			Indigenous		
	Total absolute job losses	Average annual % job loss (compounded annually)	Average annual % job loss due to closure (compounded annually)	Total absolute job losses	Average annual % job loss (compounded annually)	Average annual % job loss due to closure (compounded annually)
Food	655	3.0	0.6	4393	4.6	1.6
Drink and Tobacco	493	1.9	0	423	1.4	0.3
Textiles	717	8.8	5.5	1715	9.3	3.7
Clothing and Footwear	237	3.2	0.6	3154	13.0	9.9
Wood and Furniture	0	0	0	634	4.1	1.1
Paper and Printing	116	9.4	2.9	985	2.7	0.1
Chemicals	590	7.1	6.5	990	7.7	2.4
Clay and Cement	53	7.2	1.7	1071	2.1	0.4
Metals and Engineering	549	5.5	3.4	2892	9.0	2.3
Other Manufacturing	6	1.0	0	887	5.4	3.1
Total	3416	4.0	1.8	17134	5.1	2.0

Source: IDA Employment Survey.

Job Losses in Small and 'Other' Industry

The remaining two categories in the IDA Employment Survey are small and other industry, the latter consisting of industry grant aided by Gaeltarra and SFADCo and non-grant aided industry. Because of the relatively small size of the majority of the individual sectors the data are presented in aggregate form only in Table 3.5. The data on small foreign industry should be treated with extreme caution because of their very small relative size.

Table 3.5

Job Losses in Small and in 'Other' Manufacturing Industry, 1973-1980

	Total absolute job losses	Average annual % job loss (compounded annually)	Average annual % job loss due to closure (compounded annually)
Indigenous Small Industry	3503	4.9	2.5
Foreign Small Industry	553	16.0	12.1
Total Small Industry	4056	5.4	3.0
'Other' Indigenous Industry	10518	6.9	4.2
'Other' Foreign Industry	4925	8.7	5.6
Total 'other' Industry	15443	7.4	4.6

Source: IDA Employment Survey.

In general the rate of job loss is greater than in new or re-equipment grant-aided industry, significantly so in the case of 'other' industry. A similar result obtains when the rate of loss due to closure is examined.

There is another interesting set of questions which merit examination, namely, the size dimension of job losses. Examples of these questions are:

(i) to what extent do job loss rates vary with firm size?;
(ii) do small firms have a higher mortality rate?;
(iii) are large firms more successful at withstanding recession?;
(iv) do a small number of firms with large absolute job losses account for a large proportion of losses or are relatively small losses in a large number of firms more predominant?; the question has implications for the design of rescue operations.

This question and many others are considered to be outside the main thrust of this study and are not examined. However, they could form the basis of a useful additional study.

Effects of the 1974-1975 Recession on the Rate of Job Loss

In order to examine the extent to which the rate of job loss varies over the business cycle, the rate of job loss in new grant-aided industry for

the 1974-1976 period is compared with the subsequent 1976-1980 recovery phase. Since the IDA Survey data relate to 1 January each year, the recessionary phase is effectively January 1974 to January 1976 which very closely approximates the downswing of the business cycle (see Figure 1).

A priori, one would expect the rate of job loss to be higher during the recessionary period.[1] One would also expect the rate of loss due to closure to be higher as the recession may hasten "the demise of many activities that would otherwise have been spread over a number of years" (Kennedy and Foley, 1978).

Table 3.6 presents details for the two sub-periods for new grant-aided manufacturing industry classified by nationality.

Table 3.6

Job Losses in New Grant-Aided Manufacturing Industry by Sector, by Nationality, 1974-1976, 1976-1980
Average annual % change (compounded annually)

Sector	Indigenous				Foreign			
	1974-76		1976-80		1974-76		1976-80	
Food	4.1	(0.3) (a)	3.5	(0.9)	4.6	(0.7)	2.3	(0.2)
Drink and Tobacco	0.7	(0)	2.5	(0)	0.0	(0)	1.2	(0)
Textiles	15.5	(5.4)	6.1	(1.6)	7.6	(5.9)	2.5	(1.1)
Clothing and Footwear	10.2	(2.6)	6.3	(3.2)	18.1	(13.3)	6.7	(6.1)
Wood and Furniture	6.2	(0)	11.0	(5.1)	18.0	(5.7)	2.1	(0)
Paper and Printing	4.0	(0)	2.5	(1.2)	1.3	(0)	9.1	(3.1)
Chemicals	3.8	(0)	4.0	(3.1)	6.5	(0)	1.6	(1.4)
Clay and Cement	3.4	(0)	3.5	(1.3)	10.6	(6.0)	5.8	(1.1)
Metals and Engineering	9.8	(0.4)	3.4	(2.1)	9.4	(0.7)	5.5 (b)	(3.6)
Other Manufacturing	10.2	(4.5)	2.8	(0.8)	6.5	(3.1)	3.6	(1.1)
Total	7.9	(1.6)	4.3	(1.7)	8.4	(2.6)	4.2	(2.3)

Notes: (a) The figures in brackets refer to job losses due to closure.
(b) This figure is heavily influenced by the closure of Ferenka in 1978 which accounted for 1164 of the 3107 jobs lost in metals and engineering.
Source: IDA Employment Survey.

The *a priori* expectation regarding the effects of the recession are borne out by the figures in Table 3.6, where the rate of job loss is significantly greater in the 1974-1976 period than in the subsequent period, both for indigenous and foreign industry and for the majority of individual sectors in both. The rate of job loss due to closure is, however, virtually identical for the two sub-periods in both indigenous and foreign

[1]The extent, however, to which these losses are sustained or temporary (see Chapter 2) becomes a problem when a recessionary period is being considered.

industry which is not in line with *a priori* expectations. This results in the percentage of job loss due to closure in 1976-80 being almost double that in 1974-1976 in both indigenous and foreign industry.

McAleese and Counahan (1979) discuss the arguments concerning the behaviour of foreign enterprise in a host economy during a recession. They conclude that foreign enterprises behaved no differently to their indigenous counterparts during the 1974-1975 recession. The results from Table 3.6 confirm this conclusion. A comparison of foreign with indigenous new grant-aided industry over the 1974-1976 period in Table 3.6 shows the rate of job loss in foreign to be 8.4% compared to 7.9% in indigenous. It is noteworthy that in the sectors which account for the bulk of foreign manufacturing employment, i.e., metals and engineering, other manufacturing, and textiles, the rate of job loss is significantly higher in indigenous industry. In chemicals and clothing and footwear in which foreign industry is also well represented, the rate of job loss was greater in foreign industry.

The percentage of total job loss due to closure in new foreign industry over the 1974-1976 period was 32% compared to 21% in indigenous industry. A similar result obtains in the 1976-1980 period when the percentages were 57% and 41% respectively. The lower percentage in both indigenous and foreign industry during the 1974-1976 period as compared with the later period is likely to be accounted for by a significant amount of work-force reduction in response to declining demand during the recession.

Table 3.7 provides a brief summary of the magnitude of the absolute job losses in manufacturing industry classified by grant type and nationality between 1973 and 1980. Further detail by sector is presented in Appendix III.

Table 3.7

Absolute Job Losses in Manufacturing Industry, 1973-1980, Classified by Grant Type and Nationality

	New Industry	Small Industry	Re-equipment Industry	Other Industry	Total
Foreign	8881	553	3416	4925	17775
Indigenous	16426	3503	17134	10518	47581
Total	25307	4056	20550	15443	65356

Source: IDA Employment Survey.

Job Loss by Age of Establishment

One aspect of the job loss trends in new foreign industries which is worth particular attention is whether the longer established of these industries tend to experience higher rates of job loss. It has been

suggested by, for example, Teeling and Lynam (1980) that there is the likelihood of an increasing number of job losses in foreign firms, mainly because these firms are largely producing similar types of products for the same export markets as are the newly-industrialising countries (NICs) which have much lower costs.

This argument is based on the idea that there is a product life-cycle (as suggested by Vernon (1966) for example) such that most new products are initially developed in the advanced industrial countries. As the production process of these products becomes technically standardised, it becomes possible to produce them abroad, away from the technical base of the firm, and desirable to do so if costs in other countries are lower. Thus, the occurrence of foreign investment in Ireland would frequently be followed by (or even coincide with) quite widespread diffusion of production of the same products to other even lower cost countries.

Such a trend, if it occurs (and if foreign firms do not continually introduce new, more up-to-date products in Irish plants) would show a rise in job losses, or a lower rate of employment growth, among new foreign firms some time after their establishment in Ireland, as the NICs begin to move into production in competition with them. The newer of these industries in Ireland, on the other hand, might be expected to experience less of such competitive pressure at first until they too eventually meet growing competition from lower-cost NICs, following a pattern of industrialisation similar to that of Ireland. It is not clear, *a priori*, however, whether this hypothesis means that employment in new foreign firms would go into decline at a fairly steady rate some time after their establishment; or whether, on the other hand, one should expect to find their employment declining at a continually increasing rate as time goes on.

Table 3.8 shows the change in employment between the years 1973 and 1980 in new foreign industries, with firms grouped by their date of establishment in Ireland. Some of the ten sectors are grouped together in this Table in order to avoid having many very small cells, which would result from showing each sector individually. (The dates of establishment were provided by the IDA; any firm which established before 1952 would not have received grant aid. However, after 1952 many of the pre-1952 firms would have received New Industry Grants for major expansions. This explains how firms which set up before the New Industry scheme began, i.e., 1952, can be described as being in the new industry category.)

It is clear from the bottom row of Table 3.8 that the longer established firms have tended to experience declining employment. Whereas the most recent cohort referred to (1969-1972) shows substantial growth in 1973-1980, the others, with only the very slight exception of the 1961-

Table 3.8

Employment in Foreign New and Small Grant-Aided Industry by Grouped Sector, 1973 and 1980, by Date of Establishment in Ireland (a)

Grouped Sector	Firms established up to 1952			Firms established 1953-60			Firms established 1961-64			Firms established 1965-68			Firms established 1969-72			Established by end of 1972-date n.a. (b)			All firms established by end of 1972		
	1973	1980	% Change	1973	1980	% Change	1973	1980	% Change	1973	1980	% Change	1973	1980	% Change	1973	1980	% Change	1973	1980	% Change
Food; Drink and Tobacco	1125	1300	+15.6	155	191	+23.2	116	129	+11.2	536	648	+20.9	383	665	+ 73.6	307	129	-58.0	2622	3062	+16.8
Textiles; Clothing and Footwear	943	619	-34.4	1388	937	-32.5	225	125	-44.4	1300	1281	- 1.5	2263	2326	+ 2.8	805	299	-62.9	6924	5587	-19.3
Wood and Furniture; Paper and Printing; Clay and Cement	361	302	-16.3	1161	961	-17.2	189	215	+13.8	586	548	- 6.5	446	504	+ 13.0	159	68	-57.2	2902	2598	-10.5
Chemicals	361	164	-54.6	317	399	+25.9	249	437	+75.5	1233	1165	- 5.5	828	2587	+212.4	502	741	+47.6	3490	5493	+57.4
Metals and Engineering	3650	3150	-13.7	2493	2685	+ 7.7	2713	2821	+ 4.0	3213	2220	≥30.9	2397	2950	+ 23.1	551	237	-57.0	15017	14063	- 6.4
Other Manufacturing	1575	1140	-27.6	899	762	-15.2	1170	1044	-10.8	1880	1796	- 4.5	1423	1441	+ 1.3	276	303	+ 9.8	7223	6486	-10.2
Total	8015	6675	-16.7	6143	5935	- 7.5	4662	4771	+ 2.3	8748	7658	-12.5	7740	10473	+ 35.3	2600	1777	-31.7	38178	37289	- 2.3

Notes: (a) Includes firms grant-aided by SFADCo and Gaeltarra.
(b) These figures refer to firms known to have been established before the end of 1972, but the precise year of establishment is not available.
Source: IDA Employment Survey.

1964 cohort, show a decline. The whole group of new foreign firms established by the end of 1972 reduced their employment by 890 (2.3%) in 1973-1980, and those established prior to 1969 declined by 2,800 (10.1%) in the same period (excluding from the pre-1969 group those whose dates of establishment are not available). The table does not show a uniform tendency, however, for the total employment in the earliest cohorts to decline by most and the most recent cohorts by least, so that these trends in the total employment figures do not support the idea that the rate of decline would continually accelerate as time passes after the date of establishment.

Among the industrial groups shown in Table 3.8, all show employment growth in the most recent cohort and all except food, drink and tobacco, and chemicals to a lesser extent, show a general decline among the earlier cohorts with just a few instances of modest growth. The comparative strength in this respect of food, drink and tobacco would probably be due to the unchanging advantage of proximity to the source of raw materials which would have motivated much of the investment in the food sector – unlike the other sectors. Textiles, clothing and footwear, and "other manufacturing" show signs of accelerating decline as time passes since they have higher rates of decline in the older cohorts.

Job losses data, in Table 3.9, as distinct from data on net employment change, show that the most recent cohort (1969-1972) – for the total and for most industrial groups – has a higher rate of job loss than the earlier ones. This is not very surprising since previous studies have found that firms are most vulnerable to closure in their first few years, although most do survive this period. Table 3.9 shows in fact that the large majority of jobs lost in the 1969-1972 cohort were due to closures, which is not typical of other cohorts. Among the earlier cohorts there is no overall tendency for job losses or closures to be highest among the oldest firms, so there is no indication of an overall tendency for job losses or closures to increase as time passes after the date of establishment. Such a tendency is apparent, however, in "other manufacturing" and less markedly in textiles, clothing and footwear.

To conclude, Table 3.8 shows that employment in new foreign firms has tended to grow at first and then to go into decline a number of years after their establishment in Ireland. Although the rate of this decline appears to accelerate as time passes in some sectors, there is no indication that this is the general experience. Table 3.9 shows that this general shift from employment growth to decline is not due to a markedly higher rate of job losses among the earlier cohorts, in most sectors at any rate. Rather the shift from employment growth to decline as time passes after establishment would have to be attributable to a much weaker incidence of positive growth among longer established

firms, so that job losses come to outweigh job gains (even though losses do not increase), leading to net decline.

Table 3.9

Job Losses, 1973-1980, in Foreign New and Small Grant Aided Industry by Grouped Sector by Date of Establishment in Ireland[a]

Grouped Sectors	Firms established up to 1952			Firms established 1953-60			Firms established 1961-64		
	Employment 1973	Losses as % of 1973 employment	Losses due to closure as % of 1973 employment	Employment 1973	Losses as % of 1973 employment	Losses due to closure as % of 1973 employment	Employment 1973	Losses as % of 1973 employment	Losses due to closure as % of 1973 employment
Food; Drink and Tobacco	1125	9.2	0.4	155	8.4	8.4	116	0	0
Textiles; Clothing and Footwear	943	46.7	30.0	1388	43.4	2.6	225	45.8	38.7
Wood and Furniture; Paper and Printing; Clay and Cement	361	22.7	0	1161	30.9	1.4	189	3.2	0
Chemicals	361	65.1	65.1	317	6.9	0	249	0	0
Metals and Engineering	3650	21.5	2.4	2493	8.8	1.6	2713	21.4	5.5
Other Manufacturing	1575	29.6	0	899	20.5	5.9	1170	20.9	0
Total	8015	26.4	7.6	6413	21.8	2.5	4662	20.0	5.1

Note: (a) Includes firms grant-aided by SFADCo and Gaeltarra.
Source: IDA Employment Survey.

Table 3.9 Continued

Firms established 1965-68			Firms established 1969-72			Firms established by end of 1972-date n.a.			All firms established by end of 1972		
Employment 1973	Losses as % of 1973 employment	Losses due to closure as % of 1973 employment	Employment 1973	Losses as % of 1973 employment	Losses due to closure as % of 1973 employment	Employment 1973	Losses as % of 1973 employment	Losses due to closure as % of 1973 employment	Employment 1973	Losses as % of 1973 employment	Losses due to closure as % of 197 employmen
536	2.4	0	383	26.1	24.3	307	58.0	1.3	2622	15.6	4.3
1300	18.3	12.8	2263	20.2	15.8	805	78.5	69.3	6924	35.7	21.5
586	34.6	23.9	446	17.5	9.9	159	80.5	80.5	2902	29.5	11.3
1233	29.8	0	828	0.7	0.7	502	10.8	10.8	3490	19.6	8.5
3213	41.9	23.7	2397	51.4	42.7	551	77.9	77.9	15017	30.6	16.6
1880	10.9	2.4	1423	27.8	24.9	276	80.8	63.0	7223	23.8	8.7
8748	27.1	12.7	7740	29.3	24.3	2600	63.2	51.8	38178	28.1	14.0

CHAPTER 4

EXPLANATORY FACTORS

Introduction

This Chapter outlines the nature of the various factors which would be expected, *a priori*, to have an influence on the scale and nature of job losses in manufacturing. To begin with, these factors may be conceptually divided into two types.

First, there are factors such as changes in demand, market shares and labour productivity, which together determine changes in output and employment. By examining these factors it is possible to assess the relative importance of these components – demand changes, market share changes and changes in productivity – in bringing about net changes in employment, and hence in leading to job gains or losses. *Second*, it is necessary to consider the underlying determinants of these observed changes. If it turns out, for example, that declining market shares held by Irish industry has been an important feature, the possible causes for this must be considered, such as the removal of protection against imports or rising costs.

The first two explanatory factors suggested are:

(i) changes in foreign demand;
(ii) changes in domestic demand.

These two factors determine the size of the market available for Irish manufacturing output. One or other of them will be of particular importance to specific sectors or groups of industries, depending on their market orientation. These two factors are now outlined, in turn.

Changes in Foreign Demand

Given the exposure of the Irish economy to international trade, a decline in the volume of world trade is likely to have adverse effects on the growth rate of output in Ireland, and hence, other things being equal, on employment. This may take the form of a decline in aggregate demand leading to a decline in aggregate employment *or* a decline in demand for the output of a particular sector leading to job losses in that sector, which need not lead to a decline in aggregate employment.

Changes in Domestic Demand

That is, changes in the sum of domestic consumption (private and public) and domestic investment (private and public). Again, this can be at the aggregate or sectoral level.

The decline in demand for output of a particular sector leading to a decline in employment in that sector need not lead to a decline in aggregate employment, since job losses in declining sectors may be matched by job gains in expanding sectors. But there is not a smooth transition with workers who lose jobs obtaining jobs in expanding firms (as discussed in Chapter 2).

Other explanatory factors influence either the shares of the available markets which are held by Irish industries, or the level of employment required to produce the level of output thus determined. Adverse trends in any of these factors, which are now outlined, could lead to increased job losses.

Trade Liberalisation

This factor influences market shares, by strengthening the ability of imports to compete with Irish firms in the domestic market, and also by encouraging existing firms to re-orientate themselves to some extent to export markets; depending on the balance of these two effects, total market shares may fall or rise. One would expect some increase in competing imports to have followed the removal of protection in view of the reports of the Committee on Industrial Progress (1973) which found a number of deficiencies in many Irish firms. These included inadequacies in marketing, in product policy and planning (e.g., selling the "wrong" products, over-diversification), small scale, excess capacity in some sectors and deficient management, all resulting in high unit costs. This set of conditions in the early 1970s would probably be important because the period following 1973 was one of further trade liberalisation, completing the lowering of trade barriers which had begun in 1962. Market share changes also occur through increased competition from "third" countries in export markets. A further effect of trade liberalisation – that of increasing the attraction of Ireland as a site for new export-orientated industries – would have no bearing on gross job losses,[1] though it could influence gross job gains and hence net employment changes.

[1] This is except to the extent that new industries might have some detrimental effect on existing firms through competition for scarce resources, such as certain categories of skilled labour.

Technical Change and Productivity Change

These two elements are linked together, since increases in productivity can often occur through changes in technique or the use of new technology. This is one of the most complex elements, for the following reasons.

First, even at the level of the sector and sub-sector of manufacturing industry, productivity is an aggregate. It masks the differences in productivity which exist between firms within any sector or sub-sector. In particular there is likely to be a "duality" in sectors or sub-sectors where many new firms have commenced operations. These firms tend to employ up-to-date technology, with productivity which will tend to be greater than that of longer established firms.

Second, the effects of technical change and the associated growth of labour productivity on employment and job losses are not clear-cut. On the one hand, at the level of the establishment, the productivity of labour (output per person at work) indicates the level of employment which is required to produce any given level of output, holding constant the average number of hours worked. Consequently the rate of growth of the productivity of labour (due to technical advance or for any other reason), when taken together with any given rate of growth of output, determines the change in employment. If labour productivity grows faster than the given growth rate of output, then employment declines. Since technical advance (as well as a generally rising capital/labour ratio) normally leads to continually rising labour productivity, employment tends to grow more slowly than output. (Labour-using, or capital-saving, technical advance, which raises the output produced for a given cost of inputs while substituting labour for capital, might result in lower labour productivity but not necessarily so. Such a result would not be expected to have occurred very commonly in Ireland in the period under review.)

On the other hand, technical change does not simply lead to employment loss. For one of the effects of technical advance is on the level of output itself. This influence operates partly via reduced unit costs in increasing the competitive ability of those industries in Ireland which face foreign competition. Another effect is that increased productivity means increased incomes, thus increased domestic demand, and hence a growing home market for manufactures unless job losses are so great as to cancel out the effects of this income growth. Admittedly, the time lags may mean that job losses occur before the job gains. The increased demand may be for products which are produced in a capital-intensive way, in which case the employment increase may be dampened.

The beneficial effects of a high rate of technical advance on the competitive ability of industry can occur in two ways. In the case of an unchanged standardised product, technical advance can lead to greater

efficiency in production and thus lower unit costs. This can compensate for the pressure on profits and product prices which arise from rising costs of inputs. In the case of relatively new or developing products, a high rate of technical innovation, affecting product quality, leads to greater competitive ability. The rate of innovation can very often be more important than the effects of labour or of other input costs alone (OECD, 1980, pages 80, 93).

Third, there is need to separate the cyclical effects from the structural effects, the latter being more relevant to this study. In a recession, employers tend to retain employees as output falls, cutting down on sub-contracting and overtime at first and subsequently going on short time. Hence, productivity falls in the initial stages of a recession. For symmetrical reasons, as output increases in a recovery, productivity increases. The recession of 1973-1975 and the subsequent recovery attest to this.

To draw together these considerations, it can be expected:

(i) that high rates of technical change and labour productivity growth would be associated with low rates of employment growth relative to growth of output; and

(ii) that higher rates of technical change and labour productivity growth, relative to competitors, would be associated with greater competitive ability and higher market shares, with the likelihood of increased employment.

The first of these two effects (number (i)) might be more obvious in the short run, but the second (number (ii)) could take on greater significance for employment and job losses in the longer term. A particular point of importance for the relation between technical change, labour productivity and employment in Ireland in the past two decades concerns the inflow of many new, mainly foreign owned industies which have generally been technically advanced with higher labour productivity than existing industries (OECD, 1979a, pages 37-39). The introduction of these new industries would probably have further reduced the level of employment required to produce any given output, but would also have further increased Ireland's share of export markets.

Competitiveness

The "competitiveness" of industry in Ireland, or its ability to compete with foreign producers for market shares, is a very broad term covering a number of different elements. Two important influences on competitiveness and market shares – namely, changes in trade policy, and in technology together with productivity – have already been mentioned under separate headings so they are not explicitly dealt with

here. Other important influences on competitiveness include changes in the cost of labour and other inputs; changes in the quality of management and in labour skills; changes in the cost and quality of infrastructural and other general services necessary for industry; changes in taxation, subsidies and Government regulations concerning industry; changes in the scope for and advantage taken of economies of scale in production and of external economies[1] in industrial centres; and changes in the scale and effectiveness of marketing efforts. (Exchange rate changes, which in a sense affect competitiveness, are not counted as an autonomous influence, since they reflect the underlying changes in competitiveness.)

While competitiveness needs to be assessed *vis-à-vis* those countries which were established trading partners at the start of the period under review, consideration should also be given to the newly industrialising countries. These have become additional sources of competition. They have also become alternative sites for many of the more mobile foreign-owned companies in Ireland, although this is an aspect which is not taken into account directly.

Account should also be taken of the fact that not all the manufacturing sector in Ireland actually faces significant foreign competition, although much of it does. Much of manufacturing industry is in the open sector, in the sense of either exporting much of its output and/or facing competition in the home market from imports (whether actual or potential). But some industries probably have quite a high degree of protection in the home market due to high transport costs per unit of output, the advantages of proximity to the market, proximity to raw materials which are subject to little processing, or legal measures which permit competition only under special terms. Ideally, such industries should be isolated from the rest when considering competitiveness. In such industries, there may be "managerial slack", and unexploited gains in efficiency.

A reduction in competitiveness would occur from the following, compared with the trends of competitors:

(a) relatively rapid increases in unit labour costs (including the costs of industrial relations difficulties) and other inputs;
(b) increasing relative costs or declining relative quality of infrastructural and other services;
(c) relatively increasing taxation, declining subsidies or more burdensome regulations;

[1]These consist of facilities which are external to the firm – e.g., the supply of educational and industrial research – which typically require a minimum level of industrial activity to be sustainable.

(d) relatively declining scale or external economies compared with the scope for benefiting from these factors; and
(e) relatively declining scale or efficiency of marketing activities, as well as other management functions.

However, the practical difficulties of measuring the actual trends in some of these elements, or the strength of their influence, are considerable. In particular, it is most difficult to measure the quality of management, and the quality and effort of marketing. Short of detailed survey work, or micro-level comparisons between firms or plants in different countries, data are not available. Price competitiveness is usually measured by changes in unit costs of production. Non-price competitiveness, which can mean changes in product quality, reliability of delivery, after-sales service, or quality of marketing, is even more difficult to measure.

Relative Factor Prices

Changes in the relative price of inputs, especially those of capital and labour, may be expected to affect the proportion of these factors which are employed. If some scope exists to substitute one input for another, their relative prices would be expected to influence the labour/capital proportion within such limits as may be determined by technology.

Other things being equal, changes in the cost of labour relative to that of capital should influence the amount of labour employed to produce any given level of output. Thus, a rise in the cost of labour relative to that of capital should lead to a decline in labour employed below what would otherwise have been required to produce any specified level of output. This does *not* refer to the effect of factor prices on competitiveness and market shares (which has been dealt with under competitiveness), but only to the effect of changes in the prices of capital and labour *relative to each other* on the level of employment required to produce *a given level of output*.

Problems in Assigning Causes

Three problems which arise in assigning causes of job losses may be mentioned. *First*, there is the difficulty of discriminating between the possible causes. *Second*, some elements will have their full effects only after a lapse of years. For example, it may take some time before the reduction of trade barriers has its full impact. The following example illustrates these two problems at once: in 1977, the final part of the tariff reductions due to EEC entry occurred; however, the recession of 1973-1975 may have brought forward, in time, job losses which would have occurred in any event due to trade liberalisation.

Third, there are *inter-relationships between the various explanatory factors* which should have an influence on job losses and which have so far been considered separately. These inter-relationships between explanatory factors complicate considerably the task of identifying what have been the main contributory causes to job losses; some of the main examples are as follows.

(i) The relation between technical advance and rising productivity has already been noted.

(ii) A change in foreign demand influences domestic demand via its effects on the Irish export sector, influences the rate of productivity growth via its effects on investment, and (in the case of British demand) Irish competitiveness and relative factor prices via its effects on wages which are influenced by British labour market conditions. Similarly a change in domestic demand for output influences the rate of productivity growth and affects competitiveness and relative factor prices via its effects on wages which respond to Irish labour market conditions.

(iii) The liberalisation of trade would be expected to increase the export-orientation of Irish firms, rendering Ireland more dependent on foreign demand conditions. Furthermore, the resulting increased competitive pressures and re-equipment policies designed to meet them would presumably hasten technical change and productivity growth. A reduction in tariffs can lead to the use of new technology as firms attempt to maintain their market share. It was stated in a NESC report that "one of the fundamental causes of the productivity increase (in the 1970s) is likely to have been the abolition of tariffs. This meant that firms had to increase productivity in order to compete in world markets, or else give way to firms which were themselves more efficient. This underlay much of the large structural adjustment which occurred in Irish industry" (NESC, 1980a, page 14).

(iv) Changes in competitiveness for whatever reason, by affecting the market shares of Irish firms, output and hence incomes would affect domestic demand.

(v) An increase in productivity should lead to an improvement in competitiveness.

(vi) A rise in the wage rate relative to the cost of capital can lead to increased capital per person employed and thus increased output per person (the partial measure of productivity which is usually employed) leading to an improvement in competitiveness.

Because of the difficulty of discriminating between the possible causes of job losses, the variable time lags between changes in the causes of job losses and the job losses, and the complex inter-relationships between the various explanatory factors, the problems in assigning causes to job losses are enormous.

In principle, the way in which a number of different explanatory factors would be handled is through the use of formal statistical testing, using data which measure each factor in each year (or quarter) of the period in question. This approach is not adopted, for two reasons. *First*, direct observations on the causal factors are not available in all instances, for all periods. (While this problem might be overcome, through the use of proxy measures, difficulties would remain.) *Second*, the time period for which job loss data are available is short relative to the number of candidates as explanatory factors: this means that statistical testing is not possible.

Instead, there is a succession of comparisons between job losses, or net employment change, on the one hand, and a particular explanatory factor on the other. In doing this, every effort is made to control for the influence of other, or "third" factors. In Chapter 12, the conclusions are given, bringing together all the statistical work (such as that of Chapter 3) and all the bivariate testing. Using this method, it is not possible to allocate the total number of job losses to each of a number of explanatory variables. Even if a long time series of data on all variables were available, it is doubtful if that could be done. This is in part because of difficulties in measuring certain variables, the inter-relation between explanatory factors, and the time lags between changes in the determinants of job losses and the actual job losses. However, it is possible, with appropriate qualifications, to indicate what were the main underlying causes of job losses.

All data other than employment data relating to manufacturing industry, e.g., output data, are compiled by the CSO and hence are comparable only with CSO employment data. Because of this, the hypotheses relating to the causes of job losses are tested using, in part, data on net employment change. However, where possible the data on job losses are used to complement the data on net employment change when testing the hypotheses.

Another possible approach which could in theory be adopted is the examination of a selected sample of firms which have either reduced their work-force or have closed. This would involve attempting to examine the reasons for the employment decline in each individual case and attempting to draw broad generalisations from the results. While such an approach could usefully complement the approach adopted here, the number of case studies required to support generalisations is beyond the scope of this study.

CHAPTER 5

PREVIOUS RESEARCH RESULTS

Introduction

This chapter reviews results of earlier research which deals with some of the aspects of this study. Although there has been no previous general investigation of job losses in Irish manufacturing such as is undertaken here, there have been a number of earlier studies which deal with certain aspects of this study, such as the effects of one or more of the factors which have been suggested as influences on employment and job losses. In reviewing these earlier research results, it will be convenient to consider them under the headings of the six explanatory factors influencing employment and job losses which have been identified in Chapter 4.

Changes in Foreign Demand

It has been suggested above that changes in foreign demand for manufactured imports have a significant influence on Irish manufactured exports. Some doubt might perhaps be cast on this suggestion by a version of the "small open economy" argument, on the grounds that Irish manufactured exports supply such a small share of foreign markets that changes in the size of those markets would be of lesser importance than changes in Irish competitiveness which would affect Irish market shares.

Kennedy and Dowling (1975, Chapter 6) examine Irish manufactured exports to the UK in various sub-periods in 1953-1968, attributing changes in these exports to three distinct trends – overall growth of UK imports, changes in commodity composition of UK imports, and changes in Irish "competitiveness" (as indicated by the Irish share of the UK market broken down by trade category). Their results are summarised in Table 5.1.

As the Table shows, the overall growth of UK imports had a strong effect on Irish exports; so also, to a lesser extent, did changes in the commodity composition of UK imports, which is a measure of the effect of the changing pattern of UK demand (at the SITC two digit level). Thus, in both respects, UK demand had an important influence on Irish exports to that country.

The proportion of Irish manufactured exports going to the UK was

in decline, from 80% in 1953 to 64% in 1968, and it has continued to decline since then, but the UK has remained Ireland's largest export market. Referring to a wider range of export markets than the UK alone, O'Connell (1977), in estimating demand functions for Irish exports, finds that a weighted index of demand in 10 of Ireland's major trading partners is a significant variable in determining Irish exports, with a strong effect.

Table 5.1

Sources of Growth in Irish Manufactured Exports to the UK, 1953-1958, 1958-1963, 1963-1968

(£m., current values)

Changes in exports due to	1953-1958	1958-1963	1963-1968
Growth in UK imports	2.3	10.2	36.0
Changes in commodity composition of UK imports	3.2	3.6	–9.5
Competitiveness	2.5	2.1	12.8
Total change	8.0	15.9	39.2

Source: Kennedy and Dowling (1975), Table 26.

Changes in Domestic Demand

It is also suggested above that changes in domestic demand would influence the output of manufacturing in Ireland. It might be argued that the domestic demand factor would be unimportant on the grounds that in a "small open economy", which is effectively a part of a large international economy, there may be little point in distinguishing domestic from foreign demand. Moreover, it might be argued that since domestic demand may be as easily channelled into imports as into products of Irish industry in such a small open economy, domestic demand in itself would be relatively unimportant compared with competitiveness which affects Irish market shares. Some evidence exists, however, to show that domestic demand, although less influential than in a less open economy, is nevertheless an important influence on certain large sectors, at least, of manufacturing output.

Evidence concerning the importance of domestic, as distinct from foreign demand, is to be found in data on the market orientation of industries in Ireland, contained in McAleese (1978) and O'Malley (1980). Despite the high and rising proportion of output of Irish industry as a whole which has gone for export, McAleese points out that among industries which have not been recipients of New Industry grants, less

than 19% of output was exported in 1973, which may be compared with about the same figure for all industry in 1960. O'Malley finds a very similar result among all industries except foreign-owned recipients of new industry grants, although the corresponding figure for export-orientation rose somewhat, but only from 19% in 1960 to 25% in 1976. Thus, large sections of industry have been fairly consistently highly orientated to the home market over a lengthy period. This suggests that a distinction between domestic and foreign demand would be meaningful since these industries seem to have operated as though domestic and foreign markets were quite distinct and not simply one homogenous market.

Despite the more rapid rate of growth of manufactured exports than of home sales, Farley (1973) referring to 1958-1966 and Matthews (1980) referring to 1965-1973 find that, in absolute terms, the growth of home sales was a more important source of expansion in manufacturing than the growth of exports. With such a heavy dependence on the domestic market, especially among certain sectors, it is clear that changes in domestic demand would be an important influence on output. This influence would not be insignificant compared with changes in the market shares of Irish industry, although such changes in market shares have been considerable. Matthews (1980) identifies the effects of the growth of domestic demand on industries at a sectoral level in 1965-1973, and finds some sectors, such as footwear, in which slow growth in domestic demand has been an important factor contributing to slow growth of output, with consequent effects on job losses.

It has been found, however, that expenditure multipliers are rather low, due to the small open nature of the economy. Studies, such as those by Irvine (1974) and Norton (1975), have been done on the effects of the Government expenditure component of domestic demand and Irvine finds the aggregate multiplier to be about unity, and even somewhat less in sectors of manufacturing. More recently, the multipliers for various specific categories of government expenditure have been estimated using MODEL-80, the macroeconomic model jointly developed by the Department of Finance and the Central Bank (see Bradley *et al.*, 1981). The largest impact estimated is for current expenditure on goods and services which had a multiplier effect of 1.08 on GNP in 1977, which the authors remark is rather low compared with more closed economies.

Trade Liberalisation

A number of aspects of trade liberalisation have been investigated. Assessments of the condition of Irish industry and the likely future effects of freer trade were carried out by the Committee on Industrial

Organisation (CIO) in the early 1960s, and their main conclusions are reported by the CIO (1965) and Brock (1963/1964 and 1965). Due to various weaknesses in the industrial structure it was considered that, in the absence of adaptation measures, 21 out of 22 sectors surveyed would experience some losses of production and employment in free trade conditions. In the 1960s and early 1970s, a number of reports of the National Industrial Economic Council (NIEC) (especially NIEC, 1966 and NIEC, 1968) and the Report of the Committee on Industrial Progress (1973) made it clear that the adaptation measures taken to face freer trade had been less than adequate, in their view; this implied that freer trade would lead to considerable job losses. Nevin (1961 and 1970) also argued that free trade would lead to a running down of existing industries.

McAleese and Martin (1973) examine the effects of the Anglo-Irish Free Trade Agreement of 1965, up to 1970, (which was half-way through the ten year period of gradual dismantling of Irish tariffs on imports from the UK). They estimate that from 1964/1965 to 1969/1970, one third of the loss of Irish industry's share of the home market was attributable to the AIFTA and two thirds to other trade relaxations, the desire for greater variety and other factors. But they also remarked that general experience with trade liberalisation suggests that there is a considerable time lag before the full effects on jobs are felt. Kennedy and Foley (1978) note that the very large subsequent increase in job losses in 1973-1976 was therefore probably partly a delayed effect of trade liberalisation. They also suggested that further job losses might have been in store as a result of tariff reductions on imports from other EEC countries in the years 1973-1978, but that the recession might have already hastened many of these losses.

The positive side of trade liberalisation is argued to be an increase in exports. The figures in McAleese (1978) and O'Malley (1980), referred to above, suggest that there was little increase in the export-orientation of most existing industries, but there was of course, at the same time, rapid growth of new, highly export-orientated industries. Freer access to EEC markets probably contributed to this growth of new firms, but there has been little detailed investigation of this question.

A further issue in trade liberalisation, besides those arising from the AIFTA and EEC membership, concerns the effects of Irish and EEC trade policies on trade with extra-EEC countries. This issue is examined by Matthews (1980), McAleese and Carey (1981) and the OECD (1979b).

The OECD (1979c) conclude from a survey of the empirical studies which attempted to quantify the employment displacement effects of changing trade flows that their impact was small for the countries considered. At the individual industry level, however, the OECD state that

some industries, e.g., textiles, clothing and footwear have experienced significant job losses and are likely to suffer further losses in the future.

McAleese and Carey (1981) derive employment coefficients for 1976 for Irish trade with extra-EEC countries which indicate the number of jobs lost or gained through an expansion of imports or exports with the various trading regions. They find that, overall, a balanced expansion of extra-EEC trade would lead to a net employment loss, i.e., more jobs lost as a result of import penetration than gained through exports. On breaking down extra-EEC trade by region they conclude that the net employment effect was negative and large for trade with less developed countries and Japan and positive for trade with the US and Canada.

Matthews (1980) using the growth accounting framework developed by Cable attempts to identify the sources of employment change in manufacturing industry during the period 1965 to 1973. He concludes that the increase in the size of the home market was potentially almost twice as important as exports as a source of increased employment. He also concludes that the number of potential jobs displaced by imports was greater than the number lost through rising productivity and that the net effect of trade flows was a reduction in employment. However, care should be exercised in interpreting these figures because of the methodology employed. It is a static exercise and it treats each of the explanatory factors as independent which is obviously not the case.

Further work on the possible impact of NICs was done by Teeling and Lynam (1980), the results of which are discussed under competitiveness in this chapter.

Technical Change and Labour Productivity

The rate of growth of labour productivity in Irish manufacturing has been examined by Kennedy (1968/1969 and 1971), Kennedy and Foley (1978), Katsiaouni (1979) and Sapsford and Kelly (1980). These studies generally find that the rate of growth of labour productivity showed an increase during the period 1953-1973, so that the rate of growth of employment associated with any given rate of growth of output would have been lower at the end of that period than at the start.

Kennedy (1968/1969 and 1971), Kennedy and Foley (1978), and Katsiaouni (1979) use the "trend through end points" method to calculate rates of growth of labour productivity. This involves taking productivity data for years selected to mark the beginning and end points of the periods chosen for review, and then calculating the average rate of growth of productivity during these selected periods. By this method, these studies found that the rate of growth of labour productivity was substantially higher in 1963-1973 than in 1953-1963.

Kennedy and Foley (1978) test the relation between the growth rate

of labour input and the growth rate of output volume. Between the period 1953-1963 and the period 1963-1973, the relation changed, so that any particular growth rate of output would be associated with a lower growth of labour input.

Sapsford and Kelly, however, point out that the particular choice of sub-periods has an important influence on such calculations of labour productivity: they find that the correct choice of sub-periods is 1953-1957 and 1958-1973 since the increase in the rate of growth of productivity occurred in 1957/1958 and the growth rate of productivity then remained quite constant over the years 1958-1973. Sapsford and Kelly estimate that the annual trend rate of growth of labour productivity (output per man-hour) was 0.8% in 1953-1957, rising to 4.3% in 1958-1973.

The OECD (1979a) suggests that there was a further shift in the employment-output relationship in 1975-1977 as compared with the trend for 1955-1974, involving a lower rate of employment growth in relation to output growth in 1975-1977 than in 1955-1974. However, their methodology involves relating employment trends to real wages as well as output, so that it is not a measure of the trend in labour productivity in the same sense as the other studies mentioned above. Also, their choice of the period 1955-1974 would probably not be quite the best to indicate the long-term trend since the initial year pre-dates the point at which Sapsford and Kelly find a marked change in productivity growth i.e., 1957/1958. Sapsford and Kelly also find that the rate of productivity growth remained quite constant after that until 1973. In addition, 1974 would have been a year of cyclical downturn in productivity growth, whereas 1973 would have been more in line with the long-term trend.

Some observations also suggest that technical advance and higher labour productivity has been associated with greater competitive ability and high growth rates. The OECD survey of Ireland (1979a, page 39) says that firms which have received New Industry grants frequently use best-practice technology and have higher labour productivity than other industries; these firms have evidently also shown a greater ability to compete, in export markets especially. In addition, the National Board for Science and Technology (1980) reports that its study of small firms has found that those firms which introduced new technology promptly and/or made innovations have had relatively high growth rates.

Competitiveness

Studies of the effects of the factors referred to in the last chapter under the heading of competitiveness have tended to find it difficult to reach very firm conclusions, probably largely as a result of the simultaneous operation of a number of different effects. Kennedy and Dowling

(1975, Chapter 6) conclude their examination of the effects of Irish unit wage costs and export prices on Irish shares of UK imports by saying that there was "some indication" that the improvement in Irish shares "may be partly explained by changes in the Irish export price relative to the UK import price and the export prices of other countries, though the evidence we have presented is not very conclusive . . . changes in the export price of manufactures can only be related very indirectly, and with many qualifications, to changes in unit wage costs in manufacturing. This is not to say, however, that a massive and sustained disimprovement in unit wage costs relative to competing countries would not ultimately affect export competitiveness". Similar rather inconclusive results have emerged from a number of unpublished studies which have examined the relationship between unit wage costs, prices and employment at an aggregate or a sectoral level.

No doubt, as Kennedy and Dowling also suggest, this inconclusiveness of such studies is partly due to the rapidly changing structure of industry in Ireland, especially industry which produces for export. Many new, mostly foreign-owned, technically advanced plants have been established here, attracted by low average wage levels in Ireland relative to most other EEC countries and very attractive grant and tax incentives. Marginal changes in wage and other costs might have substantial effects on some existing plants with a given cost structure, forcing them to raise prices (the focus of Kennedy and Dowling's analysis), or else cutting their profits if prices cannot be raised in competitive conditions; at the same time such changes in costs might not discernibly deter new investment by incoming firms.

Several recent studies have calculated indices of relative labour cost or price competitiveness in the 1970s, and these are presented in Chapter 9 below which discusses competitiveness. Not all of these studies, however, have attempted to assess the strength of the link between these indices and employment, or even to show that such a link exists.

The Committee on Costs and Competitiveness (1981) refers to specific econometric findings of the extent to which employment is adversely affected by increases in real wage costs. Although this Report does not specifically stress rapid structural change as a reservation on such findings, it expresses a general need for caution in dealing with econometric results and suggests, too, that the full effects may occur only after a time lag of several years; nevertheless the Committee seems satisfied that there is a significant relationship between labour costs and employment.

A number of studies, such as de Meirleir (1976) and Hufbauer (1975) find that Ireland has had close to the most attractive grant and tax incentives for industry, especially exporting industries, among European countries, but this has been the case, with little substantial change, during the past two decades. Teeling (1975) also refers to another competitive advantage in saying that the evidence points to Ireland offering considerable advantages, especially to relatively inexperienced foreign investors, in terms of low risk, uncertainty and information costs, compared with many lower wage countries which also seek to attract foreign investment. Foreign investors in Ireland tend to be fairly small by the standards of multinational firms, and are often making their first investment abroad, suggesting that these advantages are important in attracting less experienced foreign investors (Teeling, 1975, O'Loughlin and O'Farrell, 1980). Teeling suggests, however, that rising labour costs in Ireland since the early 1960s, together with the product life-cycle effects and the appearance of newly-industrialising countries with lower wages and a similar range of export products, as discussed in Chapter 3 above, would tend to put increasing competitive pressure particularly on the longer established (and generally more labour-intensive) of the foreign firms in Ireland. These foreign firms had taken advantage of our low labour costs relative to advanced industrial countries, but they may be pressed to relocate in countries where wages remain much lower than those of Ireland or else be forced into decline and closure. (An alternative for some would be to introduce new, more sophisticated products in Irish plants.) He finds evidence of labour-saving investment among such firms up to the early 1970s but Hogan (1979), using more recent data, finds evidence of a rising rate of job losses due to closure of foreign grant-aided firms in the 1970s. Teeling and Lynam (1980) examine this question further and find some evidence of competition leading to shrinking employment among the longer-established foreign firms, in 1975-1977, in several sectors including the large and diversified metals and engineering sector.

Real Wage

Some work has been done on the relation between the real wage (money wage divided by the price of output) and employment. OECD (1979a) suggest that, over the period 1955 (3rd quarter) to 1974 (4th quarter), other things equal, employment in transportable goods industry declined by about 0.25 per cent for every increase of 1 per cent in the real wage, although a margin of error attaches to this estimate. A recent estimate is that the short-run elasticity of employment in transportable goods industry with respect to the real wage is either −0.2 or −0.5; that is, in the former case, other things equal, every 1 per cent increase in the real wage would lead to a decline in employment of 0.2 per cent (Fitzgerald and Keegan, 1982). There is, however, a good deal of uncertainty about these estimates. A problem arises with

the modelling technique when rapid structural change in the economy is continuously transforming the relationships which it is sought to measure (on an assumption of essentially constant relationships). Given the "dualistic" nature of Irish industry, with relatively new firms side by side with an older vintage of firms, a constant structure is unlikely. Hence, estimates of these types are open to doubt.

Relative Factor Prices

Trends in the relative prices of capital and labour have been investigated by Geary, Walsh and Copeland (1975), referring to 1953-1969, and these estimates have been updated to 1975 by Geary and McDonnell (1979). They conclude that the cost of labour rose more rapidly than that of capital until 1972, but there was a reversal of this trend in 1973-1974, followed by a further increase in the ratio of labour costs to capital costs in 1975. The tendency of labour costs to rise in relation to capital costs was partly due, they say, to Government policies affecting taxation and subsidies of capital. Ruane (1978) also concludes that tax policies generally effectively reduce capital costs relative to labour costs, but Ruane (1976 and 1978) suggests that the industry grants of the IDA are not a clear-cut case of capital subsidies since grant rates vary to some extent in accordance with employment and other characteristics of the projects concerned. She does, however, argue that uncertainty created by the grant procedures might, even if inadvertently, have the effect of encouraging increased capital-intensity, if firms perceive the grants as capital grants.

The OECD (1979a) also include estimates of trends in the relative costs of labour and capital, indicating that the rise in the ratio of the cost of labour to that of capital continued up to 1977, at least. They conclude that the rate of increase in real wages has tended to exert a downward pressure on the ability of manufacturing industry to employ additional workers. A recent estimate shows that changes in the price of capital relative to the price of output have some effect on employment in transportable goods industry, but the response is weak and the estimate is subject to a large margin of error (Fitzgerald and Keegan, 1982).

To conclude, existing research results, as far as they go, generally indicate that the explanatory factors suggested in Chapter 4 have indeed been of some importance in influencing market size, market shares or the relationship between employment and output, and hence are of relevance to this investigation of the causes of job losses. The following chapters examine the role of these explanatory factors in more detail.

CHAPTER 6

DOMESTIC DEMAND AND IMPORT PENETRATION

Introduction

As discussed in the chapter on explanatory factors, foreign and domestic demand indicate the *size of the markets* available to Irish producers. Changes in both the size, and the *share of these markets* held by Irish producers are factors likely to influence the scale and nature of job loss. The size of the domestic market, the relative share of this market taken by imports and domestic production and the consequent implications for domestic output and employment forms the subject of this chapter. The size and share of foreign markets is the subject of the next chapter. Since the only difference between these two chapters is the market which is being examined, the form of the analysis in both is quite similar. Where possible, any methodology which is common to both is outlined in this chapter.

This chapter is organised as follows:

(i) the various pieces of data which are used in the analysis and their sources are discussed;
(ii) the changes in domestic demand over the period 1965-1973 and the employment consequences of this change are analysed;
(iii) the effects of increasing imports on domestic activity are set out;
(iv) the methodology which is utilised to examine changes in competing imports and the employment consequences of these changes are explained;
(v) the extent of import penetration over the period 1965-1973 and the employment consequences of this penetration are assessed;
(vi) the period 1977-1979 is examined in similar fashion to that set out under (ii) and (v) above.

Data Base

Data availability dictates the time periods examined and the degree of disaggregation of the analysis. In order to calculate the size of the domestic market, data are required for domestic production (gross output), exports and imports, all classified on the same basis.

However, Irish published trade and production data are not comparable, being based on different classification systems.[1] A reconciliation of the two data sets has been undertaken by Matthews (1980) on the basis of material supplied by the Department of Industry and Commerce for the period 1965 to 1973.[2] In addition, further data on competing imports has been provided by the same Department to NESC for 1977, 1978 and 1979, albeit on a less disaggregated level than for the former period. A gap therefore exists in the competing import series from 1974 to 1976 inclusive. Moreover, the 1965-1973 and 1977-1979 series are not comparable. Based on the available data, the analysis is carried out for 41 Census of Production industries for the 1965-1973 period and for 10 product groups for the 1977-1979 period.

In calculating the size of the domestic market, a distinction is made between competing and non-competing imports. The former are those imports for which domestic substitutes are readily available and there is therefore competition for share of the domestic market. Non-competing imports are those for which domestic substitutes are not available. The size of the domestic market (henceforth called domestic demand) is here measured as gross output (domestic production) less exports plus competing imports.

Domestic Demand 1965-1973

Table 6.1 provides details of the growth of domestic demand over the period 1965-1973. For total manufacturing industry, domestic demand grew at an average rate of 14% per annum in nominal terms over the period with the most rapid growth occurring in clay and cement, wood and furniture, and other manufacturing.[3]

The consequences for employment of this growth in domestic demand can be estimated, for each sector, as follows. (Steps (i) to (iv) can also be used for calculating the consequences for employment of growth in foreign demand, hence the use of "export" in brackets.)

[1]There are also different valuation systems, imports are valued c.i.f. not at ex-factory prices as with domestic production.

[2]The import and export list numbers which were used by Matthews for reconciling production and trade data for the period 1965-73 were originally derived for 1965. The competing import data, in particular, were therefore becoming seriously out of date by 1973. The result of the calculations should therefore be treated as broad orders of magnitude rather than being completely accurate.

[3]It is possible to calculate the growth of domestic demand in real terms by deflating each of the individual components, i.e. gross output, exports and competing imports, by their respective deflators (using the overall import price index as a proxy for the competing import price deflator). However, since most of the analysis is concerned with the employment content of production, this exercise is regarded as unnecessary.

Table 6.1

Domestic Demand, Domestic Production and Competing Imports by Sub-Sector of Manufacturing Industry, 1965-1973

Sector	Average annual % growth of domestic demand (compounded annually)	Proportion of increase in domestic demand satisfied by competing imports % (a)	Factors leading to growth of competing imports			Absolute employment effects of market share changes	Average annual % employment change due to changing market share (compounded annually)	Hypothetical employment change resulting from growth of domestic demand (d)
			(i) Growth of domestic demand £m	(ii) Market share changes £m	(iii) Commodity composition effects (b) £m			
Bacon factories	12.2	0.4	0.0	+0.2	..	-10	-0.02	+360
Other meat slaughtering	26.4	1.8	1.6	-1.0	..	+30	+0.14	+560
Dairying	18.4	1.2	0.3	+1.2	..	-40	-0.1	+1,290
Canning of fruit etc.	10.9	16.8	3.1	-1.0	..	+130	+0.5	-990
Grain milling	8.5	3.0	2.5	-1.2	..	+60	+0.15	810
Bread, biscuits, flour etc.	6.0	11.3	0.2	+1.8	..	-350	-0.4	-230
Sugar refining	9.8	21.0	0.6	+2.3	..	-180	-1.1	+70
Cocoa, chocolate etc.	10.5	8.0	0.2	+1.4	..	-240	-0.6	+160
Margarine etc	11.0	15.6	0.1	+0.5	..	-40	-1.7	+150
Miscellaneous food	12.3	52.8	1.4	+1.9	..	-230	-3.4	+20
Food	12.7	5.4	12.2	+6.1	-2.1	-870	-0.2	+980
Distilling	8.7	105.9 (c)	1.7	+1.7	-	-130	-2.4	-290
Malting	12.1	6.7	0.1	+0.1	..	-10	-0.1	-340
Brewing	15.3	0.1	1.0	-1.0	-	+90	+0.2	+310
Aerated and mineral waters	21.1	1.8	0.1	+0.1	..	20	-0.1	+630
Tobacco	6.4	7.2	0.2	+2.1	..	-60	-0.3	-90
Drink and Tobacco	9.8	7.6	3.0	+3.0	+0.1	-130	-0.1	+220
Woollen and worsted	8.2	54.1	4.6	+5.0	-	-710	-1.4	-156
Linen and cotton	6.2	101.8 (c)	4.0	+4.9	-	-810	-2.9	-96
Jute, canvas etc.	26.1	89.1	16.7	+36.2	-	-4120	(e)	+279
Hosiery	13.1	61.3	3.5	+12.4	-	-2640	-5.9	+161
Textiles	13.9	78.1	31.1	+58.5	-2.3	-8280	-5.7	+188
Footwear	10.7	62.3	0.6	+6.3	-	-1500	-3.4	-280
Clothing	11.2	42.7	3.8	+10.1	-	-2770	-2.3	+160
Clothing and footwear	11.1	47.6	4.4	+16.3	+0.0	-4270	-2.6	-120
Wood and cork	18.9	54.3	18.0	+3.3	-	-490	-1.8	+1160
Furniture and fixtures	14.3	32.2	1.3	+3.4	-	-780	-2.5	+540
Wood and Furniture	17.3	48.3	17.5	+6.7	+1.9	-1270	-1.9	+1700
Paper	12.7	44.0	14.9	+1.8	-	-230	-0.5	+290
Printing and publishing	14.0	21.0	6.2	+1.1	-	-230	-0.3	+1410
Paper and Printing	13.3	33.0	21.7	+2.9	-0.6	-460	-0.3	+1700
Fertilizers	11.2	32.0	9.0	+2.3	..	-100	-0.8	+700
Oils, paints etc.	13.1	17.0	1.0	+1.4	-	-100	-0.9	+110
Chemicals and drugs	15.6	87.2	15.8	+7.4	..	-550	-3.5	-20
Soap, detergents etc	11.7	36.8	1.3	+0.3	..	-50	-0.8	+70
Chemicals	15.1	48.0	26.1	+11.5	+1.1	-800	-1.1	+860
Glass	24.4	86.0	4.8	+19.0	-	-4890	(e)	+5100
Structural clay	19.8	5.5	3.9	-1.4	-	+160	-0.4	+2240
Clay, Glass and Cement	21.3	36.2	8.2	+17.6	+0.5	-4730	-6.2	+7340
Metal trades	14.5	39.6	15.2	+10.4	..	-1610	-2.0	+3030
Non-electrical machinery	n.a	n.a	n.a	n.e	n.a	n.a	n.e	n.a
Electrical machinery	16.3	42.7	15.6	+10.0	-	-1480	-2.6	+2920
Ship and boat building	33.6	84.6	0	+17.6	-	-2270	(e)	+2360
Railroad equipment	7.1	0	-	-	-	-	-	-940
Motor assembly	18.2	59.0	1.9	+56.9	-	-6060	26.9	+7560
Other vehicle assembly	11.6	26.6	0.1	+0.9	..	-190	-1.6	-130
Metals and Engineering (f)	16.8	51.3	37.7	+95.9	-4.8	-11610	-4.0	+14800
Fellmongery	18.4	45.1	0.5	+3.1	-	-220	-1.8	+120
Leather manufactures	8.7	78.6	16.6	+0.5	-	-140	-2.1	-110
Miscellaneous manufacturing	18.9	54.1	19.0	+46.9	-	-4240	-8.8	+5770
Other Manufacturing	18.6	53.6	19.0	+50.6	-0.5	-4600	-4.3	+5780
Total (f)	14.4	37.1	166.1	+269.1	+8.3	-37020	-2.5	+33450

Notes: (a) This is effectively a marginal penetration ratio.
(b) Commodity composition effects are also likely to be present at the individual industry level but cannot be quantified since it is impossible to disaggregate the data any further.
(c) These percentages are greater than 100 due to the fact that output for the domestic market actually fell between 1965 and 1973.
(d) Assuming constant share of domestic production in domestic demand.
(e) In jute, canvas etc., glass, ship and boat building the hypothetical employment displacement due to an increasing share of competing imports would have been sufficient to displace all the employment involved in producing for the domestic market in 1965.
(f) Excluding non-electrical machinery.

Source: Matthews (1980), *Irish Statistical Bulletin, Trade Statistics of Ireland*

(i) by calculating the employment content of output for the domestic (export) market in 1965;[1]

[1]This estimate is derived by calculating the proportion of gross output which is supplied to the domestic market in 1965 and assuming that the same proportion of employment may be regarded as engaged in the production of output for the domestic market. This assumes that the ratio of gross output to employment is the same for exports as for production for domestic sale. The employment content is then arrived at by multiplying this proportion by total employment in the sector.

(ii) by assuming that domestic producers held the same share of the domestic (export) market in 1973 as they did in 1965, the hypothetical domestic production for the domestic (export) market in 1973 is calculated;
(iii) by calculating the employment content of this hypothetical domestic production for the domestic (export) market in 1973;[1]
(iv) by subtracting (i) from (iii) one arrives at an estimate of the hypothetical employment change resulting from the change in domestic (foreign) demand.

For total manufacturing industry, additional employment of over 33,000 would have resulted from the growth of domestic demand (allowing for the growth in productivity which occurred over the period) if domestic producers held the same share of domestic demand in 1973 as in 1965. This hypothetical employment growth would have occurred chiefly in clay and cement, "other manufacturing", and metals and engineering (in order of magnitude). The negative sign in the clothing and footwear sector and in some sub-sectors can be interpreted as follows. The growth of output for the domestic market, given:

(i) a fixed market share,
(ii) the rate of growth of productivity which occurred,

was insufficient to ensure continued 1965 employment levels. If these industries had been producing solely for the domestic market and only maintained their 1965 share of the market, their total employment would have fallen over the period 1965-1973.

Effects of Increasing Imports on Domestic Activity

By relaxing the constant market share assumption, it is possible to examine the extent to which the increase in domestic demand in Table 6.1 was satisfied by imports or domestic production. Before examining this, however, there follows a brief discussion on the effects of increasing imports on domestic output and employment.

Imports can increase for two reasons.

(i) They can increase due to an increase in domestic demand, while maintaining a constant or even a declining share of domestic demand. In this case, they will not lead to a displacement of domestic output and employment, rather their increase can be regarded as resulting in a foregoing of domestic output and employment (provided there are no inherent obstacles to production of this output domestically).

[1] This calculation is similar to that described in footnote 1 on page 55 above except that 1973 data are used in this case.

(ii) They can increase due to an increase in their share of the domestic market.

The opening up of the economy to free trade and the effort to industrialise through an export led strategy undoubtedly resulted in a move to greater specialisation. For example, both indigenous and foreign firms originally producing many lines for the small protected domestic market are likely to have concentrated on a limited number of lines, thus allowing imports to capture an increased share of the market for the products in which domestic producers were least competitive. The natural consequence of a movement to free trade is therefore an increase in the import share of the domestic market. In addition, when the export led growth strategy is pursued partially through the attraction of foreign firms, this import share increase is likely to be accentuated as foreign firms tend to import a substantial proportion of their raw material requirements. Finally, the encouragement of exports through export profits tax relief would be likely to favour the establishment of export orientated rather than import-substituting firms.

The effects of an increase in competing imports on domestic output and employment can be classified into a series of direct and indirect effects:[1]

(i) Direct effects. An increase in competing imports of product X into country A from country B will lead to a displacement of output in industry X with consequent job loss. This effect will exhibit itself as a rise in the share of competing imports in domestic consumption in industry X.

(ii) Indirect effects. Given that industry X is likely to be a consumer of the products of other industries, either domestic or foreign, these industries will also be affected. To the extent that the inputs of industry X are provided by domestic firms, there will be a displacement of domestic output and consequent loss of employment. These indirect effects will exhibit themselves as a drop in domestic demand, or a slower growth than would otherwise have been the case, for the products of the various industries affected. If some of the inputs into industry X are imported, the output and employment consequences would be partially transferred abroad.

(iii) Multiplier and expenditure effects. The corollary of the direct and indirect effects will be taking place in the industries of country B. The initial effects of an increase in exports of industry X from country B will be an increase in output and

[1] The classification used here is based on Lydall (1975).

employment in industry X and a consequent output and employment increase in industries supplying industry X, some of which may be located in country A. It is also likely that an increase in foreign exchange earnings in country B would lead to a general expansion of demand, part of which will be satisfied from imports. These two effects will exhibit themselves in the export/gross output ratios of the various industries in country A.

It is obvious from these direct and indirect effects that a methodology which will capture all the effects is very difficult to devise.

Methodology

The methodology utilised in this section is a shift-share type analysis similar to that used by Kennedy and Dowling (1975). The methodology allows the growth of competing imports to be allocated to three factors:

(i) growth of domestic demand;
(ii) changes in market share; and
(iii) commodity composition effects.

It is, however, only capable of capturing the direct effects of an increase in competing imports. A similar analysis allocating the growth of Irish exports to these three factors is undertaken in Chapter 7.[1] For the sake of brevity the description of the methodology in the following paragraphs relates to both exports and competing imports.

At the level of an individual sector, the growth of competing imports (exports), resulting from the growth of domestic demand (foreign imports) can be calculated by assuming that competing imports (Irish exports) hold the same share of domestic demand (foreign imports) in the final year of the period as in the initial year, thus giving a hypothetical level of competing imports (exports) for the final year. The difference between actual competing imports (exports) in the initial year and hypothetical competing imports (exports) in the final year is then due to growth of domestic demand (foreign imports). The difference between the actual increase in competing imports (exports) and the increase due to changes in domestic demand (foreign imports) can be attributed to market share changes.

This simple distinction between demand and market share changes is more complicated at the aggregate level. Total manufacturing industry is composed of ten product groups (in the case of exports, 31 categories are used), domestic demand (foreign imports) for each of which will grow at different rates. Thus, even if there is no change in the competing import share of domestic demand (Irish exports' share of

[1] Foreign imports are used as a proxy for foreign demand in Chapter 7.

foreign imports) in any product group, the aggregate share could rise (fall) if domestic demand (foreign imports) for the product group in which the initial competing import share (Irish export share) was largest, grew most (least). This commodity composition effect will arise at the product group level also since each product group is composed of a number of individual industries.

The calculation of the commodity composition effect is best illustrated by means of an example. In the food sector, over the period 1965-1973 total competing imports grew by £16.2m. If competing imports had maintained their 1965 share of domestic demand, the increase would have been £12.2m – this is therefore an increase due to the increase in domestic demand. The remaining increase of £4m is due to both a market share change and a composition effect. The total market share effect is arrived at by aggregating the market share effects at the level of individual industries, i.e., £6.1m. Since the total of the two effects is £4m and the market share change is £6.1m, the commodity composition effect equals – £2.1m.

In analyses of this nature, changes in the share of domestic demand (foreign imports) taken by competing imports (Irish exports) are often attributed to changes in competitiveness. The term competitiveness used in this sense includes any factor which leads to a change in the import share of domestic demand (export share of foreign imports). It therefore includes not only price but reliability of delivery, marketing effectiveness, product quality and design plus a host of other factors. Another factor likely to be very important during the period under consideration is the Anglo-Irish Free Trade Agreement which came into operation in 1966. Prior to this much of Irish industry had been protected behind high tariff walls. *A priori*, one would therefore expect that following the removal of these tariffs, the competing import share of domestic demand would rise.

There are a number of implicit assumptions underlying the above analysis which need to be noted.

(i) When calculating the employment content of output for the domestic market, the gross output/employment ratio is assumed to be the same for production for the domestic market and for exports. This assumption is realistic if the same set of firms are producing for both markets. However, the same set of firms are unlikely to be serving both markets. Overseas firms based in Ireland tend to be predominantly export-orientated while indigenous firms tend to be more orientated towards the domestic market (McAleese, 1977 and 1978);
(ii) It is assumed that expenditure on competing imports sub-

stitutes perfectly for expenditure on domestic output.

(iii) The analysis is carried out for nominal values of all the variables, therefore any alteration of the relative prices of domestic output and competing imports will bias the results.

Moreover, the methodology is essentially an accounting exercise and as with all such exercises holds other things constant, ignoring interactions with other variables. Hence, the results should be treated as conveying broad orders of magnitude rather than as completely accurate.

Import Penetration 1965-1973

Table 6.1 shows that 37.1% of the increase in domestic demand over the period 1965-1973 was satisfied by competing imports. This percentage varies considerably across product groups, being very low in drink and tobacco, and food. In metals and engineering, chemicals, wood and furniture, clothing and footwear, and other manufacturing, approximately half of the increase was satisfied by competing imports. In textiles, a remarkable 78% of the increase in domestic demand was taken by competing imports.

In food, wood and furniture, paper and printing, and chemicals, the growth of domestic demand has been the predominant factor leading to the growth of competing imports. In textiles, clothing and footwear, clay, glass and cement, metals and engineering, and other manufacturing, increase in market share was the primary cause of the growth in competing imports. For total manufacturing, the increase in market share was substantially more important than the growth of domestic demand in contributing to the growth of competing imports.

In the majority of product groups, commodity composition effects were negligible in absolute terms and in relation to the other two factors. A positive (negative) sign on the commodity composition effect indicates that it contributed to (mitigated) the increase in competing imports.

Employment Effects of Import Penetration 1965-1973

The employment consequences of market share changes are derived by finding the difference between the actual employment content of domestic production for the domestic market in 1973 and the hypothetical employment content if domestic producers maintained the same share of the domestic market in 1973 as they did in 1965. Where the share of the domestic market held by domestic producers fell over the period (or alternatively where competing imports increased their share of the domestic market), the employment consequences are negative and vice versa.

The average annual percentage employment displacement resulting from competing imports increasing their share of the domestic market

was 2.5% for total manufacturing industry, representing over 37,000 jobs or approximately 4,600 jobs per annum. This displacement was concentrated in textiles (5.7%), clothing and footwear (2.6%), clay, glass and cement (6.2%, primarily in glass), metals and engineering (4.0%) and other manufacturing (4.3%). In only five industries out of 41 did domestic producers increase their market share (Table 6.1).

These results are not surprising since it was during this period that the lowering of tariffs under AIFTA was having its effects. It is difficult to distinguish the effects of AIFTA from other factors which might have contributed to the changing market shares. However, its effect is likely to have been substantial, particularly in the sectors where the degree of effective protection was very high in 1965, and in sectors where firms had not prepared themselves for the transition to free trade.[1] Evidence of non-preparation can be found in the reports of the National Industrial Economic Council and the report of the Committee on Industrial Progress (1973).

Another factor influencing the growth of competing imports and import penetration ratios is the capacity of domestic industry to respond to the growth of domestic demand. This issue arises specifically in the context of the business cycle. If, during the upswing of the business cycle, domestic industry is operating at or near full capacity, the ratio of competing imports to domestic demand would be expected to rise above its trend level as demand increases and the ability of domestic industry to satisfy this demand is limited by the capacity constraint. Where this occurs, the competing import ratio would be expected to return to or go below its trend level on the downturn of the business cycle and domestic suppliers to regain their market share. This may not occur for a number of reasons, particularly due to the difficulty of displacing competitors from markets in which they have a foothold. In essence, a ratchet effect comes into operation, whereby the import penetration ratio rises sharply when domestic capacity constraints exist but falls back less sharply when these constraints are removed. This causes the import penetration ratio to rise in steps.

Some recent work by Hughes and Thirlwall (1977) attempts to test these hypotheses for the UK economy for the period 1963-1974. This work tended to confirm the hypotheses. They find cycles in import penetration to be positively related to capacity constraints (indirectly measured by demand pressure in the labour market) in 26 industries accounting for 16% of total UK imports. They also find some evidence of a positive ratchet effect over the 1970-1975 business cycle.

[1] The effective tariff rate indicates more accurately the degree of protection afforded domestic manufacturers than does the nominal tariff rate, by taking account of the proportion of value added in total output and the nominal tariff level on the industry's inputs.

There are a number of reasons why it is not possible to carry out a study of this nature for the Irish economy:

(i) very disaggregated data are required; it is entirely plausible that there may be capacity constraints in some industries of a sector or even in some segments of an industry which would be masked by sectoral data;
(ii) data would be required over a long period, at least over the business cycle and these are not available.

The possibility of this effect being operative should, however, be borne in mind when discussing market share changes.

Domestic Demand 1977-1979

The analysis of 1977-1979 is similar to that for 1965-1973 though for a more aggregated data set, viz. the 10 sectors. Due to a radical change of the competing import series, competing imports in 1977 are not comparable with those for 1973. The domestic production data for the 10 product groups are arrived at by applying the published volume indices of production and output price indices to the gross output data in the most recent Census of Industrial Production. This gives an estimate of gross output at current prices for 1977, 1978 and 1979. Employment data for the ten sectors are available from the Quarterly Industrial Inquiries for 1977. However, data are classified on a NACE basis subsequent to this. Hence, the employment consequences of any change in the share of domestic demand taken by competing imports cannot be calculated for the 10 sectors.

Over the 1977-1979 period, domestic demand for total manufacturing industry grew at an average annual rate of 20.2% in nominal terms, the most rapid growth occurring in clay and cement, and textiles (Table 6.2). If Irish producers held the same share of domestic demand in 1979 as in 1977, this growth of domestic demand would have resulted in additional employment of approximately 7,500, allowing for the increase in productivity which occurred over the period.

Import Penetration 1977-1979

Of this growth in domestic demand, 38.9% was satisfied by competing imports in total manufacturing, marginally higher than that over the 1965-1973 period. However, the experience in a number of individual sectors is markedly different between the two periods. The figures for the food industry in both periods are not comparable due to the exclusion from the basic data of agriculture based industries in the later period. In drink and tobacco, and metals and engineering, the results are broadly similar in the two periods. In clothing and footwear, wood and furniture, and paper and printing, the percentage of the increase taken

by imports is higher in the 1977-1979 period. The 106% ratio of competing imports to the increase in domestic demand in clothing and footwear arises from the fact that domestic output for the home market declined (in nominal terms) between 1977 and 1979. However, the export/gross output ratio increased from 38.6% to 48.4% in this period. This is unlikely to have been caused by a fixed population of firms deciding to export rather than supply the domestic market. Rather it is likely to have resulted from a changing mix of firms, probably due to the closure of older domestic market-orientated firms and the starting up or expansion of export-orientated firms.

In Table 6.2 the growth of competing imports is divided into a component which is due to the growth of domestic demand and a component

Table 6.2

Domestic Demand, Domestic Production, Competing Imports by Sector, 1977-1979

Sector	Average annual % growth of domestic demand at current prices (compounded annually)	Proportion of the increase in domestic demand satisfied by competing imports %	Factors leading to growth of competing imports	
			(i) Growth of domestic demand £m	(ii) Market share changes £m
Food (a)	15.1	41.9	+15.5	+23.5
Drink and Tobacco	21.3	6.8	+6.5	+3.5
Textiles	27.4	36.5	+42.3	-8.3
Clothing and Footwear	19.5	106.0	+29.2	+40.8
Wood and Furniture	16.5	70.5	+10.0	+14.0
Paper and Printing	14.3	50.0	+14.5	+18.5
Chemicals	22.0	57.4	+66.4	+10.6
Clay and Cement	29.5	14.0	+11.4	+9.6
Metals and Engineering	18.6	49.8	+73.6	+30.4
Other Manufacturing	19.2	15.1	+16.7	+0.3
Total (a)	20.2	38.9	+287.9 (b)	+142.9

Notes: (a) Excluding agriculture based industries.
(b) The balance of -£1.8m (429.0 – (287.9 + 142.9) = -1.8) is due to a commodity composition effect.

Source: Department of Trade, Commerce and Tourism, *Measurement of Growth of Competing Imports in 1977, 1978, 1979* (mimeo).

which is due to the changing import share of domestic demand. For total manufacturing industry the growth of domestic demand led to approximately twice the increase in competing imports as that caused by the increased market share of competing imports. Of the total increase in competing imports of £429m, 67% was due to the growth of domestic demand (compared with 37% over the 1965-1973 period) and the remainder to the increased import share of domestic demand (with

a small negative commodity composition effect). In drink and tobacco, textiles, chemicals, metals and engineering, and other manufacturing, the bulk of the increase in competing imports was due to the growth of domestic demand. In food, clothing and footwear, wood and furniture, paper and printing, approximately 40% of the increase was due to the growth of domestic demand.

Table 6.3 presents details of the competing import share of domestic demand in 1977, 1978 and 1979. Over the period 1977-1979, competing imports increased their share of domestic demand in total manufacturing industry from 26.1% to 30%. Their share increased in all sectors except textiles where it fell from 45.6% to 42.1%.[1] However, total competing imports of textiles still increased by £34m due to strong growth in domestic demand.

Table 6.3

Competing Imports' Share of Domestic Demand by Sector, 1977-1979 (a)

Sector	1977 %	1978 %	1979 %
Food (b)	16.7	19.2	22.9
Drink and Tobacco	4.5	4.8	5.3
Textiles	45.6	41.4	42.1
Clothing and Footwear	44.2	51.4	62.7
Wood and Furniture	29.5	36.1	40.3
Paper and Printing	21.9	25.8	28.5
Chemicals	49.6	47.9	52.2
Clay and Cement	7.7	9.1	10.3
Metals and Engineering	35.3	35.0	39.5
Other manufacturing	15.0	15.6	15.1
Total	26.1	27.4	30.0

Notes: (a) 1979 is the last year for which figures are available on the old Census of Industrial Production classification.
The Department of Industry and Commerce are revising these figures to a NACE basis.
(b) Excluding agriculture based industries.

Source: Department of Trade, Commerce and Tourism, *Measurement of Growth of Competing Imports in 1977, 1978, 1979* (mimeo).

Employment Effects of Import Penetration, 1977-1979

Using the methodology outlined earlier in this chapter, approximately 4,300 jobs were displaced over the 1977-1979 period or 2,150 jobs per annum, amounting to an average annual displacement of approximately

[1] It is argued later that domestic capacity constraints are likely to have been in part responsible for the increases in import penetration. It would be interesting to examine whether the capacity constraint was as binding in textiles as in other sectors. If not, this would help to explain why the import penetration ratio did not rise in textiles as in other sectors.

one per cent per annum. This compares favourably with the 2.5% average annual displacement over the 1965-1973 period and suggests that the employment loss due to increasing import penetration may be slowing down. However, caution should be exercised with a conclusion of this nature based on data for a two year period.

There were a number of factors operating over the period 1977-1979 which are likely to have influenced the import penetration ratios. The final tariff reduction to trade with the EEC occurred at the beginning of the period. However, much of the adjustment to free trade with the EEC is likely to have taken place prior to this period.

The consideration dealt with earlier concerning the relationship between the degree of import penetration and the degree of capacity utilisation in the domestic economy is likely to have been quite important in this period. Over the period the economy was probably running close to full capacity and the competing import/domestic demand ratio increased from 26.1% to 30%. If the hypothesis is correct, then the ratio would be expected to decrease in the post-1979 period when domestic demand eased (provided other factors are not in operation to mask its effect) but to remain above the 1977 share.

Also in operation in the latter half of this period was the Employment Maintenance Scheme which was introduced in April 1978 to help firms maintain employment in the clothing, footwear and tanning industries and in some areas of the textile industry.[1] The scheme was designed to help firms which were evidently in difficulties and were willing to restructure their operations and improve efficiency. The assistance was equivalent to £5 per eligible worker per week with effect from April 1978 to March 1980. A total of 320 firms employing 31,000 workers benefited from the scheme. This scheme was replaced by the Employers' Temporary Subvention Fund which was in existence from April to December 1980 and was financed from the employers' contributions to the Employment Guarantee Fund established under the terms of the 1979 National Understanding.

A priori, one would expect the increase in import penetration and consequently the rate of job loss due to increasing import penetration to slow down as a result of the Employment Maintenance Scheme. Although it is not intended to evaluate the scheme in this report, it is interesting to note the changes in the import penetration ratios over the period. Between 1977 and 1978 the ratio in the textile industry fell from 45.6% to 41.4% (while the scheme was introduced in April 1978) and increased marginally between 1978 and 1979 (see Table 6.3). The extent to which the decline in the ratio between 1977 and 1978 was

[1] The scheme was also introduced partly to counteract the effects of a similar scheme introduced in the UK to help the textile sector.

due to the scheme is difficult to establish. The trend in the ratio in clothing and footwear was continually upward over the period 1977 to 1979, though this is not to suggest that the scheme was ineffective, as the ratio might have disimproved further in its absence.

Import Penetration and Job Losses

The absence of competing import data for 1973-1977 is unfortunate, since this means that the relationship between competing imports and job losses in that period cannot be directly examined. However, it might be expected that an increase in import penetration would result in job losses only after some time, so that it could plausibly be suggested that the rise in import penetration which became quite marked as far back as 1967 would be an important source of the job losses shown in the data for the period after 1973. This is so particularly because the domestic market was growing quite strongly with little interruption up to 1973, so that the steady erosion of domestic market *shares* caused by import penetration in the period before 1973 need not have resulted in any immediate job losses in firms selling to the growing home market. But when the growth of the market was interrupted in the major recession of 1974-75, firms which had been losing market shares would then have come under strong pressure to reduce employment, so that job losses after 1973 could be due, to a significant extent, to a delayed effect of import penetration. Table 6.4 shows that there was a relationship between the rate of increase in import penetration by sector in 1967-1973, and the rate of job loss, by sector, in industry except Foreign New Industry in 1973-1980. (The latter is excluded here because production is very largely for export markets and therefore would not be affected significantly by competing imports.)

It is noticeable that sectors with particularly low rates of import penetration in 1967-1973 (which contain a number of inherently sheltered activities), also have low rates of job loss in 1973-1980 – in particular the cases of clay, glass and cement, drink and tobacco, food, paper and printing. By contrast, particularly high rates of import penetration were generally followed by high rates of job loss in other sectors – such as clothing and footwear, textiles and chemicals. The marked rise in import penetration, which goes back to about 1967 following the gradual implementation of free trade, is likely to have been an important underlying source of job losses after 1973.

Table 6.4

Average Annual Gain in Competing Imports' Share of Domestic Market (a), and Rate of Job Loss in Industry other than New Foreign Industry, 1973-1980

Sector	Gain in competing imports 1967-1973 (% points)	Rate of job loss 1973-1980 (% p.a.)
Food	0.4	3.8
Drink and Tobacco	0.3	2.0
Textiles	2.8	8.7
Clothing and Footwear	3.1	8.2
Wood and Furniture	1.0	6.0
Paper and Printing	0.8	3.3
Chemicals	2.5	6.7
Clay and Cement	0	2.7
Metals and Engineering	2.0	5.5
Other Manufacturing	3.3	5.1
Total	1.5	5.1

Note: (a) Average annual change in percentage point terms, e.g., total competing imports held 14.8% of the domestic market in 1967 rising to 23.6% in 1973, a gain of 8.8% over 6 years or 1.5% per year.

Source: Review of 1973 and Outlook for 1974; IDA Employment Survey.

CHAPTER 7

FOREIGN DEMAND AND EXPORT MARKET SHARES

Introduction

In this chapter the effects of changes in foreign demand on employment in manufacturing in Ireland are examined. To do this, it is necessary

Table 7.1

Manufacturing Exports to the UK: 1966-1973, 1973-1978, 1966-1978

A : Aggregate

Changes in exports of all manufactures to UK due to:	$000, current values					
	1966-1973	(%)	1973-1978	(%)	1966-1978	(%)
Growth of UK imports	438,119	(73.7)	952,940	(70.9)	1,224,110	(63.1)
Changing composition of UK imports	-17,692	(-3.0)	-124,605	(-9.3)	-188,911	(-9.7)
Changes in Ireland's market shares	173,828	(29.3)	516,281	(38.4)	903,672	(46.6)
Total Change	594,255	(100)	1,344,616	(100)	1,938,871	(100)

B: Excluding food

Changes in exports of manufactures (excluding food) to UK due to:	$000, current values					
	1966-1973	(%)	1973-1978	(%)	1966-1978	(%)
Growth of UK imports	283,144	(69.4)	655,406	(85.2)	797,951	(67.1)
Changing composition of UK imports	58,879	(14.4)	-21,713	(-2.8)	32,536	(2.7)
Changes in Ireland's market shares	65,808	(16.1)	137,598	(17.6)	358,635	(30.2)
Total change	407,831	(100)	781,291	(100)	1,189,122	(100)

Note: The proportion of Irish manufactured exports going to the UK was 69% in 1966, 55% in 1973 and 47% in 1978.

Sources: UN, *Yearbook of International Trade Statistics*;
Trade Statistics of Ireland.

first to measure changes in Irish exports, second to determine what proportion of such change is due to foreign demand changes rather than to changes in Irish exports' share of foreign markets. Finally it is necessary to estimate the implications for employment of that part of the change in exports which can be attributed to changes in foreign demand for imports. The results of the first two of these three steps are summarised in Tables 7.1 and 7.2.

Tables 7.1 and 7.2 show the changes in exports of all manufactures, and of all except food, to the UK and the rest of the OECD countries respectively, for 1966-1973 and 1973-1977 or 1973-1978. (These two markets receive most Irish exports – ranging from 93% in 1966 to 87% in 1978.) The total change in exports in each case is broken down into growth due to growth of total foreign demand for manufactured imports, changing composition of foreign manufactured imports, and changes in Irish exports' shares of foreign manufactured imports. The first two of these three items, therefore, reflect the effects on Irish manufactured exports of changes in foreign import demand.

The derivation of these tables is similar to the methodology already outlined in Chapter 6, when analysing the effects of domestic demand and domestic market share changes. The figures in these tables must be regarded as estimates rather than exact since their calculation involves a number of assumptions (similar to those outlined in Chapter 6) which cannot be fully investigated. Thirty one categories of exported goods were selected from the trade statistics, mostly at the SITC two digit level, though a few are broken down further in order to exclude certain non-manufactured products. (The full list is given in the later part of this chapter which deals in more detail with market share changes.) These 31 selected categories of exports would cover nearly all manufactured exports (probably over 95% in any year), even though some small manufacturing categories have been excluded – partly to simplify the calculations and in some cases due to lack of the required more detailed trade data.

In the tables, the "total change" in exports is simply the difference between the sum of these 31 categories of exports at the end and at the start of a period. The change due to the growth of (foreign) imports is that change which would have occurred if total Irish exports (of these 31 categories) had maintained a constant share of total foreign imports (of the same categories). The methodology utilised to calculate the change in exports due to changes in Ireland's market share has already been outlined in Chapter 6.

Tables 7.1 and 7.2 show that, except in the rest of the OECD market in the second period, growth of foreign import demand has been the major influence on growth of Irish exports. But increasing market shares for Irish exports have made a significant contribution too, which

was somewhat less in the UK market than in the rest of the OECD. The effects of changing composition of foreign demand among all manufactures are negligible for the rest of the OECD, and slightly negative for the UK. But the omission of food – which is a large export item for Ireland, with rapidly increasing market shares but slow market growth – produces generally positive composition effects among the rest of manufacturing; the omission of food also produces generally less important gains arising from growing market shares.

Table 7.2

Manufacturing Exports to the OECD: 1966-1973, 1973-1977, 1966-1977

A: Aggregate

Changes in OECD (excluding UK) manufactured imports from Ireland, due to:	$000, current values					
	1966-1973	(%)	1973-1977	(%)	1966-1977	(%)
Growth of OECD (excluding UK) imports	250,340	(55.2)	428,992	(45.4)	526,777	(37)
Changing composition of OECD (excluding UK) imports	146	(0)	2,107	(0.2)	3,713	(0.3)
Changes in Ireland's market shares	203,418	(44.8)	513,659	(54.4)	868,172	(62.1)
Total change	453,904	(100)	944,758	(100)	1,398,662	(100)

B: Excluding food

Changes in OECD (excluding UK) non food manufactured imports from Ireland due to:	$000, current values					
	1966-1973	(%)	1973-1977	(%)	1966-1977	(%)
Growth of OECD (excluding UK) imports	160,413	(56.8)	268,666	(43.9)	336,411	(37.6)
Changes in composition of OECD (excluding UK) imports	18,407	(6.5)	10,684	(1.7)	40,060	(4.5)
Changes in Ireland's market shares	103,520	(36.7)	333,212	(54.4)	518,431	(57.9)
Total	282,340	(100)	612,562	(100)	894,902	(100)

Note: The proportion of Irish manufactured exports going to OECD countries other than the UK was 23% in 1966, 33% in 1973 and 40% in 1977.

Source: OECD, *Statistics of International Trade*.

The results of the estimates of the effects on employment of the growth of exports outlined in Tables 7.1 and 7.2 are summarised in Tables 7.3 and 7.4. Table 7.3 shows the estimated level of employment in manufacturing for export, for several years and for three different export markets. These estimates are derived by calculating the proportion of gross output which is accounted for by exports, and assuming that the same proportion of employment may be regarded as engaged in the production of exports. This estimate of total employment in manufacturing for export is further broken down by markets, in proportion to the value of total exports going to each market. Thus, the estimates are based on the assumptions that, in any one year, the ratio of gross output to employment is the same for exports as for production for domestic sale, and further, that the ratio of gross output to employment in export industries is the same for exports to each market. This procedure, and these assumptions, are not entirely satisfactory but this seems to be the only possible method in view of data constraints. To give some indication of the probable bias, it is known that new grant-aided industry, which is generally highly export-orientated and accounted for almost two thirds of manufactured exports in 1973, has a slightly higher gross output-employment ratio than the rest of industry which sells very largely in the home market. From McAleese (1977) Table 3.1, it can be calculated that the gross output-employment ratio in new industry was 6% higher than the national average in 1973. If this is a rough indication of the difference between export industry and all industry, it means that the export employment estimates in Table 7.3 are a little too high (perhaps by around 6% or 4,000 in 1973). As regards trends over time, there seems to be little reason to believe that the proportionate difference between the gross output-employment ratio of export industry and of all industry would have changed markedly over time, so that the changes over time suggested in Table 7.3 and 7.4 would probably be broadly correct.

Table 7.3 shows that, despite inflation and rising labour productivity, the total growth of exports depicted in Tables 7.1 and 7.2 in current money values was sufficient to allow continually expanding employment in production of exports for each of the markets referred to. However, as was shown above, quite a substantial part of the growth of exports was due to increasing market shares rather than solely to the growth of foreign demand for imports. In order to measure the effect on employment of changes in foreign import demand in any period, steps (i) to (iv) as outlined in the previous chapter are followed.

Table 7.4 shows the results of such estimates, presented as averag annual employment changes. The table shows quite a significan change from the first period to the second, particularly in the UK market. The use of the methodology that has been followed means that

Table 7.3

Estimated Employment in Manufacturing for Export, 1966, 1973, 1977, 1978

000

	1966	1973	1977	1978
All manufactured exports	38.7	67.0	83.7	84.9
All non-food manufactured exports	26.0	50.6	66.1	67.2
Manufactured exports to UK	26.9	36.6	39.3	39.8
Non-food manufactured exports to UK	17.3	28.5	30.1	30.6
Manufactured exports to rest of OECD	9.1	22.3	33.3	n.a.
Non-food manufactured exports to rest of OECD	6.4	17.1	25.4	n.a.
Manufactured exports to rest of world	2.7	8.1	11.1	n.a.
Non-food manufactured exports to rest of world	2.3	5.0	10.6	n.a.

Source: As explained in text.

Table 7.4

Estimated Average Annual Employment Growth in Manufacturing for Export, Arising from Changes in Foreign Import Demand, 1966-1978

	1966-1973	1973-1978	1966-1978
Exports to UK	400	−1,200	−300
Non-food exports to UK	1,100	−200	400
	1966-1973	1973-1977	1966-1977
Exports to rest of OECD	800	−100	400
Non-food exports to rest of OECD	800	−100	500

Note: Negative figures in this table do not mean that foreign import demand declined, but rather that it did not grow sufficiently quickly to keep pace with the growth of labour productivity. Rising labour productivity, combined with foreign demand growing at a slower rate than in the earlier periods, is reflected in employment decline in the second period, whereas in the first period foreign demand grew sufficiently quickly to outpace productivity growth.

Source: As explained in text.

certain amount of the slower or negative growth of employment in the second period would be accounted for by a slightly higher rate of growth of labour productivity, rather than slower output growth, but this has been taken account of in deriving the estimates in Table 7.4. But even allowing for this, slower growth of foreign imports in the second period had noteworthy effects on employment. The decline in the rate of growth of UK import demand meant a change from a positive contribution of 400 jobs per annum to a negative one, of −1,200 per annum. In the rest of OECD a larger positive contribution of 800 per annum changed to a negative one of −100 per annum. Continued slow growth in the international economy, and in

the UK particularly, in recent years and possibly in the future, would therefore be a factor of some importance for employment.

Market Share Changes

Tables 7.1 and 7.2 showed that Irish exports, over all, have made quite substantial gains in their shares of foreign imports. Table 7.5 sets out the changes in market shares in more detail. Total market shares rose in both markets, in both periods; these gains were fairly widely spread, since in 10 sectors and 2 periods, 17 out of 20 observations show a rising share in the rest of the OECD, and 12 out of 20 in the UK. The weakest sectors appear to be clothing and footwear and clay, glass and cement, both of which had declining shares in both periods in the UK and in one period in the rest of the OECD. At the other extreme, food, chemicals, and metals and engineering had increasing shares in both markets and both periods. Food is likely to have benefited from the terms of the Anglo-Irish Free Trade Agreement of 1965 and even more from accession to the EEC in 1973. The sharp rise of the share of textiles in the UK market in 1966-1973 is probably also partly due to the improved market access allowed to textiles under the AIFTA.

Leaving aside food, which enjoyed particularly favourable changing circumstances, it appears from Table 7.5 that sectors consisting mainly of older indigenous firms fared rather less well than those with much new foreign investment such as chemicals, metals and engineering, and other manufacturing. This is a point of some importance. It was seen in Chapter 6 that competing imports increased their share of the Irish market substantially since the mid-1960s, while this chapter has shown that Irish exports have also increased their share of foreign markets considerably. These developments might be regarded as evidence of a general re-orientation towards exporting. Or alternatively, it could be more a result of a general relative decline among the largely domestically orientated indigenous and older foreign industries, while a *different* group of firms, the highly export-orientated new foreign industries, have mostly accounted for the development of exports. This second possibility would point to an important part of the cause of the phenomenon of a high rate of job losses (in industries suffering from competing imports) together with rapid new employment creation (in a different group of new exporting industries). Unfortunately, the data do not allow this question to be investigated in great detail, but there are reasonably firm grounds for believing that, up to the mid-1970s at least, new foreign industry rather than a re-orientation of existing industries to exports accounted for most or all of the increase in export market shares.

By subtracting the exports of new foreign industry in 1966 and 1973 from all manufactured exports in those years, it is found that the

exports of all except new foreign industry were 3.34 times greater in 1973 than in 1966 (in current £m).[1] During the same period, OECD manufactured imports increased by a factor of 3.54, indicating a fall in these industries' share of OECD imports at the same time as all manufactured exports from Ireland (including those of foreign new industry) were markedly increasing their share of OECD imports, as seen in Table 7.5.

The market shares held by new foreign industry, however, do not seem to be uniformly and continuously growing. Several export categories which included considerable amounts of foreign investment in the 1950s and 1960s show a growing share in 1966-1973 followed by a later decline. This applies to pharmaceuticals (SITC 54) in the rest of OECD market; textiles (SITC 65), plastics (SITC 58) and rubber products (SITC 62) in the UK; a similar trend also occurred with pharmaceuticals (SITC 54) in the UK, which reached its peak market share before 1973. (Teeling, 1975, Table 2.5, finds that 16% of new foreign projects established before 1971 were in textiles, 12% in plastics and 6% in drugs; separate data on rubber products are not provided.) These observations of such sectors entering a period of relative, if not absolute, decline after the initial upsurge offer some support for the argument of Teeling (1975) and Teeling and Lynam (1980). As was mentioned in Chapter 5, they argued that foreign grant-aided industries would tend to experience increasing difficulties as time went on in competing in international markets with producers in the lower-cost newly industrialising countries. This was because they tended to be concentrated in the same type of generally standardised products, and aiming for the same markets, as the NICs, but had to pay higher and rising wages in industries that were generally fairly labour-intensive.

[1] Foreign New Industry exports for 1973 were £268.3m (McAleese, 1977, Table 4.3) while all manufactured exports were £663.5m (*Review and Outlook*, 1974), leaving £395.2m for industries other than New Foreign. In 1966, all manufactured exports were £148.6m (*Review and Outlook*, 1974), and it is estimated New Foreign exports were £30.4m, leaving £118.2m for industries other than New Foreign. £395.2m divided by £118.2m is 3.34. The estimate of £30.4m for New Foreign exports in 1966 is derived from the *Survey of Grant-Aided Industry* (1967). Gross output (outside Shannon) of all New Grant-Aided Industry in 1966 (in Table 2.2) is multiplied by the proportion of foreign firms' employment in New Grant-Aided Industry (in Tables 5.1 and 5.2) to give an estimate for New Foreign gross output of £34.5m, which is then multiplied by 0.88 (the export-gross output ratio of New Foreign industry in 1973) to get an estimate of exports. This method is a bit rough, but even an error of £7m (or 23%) would still leave the rest of industry with a falling share of OECD markets in 1966-1973.

Table 7.5

Share of Irish Manufacturing Exports in Foreign Imports, 1966, 1973, 1977/78

%

Sector	Corresponding SITC Categories	Description of SITC Categories	Share of Irish exports in UK imports			Share of Irish exp. OECD (excl. UK) i	
			1966	1973	1978	1966	1973
I Food	0 less 00	Food (excludes Live Animals)	3.6	5.27	9.07	.278	.511
II Drink, Tobacco	11	Beverages	n.a.	5.04	8.57	.16	.179
	12 less 1210	Manufactured Tobacco	n.a.	4.1	4.54	.018	.089
			12.87	4.97	8.17	.144	.167
III Textiles	65	Textile Yarn, Fabrics etc.	5.28	9.51	8.84	.104	.255
	8414	Knitted Clothing and Accessories	5.77	8.31	5.7	.235	.146
			5.34	9.29	8.29	.125	.23
IV Clothing and Footwear	85	Footwear	9.59	4.36	3.41	.162	.334
	84 less 8414	Clothing other than Knitted	10.96	8.42	7.21	.17	.07
			10.49	7.3	6.1	.168	.153
V Wood and Furniture	24	Wood, Lumber, Cork Manufactures	0.05	0.06	0.45	.001	.002
	63	Wood and Cork	1.55	1.17	1.64	.15	.022
	82	Furniture	1.49	2.3	3.81	.017	.014
			0.48	0.6	1.39	.031	.008
VI Paper, Printing	64	Paper, Paperboard and Manufactures	1.28	2.1	1.82	.004	.034
	892	Printed Matter	5.42	7.27	5.08	.054	.122
			1.98	2.9	2.32	.015	.057
VII Chemicals	51	Chemical Elements and Compounds	0.09	1.25	3.37	.012	.172
	53	Dyeing, Tanning, Colouring Materials	0.46	1.63	2.06	.013	.029
	54	Medicinal and Pharmaceutical Products	6.79	4.42	5.04	1.04	1.446
	55	Essential Oils, Perfumes, Cleaning Preparations	0.52	4.38	6.63	.109	.037
	59	Chemical Materials, Products n.e.s.	0.39	2.02	2.3	.017	.424
	42	Fixed Vegetable oils and fats	0.53	0.57	0.46	.001	.004
			0.67	1.82	3.27	.151	.361
VIII Clay, Glass, Cement	66	Non-metallic mineral manufactures	1.53	0.82	0.71	.212	.266
IX Metals, Engineering	67	Iron and Steel	0.87	0.83	1.13	.014	.012
	68	Non-ferrous Metals	0.36	0.58	0.7	.022	.037
	69	Manufactures of Metal n.e.s.	4.55	4.1	5.35	.16	.337
	71	Non-electric machinery	0.43	1.17	1.93	.049	.088
	72	Electric Machinery, Goods etc.	2.2	1.37	3.12	.406	.316
	73	Transport Equipment	0.24	0.83	0.32	.03	.058
			0.8	1.16	1.58	.09	.115
X Other Manufacturing	61	Leather, Leather Manufactures, Dressed Fur	10.37	14.25	11.25	.121	.143
	33 less 331	Refined Petroleum Products	0.5	0.89	0.25	0	.001
	58	Plastic Materials etc.	0.31	3.04	2.34	.004	.076
	62	Rubber Manufactures n.e.s.	1.87	10.15	8.03	.079	.447
	86	Professional, Scientific Goods, Watches, Clocks	0.62	1.7	2.06	.057	.273
	89 less 892	Miscellaneous Manufactures less Printed matter	2.63	2.42	3.57	.158	.144
			1.59	2.88	2.72	.062	.137
Total Manufacturing			2.38	2.89	3.5	.129	.2
Total Excluding Food			1.75	2.26	2.47	.095	.145

Notes: The SITC Trade Categories are here grouped to correspond with the 10 major industrial groups, but they do not always match these prod categories exactly. Also a small portion (about 6.8%) of SITC 0 less 00 would be unmanufactured Food, while several small trade items (ally accounting for under 2% of exports of the Irish industry concerned) are left out. Consequently the groupings of trade categorie should be regarded as close proxies for exports of the 10 major industrial groups, rather than as corresponding exactly.

Sources: UN, *Yearbooks of International Trade Statistics*; OECD, *Statistics of International Trade*.

CHAPTER 8

LABOUR PRODUCTIVITY AND TECHNICAL CHANGE

Introduction

To examine the effect of labour productivity growth on employment and job losses, the "trend through end points" method used in earlier studies mentioned in Chapter 5 is adopted here. The aim is to see to what extent increased rates of growth of labour productivity may have been associated with the marked increase in job losses from about 1974 onwards. For this purpose rates of growth of labour productivity in each manufacturing sub-sector in the two periods 1966-1973 and 1973-1978 are examined.

Choice of Sub-Periods

These sub-periods are chosen for a number of reasons. The choice of 1966 is convenient for the purpose of comparison with other data used in this study. The increase in job losses which became quite marked around 1974 is one reason for choosing a dividing point around 1973/74, in order to compare productivity growth rates before and after that time. Also, earlier studies had mostly terminated in 1973, with Sapsford and Kelly (1980) finding that the rate of growth of labour productivity had been quite constant during the period 1958-1973. The OECD (1979a) using a different technique, suggested there was a shift in the "employment-output" relationship after 1974 which could have been a reflection of a shift in labour productivity growth to a higher trend rate, so again this suggests choosing a dividing point around 1973/74. Moreover, since labour productivity tends to decline, or at least grow more slowly, in the downswing of a recession such as that which began during 1974, for reasons discussed in Chapter 2, the year 1973, the last full year before the recession, should be chosen as the dividing point rather than 1974. A choice of 1974 would have given cyclically low data on productivity for that year with a consequently exaggerated picture of the increase in productivity growth in following years, whereas the choice of 1973-1978 should give productivity growth rates closer to the long-term trend. For these reasons, 1973 is chosen as an end point. The choice of 1966-1973 as a period is also convenient for purposes of comparison with some other data used in this study. The choice of 1978

is determined by the fact that this is the last full year for which productivity data are available.

The discussion which follows concerning the effects of productivity growth on employment involves an implicit assumption that the rate of growth of output is given so that, other things being equal, employment growth would be inversely related to productivity growth. It is, however, fully recognised that productivity can in fact influence competitive ability and output, and this aspect of productivity growth is referred to again later in this chapter.

Data

The labour productivity data in this section are derived from volume of production indices and data on employment and average hours worked per week, taken from the annual Census of Industrial Production (where available) and from the Quarterly Industrial Inquiry, both of which are published in the *Irish Statistical Bulletin*. The coverage of these data are therefore slightly less than the whole manufacturing sector, mainly because very small firms are not included (Appendix II).

Results

Average annual rates of growth of two indices of labour productivity in each sector for 1966-1973 and 1973-1978 are presented in Table 8.1.

Table 8.1

Average Annual Growth Rates of Indices of Labour Productivity by Sub-sector of Manufacturing Industry, 1966-1978

%

Sub-sector	(1) Output per worker			(2) Output per labour hour		
	1966-73	1973-78	Direction of change	1966-73	1973-78	Direction of change
Food						
(4) Bacon	2.0	4.24	+	2.59	4.43	+
(5) Meat	2.78	3.93	+	3.84	4.6	+
(6) Creamery	3.93	5.96	+	4.25	5.29	+
(7) Jams	6.51	3.81	–	7.34	3.07	–
(8) Grain	3.75	6.33	+	3.07	5.77	+
(9) Bread	2.09	1.53	–	2.82	1.43	–
(10) Sugar	1.97	2.96	+	3.19	2.48	–
(11) Chocolate	2.94	5.04	+	3.39	5.43	+
(12) Margarine	-1.41	1.83	+	-0.06	0.51	+
(13) Miscellaneous Food	0.92	14.79	+	2.36	13.93	+
Drink and Tobacco						
(14) Distilling	(a)	15.55	(a)	(a)	16.83	(a)
(15) Malting	(a)	5.53	(a)	(a)	5.18	(a)
(16) Brewing	6.02	1.66	–	6.43	-0.44	–

Table 8.1 (continued)

(17) Mineral Waters	6.62	6.65	+	6.78	6.61	–
(18) Tobacco	3.96	1.37	–	3.12	1.27	–
Textiles						
(19) Woollen and Worsted	8.64	4.64	–	9.37	5.72	–
(20) Linen and Cotton	6.67	0.46	–	6.67	1.29	–
(21) Jute Canvas, etc.	11.11	13.45	+	11.07	13.45	+
(22) Hosiery	12.47	0.92	–	13.5	1.23	–
(25) Made up Textiles	3.08	-3.0	–	2.9	-2.95	–
Clothing and Footwear						
(23) Footwear	1.86	2.27	+	2.64	3.05	+
(24) Clothing:						
Mens and Boys'	2.58	5.97	+	3.28	6.81	+
Shirts	-1.01	0.98	+	-1.27	1.03	+
Women and Girls	6.21	1.78	–	6.64	1.67	–
Miscellaneous	6.52	-10.76	–	7.47	-10.95	–
Wood and Furniture						
(26) Wood and Cork	3.07	1.13	–	3.74	2.09	–
(27) Furniture)	4.37	3.04	–	5.0	2.89	–
(28) Brushes)						
Paper and Printing						
(29) Paper	7.92	-2.57	–	7.68	-2.66	–
(30) Printing	2.15	2.23	+	3.21	2.78	–
Chemicals						
(33) Fertilizers	7.73	2.9	–	8.03	3.73	–
(34) Oils, paints, etc.	6.57	-0.13	–	5.97	0.26	–
(35) Chemicals and Drugs	6.62	14.48	+	6.69	13.78	+
(36) Soap, etc.	2.98	-5.33	–	2.39	-5.24	–
Clay, Glass, Cement						
(37) Glass	1.29	0.64	–	2.71	1.5	–
(38) Structural Clay)	5.46	4.69	–	4.93	4.69	–
(39) Cement)						
Metals and Engineering						
(40) Metals	3.12	1.75	–	3.62	2.17	–
(41) Non-electrical Machinery	0.5	-0.15	–	0.6	0.8	+
(42) Electrical Machinery	0.37	6.46	+	1.12	6.83	+
(43) Ship and Boat Building	-1.78	0.58	+	-2.06	2.33	+
(44) Railroad Equipment	-2.34	1.75	+	-1.67	1.4	+
(45) Motor Assembly	1.3	-2.02	–	2.05	-2.26	–
(46) Other Vehicle Assembly	2.22	-5.4	–	0.49	-5.94	–
Other Manufactures						
(31) Fellmongery	3.97	-2.6	–	5.17	-2.46	–
(32) Leather Manufactures	3.55	2.75	–	5.1	2.32	–
(47) Miscellaneous	2.47	-0.37	–	2.82	-0.51	–
Total Manufacturing	4.51	4.68	+	4.97	4.63	–

Notes: Growth rates are annual average compound rates of growth of (1) Index of volume of net output divided by numbers employed, and (2) Index of volume of net output divided by (numbers employed multiplied by average weekly hours worked), respectively. The numbers on the sectors are those used in the *Irish Statistical Bulletin*.

(a) Figures for Distilling and Malting not available for 1966-73 due to a change in definition of employment in these sub-sectors during that period.

Source: *Irish Statistical Bulletin.*

The first index represents gross output per worker, and the second represents gross output per labour-hour. Thus the first one is relevant to consideration of the effects of productivity growth on employment changes (with a given rate of growth of output), while the second is a better measure of the actual change in productivity of labour (e.g., for the purpose of consideration of competitiveness).

As the table shows, total output per worker grew at a faster annual rate (4.68%) in 1973-1978 than in 1966-1973 (4.51%). This increase in the growth rate was small, however, and would not have represented a very significant influence on total employment change. The implications of the increase in the growth rate of output per worker is a total of about 1,600 jobs foregone in 1973-1978, or just over 300 jobs per year, as compared with a hypothetical situation with an unchanged productivity growth rate (assuming that output growth was unaffected). Employment changes are a result of the combined effects of growth of output and growth of productivity (output per worker). in 1973-1978 the rate of growth of output, at 4.46% per annum, was considerably lower than the rate of 6.81% per annum in 1966-1973, and this decline in the growth rate of output had much larger effects on employment than the relatively small increase in the rate of growth of productivity. If both growth rates had remained the same in 1973-1978 as in 1966-1973, employment in CIP industries would have grown during 1973-1978 by 23,300 instead of the actual decline of 2,100. Of the 25,400 jobs foregone as a result of changes in these two growth rates, only 1,600 were associated with higher productivity growth (as mentioned above) while 23,800 were due to lower output growth. Thus, at this aggregate level, the decline in the output growth rate has had a considerably greater impact on employment than the marginal increase in the growth rate of productivity.

Similar conclusions may be drawn from examination of the individual sub-sectors. Of the 43 sub-sectors with comparable data for both periods, 18 experienced an increased rate of growth of output per worker in the second period, and 25 experienced a decline; thus, there was no sign of a strong prevalence of faster productivity growth. Further examination of the 26 sub-sectors with declining employment in 1973-1978 shows only two cases (bacon and grain milling) in which the acceleration of productivity growth had adverse implications for employment, outweighing the favourable effects of faster output growth. In a further two cases, faster productivity growth had greater adverse effects on employment than reduced output growth rates. But in most of these 26 sub-sectors in which employment declined in 1973-1978, the effects on employment of a decreased rate of growth of output were more important than the effects of changes in productivity growth. In 16 cases, slower output growth had an adverse effect on employment which

was more important than the favourable effects of slower productivity growth, and in a further four sub-sectors, slower output growth combined with increased productivity growth to influence employment adversely, but with the decline in output growth being the stronger influence.

Most of the 18 sub-sectors with increased rates of productivity growth fall into one of three broad groups:

(i) traditional industries which expanded or approximately maintained employment, such as most of the nine relevant sub-sectors in the food and drink sectors;
(ii) industries with large amounts of new foreign investment which have generally higher productivity than existing industries and have growing employment, e.g., sub-sectors 21 (which includes synthetic textiles), 35 (chemicals and drugs), and 42 (electronics);
(iii) traditional industries with declining employment such as the three relevant ones in clothing and footwear, and sub-sector 44 (railroad equipment).

Higher productivity growth would occur for different reasons in these 3 groups – in some cases (probably group (ii)) due mainly to the employment of more advanced technology, in others (probably group (iii)) due more to rapid reduction of excess labour, and in others (as perhaps in food) due partly to technological advance and partly to more intensive use of existing plant in more favourable market conditions. These observations must be regarded as somewhat speculative, however, and other forces may also be at work; it is quite possible, for example, that reduction of employment in declining firms among the earlier grant-aided foreign firms would have contributed significantly to faster productivity growth in group (ii).

The above observations would suggest that continuing high, if not increasing, rates of productivity growth may be expected in the sectors involving much foreign investment. Also, some declining traditional industries which have had relatively low productivity growth rates in 1973-1978 (and lower than in 1966-1973), might be expected to be forced by competitive pressures to follow the pattern set by those mentioned in group (iii) above, and experience higher productivity growth associated with more rapidly declining employment. Finally, the occurrence of very substantially reduced, and lower than average, rates of growth of output in most sub-sectors in the important metals and engineering sector (except electronics) in 1973-1978, generally combined with still rising or constant employment and hence low and/or declining productivity growth, could be an ominous trend in a major industrial group which has in the past contributed much to employment. For such

a pattern, if it continues, looks likely to lead sooner or later to a reduction of employment in order to raise productivity and competitiveness, or else to closures. (However, to some extent, which it is beyond the scope of this study to determine, certain activities in metals and engineering are quite sheltered from foreign competition.)

So far, the effects of productivity growth on employment have been discussed with an implicit assumption that the rate of growth of output is given; in this context of other things being equal, employment growth is seen to be inversely related to productivity growth. However, it must be emphasised that, as was mentioned in Chapter 4, the ultimate effect of productivity growth on employment is more complicated than this. Especially in the longer term, higher productivity growth is likely to improve competitiveness and market shares, and in many cases would prove on balance to be beneficial for employment. Conversely, the forces of competition in an open market are such that failure to raise productivity can ultimately hit employment more strongly than the immediate reduction in jobs which can be associated with higher productivity. Hence the purpose of this chapter is not by any means to suggest that employment would benefit from slower productivity growth, regardless of trends elsewhere; rather it is to see to what extent changes in the rate of growth of productivity – made possible by technology and necessitated by competition – may have contributed to employment changes.

A full investigation of the ultimate effects of productivity growth on market shares, output and employment cannot be carried out here; such an investigation would require comparable productivity and unit cost data for all major competing countries, in order to compare them with Irish trends. Within Irish industry, those sectors with relatively high productivity growth tend to have a relatively good employment record. Thus, of the 18 sub-sectors which increased their rate of productivity growth in the second period, employment increased in ten and declined in eight, whereas in the 25 sub-sectors with declining productivity growth, employment increased in only seven and declined in eighteen. And again, among the 14 sub-sectors with faster than average productivity growth in 1973-1978, half had increases in employment and half had decreases, whereas of the 31 sub-sectors with slower than average productivity growth in the same period, only one third had employment increases while two thirds had decreases.

CHAPTER 9

COMPETITIVENESS

Introduction

This chapter attempts to assess changes in the competitiveness of Irish manufacturing industry and to ascertain the extent to which such movements have contributed to the scale of job losses outlined in Chapters 2 and 3. This chapter is only concerned with the impact of competitiveness on actual job losses. While adverse movements in competitiveness undoubtedly result in the foregoing of output and employment increases, either because existing firms do not generate sufficient profits to allow reinvestment or because overseas enterprises are discouraged from investing in Ireland, this issue is outside the terms of reference of the report.[1]

Competitiveness may be defined as that combination of elements which enables a firm to secure sales at the expense of competitors. These elements can be divided into two broad categories, price and non-price factors. Non-price factors include such items as speed and reliability of delivery, after-sales service, product quality and design and marketing effectiveness. The quality of management is also of importance in ensuring the competitiveness of a firm. This chapter concentrates mainly on the narrower measures of price and cost competitiveness, not because they are considered more important[2] but because they are more easily measured and more amenable to policy measures in the short run. This chapter is organised as follows:

(i) a general discussion of the concept of price and cost competitiveness;
(ii) an assessment of the changes in Irish competitiveness over the 1970s;

[1]The extent to which overseas firms are discouraged from locating in Ireland as a result of a deterioration in competitiveness in Ireland is difficult to establish. While, *a priori*, it could be postulated that Ireland's share of direct foreign investment would be likely to fall as a result of this deterioration, many other factors may be operating simultaneously, for example, changes in the incentive levels offered by other countries.

[2]O'Farrell (1981) when examining the degree of linkage between new industry and indigenous small industry requested industrial purchasers to rank the criteria they considered important in choosing between suppliers of inputs. He found quality to be the most important criterion followed by price. Delivery date, reliability and past experience also ranked highly.

(iii) an examination of the effects of changes in competitiveness; and
(iv) an assessment of the impact of changes in the real wage.

Price and cost competitiveness

A number of aggregate measures are available by which international price or cost competitiveness can be assessed:

(i) the price of Irish exports relative to the price of exports of competitor countries, movements in which, other things equal, would be expected to be correlated with the Irish share of world markets;
(ii) the ratio of import prices to Irish wholesale or output prices, movements in which, other things equal, would be expected to be correlated with the relative share of the domestic market taken by imports and home produced goods; and
(iii) various measures of relative unit labour costs.

The ultimate test of an index of price or cost competitiveness is the extent to which it explains market shares, having allowed for other explanatory factors. However, no substantive work on this issue has been done for the Irish case, hence a number of different measures are explored. The measure of price competitiveness chosen depends on whether competitiveness on export markets or on the domestic market is being considered. The choice between a price index and a cost index, however, is governed by a different criterion, namely the structure of the market.[1]

Ireland has traditionally been regarded as a small open economy, the characteristic feature of which is an inability on the part of exporters to influence world market prices. Thus, any attempt by exporters to raise their price above the going world price would result eventually in a loss of market share. The market share effect might take some time to exhibit itself as purchasers seek out alternative sources of supply. For exporters who have been successful in differentiating their products from those of foreign competitors (e.g. Waterford Glass, Aran Sweaters) or for those involved in relatively high technology products, this constraint on the raising of prices will not be as binding.

In industries or sectors of industries where Irish export prices are governed by world market prices, an index of price competitiveness is of little value since Irish export prices and world market prices are unlikely to deviate to any significant extent. In this instance an index of cost competitiveness is more useful. Where the output or selling price

[1]The structure of the market is defined by reference to the number and size distribution of sellers in that market. The size of the firm relative to the size of the market is therefore an aspect of market structure.

is fixed, then adverse movements in domestic costs will be reflected in profit levels and ultimately in output and employment levels.

Ideally, when constructing an indicator of cost competitiveness, total unit costs including labour, raw materials, etc. should be used. Reliable measures of all these costs, especially for cross-country comparisons, are virtually impossible to obtain. Conventional measures of cost competitiveness therefore focus upon either unit wage costs or unit labour costs. Unit labour cost indices are a more appropriate index of the cost of labour to an employer since they include total direct and indirect payments such as employer's payments for holidays and contributions to the social insurance fund. Inclusion of indirect payments is important since their extent and their rate of growth may differ significantly between countries.

Wage or labour cost indices are derived by combining an index of productivity with a wage or labour cost index. Short term fluctuations in output will cause significant variations in the productivity index measured as output per person (see Chapter 2) and hence in the competitiveness index, whereas none of the underlying determinants of competitiveness may have changed. Allowance can be made for this variation in output per person over the business cycle by using the long-run average growth of productivity and the resulting index is labelled a "normalised unit labour cost index".[1]

It should also be noted that because of the substantial structural change which has taken place and is still occurring in Irish manufacturing industry, indices of competitiveness for total manufacturing may conceal significant differences at the sectoral level. Side by side with new technologically advanced industry, whose requirements for competitive success may be innovation combined with after sales service, are traditional firms whose requirements for competitive success may be low increases in labour or raw material costs. Thus, measures of competitiveness for heterogeneous aggregates like total manufacturing industry should be treated with caution.

Indices of Price Competitiveness

O'Leary (1981) examined the price competitiveness of Irish manufactured exports. He chose 12 countries for comparison which on average accounted for 87% of Irish manufactured exports. These countries are assigned weights designed to reflect the extent to which each country's exports compete with Irish exports on foreign markets and the extent to which Irish exports compete in each country's home

[1]For more detailed information on this and other concepts discussed in this chapter, see Committee on Costs and Competitiveness (1981).

market. The price measures used are export unit values[1] and a measure of wholesale or output prices, the latter designed to indicate the price of domestically produced manufactured output with which Irish exports compete.

The results are presented in Table 9.1. Using 1975 as base, the indices show that in the period 1975-1980, Irish price competitiveness has improved *vis-à-vis* the UK by approximately 19 percentage points while price competitiveness *vis-à-vis* the EMS countries has disimproved by approximately 8 percentage points. In the period between Ireland's entry to the EMS (first quarter of 1979) and the end of 1980, there was virtually a steady improvement in competitiveness in the UK market and a steady decline against the EMS countries.

Indices of Cost Competitiveness

Two alternative cost competitiveness indices are now presented, one prepared by the European Commission and one prepared by the Central Bank.[2] The index compiled by the European Commission is based on labour costs while the Central Bank index is based on wage costs.

There are marked fluctuations in the EEC index (Tables 9.2 and 9.3), particularly for the index in common currency. In the period 1974-1977 (inclusive) with the exception of 1975, Ireland experienced an improvement in labour cost competitiveness. A comparison of the indices in national currencies and in common currency shows that this improvement was due mainly to the depreciation of sterling. In 1976 alone there was a 10% depreciation of the effective exchange rate. However, in 1975 an effective exchange rate depreciation of 5.3% was insufficient to prevent a deterioration in competitiveness.

Ireland's labour cost competitiveness deteriorated in each of the three years 1978, 1979 and 1980, particularly so in 1980. However, there was a substantial improvement in 1981, again due to an effective depreciation of the Irish pound. What is particularly striking about a comparison of Tables 9.2 and 9.3 is the fluctuation of the index in common currency terms and the consistent deterioration – with the exception of 1978 – in national currency terms. The fluctuation in common currency terms is therefore almost entirely due to changes in the effective exchange rate.

[1]Export unit values are aggregate price indices for exports derived by dividing the value of exports by the volume of exports.

[2]For further detail on the method of calculation of the EEC index and the way in which "third country" effects are treated, see *European Economy*, March 1981. Some caution should be exercised in interpreting the data because the weights are based on the structure of international trade in 1974. Hence, for any country, the geographical distribution of whose trade has changed significantly since 1974, the results will not be completely accurate.

Table 9.1

Price Competitiveness for Irish Manufactured Exports, 1975-1980

Year and quarter		(1) Overall index	(2) UK market index	(3) Index of all markets except UK	(4) Index of EMS markets
1975	I	100.3	99.8	101.1	102.2
	II	99.5	99.6	99.4	100.5
	III	101.8	101.8	101.8	100.9
	IV	98.9	98.9	99.1	97.8
1976	I	97.4	97.9	96.8	95.3
	II	99.0	96.7	100.6	100.1
	III	99.4	96.9	102.3	101.0
	IV	103.9	99.6	108.8	108.3
1977	I	100.8	99.3	102.5	101.7
	II	97.0	96.7	97.3	96.5
	III	97.7	98.3	97.0	96.7
	IV	96.9	98.7	94.8	94.9
1978	I	98.3	101.3	94.9	95.9
	II	100.1	101.2	98.8	99.5
	III	98.1	100.3	95.6	96.5
	IV	98.2	100.2	95.6	97.9
1979	I	98.4	100.8	95.6	97.9
	II	100.3	105.3	94.6	96.7
	III	101.7	109.7	92.5	96.0
	IV	99.6	105.8	92.5	95.7
1980	I	102.0	111.2	91.4	95.3
	II	103.5	114.9	90.4	94.3
	III	105.4	118.9	89.9	94.5

Notes: Overall index to the base 1975 = 100. Column (3) is a weighted average of Irish competitiveness on the 11 markets other than the UK which enter the overall index. Column (4) is a similar weighted average for our 6 EMS partners (Belgium–Luxembourg counted together).

Source: O'Leary (1981).

The competitiveness index prepared by the Central Bank is presented in Table 9.4 and is calculated on the basis of unit wage costs in manufacturing converted into European Currency Units (ECUs). Between 1970 and 1975, unit wage costs in ECUs in Ireland increased at about the same rate as in Italy, the UK and West Germany but much more rapidly than in the US. Between 1975 and 1977 Ireland maintained its competitiveness *vis-à-vis* the UK and France and improved substantially *vis-à-vis* the other EEC countries and the US. The competitive wage cost advantage gained between 1975 and 1977 was more than eroded between 1977 and 1980 with the exception of competitiveness *vis-à-vis* the UK. However, it must be remembered that maintenance or improvement of competitiveness against the UK does not confer a

unique advantage upon Irish exporters, since Irish exporters are competing with exporters from other countries (against which Ireland has lost competitiveness) in the UK market. It only confers an advantage to the extent that Irish exporters are competing *only* with UK producers, which is likely to be a rare occurrence.

It is possible to combine the results for all the countries in Table 9.4 into one index, as done in Table 9.5. The weighting system to be employed in combining the individual competitiveness indices into a single index is the subject of considerable debate. For this reason two versions of the Central Bank index are provided using alternative weighting systems.[1] This table also contains the EEC index in summary form for comparative purposes.

The indices very clearly show a significant improvement in competitiveness in 1976, a consequence of very strong productivity growth as the economy emerged from recession and a substantial depreciation of the exchange rate. Both Central Bank indices show a deterioration in competitiveness in 1977, 1978 and 1979, with the index based on IMF weights showing a further deterioration in 1980. The EEC index shows this deterioration beginning in 1978 and culminating in a substantial deterioration in 1980. Estimates of all the indices for 1981 show a substantial improvement, mainly due to a depreciation of the effective exchange rate.

It is noteworthy that in the two years in which competitiveness showed significant improvement (i.e. 1976 and 1981), it was due to large depreciations in the effective exchange rate, which is not a firm basis on which to build sustained improvements in competitiveness.

While an overall index of competitiveness is useful it can conceal significant variations across various countries. This is particularly relevant in the Irish situation from 1978 to 1981. Over this period, unit wage costs in ECU terms increased by 46% in Ireland while in the UK they increased by 82%. By contrast unit wage costs in Germany increased by only 13%.

In summary, the various cost indices show an improvement in competitiveness between 1975 and 1977, and a deterioration from 1977 to 1980. Estimates for 1981 indicate an improvement in competitiveness. The cost indices, when broken down by individual markets, generally show an improvement *vis-à-vis* the UK, particularly in 1979, 1980 and 1981, an improvement *vis-à-vis* EMS countries between 1975 and 1978, followed by a deterioration in 1979, 1980 and 1981. Finally, major improvements in competitiveness have tended to be based on a depreciation of the effective exchange rate. In this context it is interesting

[1] For further discussion of this topic, see Committee on Costs and Competitiveness (1981).

Table 9.2

Relative Unit Labour Costs in National Currency, Ireland and Other EEC Countries, 1974-1981 (a)

(% change over preceding year)

	Ireland	Belgium	Denmark	Germany	France	Italy	Netherlands	UK	EEC–9
1974	1.3	4.0	1.2	–7.0	–2.7	4.3	–1.9	6.3	–3.5
1975	7.5	–0.6	–8.6	–10.3	3.9	16.9	–0.6	16.3	3.5
1976	3.3	–1.2	–0.1	–4.2	4.0	5.8	–5.0	6.7	2.7
1977	2.3	–1.5	0.3	–2.8	0.8	10.8	–2.4	4.1	3.4
1978	–0.7	–4.8	0.5	–2.2	2.0	5.0	–3.4	6.1	2.6
1979	0.3	–5.4	1.0	–4.1	3.4	2.9	–3.5	9.6	2.4
1980	8.5	–3.3	–2.2	–2.6	1.6	5.6	–7.0	13.5	4.5
1981	5.6	–5.9	–4.5	–3.6	4.4	12.6	–3.9	–0.4	2.7

Note: (a) Unit labour costs in national currency by reference to the weighted average for the 17 main competing countries.

Source: EEC, *European Economy*, March 1982, Number 11.

Table 9.3

Relative Unit Labour Costs in Common Currency, 1974-1981 (a) (b)

(% change over preceding year)

	Ireland	Belgium	Denmark	Germany	France	Italy	Netherlands	UK	EEC–9
1974	–1.4	5.9	1.9	–1.2	–9.0	–5.7	3.6	2.6	–6.0
1975	1.7	0.9	–5.5	–8.6	14.2	12.1	1.9	7.2	6.0
1976	–7.2	0.9	2.2	1.4	0.2	–12.6	–2.4	–9.0	–6.0
1977	–0.9	4.5	0	5.6	–3.9	2.2	3.3	–0.9	4.3
1978	0.7	–1.4	0.7	4.3	0.8	–1.1	–0.4	7.3	5.5
1979	0.7	–4.0	0.3	0.8	4.1	–0.4	–1.8	16.7	8.5
1980	5.7	–3.7	–10.1	–2.2	1.9	1.7	–6.9	24.8	6.7
1981	–4.9	–11.6	–11.7	–9.6	–4.6	–1.1	–8.6	–1.4	–12.6

Note: (a) Unit labour costs in common currency by reference to the weighted average for the 17 main competing countries (EEC–9, USA, Canada, Japan, Austria, Australia, Switzerland, Norway, Sweden, Spain and Finland).
(b) A further methodological note on the calculation of the index is contained in *European Economy*, March 1981.

Source: EEC, *European Economy*, March 1982, Number 11.

Table 9.4

Unit Wage Costs in Manufacturing Industry in Ireland and in Other OECD Countries, 1970-1981

ECU Terms

1975 = 100

	Ireland	Netherlands (a)	Belgium (a)	Denmark (a)	Greece	Italy	UK	France	W. Germany	U
1970	66.0	n.a.	n.a.	n.a.	n.a.	65	67	n.a.	65	10
1971	72.2	n.a.	n.a.	n.a.	n.a.	71	73	n.a.	71	9
1972	76.8	n.a.	n.a.	n.a.	n.a.	71	74	n.a.	73	9
1973	76.0	69	67	n.a.	n.a.	71	70	n.a.	84	9
1974	87.9	84	83	n.a.	n.a.	80	85	n.a.	95	9
1975	100.0	100	100	100	100	100	100	100	100	10
1976	97.9	106	108	109	119	97	103	102	108	11
1977	103.7	116	120	116	141	114	104	106	119	12
1978	111.0	121	124	120	150	121	115	111	127	11
1979	124.0	125	126	126	162	125	134	116	131	11
1980	145.5	127	133	126	174	140	177	131	139	11
1981	162.4[e]	128	140	134	n.a.	160	208	146	144	15

Notes: (a) Unit labour costs.
e Estimate

Basic Sources: Unit Wage Costs: Ireland: Central Bank.
Other Countries, 1970-79: Netherlands, Belgium, Denmark: OECD, *Main Economic Indicators*, November 1980;
Greece, France and W. Germany: information derived from *Main Economic Indicators Historical Statistics 1960-1969* and OECD, *Main Economic Indicators*, March 1982; UK: *Department of Employment Gazette*, March 1982, HMSO; Italy and US: *National Institute Economic Review*, November 1978 and February 1982.
Other Countries, 1980-81; *Economic Outlook*, December 1981, OECD.

Exchange Rates: Central Bank.

Source: Central Bank of Ireland.

Table 9.5

Relative Cost Indices, 1975-1981

	Central Bank		Central Bank		EEC	
	Index (i)	% change over preceding year	Index (ii)	% change over preceding year	Index	% change over preceding year
1975	100		100		100	
1976	94.2	−5.8	93.6	−6.4	92.8	−7.2
1977	94.8	+0.6	94.2	+0.6	92.0	−0.9
1978	95.3	+0.5	95.8	+1.7	92.4	+0.7
1979	98.3	+3.1	100.3	+4.7	93.0	+0.7
1980	97.8	−0.5	101.7	+1.4	98.3	+5.7
1981 (e)	94.1	−3.8	97.2	−4.4	94.1	−4.9

Notes: A rise in these indices indicates a loss in competitiveness.
Indices (i) and (ii) of the Central Bank of Ireland are unit wage cost indices. Index (i) is based on the weights used in deriving the effective exchange rate in Honohan (1979). Index (ii) of the Central Bank is based on the weights in the IMF's Multilateral Exchange-rate Model.
The EEC index is an index of unit labour costs.
(e) Estimate.

Sources: Central Bank of Ireland, unpublished data;
European Economy, March 1982, No. 11.

to note that the deterioration in competitiveness *vis-à-vis* the EMS countries began following the break in the link with sterling and entry to the EMS.

Effects of Changes in Competitiveness

Assuming other factors remain constant, changes in costs, if passed on in the form of higher prices lead to a loss of market share with consequent adverse effects on output and employment. (This occurs where Irish exporters have some market power which enables them to pass on increased costs in prices.) In the case where exporters have no market power and take the market price as given, and costs increase more rapidly than prices, profitability suffers which subsequently affects output and employment. A decline in the profitability of exporting, resulting from cost increases which are not matched by price increases would result *in time* in a movement of resources out of export sectors. It is possible that a country may maintain its competitive position by reference to export prices, but this may occur simultaneously with a worsening in its relative cost position. This could result in the short term in a maintenance of trade performance but *eventually* would result in firms finding it unprofitable to export, resulting in firm closures and job losses.

Table 9.6 provides details of changes in export prices relative to unit

wage costs in the export sector since 1973. From 1975 to 1977 unit wage costs increased much more slowly than export prices, but that picture is reversed in 1978 and 1979 and dramatically so in 1980.

The assignment of cause and effect – which has already been discussed in Chapter 4 – in a study of this nature makes conclusions regarding the effects of competitiveness on output and employment difficult. Undoubtedly there is a connection between the two but the extent of the time lag between changes in competitiveness and changes in output and the further time lag between changes in output and changes in employment makes it difficult to assess the strength of the relationship.[1]

The employment consequences of changes in cost competitiveness will also depend upon the cost structure of the firm. Where the proportion of total costs accounted for by labour costs is high, i.e., in the case of labour-intensive firms, the employment consequences of an increase in unit labour costs will be more adverse. From Table 9.7 changes in labour cost competitiveness would be expected to have a more severe impact on clothing and footwear, paper and printing, and clay and cement except to the extent to which the last two sectors include some non-traded activities.

The degree of substitutability of capital for labour is also an important consideration. In firms where it is difficult to substitute capital for labour and where labour costs constitute a high proportion of total costs, increases in unit labour costs are likely to initially lead to job losses and eventually to closure or to immediate closure.[1] In a similar situation but where capital is readily substitutable for labour, defensive capital investment combined with job losses is the more likely result.

The relationship between changes in labour cost competitiveness, output and employment changes also depends upon the degree of market power of the firm and of the responsiveness of demand to changes in price. Where the firm has a significant amount of market power and can pass on cost increases in increased prices and where the reduction in demand is not significant following the price increase, the output and employment consequences will not be as adverse.

Competitiveness and Market Shares

Bearing these considerations in mind an attempt is now made to trace

Table 9.6

Export Prices and Unit Wage Costs, 1973-1981

(1975 = 100)

	(1) Manufactured export prices	(2) Unit wage costs in manufacturing industry	(3) (1) ÷ (2)	(4) % Change in (3)
1973	68.3	68	100.4	–
1974	84.4	80	105.5	+5.1
1975	100	100	100	−5.2
1976	123.5	109	113.3	+13.3
1977	142.3	121	117.6	+3.8
1978	151.6	133	114.0	−3.1
1979	165.5	150	110.3	−3.2
1980	180.8	179	101.0	−8.4
1981 (e)	206.9	195	106.1	+5.0

Note: (e) Estimate.

Sources: Unit wage costs in Manufacturing Industry: Central Bank;
Manufactured export prices: *Economic Series*, CSO.

[1] Even though competitiveness may be maintained in the short run through the erosion of profit margins, the long run result of this strategy on the part of firms is likely to be a movement of resources out of the export sector. In such cases the effects of adverse movements in competitiveness may take a number of years to become apparent.

Table 9.7

Proportion of Gross Output Accounted for by Salaries and Wages, by Sector of Manufacturing Industry, 1973 (a)

Sector	(1) Gross Output (b) £m	(2) Salaries and Wages (c)	(3) (2) as a % of (1)	(4) Net output	(5) (2) as a % of (4)
Food	702.8	68.7	9.8	147.9	46.4
Drink and tobacco	167.4	21.6	12.9	69.4	31.1
Textiles	149.1	31.3	21.0	63.1	49.6
Clothing and footwear	78.2	22.0	28.3	39.7	55.4
Wood and furniture	47.9	11.1	23.3	21.3	52.1
Paper and printing	95.4	28.4	29.8	54.6	52.0
Chemicals	119.4	16.9	14.2	58.9	28.7
Clay and cement	79.5	21.1	26.6	45.8	46.1
Metals and engineering	317.0	73.5	23.2	130.5	56.3
Other manufacturing	170.0	24.8	14.7	64.9	38.2
Total	1924.8	319.6	16.7	696.1	45.9

Notes: (a) 1973 is the last year for which these data are available for these sectors.
(b) Exclusive of excise duty on finished products.
(c) Includes earnings of outside piece workers.

Source: Irish Statistical Bulletin, June 1976.

[1] There may also be other intermediate stages in the process, for example, a change in the product mix of the firm.

the effects of changing labour cost competitiveness. Over the period 1973 to 1978 (during which adjustment to free trade with the EEC was occurring), Irish exports' share of UK imports increased from 2.89% to 3.5% (Table 7.5) while Irish exports' share of the rest of OECD imports increased from 0.2% to 0.3% over the period 1973-1977. This improvement is consistent with the improvement in labour cost competitiveness exhibited by the indices over the period 1975-77. However, although the deterioration in indices of labour cost competitiveness for 1978, 1979 and 1980 might lead one to expect a decline in Irish shares of foreign markets, or at least a slowdown in the growth of foreign market shares – particularly in countries other than the UK – Table 9.8 shows little sign of such a tendency over the period 1978-1980.

Irish exports' share of the imports of OECD countries other than the UK continued to increase over the period 1978-1980 at about the same annual rate as in the period 1973-1977 despite the adverse trends in Irish labour cost indices *vis-à-vis* these countries, whereas the growth in Irish exports' share of UK imports slowed down noticeably in the period 1978-1980 despite the improvement in Irish labour cost indices relative to the UK. These trends could be partly due to lags before the effects on market shares are felt, but are probably also due largely to the structural change in Irish industry referred to below. This structural change appears to have been exerting a more substantial influence on export market shares than have changes in relative unit labour costs, although

Table 9.8

Irish Exports' Share of Foreign Imports, 1978 and 1980

%

SITC Category	UK		Rest of OECD	
	1978	1980	1978	1980
Food (0 less 001)	9.44	10.1	0.88	0.79
Chemicals (5)	3.48	3.75	0.69	0.72
Manufactures classified chiefly by material (6)	3.06	2.39	0.19	0.25
Machinery and transport equipment (7)	1.72	2.42	0.21	0.28
Miscellaneous manufactures (8)	4.45	4.65	0.32	0.39
Total	3.87	3.89	0.37	0.41

Note: Owing to reclassification of the trade data (to SITC Revision 2) after 1977, a more detailed analysis of the figures for 1978-80 cannot be readily undertaken for purposes of comparison with trends prior to 1977.

Source: OECD, *Statistics of Foreign Trade.*

labour costs could still be exerting some influence on market shares which is outweighed by the effect of structural change.

Since data for the share of the domestic market satisfied by competing imports are available for only 1977, 1978 and 1979, it is difficult to correlate these with changes in competitiveness, particularly given the lags which are likely between changes in competitiveness and changes in market shares. Despite this caveat, the increase in the share of the domestic market taken by competing imports from 26.1% in 1977 to 30.0% in 1979 is consistent with the deterioration of competitiveness in 1978 and 1979. Another factor likely to have been operative during this period, though its influence is difficult to assess, is the high level of capacity utilisation in the economy (see Chapter 6).

There are two major factors which complicate attempts to assess the effects of competitiveness changes on changes in market share. *First*, as discussed in the introduction to this chapter, competitiveness includes many non-price factors including the quality of management, whereas in this study only labour cost competitiveness has been assessed. *Second*, Irish manufacturing industry over the past two decades has been experiencing significant structural change. The inflow of new foreign firms, which have high productivity levels (hence, not as affected by labour cost increases) and which are highly export-orientated with much of their output going to non-UK markets, is likely to cause Ireland's share of non-UK foreign imports to rise continuously. Side by side with these foreign firms are indigenous firms, in some of which labour costs form a high proportion of total costs, and for which changes in labour cost competitiveness can be crucial. In addition, these indigenous firms tend to be more orientated towards the domestic market, while most of their exports are concentrated on the UK market. Given existing data, a distinction between the export shares of foreign and indigenous industry is not possible. Some tentative evidence is available up to 1973 showing that indigenous industry's export share of OECD imports fell (Chapter 7). The simultaneous fall in the share of the domestic market and rise in the share of export markets in the more recent period, notwithstanding the changes in competitiveness, is most likely a reflection of this dual nature of Irish industry.

Competitiveness and Job Losses

Problems are encountered in attempting to relate the scale of job losses to changes in competitiveness because of the bivariate nature of the analysis while all other factors contributing to job losses are operating simultaneously, and also because of the likely lagged effect of changes in competitiveness on job losses. In the following discussion, gross job losses on an annual basis are considered. No allowance is made for subsequent regains which are likely to be substantial in some years.

Gross job losses were relatively low at 11,600 in 1973 (Table 2.5). There was a substantial increase in 1974 and 1975, with losses reaching 27,500 in the latter year, reflecting the international and domestic recession. Losses fell significantly in 1976 as the economy moved out of recession. In addition, notwithstanding the existence of lags, the marked improvement in competitiveness in 1976 is likely to have contributed to the reduction in job losses. Losses remained high in 1977 despite an improvement in competitiveness, a 20% increase in the volume of manufactured exports and strong growth of domestic demand. Losses declined slightly in both 1978 and 1979 despite a disimprovement in competitiveness in both those years. However, the deterioration of competitiveness was not sufficient to outweigh the gains of the previous period. In addition, domestic demand continued to grow strongly so that, although domestic producers were losing market share (import penetration increased from 26.1% in 1977 to 30% in 1979), aggregate market growth would have served to maintain employment. Job losses rose to 27,300 in 1980, a consequence of the onset of world recession and a significant loss of competitiveness in that year. It is noteworthy from Table 2.5 that even in the inter-recession years of 1976, 1977 and 1978, job losses did not fall to their pre-1974-1975 recession level.

The Impact of Changes in the Real Wage

There is need to distinguish the likely impact of competitiveness on job losses from the impact of changes in the real wage. In general, competitiveness measures the change in the relative ability of Irish firms to sell in foreign and in domestic markets, in the presence of competition from other countries. The indices of labour cost competitiveness which are used above are a proxy for part of those underlying changes in competitiveness which will affect output growth in Ireland.

However, elements other than the growth of output can affect the demand for labour. A change in the wage rate can affect employment in three different ways: through a substitution between labour and other inputs even if output were unchanged, through a change in output for any given expenditure on inputs, and through a change in output in response to the resultant change in costs of production. The extent of the change in output will depend on the conditions of demand for output – unless there is scope for a squeeze in company profits. In turn, any effects on output can be expected to affect employment.

The demand for labour, and hence employment, can be expected to be related to the level of output, and to the nominal wage rate and the price of capital relative to the price of output. This section takes up the postulated relation between employment and the real wage (money wage deflated by the price of output); and the next chapter considers the impact of changes in the cost of labour relative to the cost of capital.

Chapter 5 has referred to studies of the relation between the real wage and employment in Irish industry. Table 9.9 compares the real wage with output per person (or partial productivity) in manufacturing industry. In broad terms, three sub-periods can be distinguished. In 1970-1975, the real wage grew substantially faster than did productivity. In 1975-1978, the real wage increased marginally while productivity increased substantially, although this comparison is affected by the variations in productivity over the economic cycle, which have been already commented on. In the two-year period 1978-1980, the real wage increase outstripped the increase in productivity.

Over the whole period 1970-1981, the real wage increased by 52 per cent, while output per person increased by 57 per cent. The formal testing of OECD (1979) over the period 1969 (3rd quarter) to 1974 (4th quarter) suggests that, other things being equal, employment declined by about 0.25 per cent for every increase of 1 per cent in the real wage; but it must be stressed that there is a significant margin of error attached to this estimate. For particular sub-periods, firms may have had some incentive to shed labour in response to an increased real wage relative to productivity.

Table 9.9

Real Wage and Productivity Change in Manufacturing Industry, 1970-1981

	(1) Average weekly earnings in manufacturing (a)	(2) Wholesale price index for output of manufacturing industry (excluding VAT) 1975 = 100 (b)	(3) Index of real wage, (1) ÷ (2), 1970 = 100	(4) Year to year % change in index of real wage (in (3))	(5) Index of volume of output per person in manufacturing 1970 = 100	(6) Year to year change in (5)
	£			%		%
1970	17.43	52.0	100		100	
1971	20.29	54.6	110.9	10.9	103.8	3.8
1972	23.37	58.5	119.2	7.5	108.1	4.1
1973	28.16	66.7	126.0	5.7	115.8	7.1
1974	33.60	80.0	125.3	−0.6	116.7	0.8
1975	43.76	100.0	130.5	4.2	118.9	1.9
1976	52.48	118.4	132.2	1.3	131.6	10.7
1977	61.55	139.4	131.7	0.4	136.6	3.8
1978	70.66	152.0	138.7	5.3	144.0	5.4
1979	81.41	170.0	142.9	3.0	146.7	1.9
1980	96.20	188.5	152.3	6.6	146.7	0.0
1981	112.25	219.9	152.3	0.0	156.5	6.7

Notes: (a) Data cover all workers in manufacturing industry.
(b) Prior to 1975, index is defined for all industry.

Data on employment cover industrial workers and managerial, technical, clerical and other employees; data on earnings cover industrial workers only.

Sources: CSO; *Irish Statistical Bulletin.*

CHAPTER 10

RELATIVE INPUT PRICES

Introduction

As indicated in the last Chapter, there is a postulated negative relation between employment and the price, i.e., cost of labour relative to that of capital. As outlined in Chapters 4 and 9, as a result of a rise in the price of labour relative to that of capital, even if output is constant, there is an incentive on the part of firms to substitute capital for labour. However, there may be techniques of production or categories of labour (say, electricians) where this substitution is not possible. In cases where substitution possibilities do not exist, relative prices of inputs may affect the choice of techniques which, once put in place, preclude substitution of labour by capital. In the latter case, it would take relatively large changes in the relative price of inputs to induce a change in the use of inputs, or a considerable period of time could elapse before all the adjustment occurred. Here the focus is on the effects of changes in the costs of labour and capital *relative to each other* on the level of employment which is *required* to produce a *given level of output.*

Employment Protection Legislation

While the employment protection legislation of the 1970s does not directly enter into firms' costs, it does increase the costs of adjustment which firms face when they wish to change the level of their employment. The legislation on pay and employment of the 1970s was as follows, in chronological order:

(i) **Minimum Notice and Terms of Employment Act, 1973**
Among other things, this lays down minimum periods of notice to be given by employers when terminating an employment contract.

(ii) **Protection of Employment Act, 1977**
This ensures that workers' representatives get prior notification of redundancy, and are consulted beforehand, and that an employer must notify the Minister for Labour and then delay implementation for 30 days.

(iii) **Unfair Dismissals Act, 1977**

Every dismissal of an employee who is covered will be presumed to be unfair unless the employer can show substantial grounds which justify the dismissal.

No evidence is available on the effects of this legislation. It can be expected that this legislation would have the effect of reducing the number of workers discharged. Employers may be more selective in their recruitment and may reduce the number of workers hired but that would not directly affect job losses. The same effects on hiring and discharging would be expected from the *Redundancy Payments Acts*, 1967 to 1979.

Measurement

Ideally, there is need to measure the price of labour relative to the price of capital. Difficulties of measurement abound. The appropriate price of labour should be inclusive of all wage costs to employers – including their contributions to social "insurance". In the data which are given below, there is an allowance for these payroll taxes, but not for other elements, which include employment subsidies and changes in holiday entitlements. (Following EEC entry, there was a general increase in holiday entitlements in Ireland).

It is even more difficult to measure capital costs in Irish industry, than it is to measure labour costs. This is partly because, in general, producers do not hire capital equipment for specific production periods. Rather, they purchase units of capital equipment from which a flow of services is obtained over a number of years. In order to compare the cost of capital with the cost of labour, there is need to measure cost for a specific period, such as a year. A number of measures of the cost of capital are available, and problems of measurement are discussed in Geary, Walsh and Copeland (1975) and in Geary and McDonnell (1979).

In its simplest terms, the cost of using a piece of capital equipment in any period is the change in the value of the machine over the period plus the interest cost of having finance tied up. A number of complications arise in translating this measure into a practical one. *First*, if there were no price inflation, the change in the value of the machine would be the initial value multiplied by the true rate of depreciation. But as a result of inflation, capital gains can arise from the rising values of fixed assets. *Second*, provisions of corporate taxation result in a lowering of the cost of capital. In particular, accelerated depreciation allowances have the effect of postponing tax payments until a later date. *Third*, grants under the new industry grants scheme, and under the re-equipment grants scheme, result in a lower price of investment goods to the firm. However, there is the qualification that the IDA grants are not unambiguous capital grants, because the IDA administers the grant scheme

so that a higher grant-capital ratio tends to be associated with a higher labour-capital ratio (Chapter 5).

Results

Table 10.1 shows the cost of capital, according to different measures, in each year since 1960. The first column shows the cost of capital without allowance for the effects of company taxation. The second column shows the cost of capital, allowing for the effects of initial allowances on investment expenditure. Over the whole period, these two measures of the cost of capital moved more or less in line. In the 1960s, the second measure increased more slowly than did the first. This reflected the increased proportion of investment expenditure which could be written off against tax at a time when the effective tax rate was increasing. This pattern continued in the 1970s:the proportion of investment expenditure which is allowable for tax purposes continued to rise, although the benefit of these allowances fell because of a sharp fall in the effective corporation tax rate from 40.7 per cent in 1970 to 25.2 per cent in 1980. (In turn, this reflected both a fall in the actual tax rate and a likely increased proportion of profits being earned on exports, which were not subject to tax.)

These measures assume a constant (expected) price of investment goods. A third measure of the cost of capital is available, taking account of the capital gains which arise from changes in the price of investment goods. There are difficulties with this measure: it is not clear how precisely the demand for capital on the part of the firm is related to this measure of the cost of capital. (The difficulties are discussed in Geary and McDonnell, 1979.) This measure is given in the third column. The estimated cost of capital in this column is greatly affected by the allowance for the change in the price of investment goods. The cost of capital measured thus fluctuates much more than does either of the first two measures. The cost of capital falls markedly between 1960 and 1973 and actually becomes negative in subsequent years, apart from 1978. In these years the value of capital gains outweighed the sum of interest and depreciation costs. This reflects the fact that nominal interest rates were far below the rate of inflation for many years in this period. These calculations suggest that a most important influence on the cost of capital is the real rate of interest – possibly more important than capital grants, tax rates and accelerated depreciation allowances.

None of these measures takes account of the impact of capital grants. Data on the cost of capital adjusted for IDA grants for the period 1960-1973 are given in column 4 of Table 10.1 The effect of the grants has been, arguably, to lower significantly the cost of capital.

These measures of the cost of capital can be compared with the cost of labour. Table 10.2 gives this information, using as the cost of labour

Table 10.1

Cost of Capital in Irish Industry, 1960-1980

(Index 1960 = 100)

Year	(1) Depreciation plus interest costs	(2) Allowing for effect of initial allowances	(3) Allowing for change in price of investment goods	(4) Measure (2), adjusted for impact of IDA grants
1960	100	100	100	100
1961	113.0	113.1	81.0	109.2
1962	116.3	112.6	87.4	108.0
1963	106.1	103.0	113.6	98.1
1964	117.2	112.9	54.3	108.0
1965	127.6	122.8	110.6	120.0
1966	140.7	133.8	105.2	130.6
1967	142.9	134.3	114.9	127.4
1968	158.4	146.0	108.7	136.6
1969	204.5	186.9	61.1	165.4
1970	226.0	203.9	58.8	171.0
1971	235.8	212.2	73.2	176.6
1972	249.7	229.5	58.8	211.3
1973	318.2	294.7	19.9	275.9
1974	539.9	469.0	−225.7	n.a.
1975	627.0	526.8	−119.2	n.a.
1976	706.5	599.5	−94.2	n.a.
1977	738.7	649.2	−97.0	n.a.
1978	780.3	685.1	149.1	n.a.
1979	920.3	807.2	−37.6	n.a.
1980	1163.0	1023.6	−296.3	n.a.

Notes: For further definitions of measures, see Geary and McDonnell (1979). Data for 1974 and 1975 in col (2) are revised. In computing data in col (2), ratio of exports to gross output in manufacturing industry for 1974-1980 is calculated; for the years 1978 to 1980 it is assumed that gross output changes in the same proportion as does industrial output in *National Income and Expenditure*. Interest rate is average redemption yield on industrial debentures in UK.

Sources: For data up to 1975: Geary and McDonnell (1979); *National Income and Expenditure* 1980; Central Statistical Office, *Annual Abstract of Statistics: 1982 Edition*, HMSO; *Economic Review and Outlook* (for exports); *Irish Statistical Bulletin* (for output of manufacturing industry); F.N. Kelly and K.S. Carmichael, *Irish Income Tax and Corporation Tax*, London HFL (Publishers) Ltd.; Terry Cooney *et al.*, *1982/83 A Summary of Taxation in the Republic of Ireland*, The Institute of Taxation in Ireland.

the sum of average weekly earnings of workers in manufacturing industry and the contributions of employers to social "insurance". The measure of column (2) shows a gradual, though uneven, increase in the relative cost of labour in the period 1960-1972 with a peak in 1972. There was a sharp decline in 1974, due to big increases in the price of investment goods and in interest rates. Between 1974 and 1978 there was a sharp increase in the relative cost of labour, of some 50 per cent.

The measure in column (3), which allows for the effects of the taxation system on the cost of capital, shows a bigger rise in the relative cost of labour, and shows a relative increase over 1974-1978 of 48 per cent. An even bigger rise in the relative cost of labour is estimated when the effects of IDA capital grants are allowed for, in the third column of the table. However, this must be qualified by noting that

Table 10.2

Ratio of Cost of Labour to Cost of Capital in Irish Industry, 1960-1980

Year	(1) Cost of labour, 1960 = 100 (a)	(2) Ratio to cost of capital (1) of Table 10.1 (2)	(3) Ratio to cost of capital (2) of Table 10.1 (3)	(4) Ratio to cost of capital (4) of Table 10.1 (4)
1960	100	100	100	100
1961	105.7	93.5	93.4	96.8
1962	119.3	102.5	105.9	110.3
1963	123.4	116.4	119.9	125.8
1964	139.4	118.9	123.3	129.0
1965	143.9	112.8	117.2	119.9
1966	161.6	114.8	120.7	123.6
1967	169.2	118.4	125.9	132.8
1968	187.7	118.5	128.6	137.4
1969	210.6	103.0	112.6	127.2
1970	246.4	109.0	120.8	144.0
1971	283.2	120.2	133.4	160.3
1972	324.2	129.7	141.3	153.4
1973	404.9	127.3	137.3	146.7
1974	480.9	89.0	102.5	n.a.
1975	638.9	101.9	121.3	n.a.
1976	771.8	109.2	128.7	n.a.
1977	902.7	122.2	139.0	n.a.
1978	1037.0	132.9	151.4	n.a.
1979	1194.9	129.8	148.0	n.a.
1980	1425.8	122.6	139.3	n.a.

Note: Cost of labour is the sum of average weekly earnings of all industrial workers in manufacturing industry and employers' social insurance contributions for male workers, indexed to 1960 = 100. In calculating the additional data for 1976-1980, allowance is made for pay-related contributions.

Sources: For data up to 1975: Geary and McDonnell (1979); *Irish Statistical Bulletin*; Department of Social Welfare, *Summary of Social Insurance and Social Assistance Services*.

the IDA grants are not unambiguous capital grants (as mentioned above). (No account is taken of grants for the training of workers which are given by IDA and AnCO and which lower the observed labour costs, although part of training costs are borne by industry.) In summary, the ratio of labour costs to the cost of capital increased by 12.5 per cent between 1970 and 1980 (on the first measure) and by 15.3 per cent in this period (on the second measure). Even these are likely to be underestimates of the relative fall in the cost of capital, since there is no allowance for the effects of capital gains on investment goods.

Implications

One question arises: if the cost of capital were negative, why was there not a huge increase in investment? Apart from the difficulties referred to above, of knowing the firm's demand for capital, the measures in the Tables are estimates after the event. However, investment decisions are based on expectations before the event. If the rate of inflation turns out to be much higher than expected, the actual cost of capital can be negative, but decisions would have been based on a positive cost of capital. Moreover, there are other influences on investment, such as the expected rate of return. In addition, a rise in the underlying rate of inflation and an associated rise in nominal interest rates leads to a bigger real interest rate in the early years of a loan.

There has evidently been a noticeable increase in the relative cost of labour to the cost of capital. Part of this is likely to reflect a long-run trend, whereby the cost of labour relative to the cost of capital rises over time due to at least two influences. First, there is likely to have been an increase in capital intensity in production, which would be associated with higher labour productivity and higher earnings per person. Second, there must have been an increase in "human capital" or the embodied investment in education and skills which would be reflected in increased labour productivity and in increased earnings per person.

Given the measurement problems, it is not possible to assign confidently job losses to relative input prices. However, *at a minimum*, the trends in relative input prices should have added to the pressures for increased "defensive" investment (cost-reducing rather than capacity expanding) and have been associated with some job losses. These trends in relative input prices may have been associated with new jobs foregone as much as with job losses.

CHAPTER 11

IMPACT OF MICRO-ELECTRONICS

Introduction

Future levels of job loss will depend in part on new elements which affect employment, over and above those which have had an impact in recent years. Pre-eminent among these new elements is the use of micro-processors. This is a particular form of technical change. Technical change is nothing new; it is usually regarded as the main force behind the steady rise in output per person. One can single out one technical innovation only if its impact is likely to be felt, over and above the "normal" rate of technical change. In this chapter it is argued that the impact of micro-processors does indeed merit special consideration. The reasons for the special importance of this innovation are dealt with at first. Then its likely impact on employment in manufacturing industry is considered.

The technology

Micro-electronics is the general name which applies to all electronic components or circuits which are made to very small dimensions. The most important branch of micro-electronics concerns the silicon "chip": successive layers of circuitry are embedded in silicon, and form a chip about a centimetre square and a half a millimetre thick. Hundreds of thousands of electronic components can fit on one small chip of silicon. These circuits can form a *micro-processor* which is, in miniature, the central processing unit of a computer. A micro-processor is, in essence, a small cheap computer.

The impact of the innovation dates from the early 1970s. By that time, two thousand and more components were put on to a single chip, and a micro-processor could perform the functions of the central processing unit of a computer. Micro-electronics enables large quantities of information to be stored and to be processed very rapidly. Micro-processors can be programmed (like a computer) to carry out functions such as processing data. They can automatically regulate and control products and machines.

Is the New Technology Different?

In the late 1950s and early 1960s there was a debate about the employ-

ment consequences of computers. While some argued that the introduction of the computer would lead to substantial aggregate unemployment, that did not happen. (Nevertheless, a thorough-going conclusion on this would have to control for other factors such as the impact of sustained increase in aggregate demand in the world economy, not least in the US.) However, the current new technology is likely to have more of an impact than did the large "traditional" computer, built since the 1950s. Early computers were large, clumsy, and exceedingly expensive to purchase and to operate. By contrast, silicon chips are small, their cost is negligible, they are more reliable, more powerful and more versatile than were the early computers. However, the *total* computer costs are not negligible, as the "software" costs which involve computer programming can be as much as 80 per cent of total costs.

The reasons why micro-electronics is unusually important can be outlined as follows:[1]

(i) it has wide applicability throughout services and industry;
(ii) it can replace and extend the capacities of a wide range of labour skills;
(iii) it can substantially modify communications, and the storage and dissemination of information;
(iv) it is relatively cheap, is still falling in price and is of small size;
(v) it is reliable;
(vi) it is flexible; the performance of micro-processors can be changed quickly;
(vii) the technology has advanced, and is still advancing, rapidly.

The versatility of micro-electronics can be seen from its application to almost any manufacturing process and to almost any service process. (A discussion of the likely applications in Ireland, based on field work is in National Board for Science and Technology (NBST), 1981.)

It is much more reliable than earlier electronic valve equipment. With regard to cost: in 10 years, the cost per appropriate unit has fallen by factors of 1,000 or more. "A complete computer on a single silicon slice less than 1 cm. square costs less than £10. Ten years ago, the equivalent computer would have occupied several rooms and cost more than £100,000" (Freeman, 1979).

Together with a rapid fall in price and increasing power, there has been a sharp world-wide increase in the output of products which are based on micro-electronics, and based on micro-processors – such as industrial robots, and automatic machine tools in industry. In many cases in the past, where technical change led ultimately to labour displacement, the adoption of the new method occurred gradually. To the extent that micro-electronics may replace existing plant relatively quickly, there will be relatively little time for adjustment.

[1] Advisory Council for Applied Research and Development (1978); Bessant *et al.* (1980); Rothwell and Zegveld (1979).

Channels of Influence

There are a number of different ways in which the new technology can affect production and employment:

(i) through the creation of new products and services;
(ii) through the improvement of the quality of existing products and services, such as calculators and cash registers;
(iii) through new processes for producing existing goods and services, either in assembly or other industrial processes (i.e., "automation") or through whole systems such as electronic distribution systems;
(iv) through the enhancement of existing processes by, for example, better control and better weighing;
(v) through the increase in demand for the products of industries which supply new processes of case (iii).

Before the specific impact on employment is considered, two points can be made. *First*, the *impact* of new technology is a prime example of the need to consider the implications for training and manpower policy (an issue which was raised in Chapter 1). This is partly because workers in particular occupations are likely to be greatly affected. *Second*, it is possible that, in specific cases where industrial firms introduce new technology (especially in instances where skilled workers are affected), "no redundancy" agreements will be drawn up. In such cases, any increase in unemployment is likely to be felt in declining job opportunities for first time entrants to the labour market (especially for the unskilled and semi-skilled), rather than in job losses from existing industry. This is an illustration of the point made in Chapter 2, of the need to consider the whole labour market, of which job losses comprise one component.

The Speed of Diffusion

An all-important element, about which there is a good deal of uncertainty, is the likely speed of diffusion of the new technology through sectors of industry. This will depend on familiarity with the innovation, cost of installation and availability of skills and other resources. It will also depend on the speed with which competitors introduce the new technology into *their* industrial processes and products. It will depend partly on the structure of industry: the greater the degree of competition, the greater the likelihood that its introduction by competitors

will have to be matched speedily.

However, one must distinguish the *technical* feasibility of introducing new technology from economic feasibility. While a chip is cheap, the total investment required – say, to automate a process – might be quite large, and it may require the use of additional skilled personnel. One factor which micro-processors have in common with the early commercial computers is a reliance on skilled workers for programming and back-up services. Some processes which are technically possible may never be introduced. Time will be taken in training skilled persons. The speed of diffusion will depend on a comparison of the additional cost of new technology, including costs of adaptation, with the extra benefits which ensue. In cases where firms have "sunk costs" in an older technology, it may pay them to delay introduction of new technology for a while. To be set against the many advantages of the new technology are obstacles to adoption. These are partly in the sphere of compatibility (or the degree to which the innovation "fits in", for example with existing technology) and partly in characteristics such as complexity, the extent to which an innovation can be understood (Bessant *et al*, 1980), or plant lay-out.

Specific obstacles occur in the case of Irish firms which may depend on one plant. A multi-plant firm could automate one plant and learn from that experience; this possibility is not open to most Irish firms. Much of the diffusion may begin in services. It can be argued, indeed, that the initial job displacement effects of the new technology will be most severe in their effects on the service sector. Any activity where a large volume of simple information is handled is especially vulnerable to job displacement due to micro-electronics.

Thus, certain sub-sectors in services are particularly vulnerable, as are any occupations, such as those of a clerical nature, where routine work occurs. While the effects on the service sector are not dealt with here, there is a good deal of *service-type* employment in manufacturing industry, i.e. in "non-production" occupations, much of which are managerial and clerical occupations (NESC, 1977a), and the incidence of service-type employment in industry is likely to rise with the greater complexity of products which are being made by new firms and the greater complexity of processes. Moreover, the greater the degree of complexity on the shop floor, the more complex the back-up office work is likely to be.

Job Losses

Micro-electronics is a labour-saving technology. (This is not to deny that it also saves materials and energy). The application of this new technology leads to an increase in productivity which, for any given output level, lowers the employment which is required. (Productivity

here is used in the partial sense of output per person-hour, rather than the ratio of output to an index of all inputs, and holds constant the average number of hours worked per year.) If the market is expanding sufficiently rapidly, employment can be maintained. Otherwise, employment falls.

Due to the limited application of micro-electronics in Irish industry to date, there can have been relatively little labour displacement up to now. The NBST study (NBST, 1981) shows that little or no applications have occurred to date in some sub-sectors of industry, while a limited amount of application has occurred in other sectors. In most of these sub-sectors there is considerable scope for further use of micro-electronics, even given current technology.

The electronics industry itself is directly affected. Employment in electronics increased from 5,000 in 1973 to 15,000 in 1980,[1] and expectations are of a further significant increase. However, technical changes in world electronics are likely to lead to a marked fall in employment growth by comparison with the past decade. There is a strong possibility of labour displacement *within* the Irish electronics components industry in the years ahead, whatever about the net increase in employment in the industry.

One way to gauge the extent of job displacement in individual industries is to examine the impact of applications in countries which are further advanced in their use of the technology. Judging from this, some of the greatest job losses occur in sectors manufacturing products such as cash registers and colour TV sets (National Economic Development Council, 1980). However, part of the employment loss in the production of consumer durables is likely to have been due to ownership levels of consumer durables reaching saturation levels: thus, it is difficult to separate out these demand effects from effects due to technical change. Other industries where there is likely to be labour displacement are publishing, machine shops, meters, instruments, and many assembly-type industries (Freeman, 1979). Within all industrial sectors, certain service-type occupations are likely to be adversely affected, such as clerical occupations, and draftspeople (Barron and Curnow, 1979).

However, in a number of sectors the prospects are relatively more favourable in Ireland than in other countries. Employment in tele-

[1] The employment figure for 1973 comes from Killeen (1979) – the definition of electronics does not enable a corresponding figure to be derived from the NACE classifications of the CSO – and the figure for 1980 comes from NBST, 1981, p. 27.

communications equipment was hit most in countries which relied on electro-mechanical technology, and Ireland has little employment which depends on this technology. There has not been a great deal of reliance on consumer electronics, where high job losses due to technical change could be expected. In another sector where adverse employment effects are likely – printing – there has been quite a rapid take-up of technology in Ireland and little or no loss of employment.

In cases where changes in process occur, there is not a great deal of evidence to date of substantial employment losses (National Economic Development Office, 1980). The applications take the form of, for example, replacement of control systems or the achievement of greater continuity in production. But in the future, the direct effects of, for example, automated handling of materials is likely to lead to job losses.

There are other ways of identifying the firms which may be most affected, other than by their particular product. It has already been suggested above that, the more competitive the sector, the more the lead of competition abroad, in the application of new technology, will have to be followed. In this sense, the result of *not* introducing micro-electronics would be more adverse for employment than the effects of introducing the technology. However, given the relatively high cost of adopting new products and processes, there are indications that only the most profitable firms can afford adoption (McLean and Rush, 1978). To the extent that this is the case, marginal firms in the traded goods sector may become less and less competitive. There is need to look at the overall effects on both products and processes. From this point of view, one sector which looks vulnerable is the metals and engineering sector, in part because of the lack of sophistication in its products.

Taking manufacturing industry in aggregate, the *relative* change in productivity arising from the new technology might not seem to be dramatic. While there is a big margin of error, one estimate of the growth of productivity (across the whole economy), directly attributable to micro-electronics, is in a range of 0.4 to 1.2 per cent a year, assuming steady displacement over fifteen years (*National Institute Economic Review*, 1979).

In manufacturing industry in Ireland, where the trend rate of increase in output per person was 4.7 per cent a year over 1973-1978, such an addition to the rate of increase of productivity (in percentage point terms) need not cause enormous job losses in manufacturing industry as a whole. This may over-state the likely job losses as this leaves out of account the ("dynamic") effects of productivity increase in adding to demand – as discussed in Chapter 8. Moreover, the productivity increase due to the use of micro-processors may compensate for any decline in the trend rate of growth of productivity, possibly due to less

opportunity in future to capture economies of scale (as the effects of trade liberalisation are exhausted). However, there is a wide margin of error in the attribution of increased productivity, across a wide area of industry, due to micro-electronic applications. Indeed, one suggestion is that increased "on the job leisure" might result (Walsh, 1980), in which case the productivity "gain" would be less. Most importantly, much of the adverse impact on employment is likely to be felt in particular sectors; hence, such economy-wide estimates give little indication of the severe adjustment problems which are likely in particular industries.

Job Gains

In general, the displacement of labour in production by machines can be offset by increased employment due to the introduction of the new technology. Job gains due to the new technology occur as follows;

(i) Increased employment occurs in making capital equipment which embodies the new technology; against this, capital-equipment industries are themselves subject to innovation. However, Ireland is not strong in making capital equipment, with the partial exception of electronics components.

(ii) Additional employment occurs in making new products which are associated with the new technology, and in making improved products. This occurs especially in the electronics industry, in making products such as word processors, micro-computers, new controls for machinery.

(iii) Increased employment occurs in new processes, but these effects are unlikely in Ireland.

(iv) Due to a fall in the price of products or a rise in their quality (holding price constant) for any given wage rate, as a result of the use of new technology, demand increases. This should lead to increased output and thus employment effects.

It is also possible that increases in productivity due to use of the technology – for example, through increased quality control on production lines – can lead to gains in competitiveness. However, this would depend on the extent to which the rate of adoption matched or exceeded that of competitor firms.

The uncertainty with regard to the impact of new products and processes arises from the fact that many of these are not yet on the market.

Balance between Job Losses and Job Gains

The key question is whether job creation due to applications of the new technology (which tend to be related to new products) will outweigh job displacement (which tend to be related to changes in process), in

future years. There is uncertainty regarding the precise net effects of job losses and job gains. Certainly, there will be job losses and job gains, both of which will affect industrial sectors unequally. Even within the same firms, there are likely to be job losses and countervailing job gains. More than in most instances, the skills which are demanded as a result of increased demand will not tend to match the skills of those who are displaced. Hence, even a balance between job losses and job gains will lead to adjustment problems. For instance, the impact of micro-electronics through automated manufacture will lead to a reduction in demand for job skills such as machining and an increase in demand for job skills such as programming (Rothwell and Zegveld, 1979) and various skills which are needed in monitoring sophisticated machines. Even in cases where the direction of change is clear, there is a big margin of error about the extent of change (across all industry?) and about the rate of change (how quickly will effects occur?).

Labour displacement is likely to occur in particular industries. By contrast, demand increase (due to increases in the real income of consumers) will be more diffused. There is an analogy with the impact of trade liberalisation, where certain sectors lose heavily and all consumers gain in higher real incomes, with consequent increases in demand across all sectors.

The questions of timing and the rate of diffusion of innovation are critical. Displacement may occur before job creation. In the past, when technical innovations were applied, all the labour displacement was not likely to have occurred until the technology matured and all potential gains due to economies of scale were used. The period from early application to maturity allowed time for adjustment. But in the case of micro-electronics the pace of change is more rapid than in the case of earlier innovations. Moreover, the demand effects depend on a chain of effects – first of demand on output, then of output on employment. These effects can take some time to work through (apart from the fact that their magnitude depends on the initial degree of capacity utilisation in industry).

On balance, job losses within manufacturing industry may not be outweighed by job gains for the following reasons:

(i) given the openness of the Irish economy, much of the additional spending out of real income increases will be on imports;
(ii) certain machine-building and engineering industries stand to gain (such as those which manufacture robotics), but these do not tend to be found in Ireland, and most of the machinery which will embody the new technology, or will complement the new technology will be manufactured abroad;

(iii) there is a certain vulnerability due to the existing competitiveness and relatively small scale of Irish industry;
(iv) the level of technical skills in the labour force hardly compares favourably with that in other countries.

Monitoring

It is not possible to put numbers, with any confidence, on the magnitude of the effects of micro-electronics on job losses. Nevertheless, it is evident that careful monitoring of elements such as skill requirements, adoption by competitors, speed of diffusion, is required.

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CHAPTER 12

CONCLUSIONS

Causes of Job Losses

This chapter concentrates on establishing the strengths of the various causes of job losses. Chapters 2 and 3 have already examined the anatomy of job losses – Chapter 2 in the context of labour market changes over time, Chapter 3 by calculating the extent of job losses and examining the difference in the incidence of job losses between different categories of industry. Chapter 11 has looked at some possible future problems.

In order to establish the causes of job losses, there is need to distinguish the sources of change in demand for output (aggregate foreign demand, aggregate domestic demand, market shares in foreign and in domestic markets) from the underlying causes of these changes. First, the sources of change are considered.

Foreign Demand

The exports of firms are affected by the growth of foreign markets and by the change in their share of these markets. In the 1973-1978 period, by comparison with that of 1966-1973, the volume of foreign demand grew at a slower rate. This is likely to have been associated with some job losses – in particular, in indigenous firms. In the period up to 1973, these firms had not increased their share of foreign markets, and do not seem to have increased their share since 1973. This is particularly striking, as one of the effects of trade liberalisation should have been to "push" firms into export markets, if only to compensate for the greater competition on the home market. Indigenous firms cannot be said to have been successful in this diversification. Foreign firms, on the other hand, have compensated for the slower growth in foreign demand by increasing market share. (The relative scale of foreign firms is shown in Table 3.1: in 1980, employment of 80,400 out of 244,000 in manufacturing). However, most of the job losses which occurred after the 1973 period must be attributed to causes other than the slower growth of foreign demand by comparison with 1966-1973.

Domestic Demand

The growth of domestic demand in aggregate over the 1965-73 period

was not an element leading to job losses in aggregate. If domestic production and competing imports had maintained their 1965 relative shares of the market in 1973, the growth of domestic demand would have led to a growth in total manufacturing employment of approximately 27,000. However, for some individual sectors, slow growth of domestic demand did lead to some job losses, for example in food, drink and tobacco, and clothing and footwear.

Over the 1977-1979 period[1] the growth of domestic demand at the aggregate level, again assuming that domestic producers maintained their share of the market over the period, was not an element contributing to job losses. If domestic production held the same share of the domestic market in 1979 as in 1977, an additional 7,500 jobs would have resulted.

Foreign Market Shares

There has been a steady rise in the share of foreign markets throughout the period 1966-1980 (Tables 7.5 and 9.8). The data suggest that, in the period up to 1973, the increased market shares were primarily obtained by foreign firms. While the data do not permit a firm conclusion, this is likely to have also been the case in the period since 1973.

Domestic Market Shares

Relatively more important than sluggish foreign demand, as a cause of job losses, was the increased import penetration on the domestic market over the period 1965-1973 and again over the period 1977-1979. (Unfortunately, the data are missing for the intervening period.) The increased share of the market taken by competing imports over the 1965-1973 period resulted in job losses of approximately 37,000. These losses were common to virtually all sectors with clay, glass and cement (in particular, glass), "other manufacturing", and metals and engineering suffering the greatest proportionate displacement (in order of magnitude). In terms of aggregate employment effects, rising import penetration more than offset growing domestic demand in the 1965-1973 period. (If domestic producers held the same share of domestic demand in 1973 as in 1965, additional employment of over 33,000 would have resulted from the growth of domestic demand.) Over the 1977-1979 period, approximately 4,300 jobs were displaced due to rising import penetration. All sectors, with the exception of textiles, experienced rising import penetration over the 1977-1979 period.

[1] It would have been more useful if this exercise could have been carried out for a longer period e.g., 1973-1980, and the results compared with those for the 1965-1973 period. However, the data were not available to enable similar calculations for the two periods. It would have been possible to look at the effects of domestic demand over the 1973-1979 period (using the National Accounts classification). This, however, would not have been as satisfactory as using data for individual manufacturing sectors.

Given the absence of competing import data for the period 1973-1977, it is difficult to relate directly the increase in import penetration to job losses. However, it is plausible to suggest that an increase in import penetration would result in job losses only after a time lag. In this context it is noticeable that sectors with particularly low rates of import penetration in 1967-1973 also had low rates of job loss in 1973-1980, while in other sectors, high rates of import penetration in the earlier period were generally followed by high rates of job loss.

This rise in import penetration is likely to have affected indigenous firms to a greater extent than new foreign firms because of the greater orientation of the former towards the domestic market. However, over the 1973-80 period the rate of job loss was similar for both indigenous and all foreign firms. It must therefore be concluded that elements other than rising import penetration contributed to job losses in foreign firms. A likely explanation is that these foreign firms tend to suffer, some time after their establishment, from product obsolescence and from competition in export markets from newly industrialising countries.

The single most important issue which arises in trying to explain job losses is an explanation of the rise in import penetration. This has other implications as the underlying elements must also have determined the success and failure of indigenous firms in export markets. Hence, the next section considers the underlying reasons for the rise in import penetration.

Trade Liberalisation

The increase in import penetration occurred in the period following the lowering of tariffs under AIFTA. It is not possible confidently to ascribe changes to any one cause, since many things changed in the period in question. Nevertheless, the effects of AIFTA are likely to have been substantial. Those industry groups where there was a high degree of effective protection in 1965 had a good deal of employment displacement. Job displacement is also likely to have been high in those sectors where firms had not prepared themselves for the advent of free trade.

While the 1977-1979 period is a very short period to bear the burden of strong conclusions, the data suggest that the employment displacement as a result of increasing penetration of competing imports may be slowing down as compared with the period 1965-1973. This could be expected, given the fact that most of the adjustment to free trade with the EEC would have occurred prior to 1977. From April 1978 to March 1980, the Employment Maintenance Scheme helped firms to maintain employment in clothing and footwear, tanning and in parts of textiles. However, it is not possible to estimate to what extent the Scheme resulted in a curbing of import penetration in these particular

industries.

It is also noteworthy that in 1978 and 1979 there was a relatively high degree of capacity utilisation in manufacturing industry. This would be expected to be associated with higher than average increases in import penetration as domestic producers faced capacity constraints.

Lack of a consistent series of data on competing imports for the *entire* period since 1966 makes it extremely difficult to draw firm conclusions on this topic. While there are many instances where gaps in data hamper the analysis, the lack of import penetration data is probably the single greatest deficiency.

The qualifications about the conclusions on import penetration are of two kinds. *First*, trade liberalisation would have taken some time to work its way through. *Second*, in some sectors, trade liberalisation may have acted as a "shock" which spurred firms to increase productivity, and thereby maintain or even increase their market share; but it is implausible that this occurred on anything other than a limited scale in view of the actual trends in import penetration. However, trade liberalisation should be considered in conjunction with an inherent lack of competitiveness in the widest sense as a cause of import penetration. One aspect of competitiveness, namely changes in labour cost competitiveness, is considered in the next section; more detailed information at the level of the individual firm would be needed to establish the trend of competitiveness in the widest sense.

Competitiveness

In the period 1977-1979 the effects of trade liberalisation were probably weakening, while import penetration continued to rise; it is possible that trends in labour cost competitiveness contributed to this. Until 1978, there was no adverse trend in unit wage costs, compared with developed industrial economies, with the exception of costs *vis-à-vis* the US. Since 1978, the rise in unit wage costs relative to developed industrial economies has been substantial and must have had an effect. Despite this adverse movement, export market shares continued to rise largely due to the contribution of new foreign firms. There was a deterioration in labour cost competitiveness in each of the three years 1978, 1979 and 1980. However, this would take some time to have an effect on output and employment, some of which would not occur until 1981 and after. Job losses amounted to 27,300 in 1980, equivalent to 11.0% of January 1980 employment (Table 2.5). This compares with an average of approximately 7% in the preceding three years. However, too much cannot be read into data for one year. Some of these job losses would be re-gained in subsequent years. Moreover, some of these losses are associated, not with a loss in labour cost competitiveness, but with cyclical effects, related to a relative decline in

demand, both domestic and foreign.

Changes in unit costs are likely to have had a greater impact on particular sectors, or indeed on particular firms within sub-sectors. This is because in some sub-sectors there is a duality, with firms using "best" technology existing side by side with firms using earlier techniques of production. Rises in unit wage costs will not bear equally on all sectors. In cases where the wage bill forms a high proportion of total costs, the relative decline in output and employment is likely to be greater. Other things being equal, this would be expected in clothing and footwear, textiles, paper and printing, clay and cement. If, in addition, there is limited or no possibility of substituting capital for labour, closure may result. In cases where firms have market power or where there is little response in product demand to an increase in price, these effects need not occur. Finally, the more exposed to international competition a firm is the more likely it is that job losses will result from a deterioration in labour cost competitiveness. The data in Table 3.2 illustrate the effects of some of these elements, with the rate of job loss in textiles, and in clothing and footwear being well above average. The rate of loss in the other two sectors where labour costs also form a high proportion of total costs, i.e., paper and printing, and clay and cement, is well below average. A possible explanation for this is the degree of shelter from foreign competition which is enjoyed by the majority of firms in these sectors, making it easier to pass on increased costs in the form of higher prices.

Apart from the trends in aggregate labour cost competitiveness, the changes in labour cost competitiveness *vis-à-vis* the UK and *vis-à-vis* the continental EEC, respectively, must be noted. The gains in competitiveness against the UK, and losses against the continental EEC, mean that aggregate indices underestimate the adverse trends. This is because the continental EEC market is a vital one for many foreign firms – the element in industry which has shown the most rapid growth in output and in export volume. However, despite the deterioration in labour cost competitiveness against countries other than the UK, the Irish share of OECD less UK imports has grown continuously up to 1980. This suggests that changes in labour cost competitiveness may not be a primary determinant of the performance of foreign industry. However, there is a need to distinguish here between the market share effect of the performance of already established industry and the arrival of new foreign firms, i.e., changes in labour cost competitiveness may be having a detrimental effect on already established foreign industry which is masked by the arrival of new foreign firms. The gains in competitiveness in the UK market have been helpful to longer-standing indigenous firms, although it must be emphasised that the benefits of this improvement are likely to be offset to a significant extent by the loss of com-

petitiveness against European producers with whom Irish exporters are in competition in the UK market. (The latter is called the third country effect.) There may be an asymmetry, whereby changes in labour cost competitiveness have a greater effect on the ability of indigenous firms to compete in the UK than on the ability of foreign firms located in Ireland to compete in the continental EEC market.

The Real Wage

The loss of competitiveness in the years 1978, 1979 and 1980 occurred at a time when a significant rise in the real wage relative to productivity (output per person) occurred, which would be expected to lead to some job losses in manufacturing industry.

Relative Factor Prices

Over a longer period, in the 1960s and 1970s, there has been a steady rise in the cost of labour relative to the cost of capital. While this must have had an influence on the type of project which locates in Ireland (in terms of choice of technique and capital-intensity), it may not have had a marked independent effect in increasing job losses, over and above the other effects which are noted. In particular, the trends to date in the cost of labour relative to the cost of capital are unlikely to have caused job losses in new foreign firms which have comprised over 50 per cent of investment in manufacturing industry in recent years.

However, the trends in the cost of labour relative to that of capital should have added to the pressures for increased "defensive" investment. Many firms had to engage in this cost-reducing, as distinct from capacity-expanding, investment. This was necessary in order to stay in business in particular products, and in many instances involved job losses (at least over the short term). Moreover, the movements in relative input prices are likely to have affected the timing of job losses. Given the changes in the cost of capital relative to the cost of labour, this cost-reducing investment is likely to have been brought forward in a number of cases.

Labour Legislation

In one respect the labour market conditions which face firms changed in the late 1960s and in the 1970s. In the late 1960s there was redundancy payments legislation, and in the 1970s there was employment protection legislation. While this does not directly enter into firms' costs, it does affect their costs of adjustment when their desired employment changes. A precise attribution of cause and effect, and a precise indication of the combined effects of the legislation, is not possible. Some of this legislation could be expected to discourage employers from laying off workers. At the same time, it can be argued that legislation of this type makes employers contemplate very carefully the

hiring of workers, in view of the "quasi-fixed" nature of the costs which they may incur. As a result, both numbers hired and job losses may be lower compared to what they would otherwise be. If correct – and studies of this issue are lacking – this may have wider implications than are in the remit of this study. Insofar as job losses *per se* are concerned, the legislation might be expected to lead to lower losses. This has not happened since the legislation came into operation – rather the opposite – due, presumably, to other factors.

Newly-Industrialising Countries

It is likely that the emergence of the newly industrialising countries has had adverse effects on employment in Ireland in relatively labour-intensive activities. These countries with much lower unit wage costs than the more developed economies of western Europe, have a comparative advantage in labour-intensive products. The effects of this comparative advantage have been exacerbated for Ireland by the loss of labour cost competitiveness since 1978. For subsidiaries of foreign firms in Ireland there is some evidence that employment declines in the longer established firms. This indicates the difficulty which these firms, with standardised products of relatively low value added, and absolute cost levels which are close to those of European countries, can face in competing with products from newly-industrialising countries.

Productivity Growth

There is little evidence that productivity growth has been a direct cause of job losses, even if output is taken as given. Productivity growth can improve competitiveness and hence lead to increases in market shares. It is not possible to take output as given and say that higher output per person means lower employment. Consistent with this is the fact that those sectors where the growth of output is highest tend to be the sectors where the growth of output per worker is highest. These tend to be the sectors where the growth of manufacturing employment is also the highest.

This raises the question: what are the underlying causes of productivity change? Here, intractable problems of measurement abound. Even if it had been possible to engage in precise statistical testing with a long time series of data, there would still be underlying elements which defy measurement. It is likely that these elements include the rate of investment, the quality of management, work effort, labour skills, and labour relations. Just because it is difficult to measure these, it must not be concluded that they are unimportant. They are likely to be most important and are likely to explain much of the inter-firm differences in productivity which persist even within the same sector.

The "Shake-out" Hypothesis

Has a "once-for-all" reduction in employment in certain sectors occurred? This is the so-called "shake-out" hypothesis, whereby once-for-all job losses would have occurred due to the Anglo-Irish Free Trade Agreement and EEC entry, accompanied by a raising of the competitive threshold[1] in Irish industry. To date, there is little evidence for this hypothesis. While the competitive threshold is likely to have been raised, this has also happened in competitor countries. Job losses will continue and will in some measure reflect the inevitable flux in markets. There will continue to be changes in costs, in demand and in technology which will result in problems of adaptation and variations in job losses.

Rates of Job Losses in Sub-Periods

Did the underlying rate of job loss (i.e., allowing for the effects of the business cycle) decline after the mid 1970s, once most of the adjustment to EEC entry was completed? Allowing for job losses which are subsequently regained, the rate does not seem to have declined. However, other reasons took over. Trade liberalisation is likely to have dominated the effects of the first half of the 1970s. In the second half of the 1970s, three effects were also important (not in any order of importance): a rise in unit wage costs and in the real wage relative to productivity, increased competition from newly industrialising countries, and a slower growth in foreign demand.

Prospects for Immediate Future

The question arises of the extent to which job losses of the magnitude of those of the past decade are likely to continue for the immediate future. One of the new elements, whose impact has been negligible in the past decade, has been considered in Chapter 11 – the effects of micro-electronics.

To what extent will the contributory elements, which have been identified, continue to have an effect? It has been shown that, in the period since 1973, slower growth in UK and OECD import demand had an adverse effect on employment change. If the growth rates of OECD and of UK imports continue to be low, this would have further dampening effects on Irish employment. With regard to technical change and productivity, it may be expected that sectors which have a good

[1]The competitive threshold may be defined as that level of competitiveness required to withstand competitive pressure. At the time of AIFTA, Irish industry, having operated behind tariff protection for a sustained period, would be expected to have a low competitive threshold. Free trade would therefore be likely to lead to job losses as firms either contracted or ceased operations. Many firms, however, faced with foreign competition would be expected to have become more efficient. At the time of EEC entry, therefore, the firms which survived the first round of free trade would be better equipped to withstand competitive pressures.

deal of foreign investment will continue to have high rates of growth in output per person. This can lead to net increase in employment. While foreign firms are likely to continue to be affected by competition from newly industrialising countries, EEC membership may offer more persistent competitive advantages.

The principal question relates to import penetration on the domestic market. The trend in competing imports will be the most important influence on future job losses. Some older established sectors – which now include foreign firms which were in the first generation of foreign investment – are likely to suffer from competing imports unless they adapt. They may be forced by competitive pressures to engage in defensive investment, cost reducing in nature, which is likely to be associated with employment decline. Those firms which are likely to be most vulnerable to job losses are those where there is a low income elasticity of demand for their products, where there is low productivity growth, where they are subject to competition from newly industrialising countries, and where limited processing and relatively little added value occurs in Ireland.

A final point on data can be made. Future work in this area would be made easier if CSO data on net employment change at the firm level were available. As long as the identity of individual firms is protected, there seems no reason why these data should not be made available.

APPENDIX I

THE RELATION BETWEEN EMPLOYMENT CHANGE AND JOB LOSSES

Let employment in firm i at time t be E_t^i. The data on job losses in this study are computed from basic data on employment, by firm, on 1 January each year. The job loss of firm i (J^i) in period 1 (the time between t_0 and t_1) is defined as follows:

$$J_1^i = E_1^i - E_0^i \text{ where } E_1^i < E_0^i$$

$$J_1^i = 0 \qquad \text{where } E_1^i \geqslant E_0^i$$

For a particular manufacturing sector, consisting of n firms, job losses in period 1 are calculated as follows:

$$J_1 = \sum_{i=1}^{n} J_1^i$$

If E_1^i is less than E_0^i, the *net change in employment* in the firm in period 1 is defined as:

$$\Delta E_1^i = E_1^i - E_0^i$$

Now $E_1^i = E_0^i + H_1^i - D_1^i$

where H_1^i is the number of workers who are hired in period 1,

D_1^i is the number of workers who are discharged in period 1.

Then: $\Delta E_1^i = H_1^i - D_1^i$.

If a manufacturing sector consists of one firm, ΔE_1^i is the net change in employment in the *sector*, and there is a perfect correlation between net employment change and job loss, as defined. (Job losses are *not* defined to be D^i, since data on the latter entity are not available.)

Assume that a manufacturing sector consists of two firms, and that

$$E_1^1 > E_0^1$$

$$E_1^2 < E_0^2$$

To simplify, assume that:

$$D_1^1 = 0$$

$$H_1^2 = 0$$

Job losses are as follows:

$$J = \sum_{i=1}^{2} J_1^i = E_1^2 - E_0^2 = -D_1^2$$

Net employment change is:

$$\Delta E_1 = \Delta E_1^1 + \Delta E_1^2$$
$$= H_1^1 - D_1^2$$

In this case, there is not a perfect correlation between job losses and net employment change.

Now the likely correlation between job losses and the *change in unemployment* is considered. To simplify, an economy with one manufacturing sector, within which there is one firm, is taken. Labour supply is L, unemployment is U. Then:

$$L = E + U$$
$$\Delta E = \Delta L - \Delta U$$

Suppose $\Delta E < 0$

If $\Delta U = 0$

$\Delta E = \Delta L$ where $\Delta L < 0$

On the other hand, if $\Delta L = 0$

$\Delta E = -\Delta U$

Thus, there may not be a good correlation between the change in aggregate unemployment and aggregate job losses, since the change in unemployment will depend on the relative changes in labour demand and in labour supply.

APPENDIX II

COVERAGE OF CSO AND OF IDA DATA ON EMPLOYMENT

There are some differences between the IDA and the CSO data on employment, in terms of their coverage. The CSO data from the Quarterly Inquiry are linked to the data from the most recent Annual Census of Industrial Production. The Census of Industrial Production, in general, does not cover industrial establishments which had, on average, less than 3 persons engaged during the year. If part of a firm is engaged in manufacturing, the employment in manufacturing only will be included. Employment data are collected as part of a larger sample inquiry on employment, earnings and hours worked. Footnote (a) to Table 2.3 gives further details.

The IDA data, for the period from January 1979 (inclusive) onwards, are based on a census of the whole country; prior to that date, the census covered the country less Dublin and there was an un-random sample in Dublin. Establishments which have less than 3 persons employed at the census date are not covered. If 50 per cent or more of employment of a firm is in manufacturing, that firm is included and all of its employment is counted. Of the total employment, 3,000 in January 1981 is outside manufacturing industry and is in activities such as systems building, trout farming, mushroom growing and in activities covered by the service industry programme. In the IDA census, only a question on employment is asked. Number of employees includes executives, drivers and sales staff, but excludes part-time or temporary employees.

APPENDIX III

Table A3.1

Employment by Sector in Indigenous Irish Industry Classified by Grant Type, 1973 and 1980

Sector	New Industry		Small Industry		Re-equipment Industry		Other Industry		Total	
	1973	1980	1973	1980	1973	1980	1973	1980	1973	1980
Food	17605	20599	889	1317	15634	15181	6743	5927	40871	43024
Drink and Tobacco	1974	1328	150	177	4471	4840	869	595	6564	6940
Textiles	11377	7444	847	987	3474	1976	1936	1762	17634	12169
Clothing and Footwear	9883	8686	1199	2071	5067	2316	3351	2588	19499	15661
Wood and Furniture	2190	1922	2414	3534	2415	2105	2941	3374	9960	10935
Paper and Printing	3948	4708	730	1038	5582	5386	2455	4001	12715	15115
Chemicals	1770	2461	244	460	2306	1417	1035	617	5355	4955
Clay and Cement	3756	4181	900	1427	7678	8172	1819	2261	14153	16041
Metals and Engineering	9579	12055	3534	8718	5964	3654	3685	5387	22762	29814
Other Manufacturing	3139	3015	961	1592	2740	2131	1888	2091	8728	8829
Total	64320	66399	11868	21321	55331	47160	26722	28603	158241	163483

Source: IDA Employment Survey.

Table A3.2

Employment by Sector in Foreign Industry in Ireland Classified by Grant Type, 1973 and 1980

Sector	New Industry		Small Industry		Re-equipment Industry		Other Industry		Total	
	1973	1980	1973	1980	1973	1980	1973	1980	1973	1980
Food	2182	3564	6	27	3420	2964	377	278	5985	6833
Drink and Tobacco	376	697	0	19	3830	3337	20	23	4226	4076
Textiles	3160	8233	56	67	1505	788	648	154	5369	9242
Clothing and Footwear	2748	3202	73	120	1173	936	1276	326	5270	4584
Wood and Furniture	480	672	82	72	59	78	190	101	811	923
Paper and Printing	1314	1875	0	15	232	180	242	44	1788	2114
Chemicals	3477	7007	5	40	1458	951	958	1047	5898	9045
Clay and Cement	901	1738	37	29	365	312	96	164	1399	2243
Metals and Engineering	12691	21986	358	562	1677	1497	5025	4654	19751	28699
Other Manufacturing	6714	10445	167	505	81	157	1592	1564	8554	12671
Total	34043	59419	784	1456	13800	11200	10424	8355	59051	80430

Source: IDA Employment Survey.

Table A3.3

Job Losses, 1973-80, Cross-classified by Sector, Grant Type and Nationality

Sector	New Industry		Small Industry		Re-equipment Industry		Other Industry		Total		
	Foreign	Indigenous	Foreign	Indigenous	Foreign	Indigenous	Foreign	Indigenous	Foreign	Indigenous	Overall Total
Food	356	2825	0	233	655	4393	154	2395	1165	9846	11011
Drink and Tobacco	0	76	0	21	493	423	0	357	493	877	1370
Textiles	576	5164	6	359	717	1715	551	845	1850	8083	9933
Clothing and Footwear	1273	3216	67	541	237	3154	1003	1748	2580	8659	11239
Wood and Furniture	127	915	29	645	0	634	95	1304	251	3498	3749
Paper and Printing	366	617	0	188	166	985	228	588	710	2378	3088
Chemicals	685	299	0	51	590	990	273	779	1548	2119	3667
Clay and Cement	230	616	16	235	53	1071	68	517	367	2438	2805
Metals and Engineering	3815	1896	315	846	549	2882	2121	1308	6800	6932	13732
Other Manufacturing	1453	803	120	384	6	887	432	677	2011	2751	4762
Total	8881	16426	553	3503	3416	17134	4925	10518	17775	47581	65356

Source: IDA Employment Survey.

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