THE COMPARATIVE POSITION OF IRISH MANUFACTURING INDUSTRY*

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CONTENTS

FOREWORD

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FOREWORD

In this paper Dr Nevin assesses the competitive position of Irish manufacturing industry as a whole and in industrial groups on the basis mainly of census of production statistics for certain countries. His method is a very interesting one. On the basis of actual labour costs and the author's own estimates of the stock of fixed capital, to which are applied a "normal" rate of return, in comparison with actual net output, he computes, in effect, the existing surplus return to capital as well as the probable return when tariff protection is withdrawn. This surplus "fat" or the lack of it is the measure of the relative viability of the industrial group.

At many points throughout the paper the author emphasises the purely statistical difficulties with which he has had to contend, particularly because of international differences in statistical practice. Every effort has been made to ensure that the comparisons attempted are not invalidated by these differences, and authoritative criticism and advice has been sought from several of the European countries involved in them. In particular, the study has been referred to those responsible for the United Nations publication on which the study relies to a major extent for its basic data in order to ensure that those used are broadly consistent from a definitional point of view. Nevertheless, as the author stresses, the data are still bound to be limited by the inadequacies of census of production returns at a national level as well as by international differences in the relationship between net output and value added, which would have been more suitable for the present analysis but such statistics are not available from the census of production.

Hence, in the author's words in paragraph 3, the reader must therefore "judge for himself the point - if, in his view, it does occur - at which the resort to arbitrary assumption as a means of overcoming deficiencies in the available statistical data becomes so great as to rob the subsequent analysis of any meaningful significance." This defines the spirit in which the paper is presented. Apart from the conclusion, the statistics and statistical analyses and methods will be found to be useful and interesting - notably the estimates of fixed capital stock of Irish industry - in their own right.

Nothing more than broad orders of comparative magnitude could possibly be expected from a study of this kind. Given the existing lack of quantitative data on the Common Market issue, however - obviously the crucial policy problem facing Ireland today - any analysis which arrives at the roughest of estimates from a detached and dispassionate examination could hardly fail to be of interest to the public as a whole. Individual industrialists, disposing of much more detailed information about their enterprises than available to the author for the industry as a whole, may be interested to apply his methods to their own data.

R. C. Geary
Director

THE COMPARATIVE POSITION
OF
IRISH MANUFACTURING INDUSTRY[1]

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PART I: INTRODUCTION

The possible entry of Ireland into the Common
Market poses a number of policy questions, amongst which
that of the capacity of Irish industry to withstand open
competition from Europe must inevitably occupy an
especially important position.   For the most part, Irish
industries are currently operating within the protection
of a substantial tariff wall which would necessarily
disappear as integration into the Common Market proceeds.
What are their prospects of survival in a situation of
virtually unrestricted competition from and with European
industry ?

The present study attempts to throw some light on
the order of magnitude of the problem facing the major
groups of Irish manufacturing industries.   It has to be
stated flatly at the outset, however, that the task of
assessing the efficiency of particular industrial groups
in any precise sense has so far proved an impossible one.
The concept of efficiency itself is not unambiguous;
even if it were, the data which would be required for its
measurement are not available internationally on a
strictly comparable basis.

The analysis presented in the following pages
therefore contains, of necessity, an element of
arbitrary judgement and assumption which is certainly
large enough to deny to the results any pretensions to
dispassionate and objective precision.   The judgements
and assumptions are displayed whenever they are introduced

however, and the sequence of the analysis is such that the relative importance of these elements increases as the argument proceeds. The reader can therefore judge for himself the point - if, in his view, it does occur - at which the resort to arbitrary assumption as a means of overcoming deficiencies in the available statistical data becomes so great as to rob the subsequent analysis of any meaningful significance.

The sections which follow are concerned with successive stages of the problem of attempting an international comparison of the competitive strength of Irish industry. Part II addresses itself to the question of relative labour costs; in Part III some attempt is made to estimate capital costs in a comparable manner, and thus to arrive at a comparison of total factor costs in manufacturing industry in several countries. Finally, Part IV advances some assessment of the adjustments which would be necessary to these comparisons in order to allow for the influence of the varying levels of tariff protection which prevail currently in these different countries.

PART II: LABOUR COSTS

1.   The measurement of productivity.

The productivity of labour is conventionally measured by means of the division of an index of production by an index of numbers employed. This device has only limited uses. In the first place, it refers to changes over a period of time only, revealing nothing of absolute productivity; secondly, it regards labour as homogeneous and makes no allowance for differences in sex, skill, intensity of effort or - most important - relative wage-levels; finally, it tends to imply that all changes in productivity are attributable to labour, which patently

conflicts with reality.[2]

Some of the weaknesses of the conventional measure of labour productivity are remedied by the substitution of the absolute value of net output for an index of production. By net output is meant here, of course, the difference between the gross value of output and the costs of fuel, raw materials, semi-finished goods etc. consumed in the course of producing that output.[3] This differs from industry to industry either because a given output is produced from different amounts of raw materials and/or components or because one industry is capable of producing more from a given amount of raw materials than another.[4]

In Table 1 such a comparison for 1953 is attempted for a number of European countries, most of which are present or prespective members of the E.E.C., and for some major non-European trading nations. The statistics from which this comparison has been calculated were drawn from a United

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[2]This is not to say, of course, that such comparisons may not have their value as indicators of changes in overall incomes and standards of living, irrespective of the precise causes of such changes.

[3]In other words, "net output" is used in the Census of Production sense. The term "value added" is more suitably reserved for the contribution of an industry to the national product, for which purposes net output is further reduced by subtracting the cost of transport, advertising etc. performed by outside firms and various other supplementary costs. Value added, in this sense, should ideally be used in the analysis which follows, rather than net output; it does not seem possible however, to derive any consistent correction factor to census data at an international level. Even within a particular country the adjustment for national income purposes is generally effected in a rather rough-and-ready way.

[4]For the sake of brevity, the expression "materials" will often be used in what follows, in the context of net output, as a shorthand expression for all the products consumed by an industry in its operations, including fuels, components and semi-finished goods as well as raw materials in the ordinary sense of the term. The distinction is of particular importance for Irish industry,

Strictly speaking, of course, the expressions "greater output with constant input" and "constant output with smaller input" can be regarded as synonymous for the purposes of productivity analysis only if the production functions involved are assumed to be linear and homogeneous,

Nations publication, and a great deal of the subsequent analysis also draws heavily on the data presented in this publication.[5] It can be assumed, therefore, that everything possible has been done to make the data broadly comparable internationally and, in particular, that the values for net output in different countries do not include the irrelevant but highly distorting components of subsidies and indirect taxation.[6] Since the U.N. publication did not include net output data for Germany in 1953, these had perforce to be estimated.[7]

Three points of a statistical nature should be mentioned at this point. First, even within any given country it is known that the Census of Production is frequently imperfect in its coverage, while its returns are even more frequently incorrectly completed. The more detailed the analysis built upon the Census, of course, the greater the caution called for as a result of these weaknesses in the basic data. Secondly, in order to achieve the international

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[5] _Patterns of Industrial Growth, 1938-1958_, United Nations, New York, 1960, (59.XVII.6), Part II.

[6] The compilers of the publication have been good enough to confirm that the net output figures for all the countries referred to in the present study are valued at factor cost except those for Germany and Japan. An estimated correction has been made accordingly to the German figures but data are not readily available which would enable a similar correction to be made for Japan. The results for Japan should therefore be considered with this factor in mind throughout. National income data indicate that the net output of Japanese manufacturing industry in 1953 was about 21 per cent greater than the value added, although not all of this difference is attributable to the taxation factor. It would seem safe to assume that all the Japanese coefficients shown in this study are some 10-15 per cent too high because of the inclusion of taxes in the value of net output.

One other complicating element is the presence of some variability between the countries concerned in the matter of size coverage in the census of production; in some countries virtually all industrial establishments are included, whereas in others the Census covers only those employing more than a minimum number of persons. The compilers of the U.N. publication are of the opinion that the impact of this factor on the results of the present study is unlikely to be substantial, except possibly in the case of France, where some understatement of the coefficients may have resulted in relation to those of the Scandinavian countries, Australia and Japan.,

[7] A set of statistical tables, and explanatory notes thereto, showing the details underlying this and subsequent calculations in this study is available on request from the Institute.

TABLE I: OUTPUT PER HEAD IN MANUFACTURING INDUSTRY, IN $ U.S., 1953.

	EUROPE.							OTHER.				
	DENMARK 1	FRANCE 2	GERMANY 3	IRELAND 4	NORWAY 5	SWEDEN 6	U.K.[A] 7	AUSTRALIA 8	CANADA 9	JAPAN 10	NEW ZEALAND 11	U.S.[A] 12
1. Food, Drink, Tobacco	2,861	1,777	1,955	2,253	5,538	3,656	2,618	3,235	6,553	966	3,881	8,123
2. Textiles	1,980	1,657	1,752	1,225	1,944	2,216	1,755	2,485	3,796	695	2,704	4,566
3. Clothing	1,720	1,234	1,378	1,053	1,692	1,981	1,340	1,846	3,491	507	1,676	4,249
4. Wood	1,893	1,571	1,382	1,228	1,580	2,290	1.864	2,441	4,442	549	3,061	5,049
5. Paper	2,471	2,191	2,581	1,643	3,399	3,671	2,741	3,902	9,372	1,528	4,380	8,611
6. Printing	2,717	1,957	2,087	1,601	2,238	3,134	2,387	2,830	5,607	1,181	3,252	7,557
7. Leather	3,254	1,200	1,559	1,660	2,252	2,245	1,889	2,526	3,637	791	2,443	5,190
8. Rubber	2,124	1,991	2,590	N.A.	2,559	3,262	2,340	3,148	7,877	1,113	4,457	7,709
9. Chemicals	3,627	3,080	3,733	2,191	3,483	4,446	3,694	4,689	9,201	1,860	4,524	12,452
10. Minerals	2,645	1,720	2,155	1,666	2,434	2,914	2,231	2,904	7,186	1,074	4,155	7,644
11. Metals	4,870	1,914	2,953	1,596	4,196	3,071	2,710	3,445	8,244	1,478	3,958	8,376
12. Metal Products	2,298	2,003	2,101	1,494	2,364	2,937	2,189	2,541	6,261	999	2,920	7,838
13. Other.	2,211	1,883	1,600	1,463	2,783	2,439	2,050	2,579	4,834	667	2,360	6,485
All Manufacturing	2,413	1,854	2,146	1,640	2,839	2,928	2,242	2,736	6,205	1,004	3,075	7,394

NOTE: (A) 1954.

comparisons shown in Table I it was necessary to translate national currencies into a single common unit through the official exchange rates prevailing in 1953. It is well known that such conversions are often of dubious validity because of the limitations of exchange rates as a measure of comparative purchasing power.[8] In the context of international trade, however, the objection disappears; whatever their accuracy as indicators of internal prices, official exchange rates are the effective device by means of which internal costs are translated into prices in export markets.[9]

Finally, it has to be emphasised that the technical content of any given industrial category may vary considerably from one country to another. The category "chemicals", for example, may be broadly similar in, say, the United Kingdom and Germany, but the Irish chemical industry is different in nature from either. At the same time, the extent to which this factor invalidates comparison should not be exaggerated. In the last resort it is net output per unit of resources which is being examined, and the precise nature of an industry cannot alter the fact that the value of output in relation to cost, however much industries may differ, is the ultimate criterion of competitive strength.

2. Labour coefficient

While the use of net output per head eliminates some of the inadequacies of the crude output-per-head index-number technique mentioned earlier, it still retains two of its major deficiencies. In the first place, it treats labour as a homogeneous input. While it may be an informative analysis in the context of welfare comparisons,

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[8]The best-known demonstration of this is perhaps M. Gilbert and I. Kravis, _An international comparison of purchasing powers_, O.E.E.C., Paris 1958.

[9]This is not to say, of course, that other factors – tariffs or transport costs, for example – do not also enter into the process of translation.

therefore,[10] it has little usefulness for an investigation of international competitiveness. In the latter context it is axiomatic that the absolute level of _per capita_ net output is of little significance; the important concept is labour-cost per unit of output, which is a very different matter.

A more revealing comparison for the purposes of the present paper is therefore obtained by expressing net output as a ratio of total labour costs - i.e. wages and salaries - rather than per unit of labour employed. By doing so, several disadvantages of the _per capita_ output technique are removed. Overtime or short-time working, for example, are to a large extent taken care of, as are differences in the age, sex and skill of workers, assuming that all these things are reflected in earnings. Most important, the actual cost of labour is allowed form, not its numerical strength. What is being measured is not output per head in a given year but the value of output per pounds-worth, or dollars-worth or francs-worth, as the case may be, of labour input - what will be called the labour coefficient in what follows. The currency unit becomes irrelevant; the comparison is concerned with the relative rates of transformation of labour into product.

There is a further point of some importance. A comparison of absolute net outputs in different countries (after allowing for the effect of tariffs) would implicitly involve the assumption that a given value of net output represents the same real wealth in the different countries being compared - i.e. that price-levels in the various countries were equal when converted at prevailing exchange

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[10] Although here the objections to the use of official exchange **rat**es mentioned earlier become distinctly relevant, of course.

rates.   The division of net output by factor <u>costs</u>,
however - wages and, subsequently capital charges - avoids
the need for this assumption of equality of price-levels.
In effect it measures the surplus over and above factor
costs (roughly identifiable with the profit margin) in
real terms - that is to say, <u>in terms of the factors of</u>
<u>production which it could purchase in its own economy.</u>

For example, if in a given industry the labour
coefficient was 1.8 in country A and 2.0 in country B, the
comparison would in effect be indicating that for every
100 units of labour employed (man-hours, man-years etc.)
the margin left over to meet capital charges and profits
would be equal to 80 in country A and 100 in country B.
Subsequently an attempt is made to include capital as well
as labour costs so as to arrive at an overall coefficient
indicating the surplus available in different industries and
countries (measured in real terms) for profit only.
Substantial differences in the coefficients would thus
indicate corresponding differences in the magnitude of the
problem which would be presented to an industry through the
advent of unrestricted competition from similar industries
abroad having a larger profit surplus.

One further consideration of a statistical kind
should be mentioned in connection with international
comparisons based on national statistics of labour costs.
Wages and salaries paid are not entirely synonymous with
labour costs in the modern economy.   The United Nations
data employed here refer to all payments, whether in cash
or kind, made in connection with the work.   There is one
element in labour costs, however, whose omission might be
regarded sufficiently serious to qualify substantially the
usefulness of the U.N. data for international labour-cost
comparisons, namely employers' contributions to compulsory
social security schemes.[11]   Such payments could obviously

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[11] I am indebted to Mr. Garret Fitzgerald for drawing my
attention to this very important point.

be held to be as much part of the cost of using labour as wages paid in cash; furthermore, their magnitude varies considerably between countries, and in some European countries they are a significant fraction of wage and salary cash payments.

An adjustment has therefore been made to the U.N. wage data for European countries to allow for this element. The extent to which the U.N. totals for wages were increased is shown by the following coefficients:-

Denmark	1.15
France	1.23
Germany	1.10
Ireland	1.02
Norway	1.01
Sweden	1.01
United Kingdom	1.02

No adjustment has been made to the wage data for the non-European countries included in the comparisons, Data on which such an adjustment could be based are nor available, but in any case it is believed that compulsory social security payments by employers in these countries are small in relation to total wages and salaries.

Important as it is, however, labour is not the only element in industrial costs and efficiency.   The analysis must therefore now proceed to the second major weakness of the output-per-head approach: its neglect of differences in the amounts of capital with which labour is working.

PART III: CAPITAL COSTS

1.   The problem of measurement

Broadly speaking, the cost of labour used in production can be regarded as accurately measured by wages and salaries paid.   The cost of land is probably so small, for manufacturing industry, in relation to total

costs that it can safely be neglected.[12]   No comparison
of production costs can hope to be meaningful, however, if it
makes no estimates at all of the costs involved in the
capital employed.

Unfortunately it must be admitted that the problem
of measuring the amount of capital employed in industry is,
in any precise sense, insoluble.   There are immense
conceptual and statistical difficulties in valuing industrial
capital for a particular industry in a particular country;
these are naturally multiplied when an international
comparison is attempted.   Yet without such a comparison,
the international position of Irish industry cannot
possibly be assessed.

The present analysis adopts an entirely
arbtirary device in order to make some attempt to resolve
this dilemma.   The only statistical data available on an
international basis having some direct connection with
capital equipment in manufacturing industry are those
provided (for 1953 in most cases) in the United Nations
study previously referred to[13]   on the capacity of installed
power equipment.   By this is meant the total horse-power of
installed prime movers not driving electric generators plus
that of all installed electric motors.[14]   In other words,
power equipment used only to generate electricity is excluded,
so that comparability between industries or countries is not
compromised by differences in the relative importance of
electricity supplied by outside undertakings (e.g. a national
grid), on the one hand, and electricity generated within the

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[12]The "cost of land and other fixed assets" purchased by
Irish manufacturing industry in 1958 amounted to 0.6 per cent
of total expenditure on plant, buildings and other fixed
assets.

[13] See footnote (5) above.

[14] Alternatively, the capacity of all prime movers plus
that of electric motors driven by purchased electricity.

consuming enterprises on the other. If these data are
adopted as indicators of the total capital employed in an
industry in effect the assumption is being made that each
unit (in terms of capacity) of power equipment in a
particular industry connotes an equal volume of all forms
of capital - including buildings - in every country being
compared.

The violence of this assumption scarcely requires
stress. It is perhaps least heroic when the industrial
group in question can be assumed to be reasonably
homogeneous (in respect of its capital-using habits) between
various countries; it becomes unworkable if an industry
differs substantially in nature from country to country,
even though its statistical description may be the same.
An example of this is the industry described as "paper and
paper products"; in Canada and the Scandinavian countries
this industry is largely concerned with the basic processes
of transforming timber into pulp and basic products, whereas
in other European countries pulp is largely imported and the
industry is mainly concerned with processing into the more
complex and later paper products. In such a situation the
assumption that the capacity of installed power equipment
bears a more or less stable ratio to total capital clearly
breaks down.

Even granted this assumption - that power-equipment
capacity is a reliable index of capital employed - the data
on horse-power of such equipment have still to be translated
into value equivalents in the currency of each country
involved. Allowance must obviously be made for the fact
that 100 HP of power equipment will imply a different value
for the corresponding "other" capital equipment in the metal
manufacture industry than in, say, the textile industry.
The choice of procedure for this piece of the analysis is
in effect determined by the fact that the United Kingdom
appears to be one of the very countries for which capital

estimates are available on a detailed industrial basis
comparable with that on which the U.N. power-equipment
statistics are presented.   The procedure adopted has
therefore been:-

> (a)   classification of U.K. capital data (in £ million
>   at 1953 prices) on an industrial basis comparable
>   to that for power-equipment;
>
> (b)   conversion of horse-power of equipment in each
>   industry in the U.K. into £ per HP;
>
> (c)   conversion of HP power-equipment in similar
>   industries for other countries in 1953 into
>   £ equivalent by means of the conversion rates
>   emerging from (b);   and
>
> (d)   translation of results at (c) into own-currencies
>   by means of the appropriate foreign exchange rate.

It seems likely that, by using Dr. Barna's
estimates as a basis, the resulting estimates for other
countries will tend to be rather high in comparison with
such other estimates as are available.   Barna's figures
are derived from insurance valuations and, in so far as
they can be compared, result in substantially higher totals
than those obtained for manufacturing industry in the
United Kingdom by the "perpetual inventory" method employed
by Mr. Philip Redfern.   Comparing the two sets of estimates,
Barna himself shows that for 1955 his estimates would be some
50 per cent higher than those implied by Redfern's work.[15]

A similar impression is left by a comparison of
the results obtained for other countries by the present
method - shown in Table 2 - with such other information as
is available for some of them from other sources.   The
comparisons possible are the following:-

> (a)   Sweden.[16] The total shown in Table 2 is Kr. 44.1
>   billion[16]   Table I of Income and Wealth[17] gives
>   Kr. 179.5 billion for all non-agricultural

[15] T. Barna, "The replacement costs of fixed assets in
British manufacturing industry in 1955", Journal of the
Royal Statistical Society, Vol. 120, Part 1, 1957, Table 4,
p.21.

[16] Throughout this study the word "billion" is used in the
the american sense of thousand million.

[17] The measurement of national wealth, (ed. Goldsmith and
Saunders), Income and Wealth, Series VIII, Bowes and Bowes,
London 1959.

reproducible assets in 1952, including investories,
dwellings, consumer durables and subsoil resources.
In 1953 manufacturing and construction accounted for
19 per cent of all non-agricultural fixed capital
formation;[18] applying this ratio would give a
total of about Kr. 34 billion for manufacturing and
construction.

 (It has to be admitted that since most fixed
assets in manufacturing are shorter-lived than
similar assets in other sectors, the ratio of
manufacturing capital in total current capital
formation may over-state its proportion of the total
capital stock. It would be exceedingly difficult
however, to make any defensible allowance for this
factor.)

(b) Norway. A total of Kr. 12,799 million in 1955
prices is given for real capital in mining and
manufacturing in 1953 by the Statistical Yearbook of
Norway 1960, (Central Bureau of Statistics for Norway,
Oslo 1960). Table 359, p.287. Between 1953 and
1955 the prices of building materials, machinery and
transport equipment rose by 2 per cent in Norway,
so that at 1953 prices this total would be about
Kr. 12,545 million. Mining and quarrying accounted
for about 5 per cent of the gross product of mining
and manufacturing in 1953, which would imply a
capital stock of abour Kr. 12 billion for manufact-
uring, compared with the total of Kr. 20.6 billion
shown in Table 2.

(c) Canada. The total shown in Table 2 is $16.96
billion. Scott[19] suggests a total of $12.2
billion for structures and equipment in resource
industries and manufacturing in 1955 at 1949 prices
and indicates that at current prices this would be
about $16.0 billion. "Resource industries",
however, account for about 40 per cent of this, so
that the total for manufacturing as here defined might
be only about $10 billion.

(d) United States. The total shown for 1954 in Table 2
is about $180 billion. Table 1 of Income and Wealth
gives $827 billion for all structures and equipment
in 1955. In that year fixed capital formation in
manufacturing accounted for 18.6 per cent of total
fixed capital formation;[20] applying this ratio
would give about $154 billion for manufacturing in
1955.

In the context of capital estimates the uncertainties are too

great to justify pronouncements as to absolute right or

wrong. All that can be said is that the Barna basis employed

[18] Yearbook of National Accounts Statistics 1960, United
Nations, New York 1961, Table 4, p. 204.

[19] "Canada's reproducible wealth", Income and Wealth,
Series VIII Tables III-V, pp. 200-1.

[20] Yearbook of National Accounts Statistics 1960, Table 5
p. 238.

here seems likely to give significantly higher figures than estimates based on the "perpetual-inventory" basis which underlies most of these other totals - many of which are also net of depreciation rather than gross - with which comparison has been made.

2. Comparison of capital estimates

For the purposes of international comparison, however, such a tendency would be of no overwhelming importance provided that it was reasonably consistent as between each industry in different countries. On the other hand it is not entirely unimportant; an over-valuation of capital will naturally tend to overstate costs in highly-capitalistic industries or countries in comparison with other industries or countries.[21] The comparison of overall capital-per-employee in manufacturing in nine countries shown in Table 2 may be considered with this in mind. It should be remembered that it is capital per head <u>in manufacturing</u> <u>only</u> which is being compared, not capital per head of total population.

In general the results are not entirely unconvincing.

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[21] Mr Garret Fitzgerald has also pointed out to me that if capital is relatively under-utilised in a particular country, as may be the case in Ireland - i.e. a given capital stock is used to produce a smaller output than would be the case elsewhere - a tendency to over-estimation in the capital figures will lead to over-statement of relative costs (and hence under-statement of relative coefficients) just as it will between highly-capitalistic and less-capitalistic industries or countries in the ordinary sense of the term.

It may be helpful to indicate the likely order of magnitude involved. The estimated index of the total factor coefficient for Irish manufacturing as a whole in 1953 (U.K. = 100) using the present capital estimates is 95. If the capital estimates (for both Ireland and the U.K.) were (a) 25 per cent. (b) 50 per cent. (c) 100 per cent too high, this index would rise to 97, 98 or 99 respectively. In other words, a change of 100 per cent in the estimate of capital stock would result in one of about 4 per cent in the final index of the total factor coefficient. In particular industries of course, the change would be proportionately smaller or greater than this, depending on the industry's relative degree of capital intensity.

That capital per head in North American manufacturing should be about twice the U.K. level, is not unlikely; that the figure for Japan should be less than a quarter of it is also probable enough; that the figure for Ireland should be below that for the United Kingdom is also likely, although it is perhaps surprising that the inferiority is only of the order of 13 per cent, Once again, the effects of differing industrial structures, as well as differences within given industries, should be borne in mind, however.

The unlikely feature of Table 2, however, is the suggested per capita figures for the Scandinavian countries, especially Norway and Sweden.[22] It is certainly probable that relatively large amounts of capital are indeed engaged in the Scandinavian economies; a recent comparison of European incremental capital-output ratios, for example, yielded the following results for the period 1949-56:-[23]

Denmark	6.6
Germany	2.9
Italy	3.4
Netherlands	5.0
Norway	8.1
Sweden	5.7
United Kingdom	5.4

These results for Denmark and Norway are on the high side,

[22] Even allowing for the backlog of capital losses which may still have existed in 1953, the German figure looks too low in relation to the others. As stated above, the German and Japanese estimates are wholly or partly based on independent capital stock figures whose basis of calculation probably tends systematically to produce lower totals than would probably emerge from the Barna basis. The succeeding results for Germany and Japan should thus be interpreted with this in mind. On the basis used here, the overall factor coefficients for all manufacturing in 1953 (U.K. = 100) were 121 for Germany and 120 for Japan. If the capital estimates employed here for these two countries were (a) 25 per cent (b) 50 per cent or (c) 100 per cent too low in relation to those employed for the U.K. and the remaining countries, these index numbers would be changed as follows:-

Capital stock	Germany	Japan
+ 25%	112	107
+ 50%	104	96
+ 100%	90	80

[23] A. Maddison, "Economic growth in Western Europe, 1950-57" Review of the Banca Nazionale del Lavoro, No. 48, March 1959, p. 81.

TABLE 2: ESTIMATED CAPITAL STOCK IN
MANUFACTURING INDUSTRY, 1953.

Country	Estimated total capital stock at current prices	Numbers engaged 000s	Capital stock per person engaged	
			Own currency	£ equivalent
Denmark	Kr. 13,973 mn.	301	46,422	2,399
Germany	DM 77,624 mn.	5,087	15,259	1,304
Ireland	£248.6 mn.	146	1,703	1,703
Norway	Kr. 20,558 mn.	262	78,466	3,925
Sweden	Kr. 44,077 mn.	749	58,848	4,053
United Kingdom (a)	£14,849 mn.	7,602	1,953	1,953
Australia	£A 3,130 mn	924	3,387	2,709
Canada	$ 16,962 mn.	1,326	12,792	4,618
Japan	Yen 4,320 bn.	4,668	925,449	925
United States (a)	$179.9 bn.	15,760	11,415	4,062

(a) Data relate to 1954 throughout.

but even so they are scarcely sufficiently high to
constitute a corroboration for the results of Table 2 or
to make them entirely convincing.

More light is thrown on this question by a
comparison of average capital-output ratios by industry, as
is provided by Table 3.[24]   Overall capital-per-head in
manufacturing is subject to the same limitation as the
average labour coeffficient for manufacturing as a whole -
it is a reflection of differences in economic structure as
well as of variations in capital intensity in any particular
industry.   For reasonably homogeneous industrial groups,
however, a comparison could be distinctly more revealing.
It is only to be expected that variations would occur from
one country to another, but on the other hand, the range of
variation should generally be of a smaller magnitude than
that suggested by the _per capita_ comparisons of Table 2.

The overall averages emerging in Table 3 conform
with this expectation.   The ratios for manufacturing as a
whole all lie within the range of 1.64 to 3.89, although
the figure for 1954 is probably unrepresentative for the
United States.[25]   For Europe, other than Germany, the range
is only 2.43 - 3.89, or about 60 per cent.   Within this
broad average, however, wider variations are observable.
In the particular case of the paper industry mentioned earlier,
Table 3 confirms the view that international differences in
its character are so great that the assumption of a constant

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[24] These are calculated by dividing the estimated capital
stock in each industry by the net output of the industry in
question.

[25] In terms of industrial production 1954 was a bad year
for the United States, in contrast to European experience.
In that year manufacturing output fell by 7 per cent in the
U.S., whereas in the European countries shown in Table 3 it
rose by between 3 and 12 per cent., Ireland being at the
bottom end of this range.   Ignoring changes in the estimated
capital stock (which are certain to be small over a single
year), the capital-output ratio for 1955 on the basis of
calculation being used here would have been about 1.9.

TABLE 3: CAPITAL-OUTPUT RATIOS IN MANUFACTURING INDUSTRY, 1953

	Denmark	Germany	Ireland	Norway	Sweden	U.K.[a]	Australia	Canada	Japan	U.S.[a]
1. Food, Drink, Tobacco	4.49	3.04	3.87	2.31	5.25	2.80	5.47	2.19	2.59	1.83
2. Textiles	3.07	1.63	3.46	4.04	4.89	4.54	2.68	3.03	2.49	2.74
3. Clothing & footwear	1.48	0.73	1.64	1.81	1.62	1.45	1.50	0.55	2.13	n.a.
4. Wood	1.99	1.76	2.12	3.62	2.83	1.54	2.51	1.97	1.68	1.06
5. Paper	3.47	2.26	3.29	10.89	10.64	3.25	3.58	7.32	2.44	2.80
6. Printing	2.35	1.26	2.43	3.42	2.02	2.18	3.17	1.01	0.64	0.73
7. Rubber	1.99	1.07	n.a.	2.11	2.38	2.15	2.43	0.93	3.55	1.12
8. Chemicals	3.23	2.17	2.58	8.82	3.95	3.09	2.46	2.44	3.96	3.56
9. Minerals	2.61	1.43	2.59	2.60	2.54	1.75	2.22	1.39	1.61	1.24
10. Metals	2.10	2.52	1.70	1.58	4.89	2.98	2.76	1.71	2.62	2.34
11. Metal Products	2.22	1.28	1.23	2.29	2.62	1.87	1.78	1.12	2.64	0.99
12. Other Manufactures	2.50	0.27	2.67	1.40	1.25	1.10	1.53	0.57	0.81	0.83
All Manufacturing: Unadjusted.	2.78	1.69	2.90	3.88	3.89	2.43	2.66	2.13	2.55	1.64
Adjusted.[b]				2.42	3.23			1.59		

NOTES: (a) 1954

          (b) See text.

relationship between power equipment and total capital stock
breaks down.

It is advisable, therefore, to use the results of
Table 3 as a test of the reasonableness of the estimates
arising from this method and to exclude from subsequent
calculations any results which appear from Table 3 to be
seriously out of line. The capital estimates for the
paper industry in Norway, Sweden and Canada clearly come
into this category, as does that for the chemical industry
in Norway. The overall capital-output ratios for these
three countries after making these corrections are shown in
Table 3; it will be seen that the adjusted results are much
more in line with other countries as a result.

It will be noted that the estimated capital-output
ratio for Ireland is rather on the high side in comparison
with the United Kingdom and Denmark (and the adjusted average
for Norway.) This is not a case of its industrial structure
causing a rather deceptive result, as with the labour
coefficient; in seven of the separate industries for which
comparison is possible the Irish capital-output ratio is
above the corresponding figure for the United Kingdom –
although one of them, it must be added, is the heterogeneous
group "other manufacturers" in which comparability is
obviously drastically limited.

3. The cost of capital.

Having brought together these estimates of the
capital employed in manufacturing industry in various
countries it is necessary to determine the current charges
conceptually attributable to that capital in order to place
capital on the same footing as labour. It is customary
to regard the balance remaining from net output after the
deduction of wages[26] as the return on capital. Matters

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[26] And after payment of other "outside" charges, of course –
rates, advertisements, transport costs, etc.

are a little more complicated than this might suggest,
however. Apart from the various "supplementary costs"
included in net output but unfortunately not separable from
it - other than compulsory employers' social security
contributions for which allowance has been made - this
balance of net output has to cover three distinct ingredients:

(a)   interest - the current cost of borrowing capital,
        or, to look at it from the lender's point of view,
        the reward for accepting the illiquidity of an
        industrial asset, profit uncertainties apart,
        rather than holding cash;

(b)   Depreciation - the sums an enterprise is obliged
        to set aside so that the capital can be maintained
        and repaired and ultimately the loan repaid or the
        asset replaced[27];   and

(c)   the true profit, the return to enterprise as a
        factor of production as distinct from capital,
        before payment of taxes.

The problem of estimating the amounts actually set
aside by enterprises under each of these headings is well-
known;   quite properly it is generally regarded as insoluble.
For an international comparison of the kind under discussion,
however, the _facts_ of actual practice are less important
than the application of reasonable criteria to all industries
and all countries alike.   An international comparison of
costs should not be affected by differences in accounting
practices with regard to depreciation from one country to
another, for example, or by variations in the extent of
internal finance (and avoidance of interest charges) as
opposed to market finance.   A meaningful comparison can be
achieved only by assuming that given criteria are applied
throughout, whether this happens to be the case in reality
or not.

What notional criteria are suitable, then, for
the computation of capital costs?   So far as interest
charges are concerned, some allowance must obviously be

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[27] In their study of U.K. manufacturing industry, Reddaway
and Smith impute a running charge of 15 per cent on capital
which is specifically stated to exclude any depreciation
element ("Progress in British manufacturing industries in
the period 1948-54", _Economic Journal_, Vol. LXX, No. 277,
March 1960, p. 21).   There would seem to be no theoretical
justification for excluding depreciation in this way.

made for variations in the cost of capital in different

countries; if the relative supply costs of capital vary

from country to country - as they do - then the structure

of a given industry will differ in the countries concerned

so as to take account of it, just as differences in labour

costs influence the use of labour. In what follows,

therefore the interest cost of industrial capital in each

country has been assumed to be double the current rate on

long-term government bonds, or the closest available

alternative.[28] There might be some case for also

applying differential interest rates to correspond with the

varying degrees of risk associated with different industries.

The practical difficulties of doing so are very considerable,

however, and the point can be met equally well by assuming

that the residual rate of "true" profit for any industry

takes account of this differential risk element.

A rule for depreciation, which must be taken to

include. expenditures on repair and maintenance, is less

easy to determine. It is known that practices in this

matter vary tremendously from one enterprise to another and

from one industry to another, to say nothing of inter-

national differences. Fortunately, however, the analysis

is not concerned with what _is_ done, nor even with what

should be done; all that the comparison requires is the

application of _some_ reasonable criteria consistently,

The word "reasonable" is important, however, since the

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[28]The I.M.F. publication International Financial Statistics
provides a governmental bond yield for the appropriate years
for all the countries involved and it is for this reason
that the government bond rate has been adopted as the basis
of imputed capital charges. This rate is not given by the
I.M.F. for 1953, however, for Japan and Germany. The bank
lending-rate has been used instead for the former and an
arbitrary rate of 10 per cent for the latter. Within
reasonable limits, the actual level assumed for interest
rates affects the outcome only to a moderate degree. For
Irish manufacturing in 1953, for example, an assumed interest
rate equal to the government bond rate (instead of double
it) would raise the total factor coefficient from 95 to
98 (U.K. = 100).

application of grossly unrealistic criteria would distort comparisons between industries or countries which differed substantially in the matter of capital intensity.

It is generally believed that plant and machinery usually have effective working lives of between 5 and 15 years implying a "real" depreciation rate of anything between 7 and 20 per cent per annum; buildings, on the other hand, will clearly have a longer life, and an annual depreciation rate of 2 per cent could well be appropriate. Arbitrarily, therefore, an overall depreciation rate of 5 per cent per annum has been adopted in what follows; this may be a little on the low side; as has already been remarked, however, the precise value of the assumed rate is of less importance in this context, provided it is not manifestly unreasonable, than its consistent application internationally.[29]

The cost to be imputed industry by industry, therefore, can be taken as the sum of interest and depreciation charges. This, together with total labour cost, yields an estimate for what is called here the total factor costs of producing a given net output. The difference between total factor costs, so defined, and the value of net output will represent the true rate of profit in the industry, before tax, in comparison with the same industry in other countries. The ratio between net output and total factor costs — the "total factor coefficient" — therefore provides an indication of the margin between output and cost in real terms — i.e. in terms

[29] The U.K. data, however, seem to indicate that a 5 per cent overall depreciation rate may be rather high. The 1960 Blue Book shows that gross capital formation in 1955 by manufacturing industry accounted for 69 per cent of the total for all companies; if the same ratio is applied to capital consumption in that year by companies, capital consumption by manufacturing industry would come out at about £388 million. This would give depreciation rates of about 2.6 per cent on the Barna capital estimates and 3.8 per cent on the corresponding Redfern estimates.

of the factors of production it could purchase in the country
concerned.   It is not necessarily a measure of efficiency
in the ordinary sense of the word, however, since it may
reflect monopoly powers, government support or tariff
protection.[30]

One important point calls for stress in this
connection.   The total costs involved in the present
analysis refer, so far as capital is concerned, to
notional rather than actual costs.   This being the case,
it is quite conceivable that total costs, so calculated,
may exceed net output;   what is being called the total
factor coefficient (net output/total factor costs) may thus
be less than unity.[31]   This would not necessarily imply
that the industry concerned is operating at a commercial
loss in reality.   The imputed capital costs may differ
from actual costs paid out by the industry because –

(a)   The capital estimates being employed are too high; <u>or</u>

(b)   Its capital is valued at historical or written-down cost, rather than at current replacement costs, the concept used here;   <u>or</u>

(c)   an interest charge of less than the assumed rate is being paid on fixed capital as a whole;   <u>or</u>

(d)   capital is being amortised at less than 5 per cent of current replacement cost.

A total factor coefficient of less than unity means, therefore,
<u>not</u> that the industry is currently running at a commercial
loss but that it would be running at an economic loss if
(assuming an unchanged level of efficiency) its capital
were valued at replacement cost, carried the prevailing
level of interest rates, and was being amortised over 20 years.

4.   The total-cost position, 1953

If total factor costs are calculated in the
manner described, the relation between net output and its
factor costs can be calculated for each industry and each

[30] An attempt to allow for this crucially important latter factor is made in Part IV below.

[31] This in fact occurs on several occasions, notably (and not perhaps surprisingly) with the textile industry.

country.   The detailed calculations are shown in Table 4;
they are presented for ease of comparison as index numbers
based on the U.K. coefficients.   At first sight the range
of coefficients is bewildering, if not overwhelming;   on
closer inspection, however, something of a pattern begins
to emerge.   It can be summarised as follows:-

In	Denmark	9	of	the	12	lie	in	the	range	79	104
"	Germany	8	"	"	12	"	"	"	"	116	138
"	Ireland	8	"	"	11	"	"	"	"	77	97
"	Norway	7	"	"	10	"	"	"	"	100	124
"	Sweden	8	"	"	11	"	"	"	"	76	99
"	Australia	9	"	"	12	"	"	"	"	88	99
"	Canada	8	"	"	11	"	"	"	"	115	132
"	Japan	6	"	"	12	"	"	"	"	104	122
"	U.S.A.	10	"	"	11	"	"	"	"	105	138

In other words, the majority of coefficients - in most cases
the substantial majority - lie within a comparatively narrow
range of 20 points or so.   The least sign of consistency is
found in the case of Norway;   seven of the ten observarions
lie in the range 100-124, but one other is as low as 75 and
another is a high as 177.

Ths scope for comparison and speculation provided
by Table 4 is naturally very considerable;   the discussion
here will be confined to the findings for Ireland.   In
general, as will be seen, Ireland's position does not appear
too favourable.   The average coefficient for manufacturing
as a whole is the lowest of the nine countries listed with
the single exception of Sweden.   Only in three industries -
textiles, metals and metal products - do the Irish
coefficients compare favourably with those of the United
Kingdom and, a fortiori, most of the other countries listed.
The Irish coefficients in these industries are not only
higher than those of the United Kingdom but in the cases of
both textiles and metal products they compare favourably
with those shown for the other European countries apart
from Germany.   (It will be appreciated, of course, that all
this is subject to the adjustments which must be made to
allow for the effects of tariff protection.)

TABLE 4: *TOTAL FACTOR* COEFFICIENTS, 1953.

U.K. = 100

INDUSTRY	DENMARK	GERMANY	IRELAND	NORWAY	SWEDEN	U.K.[a]	AUSTRALIA	CANADA	JAPAN	U.S.[a]
1. Food, Drink and Tobacco	66	86	82	177	76	100	63	120	121	124
2. Textiles	104	162	121	124	99	100	124	117	165	127
3. Clothing and Footwear	85	134	97	106	97	100	98	122	113	n.a.
4. Wood	83	99	89	75	91	100	92	109	122	120
5. Paper	79	121	91	n.a.	n.a.	100	94	n.a.	129	111
6. Printing	86	119	89	92	104	100	88	129	183	136
7. Rubber	83	138	---	116	102	100	92	157	100	122
8. Chemicals	82	119	94	n.a.	89	100	110	118	97	105
9. Minerals	82	119	88	100	98	100	89	132	143	128
10. Metals	132	116	111	177	88	100	99	142	120	119
11. Metal Products	83	122	105	106	91	100	96	125	104	128
12. Other Manufactures	68	99	77	119	118	100	93	115	120	109
All Manufacturing	84	121	95	103	87	100	94	118	120	126

Note: (a) 1954.

At the other end of the scale, the low index number against food, drink and tobacco must give cause for comment. The relative coefficients for this industry in Denmark and Sweden are also very low, which might suggest that the capital-indicator may not be operating too reliably in this sector; against this possibility it must be remarked, however, that a high ratio emerges for Norway and for the non-European countries shown in the table.

5.   Total costs;   Ireland and the U.K., 1958

Detailed Census of Production data are available for Ireland and the United Kingdom in 1958 and these permit a more up-to-date comparison of the type attempted in the previous section; its results are summarised in Table 5. Between 1953/4 and 1958 the estimated coefficients for manufacturing as a whole showed a tendency to fall in both countries, implying that factor costs rose rather more rapidly than the value of output – that is to say, that overall prices rose less rapidly than factor costs and that the share of profits in the final product tended to decline. On average this process seems to have had equal effects in the United Kingdom and Ireland, so that the relative position of manufacturing as a whole in the two countries was unchanged between 1953/4 and 1958.

This overall stability of relative costs in Ireland and the United Kingdom is naturally the resultant of movements in either direction in particular industrial groups; earlier sections have also stressed the probability of these divergences from the average becoming more marked as the industrial classification adopted becomes finer. Between 1953 and 1958 Ireland's cost position in relation to the United Kingdom would appear to have weakened considerably in the food, drink and tobacco sector and in the manufacture of wood products. On the other hand, it seems to have improved appreciably in

TABLE 5: TOTAL FACTOR COEFFICIENTS, U.K.

AND IRELAND, 1953-58.

INDUSTRY	UNITED KINGDOM		IRELAND			
	Factor coefficients		Factor coefficients		U.K. = 100	
	1954	1958	1953	1958	1953	1958
1. Food, drink & tobacco	1.25	1.30	1.02	0.93	82	72
2. Textiles	0.84	0.72	1.02	0.96	121	133
3. Clothing & footwear	1.19	1.11	1.15	1.11	97	100
4. Wood	1.14	1.12	1.01	0.89	89	79
5. Paper	1.14	0.97	1.04	1.03	91	106
6. Printing	1.12	1.08	1.00	1.02	89	94
7. Chemicals	1.25	1.14	1.17	1.16	94	102
8. Minerals	1.22	1.13	1.07	1.11	88	98
9. Metals	1.06	1.00	1.18	1.20	111	120
10. Metal products	1.14	1.10	1.20	1.22	105	111
11. Other	1.37	1.10	1.06	0.81	77	74
All manufacturing	1.12	1.07	1.06	1.01	95	94

chemicals, textiles, paper, minerals, metals and metal products. The change in the position of the food industry seems to have been due to a combination of a worsening of the absolute cost position in Ireland and a simultaneous improvement in the United Kingdom; the opposite was true, however, for minerals, metal manufacture and metal products. The strengthened relative position in paper and chemicals was attributable almost wholly to a worsening in the United Kingdom, while that in textiles was the outcome of a worsening in both countries which happened to be of greater magnitude in the United Kingdom than in Ireland.

6.   The international cost position, 1960

As the comparison comes closer to the present day it obviously becomes more interesting and useful; unfortunately it also becomes less reliable, since the available data tends to become more scanty and heterogeneous . Nevertheless it seems worthwhile to hazard some estimate of what Ireland's relative position in terms of industrial costs looked like in 1960.

Since Census of Production data are not available on a more or less comparable basis for later than 1958 for the United Kingdom and Germany, 1954 for the United States and 1953 for Canada, Japan and the Scandinavian countries, a variety of sources have to be used to bring the comparison up to date - national income estimates, where available, index numbers of industrial production and prices where not. The results of such an exercise for 1960 are summarised in Table 6. A comparison is possible only for manufacturing as a whole; the variety of experience which may be concealed in such aggregation has been stressed more than once above.

Broadly speaking, the impression left by the findings shown in Table 6 is one of a substantially unchanged relative position between 1953 and 1960. Within

Europe, the total factor coefficients appear to have declined in every country except Sweden. In the United Kingdom and Germany the overall change was relatively small; in Denmark and Ireland rather greater; in Norway greatest of all. In the three non-European countries shown, the rise in the overall Japanese coefficient is especially striking, while the improvement in the United States position is no doubt primarily a reflection of the peculiar circumstances prevailing in the base-year; reference has been made to this factor earlier.

The relative positions of the countries listed, however, show no substantial change between 1953 and 1960. In 1953 the top two positions were occupied by Japan and Germany; this remained true for 1960, although by then the United States had moved much closer to their level than in 1953. The bottom two places in 1953 were occupied by Ireland and Sweden, and this also remained true in 1960 - Norway in this case moving closer to their level.

All this, then, relates to the apparent position between 1953 and 1960 with matters as they stood., The object of the analysis, however, is to assess the possible consequences of the reduction, and ultimate removal, of the tariff barriers from which the industry of all these countries derived some varying degree of protection. The analysis must therefore now turn to the difficult problem of the measurement of these effects.

PART IV: THE EFFECT OF TARIFFS

1. The tariff level

The problems attached to comparisons of average tariff levels in different countries are too well known to require description here. Like the problem of measuring the effects of any given tariff, its solution is impossible in any complete sense. The most that can be

TABLE 6: ESTIMATED DEVELOPMENT OF TOTAL FACTOR COEFFICIENTS

IN MANUFACTURING INDUSTRY, 1953-1960.

COUNTRY	Estimated total factor coefficient.			Index, U.K. = 100	
	1953	1960	1953 = 100	1953	1960
1	2	3	4	5	6
Denmark	0.94	0.86	91	84	77
Germany	1.36	1.35	99	121	121
Ireland	1.06	1.01	95	95	90
Norway	1.15	1.02	89	103	91
Sweden	0.97	0.93	96	87	83
United Kingdom [a]	1.12	1.12	100	100	100
Canada	1.32	1.19	90	118	106
Japan	1.34	1.76	131	120	157
U.S.A. [a]	1.41	1.48	105	126	132

(a) Base Year 1954

looked for is an arbitrary procedure which holds out some prospect of indicating the right orders of magnitude.

For a comparison of European tariff levels on an industrial basis similar to that used for the analysis of the two preceding sections, therefore, the following procedure has been adopted. For each of the eleven industrial groups involved a small number of what appear to be representative products have been selected from the Irish tariff list, and the rates on these (converted to ad valorem basis where necessary) set down for Ireland and the other five European countries in question. A straightforward arithmetic (unweighted) average has then been calculated for each industrial group and each country.[32]

The arbitrary elements in this procedure will be obvious. In the first place, the commodities selected for comparison may not be truly representative; the entire comparison rests on only 58 separable items, distributed over the industrial groups roughly in accordance with the relative importance of each group in Irish manufacturing as a whole. Secondly, the use of an unweighted average implicitly attributes equal importance to each item within the group concerned which is naturally open to objection; the average for manufacturing as a whole, however, is calculated by weighting the rates for each industry by its net output in 1953. Finally, customs duties on tobacco, alcholic liquors and hydrocarbon oils are virtually

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[32] The Irish rates are derived from Table A of my study The Irish tariff and the E.E.C: a factual survey, with the additions of the items other than books listed under "printing"; these were derived in the same way and from the same sources as the items shown in that table. The European rates are taken from the P.E.P. study Tariffs and trade in Western Europe, Allen and Unwin, London 1959. The rates for Ireland are the preferential rates throughout. In some cases two sets of rates are operated in the Irish tariff system, one applicable so long as the commodity concerned is subject to quota restriction and the other applicable in the event of the ending of such restrictions on imports. In such cases the latter rate has been chosen since it is presumably the more realistic one so far as protection is concerned.
It will be appreciated that the figures thus relate to the position in 1959-60. Since that time, however, the progress of both the E.E.C. and the E.F.T.A. arrangements has resulted in substantial reductions, at least so far as mutual trade is concerned, in the tariff levels of all the countries shown except Ireland.

impossible to compare internationally, import levies
being of a revenue nature in many cases but of a protective
nature in others; of necessity, therefore, these categories
have been omitted from the comparison.

The overall outcome of the exercise is shown in
Table 7. The fact that the Irish tariff is high in
comparison with other Western European countries is well
enough known; the magnitude of the difference suggested by
the table, however, even though preferential rates are used
for Ireland and the full rates for other countries, is
perhaps unexpected. It is worth pointing out, therefore,
that the comparison is confined to manufactured products
only; like the United Kingdom tariff, the Irish tariff
on many primary products is lower than the European average,
and this would naturally tend to reduce the gap suggested
by Table 7.

2. Tariff levels and factor coefficients.

If the measurement of average tariff levels is
difficult, the assessment of their effects on home industry
is even more formidable. The coefficients used in the two
preceding sections are based on the value of net output in a
situation where tariffs exist; to some extent they must
inevitably reflect tariff protection rather than industrial
productivity in its real sense. How can this effect be
allowed for?

If, in a protected industry, both prices and
wages adjust themselves to take full and equal advantage of
a given tariff rate the level of the labour coefficient in
that industry will of course be unaffected.[33] On the
other hand, the only realistic assumption possible about
wages in the modern world is that, while they will no
doubt rise to take advantage of a tariff wall, it is

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[33] In this and subsequent paragraphs the discussion is
conducted in terms of the labour coefficient for ease
of exposition; it will be appreciated that the argument
applies to capital costs equally with labour costs.

TABLE 7 : COMPARATIVE EUROPEAN TARIFF RATES

ON MANUFACTURES.

INDUSTRY.	AVERAGE TARIFF RATES %					
	IRELAND (PREFEREN-TIAL)	U.K. (FULL)	GERMANY	SWEDEN	DENMARK	NORWAY
1. FOOD, DRINK, TOBACCO.	22	11	26	N.A.	N.A.	N.A.
2. TEXTILES.	39	18	14	10	10	13
3. CLOTHING AND LEATHER.	48	20	13	13	16	22
4. WOOD.	40	14	10	3	4	6
5. PAPER.	20	18	15	6	7	N.A.
6. PRINTING.	38	0	5	0	2	10
7. CHEMICALS.	31	13	14	0	6	7
8. MINERALS.	44	15	12	14	9	19
9. METALS.	18	10	8	4	0	0
10. METAL PRODUCTS.		22	11	10	7	13
11. OTHER MANUFACTURES.	34	23	11	13	7	14
OVERALL AVERAGE.	...	17	13	8	8	11

exceedingly improbable that they could be driven down again if that tariff wall were to be removed. A comparison of the competitive position of that industry in the absence of existing protection would have to assume that the impact of the tariff reduction would be felt only on the market value of output and not on the wages bill; the coefficient itself, in other words, would have to be reduced pari passu with the fall in protection.

The assumption that prices and wages rise equally and to the full extent of the tariff is not entirely realistic, however. The result of such a sequence would be that the factor coefficients of the industries concerned would be unchanged and that the competitive position of the home industry would be substantially unaltered vis-à-vis foreign-produced imports.[34] But tariffs are imposed in many cases precisely because home industry is not able to compete against imports with its technically-given existing factor coefficients.

A more realistic hypothesis, therefore - certainly in the Irish case - is that wage-rates are determined by convention (for example, are related to rates prevailing in, say, the United Kingdom) and that the effect of a tariff is not to permit a more or less equal rise in internal wages but to permit profitable operation at the given wage-level by a domestic industry which (in the absence of protection) would not previously have survived at all. In such a case the effect of the tariff will be to allow the value of output (i.e. the price of the product) to rise in relation to a more or less predetermined wage-bill and to raise the factor coefficients accordingly.

It is naturally impossible to substantiate this latter hypothesis conclusively. The experience of the

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[34] Substantially, but not completely, of course, if profit-margins were positive before the imposition of the tariff they would be raised pari passu with prices and wages.

imposition of the Special Import Levies in Ireland in 1956
does present an opportunity, however, to test it against
the statistical records in some degree.   The levies imposed
in 1956 fell more heavily on certain types of product than
on others.[35]   In the year ending March 31st, 1957, for
example, they brought in a total of £4.4 million;   of this,
about £2.5 million, or nearly 60 per cent, was derived from
products falling in the four industrial groups of non-
electrical machinery, electrical machinery, motor vehicles
and miscellaneous manufactures.   What was the effect on these
four groups?

The relevant data are set out in Table 8.   First,
it is clear that wages did _not_ in general rise in those
groups more rapidly than in the industries enjoying less,
or none, of this new protective shelter.   No significant
differences is discernible at all.   The experience of
prices was in contrast with this.   The average value of
output was raised by 16 per cent between 1955 and 1957 in the
case of non-electrical machinery and by 19-21 per cent in the
other three protected trades;   in the rest of Irish industry
it rose only by 6 per cent.[36]

Whether wages rise with prices or not under the
stimulus of tariff protection, then, the conclusion remains
the same.   The effects of the removal of tariffs, if

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[35] It will be appreciated that the object of these levies
was to strengthen the external payments position rather
than to protect home industry as such.   Nevertheless they
inevitably had a protective effect.

[36] The hypothesis that Irish wage-rates are largely
determined exogenously - i.e. by the prevailing U.K. level
in comparable trades is supported by the evidence of the
Census of Production.   This shows for 1954 that in the
majority of cases average earnings in Ireland were 70 - 80
per cent of the U.K. average for the same industry.   Since
it is well known that in recent years industrial earnings
in the U.K. have generally remained well above basic wage-
rates, it seems likely that Irish wage-rates are generally
very close to the British.   This general stability in the
ratio of Irish to U.K. earnings persists despite wide
variations in relative labour productivities.

productivity remains constant, can be indicated by reducing the factor coefficients of the industry concerned in a proportion comparable to the price increases generated by the initial imposition of the tariff. The analysis can therefore turn to concentrate on this latter effect.

3. Tariffs and net output

The existence of a tariff clearly enables the home producer to raise his selling price in comparison with that he could have charged previously; he can thus raise the value of his net output, even if the latter is unchanged in real terms. The question of the precise effect which a tariff will have on net output values, as revealed in the Census of Production, is nevertheless a very complex one. Four separate aspects may be indicated.

The first is the extent to which a producer will choose to raise the price of his product. Theoretically, he may raise it to the full extent of the tariff; on the other hand, he may raise it only to the level at which his profit becomes - in some sense - fair and reasonable, which may involve little or no price change. There are considerations pointing in each of these two directions. On the one hand, it might seem justifiable to assume that prices will be raised by a percentage equal, or very close, to the tariff:-

(a) In determining the tariff, the authorities presumably have an eye to the minimum level necessary to secure a reasonable profit for the home industry;

(b) The producer may feel that if he leaves some margin of protection unexploited, labour will proceed to insist on wage increases to absorb it; *and*

(c) few producers are likely to feel that any level of profit below that practically obtainable is in fact fair and reasonable.

On the other hand, certain factors may work in the opposite direction, especially in the Irish case:-

(a) Since Ireland has no anti-dumping legislation, it is argued that the Irish tariff is set high enough to prevent not only foreign competition of the ordinary sort but also dumping at below average cost;

TABLE 8:   IMPORT LEVY INDUSTRIES AND

AVERAGE PRICES, 1955-57.

Industry	Wage Changes 1955-57			Price Changes 1955-57		
	Average Wages (£)		Index 1955= 100 (3/2)	Value of Net Output 1955=100 1957	Index of Volume of Output 1955=100	Price Change (5/6)
	1955	1957				
1	2	3	4	5	6	7
Non-electric Machinery.	372	409	110	104.9	90.5	116
Electrical Machinery.	319	362	113	115.5	97.2	119
Motor Vehicles.	438	492	112	81.2	66.9	121
Misc. Manufactures.	351	388	111	113.5	94.8	120
All Other Manufacturing	329	363	110	103.1	97.6	106

Source :   Statistical Abstract of Ireland.

(b) Foreign producers may have absorbed part of past tariff increases in the form of lower profit-margins, so that the degree of price protection enjoyed by the domestic producer is less than the tariff itself; (37)

(c) The government, in conceding tariff protection high enough to shut out foreign produce, may insist upon undertakings from home producers that prices will not be raised beyond some specified level; (38)

(d) A high tariff may be adopted merely to break a habitual, and irrational, prejudice against a home product equal in price and quality to the imported product; and

(e) Where consumers are familiar with prices prevailing in neighbouring countries, the pressure of public opinion may have the same effect as the government control mentioned in (b) in restraining producers in their price policy.

The matter may thus safely be described as a fairly complex one. (39)

The second aspect worth remembering is that tariff reductions usually have two sides for an individual producer. If the fall in the tariff on imports competing with his own product is part of a general tariff adjustment (as in the Common Market context it clearly will be), the price of his raw materials and purchased semi-finished products will be affected as well as that of his own product. This would be particularly important in a country like Ireland, having little or no basic industry and relying heavily on imported materials and components.

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(37) It has been suggested that in the United States — admittedly a highly competitive market — close to a half of the tariff on manufactures seems to have been absorbed by foreign producers rather than added on to prices — M.E. Kreinin, "Effect of tariff changes on the prices and volume of imports", American Economic Review, Vol. LI, No. 3, June 1961, p. 317.

(38) In Ireland's case there even exists machinery by which representations about undue restrictions of competition on the home market can be made periodically by another government — i.e. the United Kingdom,

(39) Some light will be thrown on this question by a study of the relative prices of similar products in Ireland and the United Kingdom to be published in a future Institute paper. It can be said that the findings of this study are broadly consistent with the central assumption adopted in the present work.

Thirdly, in any particular industry not all net output is competing with imports, so that some producers may not need to reduce prices when protection ceases. For purely physical reasons some elements of most industries are protected naturally within a substantial range of prices, whatever the tariff level may be - obvious examples are bread, bespoke tailoring, daily newspapers, and repair services of all kinds. International competition in products of this sort may not be impossible, but it is severely limited. How much of the net output of an industry enjoying protection falls into this category is naturally difficult to say; since international trade is both practicable and profitable with the majority of manufactured products; it is not likely to be very substantial in most industries, however, especially if the domestic price differential becomes large in relation to potential substitutes from abroad.

Each of these three elements of the problem tend to the conclusion that the effects of any given reduction in tariffs of particular products may be moderated in various ways when related to the overall net output of the industry concerned. The fourth element, however, works very strongly in the opposite direction. A tariff is levied on the final value of products entering the home market from abroad. Its abolition would therefore involve an enforced reduction in the gross value of the home product; if the cost of raw materials, fuel, components etc. were largely fixed to the home manufacturer, therefore, a relatively small reduction in the gross value of output might require a much more substantial cut in the "value added" component - i.e. labour costs, capital costs or profits.

Reference to the structure of Irish industry may help to emphasise the magnitude of this point.

TABLE 9.4: GROSS/NET RATIOS.

IRELAND, 1958

	Value of output £ million		2 as % of 1
	Gross	Net	
	1	2	3
Food (a)	146.7	25.8	17.6
Textiles	23.2	7.3	31.5
Clothing and leather	35.2	14.1	40.1
Wood	8.5	3.6	42.4
Paper	9.8	3.7	37.8
Printing	11.0	6.5	59.1
Chemicals	15.0	4.5	30.0
Minerals	8.4	4.3	51.2
Metals	11.5	4.6	40.0
Metal Products	31.3	10.1	32.3
Other manufactures	7.8	3.8	48.7
All manufacturing (a)	308.1	88.2	28.6

(a)   Excludes drink and tobacco

SOURCE: Statistical Abstract of Ireland,
1960, Pr. 5492, Stationery Office
Dublin 1960, Table 109, pp. 120-22.

Table 9 sets out the relationship between the values of
gross and net output in Ireland in 1958.   In almost all
of the industries shown - although the important food,
drink and tobacco industry is one of the two exceptions -
net output accounted for between 30 and 50 per cent of the
gross value of output.   Taking 40 per cent as a typical
ratio, this would mean that if the cost of raw materials
fuel etc. was fixed, a reduction of 10 per cent in the
value of gross output would require a 25 per cent reduction
in the net output component.   The materials etc. included
in gross output are not all imported, of course; given
Ireland's lack of basic industry, however, it is certain
that a large proportion is imported at one or two removes,
if not directly.

The forces operating on the value of net output
in the event of a tariff reduction are therefore complex
and divergent.   In each of the aspects listed above there
is considerable scope for the exercise of judgement, and
the results obtained will vary substantially as a result.

4. The determination of assumptions

In order to arrive at some reasonable combination
of assumptions, a schematic example is set out in Table 10.
Here it is assumed that a tariff of 40 per cent is to be
removed and the consequential changes in the value of net
output under different assumptions are examined.   The
assumptions themselves are set out in the first columns:
by the "price" assumption is meant that concerning the
extent to which the average domestic price-level of the
industry concerned was raised in response to the tariff
initially, and hence the extent to which it must be
reduced when the tariff disappears;   by the "coverage"
assumption is meant the proportion of the industry's
net output which is assumed to have derived protection
from the tariff; by the "input" assumption is meant the

TABLE 10: HYPOTHETICAL TARIFF REDUCTION EFFECTS
(Reduction of 40% assumed throughout)

BASIC ASSUMPTIONS (%)			COST STRUCTURE (£)						PERCENTAGE CHANGE IN NET OUTPUT.
PRICE ASSN.	COVERAGE ASSN.	INPUT ASSN.	BEFORE TARIFF REMOVAL			AFTER TARIFF REMOVAL			
			MATERIALS ETC.	NET OUTPUT	GROSS OUTPUT	MATERIALS ETC.	NET OUTPUT	GROSS OUTPUT	
1 "AVERAGE" CASE									
1. 25	90	50	60	40	100	48	43	91	+ 7.5
2. 50	90	50	60	40	100	48	34	82	− 15.0
3. 75	90	50	60	40	100	48	25	73	− 37.5
4. 50	80	50	60	40	100	48	36	84	− 10.0
5. 50	90	50	60	40	100	48	34	82	− 15.0
6. 50	100	50	60	40	100	48	32	80	− 20.0
7. 50	90	25	60	40	100	54	28	82	− 30.0
8. 50	90	50	60	40	100	48	34	82	− 15.0
9. 50	90	75	60	40	100	42	40	82	−
11 "FOOD" CASE									
10. 50	50	0	80	20	100	80	10	90	− 50.0
11. 50	50	25	80	20	100	72	18	90	− 10.0
12. 50	50	50	80	20	100	64	26	90	+ 30.0
111 "PRINTING" CASE									
13. 50	70	0	40	60	100	40	46	86	− 23.3
14. 50	70	25	40	60	100	36	50	86	− 16.7
15. 50	70	50	40	60	100	32	54	86	− 10.0

extent to which tariff reductions are reflected in a fall
in the cost of raw materials, fuel components etc. [40]
Each is expressed in percentage terms. A price assumption
of 50 per cent, for example, would mean that prices are
assumed to be 20 per cent higher as a result of a tariff
of 40 per cent, and so on.

Consider first what is called in Table 10 the
"average" case: that is to say, an industry where net
output represents about 40 per cent of gross output. It
will be recalled that in nine of the eleven industries
distinguished in Table 9 the percentage of net to gross
output lay within the range 31-51; a ratio of 40 per
cent can be taken as typical. In the table nine more
or less representative cases are worked out in detail.
In the first three it is assumed that 90 per cent of the
industry's net output benefits from the tariff protection
and that 50 per cent of the tariff reduction is felt in
material costs; the effect of changing the price assumption
between 25 and 75 per cent of the tariff is then worked out.
It will be seen that the consequences vary from a rise of $7\frac{1}{2}$
to a fall of $37\frac{1}{2}$ per cent in the value of net output. In
the second trio of cases the price assumption is held at
50 per cent and the input assumption also at 50 per cent;
the coverage assumption is then varied between 80 and 100
per cent. The impact of net output ranges only from a
cut of 10 per cent to one of 20 per cent. In the final
trio of examples, the price assumption is held at 50 per
cent and the coverage assumption at 90 per cent; the
input assumption is then varied between 25 and 75 per cent
Here net output can fall by 30 per cent at one extreme

[40] In what follows it is assumed for the sake of simplicity
that the reduction in tariffs against finished products is
equal in magnitude to that of simultaneous reductions in the
average tariff paid on imported materials. This is clearly
an over-simplification, since the tariff category of
materials will by no means always be the same as that on
the related finished product. Reductions in the former
may be smaller or greater than those in the latter. It is
difficult, however, to conceive of any alternative procedure
which would be practicable in the circumstances.

or remain unchanged at the other.

The range of resulting adjustments to net output, even in these nine selected cases only, is thus very wide with different combinations of assumptions. Quite arbitrarily, although not unreasonably, the subsequent analysis will operate with each of the results obtained in the first trio, since these include the widest extremes - i.e. from a rise of $7\frac{1}{2}$ per cent in the value of net output to a fall of $37\frac{1}{2}$ per cent with the removal of a 40 per cent tariff. These can be rounded a little to be taken as (a) a rise of 25 per cent of the tariff change, (b) a fall of 40 per cent and (c) a fall of 100 per cent. The reader can then concentrate attention on the results corresponding to what appear to him to be the most realistic set of assumptions.

The two remaining industries justify special attention since their gross-net proportions differ considerably from the 60-40 relationship perviously assumed. As will be seen from Table 9, net output in the food processing industry in 1958 was about 18 per cent of gross output; an 80-20 gross/net relationship seems more appropriate to such a case. A realistic level for the various assumptions also requires special consideration. It seems probable on a priori grounds that a larger proportion of the industry's output is to some degree immune from foreign competition in the home market than is the case with industry generally.[41] On the other hand, an exceptionally large proportion of the industry's raw materials are home-produced, so that the probable level of cost reductions on materials should also be lower.

[41] Even though a large proportion admittedly represents exports, substantial foreign competition at home is difficult to imagine for many of its products - slaughtering, baking, ice-cream making, distilling, all come to mind.

It will be seen from the table that assuming a
price effect of 50 per cent and also that 50 per cent of
the industry's net output is subject to protection, varying
the assumed saving on material costs between zero and 50
per cent results in changes in net output ranging from a
fall of 50 per cent to a rise of 30 per cent. Once again
the extreme points of this range of results can be adopted
and translated into a trio of assumptions that for this
industry tariff reductions will involve a
change in net output amounting to (a) a fall of 100 per
cent, (b) a fall of 25 per cent and (c) a rise of 100
per cent of the tariff itself.

The final case is that of the printing industry,
whose net output accounted for 59 per cent of gross output
in 1958; a 40-60 gross/net relationship therefore seems
more appropriate.   Further, it is an industry in which
foreign competition in the home market is probably less
extensive than for most industries, although probably not
so much so as with the food industry.[42] Hence a
"coverage" assumption of 70 per cent has been adopted in
the table.   It is also an industry in which the range
of cost-saving resulting directly or indirectly from tariff
reductions on materials is not likely to be as great as
in other trades; the greater part of its material costs
consists of paper on which the rate of import duty is
very low indeed.[43]   Varying this assumption between
zero and 50 per cent, therefore, the range of effects
on net output with a 40 per cent tariff moves from a fall
of 23 per cent to one of 10 per cent.   Taking the range
of results shown in the table again, the assumptions
adopted have been that tariff reductions cut net output

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[42] Daily newspapers, books and journals of local
interest and government publications come to mind.

[43] Table B of my study The Irish Tariff and E.E.C. shows
that in 1959-60 import duties on paper amounted to only 7
per cent of the value of imports.

by (a) 60 per cent, (b) 40 per cent, and (c) 25 per cent of the tariff itself.

The "tariff adjustment factors" emerging from this analysis – they are summarised for convenience at the foot of Table 11 – are clearly very arbitrary, and views will inevitably differ about their realism in particular cases. The schematic outline of Table 10, of course, enables the reader to feed in any alternative assumptions which seem more realistic without great difficulty. For the purposes of the present study it will be assumed that the middle set of assumptions (shown as (b) in table 11) is probably most realistic, with (a) and (c) as optimistic and pessimistic sets of assumptions respectively. This would seem to accord with the experience of the Special Import levies in 1956. These amounted to 60 per cent full and 40 per cent preferential for "luxury" commodities and to 37½ per cent full and 25 per cent preferential for less dispensable products. Since about two-thirds of Ireland's imports of the type of commodity concerned come from the United Kingdom[44] the preferential rates were substantially the operative ones, and since most of the products involved were of the 'luxury' type, the average additional tariff was probably of the order of 35 per cent. The "central" assumption of Table 11, (b), postulates a price increase of 40 per cent of a tariff increase; this would imply that the 1956 levies resulted in a rise in the average value of the net output of the industries concerned of around 10 per cent. Reference to Table 8 above shows that (in relation to that of all other manufacturing industry) it was in fact about 12 per cent.[45]

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[44]See categories 6-9 of Table 11 in my study The Irish Tariff and E.E.C.

[45]See also footnote (39) above.

TABLE 11: ESTIMATED TOTAL FACTOR COEFFICIENTS, NET OF TARIFF EFFECTS, 1960.

U.K. = 100

		Food, Drink, Tobacco	Textiles	Clothing and Leather	Wood	Paper	Printing	Chemicals	Minerals	Metals	Metal Products	Other manufactures.	All Manufacturing.
IRELAND	a	68	122	98	91	87	65	93	89	108	103	76	83
	b	75	104	81	76	86	72	82	73	102	93	70	84
	c	85	86	60	59	85	77	71	55	97	80	65	91
GERMANY	a	70	159	130	98	118	114	119	117	114	117	114	117
	b	71	163	137	101	122	115	117	119	116	127	124	121
	c	96	168	144	103	125	117	117	122	118	138	136	127
SWEDEN	a	n.a.	93	91	86	n.a.	100	83	94	83	85	111	89
	b	n.a.	99	96	93	n.a.	100	90	93	85	92	118	92
	c	n.a.	104	102	99	n.a.	100	98	94	89	101	130	96
DENMARK	a	n.a.	92	77	74	70	77	74	73	117	73	60	77
	b	n.a.	97	79	79	75	77	77	76	125	80	66	80
	c	n.a.	103	81	85	82	77	81	80	134	90	75	84
NORWAY	a	n.a.	109	95	67	n.a.	n.a.	n.a.	n.a.	153	92	104	99
	b	n.a.	113	94	69	n.a.	n.a.	n.a.	n.a.	164	99	109	103
	c	n.a.	117	92	72	n.a.	n.a.	n.a.	n.a.	176	106	119	104

Assumed effects of tariff reduction (%) on net output (% of tariff change):-

   (a) Food, − 100; printing, − 60; other, + 25

   (b) Food, − 25; printing, − 40; other, − 40

   (c) Food, + 100; printing, − 25; other, −100.

PART V: CONCLUSION

It remains only to bring the various strands
together in order to arrive at some broad impression of
the position prevailing at more or less the present time.
The chasms in the data over which the analysis has had
to leap from time to time have been stressed often
enough, and their width - and depth - need not be
emphasised yet again.   They should not, however, be
forgotten.

Table 4 above presented an international
comparison of the factor coefficients in separate
industries as they appeared to be in 1953.   Two steps
are necessary to arrive at the final picture of the
approximate position today.   First, allowance must be
made for the estimated development of factor coefficients
between 1953 and 1960 as summarised in Table 6.   The
estimates in that table related to manufacturing as a
whole, and it has been shown and emphasised more than
once in the preceding paragraphs that aggregation at
this level will inevitably conceal marked diverse
movements in particular sectors.   Nevertheless account
has to be taken of developments during 1953-60, and in
the absence of detailed data for each industrial category
the coefficients for all the industries of each country
have been multiplied by the index number shown in column
4 of Table 8.

The second adjustment necessary is the allowance for
the effect of tariffs on the level of net output.
As was argued in the previous section, a wide range
of results could follow from different assumption;
the coefficients have therefore been adjusted in
accordance with each of the three "representative"

results described in the previous section. This allows
the reader, on the one hand, to examine the results
obtained with what might be thought to be reasonably
realistic assumptions; on the other hand, it also
indicates the magnitude of the differences introduced
into the comparison by variations in the tariff-effect
assumptions.

The use of the same adjustment factors for all
countries implicitly assumed that the effects of tariffs
are much the same in other countries as they are in
Ireland. Clearly this may not be the case, but it seems
likely on a priori grounds that the magnitude of the
differences which exist in practice would be relatively
small, so that there would be little point in attempting
to assess these effects separately for each country, even
assuming the availability of the data necessary for this
purpose.

Having made these two sets of adjustments, the
final estimates of the total factor coefficients for 1960
emerge. They are shown in Table 11 as index numbers with
the coefficient for the United Kingdom being taken as 100
in each case. In view of the accumulation of assumptions
and estimation built into these figures, it would hardly
be prudent to attach much significance to differences of
less than about 10 per cent.

Given this range of error, it could be said that
coefficients within the range of around 95-105 are
indicative of a competitive position comparable with that
of British industry. That is to say, the cushion of
profit in real factor terms would be roughly equal to that
enjoyed by British producers; by implication the
"squeezability" of the industry in the face of intensified

competition would be about equal to that of the British industry. How would this test apply to Ireland ? If the middle assumption - case (b) in Table 11 - is adopted, only two industries - textiles and metals - fall clearly within the range. The importance of the metal manufacture industry is, of course, rather limited for Ireland,[46] so that the indications would appear to be that the textile industry may be the only major Irish industry which currently enjoys a strong competitive position in comparison with most of its European counterparts. The calculations highly approximate as they are, would also suggest that the metal products industry may just scrape into the competitive range vis-à-vis the United Kingdom.

With the eight remaining industries the results are of such a level — and, for that matter, so similar — that it would not seem unreasonable to suggest that they may reflect a general and fundamental weakness in the Irish industrial cost situation. Three of them — clothing and leather, paper and chemicals — lie within the range 81-86 although it is worth noting that in most instances the United Kingdom coefficients which are being used as a basis of comparison may be somewhat high by general European standards. In the remaining five industries the index numbers lie in the range 70-76, which is well below the level of the United Kingdom although by no means that of all other countries shown in every case.[47]

The broad conclusion which emerges from a comparison of the Irish cost structure with that of its nearest and most likely competitor under conditions of

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[46] In 1958 its net output was about 4.5 per cent of the total for manufacturing industry and it employed about 6,600 people.

[47] It will be noted that in the crucially important case of food, drink and tobacco, comparison is possible for only one country other than the U.K. and is by no means unfavourable to Ireland.

free trade therefore seems fairly clear. The textile
industry is the only major Irish trade whose competitive
position seems to emerge as a relatively confident one;
the production of metals would appear to be in a similar
position but is of limited importance; the metal products
industry may also lie on the margin of the competitive
range. For other Irish industries - accounting for over
80 per cent of total industrial net output in 1953 - the
competitive position, measured on this profit-margin or
"squeezability" basis, would appear to be anything from
12 to 30 per cent below the U.K. level.

How far is this conclusion modified by varying
the tariff-effect assumptions underlying the calculations ?
If one adopts the most optimistic of the trio of
assumptions - case (c) for food and printing and (a) for
the remaining industries - then clothing and (marginally)
chemicals move into the range of competitiveness vis-a-vis
the U.K.; the proportion of 1953 net output failing to
reach this competitive range would be reduced from about
80 to about 65 per cent. If the most pessimistic of the
trio of assumptions is adopted, however, only the metal
industry would remain in the competitive range.

At the risk of wearisome repetition it has to
be emphasised yet again that these general coefficients for
broad industrial categories certainly conceal widely
varying coefficients in the various trades of which each
is made up, and even more so in the individual enter-
prises in each trade. That this must be so is suggested
by the fact that substantial exports are maintained by
Irish producers in almost every group listed in Table 11 -
although mostly, it must be admitted, with the aid of
preferential entry into the protected British market.
It is also worth remembering that enterprises may retain

export markets only by allocating an unduly large share of overhead costs to products sold within the protected domestic market, a device which would cease to be practicable if the protection disappeared.

The need for caution in applying the general results of this analysis to any particular situation is nevertheless evident and imperative; on the other hand, it would be unreasonable to suppose that the necessity for a relatively high level of aggregation must necessarily invalidate its broad outcome. Averages have their limitations but are not meaningless; if an average conceals particular results which are exceptionally good they must, ipso facto, contain results which are exceptionally bad.

Above all, it must be remembered that this study has been concerned with an attempt to assess the comparative position of Irish industry in 1953-60 if it had been plunged into a Common Market situation with its existing and unchanged state of efficiency. It can reasonably be argued that the very movement into such a situation would in itself cause substantial and fairly rapid effects on industrial efficiency, although it is necessary to remember that the same effects will presumably also be felt simultaneously in the other countries with which comparison has been attempted, only one of which, in the final comparison, is currently a member of the E.E.C. To assess the relative impact of such effects, however, is the business of informed prophecy, not of empirical analysis; and the scope of the present study may well be thought to have been ambitious enough without wandering into such esoteric regions.

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