THE ECONOMIC AND SOCIAL RESEARCH INSTITUTE

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by

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1. INTRODUCTION

The desirability of obtaining some knowledge about the behaviour of imports is obvious and needs little emphasizing. In present-day conditions, the concepts of "balance of trade" and "balance of payments" are by no means of interest to the academic economist alone. Their behaviour, through economic policy measures which ensue, has a profound effect upon every-day economic life. It is no wonder therefore that public attention tends to concentrate on the fairly up-to-date information which becomes regularly available as regards the course of merchandise imports and exports. To see developments in foreign trade in their proper perspective, an understanding of the forces which prevail upon the levels of imports and exports would seem very much worthwhile.

It is a well-known fact that imports and exports are far from keeping in a constant relation to each other and may indeed, in the short run at least, move in opposite directions. Not only that but the determining influences which bear upon the levels of imports and exports are quite different. Imports may be looked upon as depending very much upon economic conditions at home, whilst demand factors operating in the outside world certainly have an important, if not predominant, bearing upon exports. In the language of the econometrician, imports are generally treated as endogenous but exports commonly as exogenous in a model of the economy, whether it is fully specified or its theoretical existence only implied. It follows that a symmetrical approach to both aspects of foreign trade does not seem promising and that the two external trade entities should be studied separately.

The present investigation is devoted to imports and to some extent follows the lines of a substantial study for the United Kingdom undertaken by Scott

(1963). It modifies and extends the results obtained for Ireland in a shorter and earlier study by Leser (1963). The period of analysis extends to the end of 1964.

The first part of the present paper consisting of sections 2 and 3 is largely descriptive, designed to set out some relevant facts and figures. Although a good deal of statistical data are published, they are not invariably readily available in a form which permits comparison and analysis. Data assembly has therefore been an important part of the work carried out, and it is hoped that some service will have been rendered by the presentation of the data in the text and appendix. Section 2 gives annual data over a varying number of post-war years, whilst section 3 deals with quarterly data and seasonal patterns.

Sections 4 and 5 form the second part of the main body of the paper, in which it is attempted to obtain, by means of econometric analysis, relationships connecting imports with some determining or associated factors. Section 4 operates on a macro-level, studying merchandise imports as a whole and disaggregated into four categories: food, drink and tobacco; crude materials; fuels and lubricants; miscellaneous goods. The analysis in section 5 is concerned with fifty-five commodity groups which make up visible imports.

Although exports are not the main subject of attention, nevertheless they cannot be altogether left out of the picture. The level of exports influences the level of imports both directly, through requirements which are generated, and indirectly, since the state of the balance of payments affects government policy with regard to imports and the degree of corrective action which may be needed. The problems of exports and the balance of payments are discussed in section 6, which is followed by a brief final section summarising the previous findings and presenting some conclusions.

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2. IMPORTS OVER THE POST-WAR YEARS

There are two senses in which the word "imports" is commonly used, according to whether services are included or excluded. For merchandise imports alone, also referred to as imports of goods or visible imports, statistical information is available in considerable detail by calendar month, by commodity and by country of origin; and the bulk of the analysis carried out here is confined to these imports. Nevertheless a short account and discussion of the changes in imports of all goods and services, thus taking imports in the widest sense, does not seem out of place. Table 1, based on national accounts data, shows the totals of imports of goods and services both at current and at 1958 prices, together with the price index which is implied by the published totals.

Between 1947 and 1964, imports of goods and services increased by 161% in value terms and by 87% in volume terms. The divergence between the two series is chiefly accounted for by the experience of the years 1950–1951, between which import prices were permanently lifted up to a higher level. As a result, the value of imports in the 1950s was well above that in the early post-war years, although between 1947 and 1958 imports in 1958 prices fluctuated within the range of £200–240 million only, around a virtually constant trend. Since 1958 imports rose rapidly, and most of the increase is accounted for by higher quantities rather than prices. Even over the period 1953–64, an increase by 91% in value terms may be seen as composed of increases by 68% in quantum terms and only 13½% in price terms.

The increase in imports may be seen in its proper

Table 1: IMPORTS OF GOODS AND SERVICES, 1947–64

Year	Value of imports (£ million) at		Implied price index (1958=100)
	Current prices	1958 prices	
1947	150·0	200·5	74·8
1948	154·6	203·5	76·0
1949	148·2	202·9	73·0
1950	179·1	226·2	79·2
1951	226·6	237·3	95·5
1952	195·9	202·4	96·8
1953	205·2	222·1	92·4
1954	202·7	218·3	92·9
1955	232·7	242·4	96·0
1956	208·9	213·2	98·0
1957	208·2	201·8	103·2
1958	222·1	222·1	100·0
1959	238·2	242·6	98·2
1960	255·1	255·8	99·7
1961	290·5	287·6	101·0
1962	308·0	303·4	101·5
1963	343·9	333·1	103·2
1964	392	374	104·8

Source: C.S.O., National Income and Expenditure 1964; last column derived.

Table 2: IMPORTS AS PROPORTION OF FINAL EXPENDITURE, 1947–64

Year	% of imports at	
	Current prices	1958 prices
1947	31·1	28·4
1948	29·7	27·8
1949	27·5	26·9
1950	31·0	28·7
1951	35·1	29·3
1952	29·1	25·7
1953	28·1	27·0
1954	27·7	26·5
1955	29·7	28·1
1956	27·2	25·9
1957	26·4	24·7
1958	27·0	27·0
1959	27·3	27·9
1960	27·5	27·9
1961	28·7	29·4
1962	28·4	29·9
1963	29·3	31·0
1964	29·3	32·6
Mean 1947–64	28·9	28·0
1953–64	28·0	28·2

Source: Derived from C.S.O., National Income and Expenditure 1964.

perspective when imports are expressed as a proportion of total final expenditure. This total is by definition equal to personal expenditure plus government current expenditure plus gross fixed capital formation plus stock changes plus exports of goods and services; according to a well-known national accounts identity it is also equal to imports of goods and services plus gross national product. The alternative procedure of expressing imports as a percentage ratio to gross national product has the drawback that it suggests imports to be part of national product, which is not the case.

The proportion of total final expenditure on goods and services which is met by imports shows a remarkable degree of constancy. Whether measured in current or in 1958 prices, it tended to fluctuate during the period 1947–64 around a level of 28–29%, or about two-sevenths.

The question whether the share of imports has remained more stable at current or at constant prices raises a neat point of statistical measurement. If variability is measured by the standard deviation, then the import share varied on the average over the period 1947–64 by 2·04 percentage points if based on current prices or by 1·94 percentage points if based on constant prices. Both series thus appear to be about equally stable. It is, furthermore, clearly seen that the ratio of current price totals fluctuated more than the ratio of constant price totals during the early part of the period, say 1947 to 1953; since about 1953, on the

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other hand, the ratio of current price totals has been the much less variable one.

If, however, variability is meant to represent the presence, and stability the absence, of a noticeable regular trend, then the volume ratio is clearly seen to be more variable than the value ratio. A quadratic trend, fitted to the data in Table 2, is much more successful in explaining the variations in the second than in the first column of figures, yielding a co-efficient of determination amounting to ·696 as against ·264 and regression coefficients which are significant at the 1% level as against coefficients of doubtful significance. This conclusion remains valid if data from 1953 alone are considered.

Thus it seems justifiable to state that imports of goods and services at current prices have tended to remain a more or less constant proportion of total final expenditure. Before discussing any possible implications, it may be asked whether a similar statement may be made with regard to merchandise imports alone. This will now be investigated.

TABLE 3: IMPORTS AND FINAL EXPENDITURE ON GOODS, 1953–64

Year	Merchandise imports £ million	Final expenditure on goods £ million	Imports as proportion of final expenditure %
At current prices:			
1953	185·4	522·0	35·5
1954	183·0	521·0	35·1
1955	207·7	563·1	36·9
1956	182·8	539·3	33·9
1957	184·2	555·9	33·1
1958	199·0	578·4	34·4
1959	212·6	618·4	34·4
1960	226·2	660·0	34·3
1961	261·4	727·7	35·9
1962	273·7	774·5	35·3
1963	306·9	843·0	36·4
1964	348	965	36·1
Mean proportion			35·1
At 1958 prices:			
1953	198·8	579·4	34·3
1954	194·6	579·4	33·6
1955	213·5	610·3	35·0
1956	184·2	575·8	32·0
1957	176·5	573·1	30·8
1958	199·0	578·4	34·4
1959	217·4	614·9	35·4
1960	227·0	653·8	34·7
1961	259·4	709·5	36·6
1962	271·3	732·6	37·0
1963	298·8	782·7	38·2
1964	336	846	39·7
Mean proportion			35·1

Source: Merchandise at current prices from Trade and Shipping Statistics and from Trade Statistics of Ireland, 1953 and 1954 figures adjusted. Other figures computed from C.S.O., National Income and Expenditure 1962, 1964.

In Table 3, total merchandise imports at current and constant prices for each year from 1953 to 1964 are presented and related to a total of final expenditure on goods, specially constructed for this purpose. Final expenditure on goods has been taken as the sum of personal expenditure on goods—food, drink and tobacco, clothing and footwear, fuel and power, durable household goods, transport equipment, and other goods—plus investment, both in fixed capital and stocks, plus merchandise exports. Goods consumed by visitors, and thus some invisible exports, are included.

It is not surprising to find that by eliminating services from the field of enquiry, the numerical importance of imports is raised. Imports account for about 35%, or more than a third, of the final expenditure on all goods, as against 30% or less for goods and services together. Otherwise, Table 3 confirms the picture which was conveyed by Table 2, except that the year-to-year fluctuations in the proportion of imports are shown up even more clearly. Over the period 1953–64, both current and constant price percentages tend to show a downward movement, followed by an upswing. The variations are more marked and to a larger extent explained by a quadratic trend for the constant price than for the current price series.

The divergence between the value and volume series for the share of imports in final expenditure, which had been observed for goods and services, can thus not be solely attributed to larger price rises for services than for goods. Even in the field of merchandise, there is a tendency for imports to become relatively cheaper and to expand relatively more in volume terms than for national production. Some association between the two phenomena, and a price elasticity of the demand for imports in the neighbourhood of −1, is thus suggested. This point will be more fully investigated in section 4.

It seems worthwhile to present a less aggregated picture of imports now. Whilst emphasis will be on a breakdown by commodity groups, presentation of these data will be preceded by a short tabulation of imports by country of origin.

The outstanding feature of Table 4 is the contrast between the course of imports from European and non-European countries. The former have shown substantial increases, at any rate in value terms; the latter merely fluctuated around a constant trend until recent years and then began to grow slowly. This change in the geographical pattern largely reflects a change in the commodity pattern of trade, since a large part of the imports from other continents consists in food, drink and tobacco; and imports in this sector have not increased as much as in other sectors, as will be shown shortly.

TABLE 4: IMPORTS BY ORIGIN, 1947-64

Year	Value of imports (£ million) from			
	United Kingdom	Rest of Europe	Other continents	All countries
1947	54·5	21·5	55·3	131·3
1948	73·4	16·2	46·7	136·3
1949	74·6	18·5	37·1	130·2
1950	84·4	25·9	49·1	159·4
1951	95·7	41·2	67·7	204·6
1952	87·6	33·7	50·9	172·3
1953	92·5	39·7	50·3	182·5
1954	100·2	36·7	43·0	179·9
1955 (a)	107·5	42·6	54·3	204·3
(b)	110·6	42·7	54·3	207·7
1956	104·7	37·4	40·7	182·8
1957	104·6	37·8	41·7	184·2
1958	112·0	41·1	45·9	199·0
1959	109·8	46·4	56·5	212·6
1960	112·0	52·8	61·3	226·2
1961	132·5	63·0	66·0	261·4
1962	136·4	71·4	65·9	273·7
1963	156·1	80·3	70·0	306·4
1964	176·5	88·5	82·8	347·8

Source: 1947–62 Trade and Shipping Statistics; 1963–64 Trade Statistics of Ireland. 1955 figures (*a*) strictly comparable with earlier, (*b*) with later years.

Since 1948, about half of all merchandise imports came from Great Britain and Northern Ireland, but the rate of increase from this source has been more moderate than for imports from the remainder of Europe, the value of which rose nearly five-fold between 1948 and 1964. In each of the years 1962 to 1964, imports from Europe outside the U.K. accounted for more than a quarter of the total.

For the commodity group analysis which follows, the revised Standard International Trade Classification (SITC) has been used as a basis. This classification distinguishes 10 broad groups and 57 divisions; no finer classification has been utilised here. The four categories "food, drink and tobacco", "crude materials", "fuels and lubricants" and "miscellaneous goods" then comprise the SITC groups 0–1, 2, 3, and 4–9 respectively. Current price data have been derived for each year 1950–64 and the import price group index numbers were used to deflate the figures from 1953 onwards.

To follow the classification of imports by use would have been an alternative and advantageous from one point of view, but the analysis would run into trouble owing to changes in classification, difficulties of obtaining appropriate price indices for deflation, and later difficulties in obtaining reliable data for a quarterly analysis.

As seen from Table 5, imports of all kinds rose from 1950 to 1951 and dropped again in 1952, but after that date the trends for each category showed sharp divergences. Food imports, which were running at a high level in 1953, subsequently fell and then rose again slowly, not reaching the 1953 value and volume totals again till the early 1960s.

TABLE 5: IMPORTS OF FOUR CATEGORIES OF GOODS, 1950-64

Year	Food, drink and tobacco	Crude materials	Fuels and lubricants	Miscellaneous goods
Value (£ million)				
1950	38·7	14·9	17·2	90·1
1951	49·4	21·3	24·4	111·0
1952	39·8	15·4	23·1	96·6
1953	47·0	16·0	22·2	100·2
1954	33·5	17·8	23·4	108·3
1955	42·2	20·2	27·7	117·5
1956	27·4	18·6	28·7	108·1
1957	35·8	17·3	28·4	102·7
1958	39·1	15·8	25·2	118·8
1959	43·2	18·5	26·0	125·0
1960	38·7	21·5	26·1	139·9
1961	50·1	21·4	27·3	162·7
1962	49·7	21·8	26·8	175·4
1963	56·6	24·2	27·9	198·2
1964	59·6	27·3	29·6	231·3
Volume (1953 = 100)				
1953	100·0	100·0	100·0	100·0
1954	68·1	112·0	108·3	107·5
1955	81·4	123·1	122·0	114·2
1956	55·0	112·7	120·2	101·6
1957	68·7	102·3	102·8	92·9
1958	75·4	106·0	108·0	109·2
1959	84·5	123·3	120·0	116·8
1960	76·2	132·8	121·4	127·9
1961	100·5	135·8	128·0	145·0
1962	98·2	144·6	126·5	156·6
1963	112·0	159·1	129·4	174·3
1964	115·1	170·9	134·2	203·5

Source: Value derived from Trade and Shipping Statistics and from Trade Statistics of Ireland (1950–54 figures for misc. goods adjusted); volume with help of C.S.O. import price index numbers.

Fuel imports rose sharply until the middle of the 1950s but afterwards, and on balance over the whole post-war period, only slightly. A more marked increase was observed for crude materials, but the most striking increase of all took place in the miscellaneous group of commodities, which contains mainly semi-manufactured and manufactured goods. Between 1953 and 1964, imports of this category more than doubled not only in value but also in quantum terms.

Whilst the distinction between four categories of imported goods shows up some considerable differences in expansion rates, it must conceal others which a more detailed breakdown would reveal. Tables 6 and 7, based on the value of imports by SITC division, are designed to convey further information. The detailed figures for each year from 1950 to 1964 are given in Appendix Table A1; for the years prior to 1960 for which the unrevised SITC classification was followed, some reconciliation and rearrangement of published data was necessary. To give a clearer picture of trends than a wealth of detail could convey, three-year averages for the beginning, middle and end of this period are used in Tables 6 and 7.

TABLE 6: FOOD, MATERIALS AND FUELS IMPORTS BY DIVISION, 1950–52 TO 1962–64

SITC code	Short description	Average annual value (£ million)			% of total food etc., materials or fuels etc. resp.		
		1950–52	1956–58	1962–64	1950–52	1956–58	1962–64
00	Live animals	0·47	4·39	11·25	1·1	12·9	20·3
01	Meat and meat preparations	0·13	0·16	0·22	0·3	0·5	0·4
02	Dairy products and eggs	1·54	0·06	0·11	3·6	0·2	0·2
03	Fish and fish preparations	0·58	0·57	0·98	1·4	1·7	1·8
04	Cereal and cereal preparations	15·28	6·65	9·31	35·9	19·5	16·8
05	Fruit and vegetables	6·84	6·04	9·09	16·1	17·7	16·4
06	Sugar, sugar preparations and honey	3·81	1·92	2·74	8·9	5·6	4·9
07	Coffee, tea, cocoa, spices, etc.	7·26	6·57	7·80	17·0	19·3	14·1
08	Feeding stuffs for animals	1·00	2·75	5·10	2·3	8·1	9·2
09	Miscellaneous food preparations	0·29	0·24	0·99	0·7	0·7	1·8
11	Beverages	1·11	1·59	3·01	2·6	4·6	5·4
12	Tobacco and tobacco manufactures	4·31	3·17	4·72	10·1	9·3	8·5
0, 1	Food, drink and tobacco	42·62	34·12	55·31	100·0	100·0	100·0
21	Hides, skins and undressed furskin	0·47	0·63	0·70	2·7	3·6	2·9
22	Oil seeds, nuts and kernels	0·87	0·71	0·70	5·1	4·1	2·9
23	Crude rubber	1·01	1·07	1·44	5·8	6·2	5·9
24	Wood, lumber and cork	5·87	3·45	5·76	34·1	20·0	23·6
25	Pulp and waste paper	1·31	1·44	1·89	7·6	8·3	7·7
26	Textile fibres and waste	4·56	6·36	9·10	26·5	36·9	37·3
27, 28	Crude fertilisers and minerals, metal ores and scrap	1·70	1·81	3·32	9·9	10·5	13·6
29	Crude animal and vegetable materials	1·42	1·79	1·50	8·3	10·4	6·2
2	Crude materials	17·21	17·26	24·40	100·0	100·0	100·0
32	Coal, coke and briquettes	10·88	9·42	8·30	50·4	34·3	29·5
33	Petroleum and petroleum products	10·68	17·82	19·66	49·5	65·0	69·9
34, 35	Gas and electrical energy	0·02	0·19	0·17	0·1	0·7	0·6
3	Fuels and lubricants	21·57	27·43	28·13	100·0	100·0	100·0

Source: Derived from Appendix Table A1.

It should be noted that the 1950–52 average of all merchandise imports amounted to £180·6 million and the 1956–58 average to £188·7 million which is only 4½% higher, but the 1962–64 average is £309·5 million, or 64% above the 1956–58 level. All figures are in current prices, but as previously shown, price rises only account for a small proportion of the increase whilst volume increases are chiefly responsible.

Between 1950–52 and 1956–58, the value of food, drink and tobacco imports declined by 20%; between 1956–58 and 1962–64 it rose by 62%. During this period, the pattern of these imports underwent substantial changes. Live animal imports which were small after the war increased steadily and in the most recent period studied accounted for one-fifth of all imports in the food group. On the other hand, the value of cereal imports fell sharply and subsequently only rose moderately so that their share in the food, drink and tobacco imports fell from one-third to one-sixth. Between 1950–52 and 1956–58 imports of dairy products and of sugar and sugar preparations also declined in importance, whilst imports of feeding stuffs became numerically more important.

The pattern of imports in the fuels and lubricants group also showed a very substantial shift. Imports of solid fuels declined both in absolute value and in their relative share, whilst the converse applies to petrol and allied products.

The value of all crude materials imports was practically the same in 1956–58 as in 1950–52, but textiles occupied a far greater and wood a far smaller proportion at the later than at the earlier date. In the subsequent six-year interval, when total materials imports increased by 41%, this expansion was followed by most of the commodites included, and there were no radical changes in the composition of materials imports.

Imports of most commodities shown in Table 6 and discussed so far have remained relatively static over the post-war years. The commodities listed in Table 7, on the other hand, belong to that sector of merchandise imports which experienced the fastest growth in recent years and over the period 1950–64 as a whole.

Whilst imports for most commodities in the miscellaneous category are at a higher level in 1962–64 than in either 1950–52 or 1956–58, there are a few which show especially high rates of increase. An outstanding example is the rise in imports of non-electric machinery which trebled in value over the whole observation period. Imports of electrical machinery and transport equipment also

SITC code	Short description	Average annual value (£ million)			% of total miscellaneous goods		
		1950–52	1956–58	1962–64	1950–52	1956–58	1962–64
41	Animal oils and fats	0·61	0·31	0·29	0·6	0·3	0·1
42	Vegetable oils and fats	1·88	0·86	1·06	1·9	0·8	0·5
43	Processed oils, fats and waxes	0·19	0·17	0·36	0·2	0·2	0·2
51	Chemical elements and compounds ..	1·02	2·10	3·51	1·0	1·9	1·7
52	Crude chemicals from coal, petroleum, etc.	0·20	0·30	0·24	0·2	0·3	0·1
53	Dyeing, tanning and colouring materials	1·27	1·10	1·65	1·3	1·0	0·8
54	Medicinal and pharmaceutical products ..	1·39	2·05	3·95	1·4	1·9	2·0
55	Perfume materials, toilet preparations, etc.	0·30	0·62	1·24	0·3	0·6	0·6
56	Manufactured fertilisers	2·23	4·47	6·39	2·2	4·1	3·2
57	Explosives and pyrotechnic products ..	0·22	0·21	0·30	0·2	0·2	0·1
58	Plastic materials, cellulose and resins ..	0·27	1·23	4·72	0·3	1·1	2·3
59	Miscellaneous chemical materials and products	1·28	1·49	2·65	1·3	1·4	1·3
61	Leather, leather manufactures and dressed furskin	1·19	0·88	1·89	1·2	0·8	0·9
62	Rubber manufactures	1·00	0·95	1·64	1·0	0·9	0·8
63	Wood and cork manufactures	1·53	1·20	1·75	1·5	1·1	0·9
64	Paper, paperboard and manufactures thereof	5·24	4·77	7·50	5·3	4·3	3·7
65	Textile yarn, fabrics, made-up goods, etc.	16·96	12·95	20·74	17·1	11·8	10·3
66	Non-metallic mineral manufactures ..	3·40	1·80	3·80	3·4	1·6	1·9
67	Iron and steel	4·35	5·01	9·30	4·4	4·6	4·6
68	Non-ferrous metals	1·62	2·29	5·03	1·6	2·1	2·5
69	Manufactures of metal	7·34	5·72	10·52	7·4	5·2	5·2
71	Non-electric machinery	11·22	15·86	35·86	11·3	14·4	17·8
72	Electrical machinery and appliances ..	6·92	5·36	15·37	7·0	4·9	7·6
73	Transport equipment	9·26	15·38	23·31	9·3	14·0	11·6
81	Plumbing, heating and lighting fixtures and fittings	1·14	0·85	1·87	1·1	0·8	0·9
82	Furniture	0·25	0·15	0·53	0·3	0·1	0·3
83	Travel goods, handbags, etc.	0·11	0·07	0·27	0·1	0·1	0·1
84	Clothing	3·45	1·33	2·36	3·5	1·2	1·2
85	Footwear	0·28	0·28	0·58	0·3	0·3	0·3
86	Instruments, optical goods, watches and clocks	1·73	1·48	3·20	1·7	1·3	1·6
89	Miscellaneous manufactured articles ..	3·41	4·93	9·05	3·4	4·5	4·5
9	Unclassified commodities and transactions	7·95	13·68	20·68	8·0	12·5	10·3
4–9	Miscellaneous goods	99·21	109·85	201·64	100·0	100·0	100·0

Source: Derived from Appendix Table A1.

rose and these three groups together account for a £47 million increase between 1950–52 and 1962–64, almost half the increase for all goods in the miscellaneous sector; in 1962–64, almost three-eights of the amount spent on miscellaneous goods went on these three items. The bulk of the machinery imports are for industrial purposes, including agriculture, though electrical machinery and appliances also contain a substantial element of durable consumer goods; to a lesser extent, this applies to non-electrical machinery which includes a few items such as sewing machines. Imports of transport equipment are dominated by motor car components of which the greater part are for private cars, the lesser for lorries and buses.

A very striking increase is also observed for imports of plastic and allied materials, which formed a negligible proportion of miscellaneous imports in 1950–52 but more than 2% in 1962–64. Imports of other chemicals, furthermore, show substantial increases, which are very marked for chemical elements and compounds, medicinal and pharmaceutical products, and manufactured fertilizers. Other goods for which imports rose faster than the average are non-ferrous metals and unclassified items, which include postal packages and temporary transactions.

For materials and manufactures of a more traditional character, the rise in imports has been relatively moderate, and they have thus lost relatively in importance in the import bill. An important category of goods to which this applies are textiles which include yarn and fabrics made of a variety of materials. In some cases, notably for animal and vegetable oils and fats, there has actually been a long-term decline in imports. Nevertheless the rise in imports is sufficiently widespread to justify the treatment of this large category of goods as a unit.

The general picture which emerges from the whole of this analysis is one of substantial changes in the composition of imports. Whilst imports as a whole have roughly kept in proportion with total final expenditure, this is not so with regard to individual items which may show very much lower or higher expansion rates. Both between and within the four broad categories of imports, there are variations in experience which invite and deserve further study.

3. SHORT-TERM FLUCTUATIONS

To establish the medium-term and long-term changes which the level and composition of imports has undergone, an analysis of yearly data is sufficient. For further study, the use of data which are published on a monthly or quarterly basis is desirable, but this raises the problem of seasonality. In a regression analysis, seasonal variation can be taken care of by dummy variables, and this will in fact be done in section 4. Some knowledge of seasonality patterns is, however, of direct interest and an analysis of quarterly data will therefore be carried out here.

TABLE 8: IMPORT VALUE EACH QUARTER, 1953–64

Year	Value of merchandise imports (£ million) in quarter				
	I	II	III	IV	Mean
1953 ..	45·2	44·0	41·9	51·4	45·6
1954 ..	47·3	43·8	42·8	46·0	45·0
1955 ..	55·4	50·5	47·7	54·1	51·9
1956 ..	52·9	46·7	39·5	43·8	45·7
1957 ..	47·8	45·4	42·6	48·3	46·0
1958 ..	48·7	51·5	44·5	54·3	49·8
1959 ..	54·5	53·6	50·7	53·8	53·2
1960 ..	57·0	55·9	52·2	61·2	56·6
1961 ..	65·8	67·4	62·3	65·8	65·3
1962 ..	67·3	67·3	64·7	74·3	68·4
1963 ..	69·4	80·0	69·9	87·6	76·7
1964 ..	87·7	91·1	81·2	87·9	87·0
Mean ..	58·2	58·1	53·3	60·7	57·6

The value of imports in each calendar quarter from 1953 to 1964 is reproduced in Table 8. A comparison of quarterly means shows that imports tended to be below average in the third and above average in the other quarters, particularly the fourth. The regularity with which this variation is observed even within individual calendar years suggests a recurring seasonal pattern, which is somewhat blurred by a trend.

Estimates of additive seasonal components have been made by means of the formulae which are implicitly used when the trend is assumed to be linear, and these have been converted into seasonal indices by expressing them as percentages of the overall mean, and by adding or subtracting the percentage to or from 100. The justification of this procedure has been described by Leser (1966).

The seasonal indices derived here, which may be used as deflators to obtain seasonally corrected figures, are 103·4 for the first, 101·6 for the second, 91·8 for the third and 103·2 for the fourth quarter. This clearly demonstrates the fact that imports are generally a good deal lower in the third than in any other calendar quarter. In other words, imports do not tend to be evenly distributed over the year; in times of a stationary trend, about 26% of all merchandise imports takes place each in the first and fourth, but only 23% in the third calendar quarter.

This conclusion remains valid when imports are measured in constant instead of current prices, since there is no evidence of any seasonality for import prices. When, however, the totals for all imports are disaggregated, quite different seasonal patterns emerge for the individual series.

The quarterly volume index of imports, with the 1953 average as base, is reproduced in Appendix Table A3. Furthermore, quarterly volume indices for imports of food, drink and tobacco, of crude materials, of fuels and lubricants, and of miscellaneous goods, were estimated on a similar basis as the annual volume indices which have already been encountered in section 2 and presented in Table 5; these quarterly indices are shown in Appendix Table A4. Seasonal indices for each category of goods were derived in the same way as those for the value of total imports, and the results are shown in Table 9.

The seasonality patterns show appreciable contrasts. The seasonal fluctuations are most marked for food, drink and tobacco imports, which tend to be highest in the fourth and lowest in the third quarter, with the first quarter also being above and

TABLE 9: SEASONAL INDICES FOR VOLUME OF IMPORTS, 1953–64

Category	Seasonal index for quarter			
	I	II	III	IV
Food, drink and tobacco	104·2	94·6	85·1	116·1
Crude materials ..	104·5	96·0	95·6	103·9
Fuels and lubricants	98·2	101·8	98·2	101·8
Miscellaneous goods	104·5	104·7	91·9	98·9
All merchandise imports	103·5	101·8	91·9	102·8

the second below average. The pattern of relatively high imports during the autumn and winter months, with low imports in spring and summer, is also shown by crude materials, though the differences are not as large as for the food group. Imports of miscellaneous goods, on the other hand, are high in the first and low in the second half of the year, particularly the July–September quarter. Fuels and lubricants imports as a whole show only slight seasonal variation; as will be seen, this does not hold good for the major items in this group.

All four import categories possess the property of a low seasonal index for the third calendar quarter. With the exception of the small fuel group, a seasonal index above 100 is also a recurring feature in the first quarter. The effect of very high food, drink and tobacco imports on the fourth quarter's import bill is partly offset by moderately low imports of the numerically important miscellaneous group. The various groups show a contrasting behaviour during the second quarter.

In order to identify more clearly those commodities of which imports are particularly liable to seasonal variations, a more detailed analysis, though based on a shorter period, was made. For this purpose, merchandise imports by C.S.O. division each quarter in 1962–64 were used as a basis. For these years, the C.S.O. classification closely follows the SITC, the main exception being the treatment of temporary live animal imports; these are included with unclassified transactions in the SITC but with live animals in the C.S.O. classification scheme.

The seasonal pattern observed for these years differs slightly from that obtained for the full 1953–64 period. The highest seasonal indices now apply, in that order, to the second and fourth quarter. The main feature, the low seasonal index for the third quarter, is retained. Seasonal factors in 1962–64 thus tended to raise the import bill for the first quarter by £0·90 million, that for the second quarter by £3·26 million and that for the fourth quarter by £2·43 million; conversely the third quarter total was reduced by £6·59 million.

Seasonal components and indices were computed for each C.S.O. division, and the various sets of seasonal indices were seen to exhibit considerable differences. The problem then arose to find a measure by which the commodity groups could be classified according to the distinctiveness of their seasonal pattern. The following is the procedure adopted.

A set of expected additive seasonal components was computed for each C.S.O. division, on the hypothesis that the overall seasonal indices of 101·2, 104·2, 91·5 and 103·1 respectively were applicable. The four differences between actual and expected seasonal components, with sum zero, were

obtained; the sum of their squares was computed and divided by the mean value of imports for the commodity group. The groups were then ranked according to this descriptive measure obtained.

The sixteen items which, according to the chosen criterion, show the most distinctive seasonal patterns, are in this order: Manufactured fertilisers; tobacco; sugar, sugar preparations and honey; coffee, tea, cocoa, spices, etc.; wood, lumber and cork; live animals; crude animal and vegetable materials; non-electric machinery; transport equipment; cereals and cereal preparations; parcel post and special transactions; feeding-stuffs for animals; petroleum and petroleum products; coal, coke and briquettes; hides, skins and undressed furskin; textile fibres and waste. Between them, they account for more than half of the total value of merchandise imports.

It should be noted that most of the items listed here fall into the food, materials or fuel groups. Out of thirty-one items which make up the miscellaneous category of imports, only four are marked with a distinctive seasonal pattern; most of the others thus follow the general tendency for imports to be substantially lower in the third than in any other calendar quarter.

The seasonal indices themselves are presented in Table 10. It must be borne in mind that in some cases, the regular seasonal fluctuation is combined with substantial irregular movements, and the seasonal component estimates are unstable. In particular, this applies to cereals and cereal preparations, sugar, sugar preparations and honey, tobacco, petroleum and petroleum products, non-electric machinery and transport equipment. On the other hand, practically all the variation is of a seasonal character in the case of manufactured fertilisers.

Nevertheless, Table 10 demonstrates clearly the way in which the seasonal indices for all imports and for the four categories of imports are built up. For example, the high level of food, drink and tobacco imports which is observed for the fourth quarter is seen to be particularly associated with relatively large imports of live animals, non-alcoholic beverages, feeding stuffs and tobacco, even though partly counteracted by relatively small imports of cereals and sugar. During the third quarter, live animal and sugar imports tend to be high, but the effect is far outweighed by low imports of other food items and tobacco. High imports of some and low imports of other items more or less cancel out in their effect upon first and second quarter food, drink and tobacco imports.

The almost even distribution over the year of fuels and lubricants imports is brought about by high coal imports during the winter and high petroleum imports during the summer, which practically offset each other. A similar effect is

CSO code	Description	Average value £ million	Seasonal index for quarter			
			I	II	III	IV
0.0	Live animals	3·82	82·2	99·4	111·4	107·0
0·4	Cereals and cereal preparations	2·33	127·8	96·7	85·1	90·4
0.6	Sugar, sugar preparations and honey	0·68	45·6	163·9	131·0	59·5
0·7	Coffee, tea, cocoa, spices, etc.	1·95	118·0	112·3	53·0	116·7
0.8	Feeding-stuffs for animals	1·27	77·4	97·9	97·7	127·0
1·2	Tobacco	1·18	72·3	82·7	57·9	187·1
	Total above	11·23	94·0	103·1	89·9	113·0
	Other food, drink and tobacco	3·60	104·4	103·9	83·0	108·7
0, 1	Total food, drink and tobacco	14·83	96·5	103·3	88·2	112·0
2.1	Hides, skins and undressed furskin	0·17	78·2	114·9	143·1	63·8
2.4	Wood, lumber and cork	1·44	66·5	96·1	128·8	108·6
2.6	Textile fibres and waste	2·27	116·7	98·6	90·0	94·7
2.9	Crude animal and vegetable materials	0·38	110·9	55·7	62·4	171·0
	Total above	4·26	97·6	94·7	102·9	104·8
	Other crude materials	1·84	115·1	95·0	93·5	96·4
2	Total crude materials	6·10	102·9	94·8	100·0	102·3
3.1	Coal, coke, briquettes	2·07	118·1	92·6	77·5	111·8
3.2	Petroleum and petroleum products	4·92	91·7	105·3	105·2	97·8
3	Total fuels and lubricants (including gas and electrical energy)	7·03	99·5	101·5	97·0	102·0
5.6	Manufactured fertilisers	1·60	213·2	61·8	42·9	82·1
7.1	Non-electric machinery	8·97	103·4	110·2	97·7	88·7
7.3	Transport equipment	5·83	93·2	114·4	79·9	112·5
9	Parcel post and special transactions	4·16	84·7	112·5	86·7	116·1
	Total above	20·56	105·3	108·1	86·1	100·5
	Other miscellaneous goods	28·85	100·7	104·6	93·8	100·9
4–9	Total miscellaneous goods	49·41	102·6	106·1	90·6	100·7
0–9	All merchandise imports	77·37	101·2	104·2	91·5	103·1

observed for the crude materials group which, seen as a whole, shows only moderate seasonal variations.

The high concentration of manufactured fertiliser imports in the first calendar quarter, comprising more than half of the total imports during the year, has a substantial effect upon the seasonal pattern of the miscellaneous goods category. If fertilisers were excluded, the seasonal index for the first quarter would fall below 100 and that for the third quarter would rise above 90.

There are thus substantial differences in the timing during the year of various commodity imports. Nevertheless, a relatively low level for the third quarter of the year appears to be an almost universal feature. Important items such as live animals and wood exist which tend to be imported during the third in preference to any other calendar quarter, but they are few and far between.

It follows that imports will generally be lower during the second half than during the first half of the year. At least, this is true while the trend of imports is declining, stationary or only moderately rising; with a rapidly rising import bill, the trend effect may outweigh the seasonal effect. At times when imports are stable, it appears that imports for the second half of the year will tend to be about 5% below the level of the first half; and merchandise imports for the whole year could be forecast at 1·95 times imports for the first six months.

This formula, however, does not apply in times of a rising trend; and if imports increase at a rate exceeding 10% per annum, as they did in some of the 1960s, they may well be higher in the second than in the first half of the year. Unfortunately, there is no easy way of disentangling a trend from irregular movements, at least not beforehand; even for a forecaster, it is easier to be wise after than before the event. Nevertheless, the practical importance which a knowledge of seasonality patterns has must be obvious enough not to require any further emphasis.

4. SOME MACRO-RELATIONS

Having traced some of the course which imports have been following in recent years, an attempt will now be made to relate their movements to those in other factors. Basically, imports constitute a demand variable and may thus be largely explained by an income variable and a price variable. Other possible variables were considered but their use was not believed to be fruitful with the available data. Linearity in the variables was also assumed throughout the analysis; a logarithmic transformation would not produce very different results.

In the first approach followed, the dependent variable will be the quarterly volume index for all merchandise imports. The availability of quarterly series somewhat limits the possibilities for the choice of explanatory variables. There is no great difficulty about the price variable, a basis for which is provided by the published set of wholesale price indices, which include the effect of import duties. Quarterly wholesale price indices of imported and home-produced goods can be derived from monthly indices and are shown in Appendix Table A6. The difference between the two sets in the first and second columns of figures forms the price variable.

The best quarterly indicator of real income, whether seen from the point of view of productive activity or of disposable income, appears to be the volume of industrial production index (for transportable goods), shown in Appendix Table A5. In its annual form it is highly correlated with gross national product at constant prices, although the two series do not move proportionately, industrial production showing a much higher average rate of increase than productive activity as a whole. Over the period 1953–63, the coefficient of determination r^2 for the relationship between the two variables amounts to ·978. Even when first differences are used, $r^2 = ·731$ for an ordinary regression which implies a time trend, or $r^2 = ·724$ for a regression without constant term which implies no time trend.

A number of alternative versions were tried out for this basic import function. Industrial production was introduced as a current term, with a 3-months lag behind or a 3-months lead over imports. Similarly, a 3-months lag in import price differential was investigated alternatively to the absence of a lag. Some combinations of current and lagged terms were also investigated.

Notwithstanding some attractions which the use of year-to-year differences as regression data offers on theoretical and practical grounds, it was decided to retain the original data as observations here and in further cases. It was hoped thus to obtain long-term relationships which remained structurally valid over the whole observation period. Alternative regressions were, however, calculated without and with a linear time trend.

Imports have been shown to follow a distinct seasonal pattern, and the same applies to industrial production though not to wholesale prices. Therefore it is necessary to take care of seasonal effects either by introducing dummy variables or by using seasonally corrected data. The relative merits of the two procedures are nicely balanced. The use of original data with dummy variables has the advantages of greater statistical efficiency under the usual assumptions, of giving definite results which do not depend on a somewhat arbitrary adjustment, and of clearly specifying the degrees of freedom for significance tests. Seasonally corrected data permit greater flexibility with regard to the assumed form of the seasonal component, easier preliminary inspection of the data and easier computations; also the resulting equation can be written with a single constant term instead of four alternative constants for each quarter.

In this case, the calculations being carried out by electronic computer, it was found more advantageous to use original data and dummy variables. The calculations were done on an Elliott Computer through the courtesy of Mr. Harrington of the Agricultural Research Institute. Some regressions based on seasonally corrected data were subsequently worked out on a desk computer as a check, and the differences in results obtained were found to be almost negligible.

The observation period chosen for the dependent variable covers the ten years from the third quarter of 1953 up to and including the second quarter of 1963. The first half of the period was a time of stagnation combined with sharp price movements which arose chiefly out of the operation of import levies; the second half of the period brought the experience of economic growth. To ascertain whether one single relationship could reasonably be applied to the period as a whole, a stability test was carried out. To this purpose, separate regressions were fitted to each half of the observation period and the differences in coefficients tested for significance by an analysis of variance. Thus not only the possibility of a shift but also that of a change in slope was investigated.

When comparing the various regressions obtained, it became immediately evident that there was no indication of either a lead or a lag in production as compared with imports. With regard to the price variable, the position is less clear-cut as a lagged term gives a somewhat better fit when time is excluded but a current term gives a slightly better fit when time is included. The introduction of a

current and a lagged price variable together improves the fit just noticeably but the individual price coefficients become subject to large standard errors and can thus not be accurately estimated.

The stability test carried out shows that when time is included as a variable, there is no evidence against the hypothesis of a single import relationship being valid over the whole period 1953–63. If time is not explicitly introduced, the regression coefficients for the two sub-periods do not differ significantly, but the difference between the constant terms is significant at the 5% level. There is thus some evidence of a shift in the import function between 1953–58 and 1958–63, and the shift is in the downward direction. On the other hand the evidence is not so strong as to rule out the formulation of a single import relationship. Furthermore, a gradual shift represented by a time trend is an acceptable alternative.

Assuming no time trend, the import relationship appears to be described most suitably in the form:

$$m = \underset{(0\cdot0742)}{0\cdot7257}\,q - \underset{(0\cdot2858)}{1\cdot4100}\,\Delta p_{-1} + \begin{Bmatrix} 33\cdot04 \\ 22\cdot36 \\ 15\cdot92 \\ 25\cdot58 \end{Bmatrix} + u \quad (1a)$$

$$(R^2 = \cdot925, \quad d = 1\cdot49)$$

where m is import volume, q industrial production volume and Δp wholesale price difference between imports and home production, here referring to the previous quarter; u is a residual. All variables are index numbers (1953 = 100) or in the case of Δp derived from such index numbers. The four constant terms apply alternatively to each calendar quarter in that order.

Both regression coefficients are highly significant. Their interpretation is facilitated by conversion to elasticity form. This is effected by relating them to the mean values over the observation period

$$\overline{m} = 110\cdot40$$

$$\overline{q} = 118\cdot14$$

$$\overline{p}_0 = 108\cdot20$$

where $\overline{p}_0$ represents the simple mean of import and home prices. Average elasticities $\overline{e_q}$ with regard to industrial production and $\overline{e_p}$ with regard to relative import prices are then obtained as follows:

$$\overline{e}_q = 0\cdot78$$

$$\overline{e}_p = -1\cdot38$$

The price elasticity of the demand for imports appears to be in the neighbourhood of -1, from which value it does not differ significantly. This suggests that a relative fall in import prices will tend to raise the ratio of imports to home production in volume terms but will leave it largely unchanged in value terms.

Furthermore, the elasticity with regard to production is somewhat below 1, and this suggests that in the absence of relative price changes the import volume tended to increase less than proportionately to production volume during the period analysed. This relationship should, to be viewed in its proper perspective, be looked at in combination with the relationship between industrial production and gross national product which has already been mentioned and which should now be brought into quantitative form.

Since the relationship between industrial production volume and gross national product at constant prices can be looked upon as an associative one, with either variable being expressed as a function of the other, a diagonal regression seems most appropriate. The result is that an increase in the production index by one point tends to be associated with an increase in gross national product at 1958 prices by £2·615 million, or a 1% increase in industrial production with a 0·483% increase in national product.

Thus if changes in import volume are to be related to total national production instead of industry alone, the value of eq has to be divided by 0·483, thus yielding what may be called an income elasticity of imports amounting to about 1·61. Merchandise imports thus tended to increase half as much again as gross national product in relative terms.

The simple relationship (1a) is not fully satisfactory on statistical grounds, in particular the low value of the Durbin-Watson d-statistic suggests positive serial correlation of the residual terms. To some extent this may indicate the omission of a relevant variable which seems understandable as industrial production serves very much as a proxy variable for other allied factors in operation. However, the alternative equation obtained by including a term with time t should now be examined. In its most acceptable version the price variable appears without a lag, and the relationship has the form

$$m = \underset{(0\cdot1281)}{1\cdot0710}q - \underset{(0\cdot2603)}{1\cdot2192}\Delta p - \underset{(0\cdot1649)}{0\cdot4881}t + \begin{Bmatrix} 3\cdot52 \\ -9\cdot39 \\ -11\cdot74 \\ -5\cdot07 \end{Bmatrix} + u$$

$$(R^2 = \cdot936, \quad d = 1\cdot69) \quad (1b)$$

where t is measured in quarters, o for the fourth quarter of 1952. The coefficient of t is significant

at the 5% level and not far off significance at the 1% level. The introduction of t also raises the value of d and there is less reason to suspect the residuals of not being random.

Converted into elasticity form, the coefficients of q and Δp become

$$\bar{e}_q = 1{\cdot}15$$
$$\bar{e}_p = -1{\cdot}20$$

The coefficient of Δp in (1b) which appears as a current instead of as a lagged term, is not very different from the corresponding coefficient in (1a) and the resulting elasticity comes even closer to -1 than in the previous equation. The coefficient of q, on the other hand, is substantially raised by the introduction of t. It may perhaps be interpreted as a short-term effect and suggests that in the short run, the volume of imports tends to rise or fall at least as fast as industrial production and perhaps a little faster. In the long run, this short-term effect appears to be partly counteracted by an autonomous reduction in imports, to the tune of about half an index point per quarter or two points per annum; on the average this comes to $1\tfrac{1}{2}\%$ per year. This trend may represent the effects of gradual import substitution, adjustment to new production patterns and similar factors.

The expression (1b) yields at any rate a reasonable historical explanation of what happened to imports between the middle of 1953 and the middle of 1963. Industrial production remained static during the first five years but jumped upwards in 1959 and continued to rise rapidly. Imported products became relatively expensive in the course of 1956 but by mid-1958 their position in comparison with home production had been restored and 1962 saw a further relative cheapening of imports. These factors together with a trend largely account for the near-constant level of imports in 1953–55, the low levels in 1956–57 and the subsequent steady rise.

Functions (1a) or (1b) are less successful in lending themselves to extrapolation beyond mid-1963, as they tend to underestimate the subsequent rapid rise in imports. The responsibility for this failure to apply to a more recent period may be sought in the highly aggregated nature of the import function and some disaggregation will be the next step in this analysis.

For this purpose, quarterly volume index numbers were constructed for imports of food, drink and tobacco, of crude materials, of fuels and lubricants and of miscellaneous goods, from 1953 to 1964. The indices were derived from data published in Trade Statistics of Ireland with the help of monthly index numbers of import prices, and they were adjusted so

as to be comparable with the annual index numbers shown in Table 5. No attempt was made to reconcile the volume indices with the published volume index for all imports, though an appropriately weighted mean of the four index numbers does not differ much, on the whole, from the published index. The data are shown in the Appendix.

Linear regressions were formulated for each category of imports. As in the global case, the regressors are an income and a price variable, dummy variables for the seasons and time as an optional variable.

The volume of production index was used as income variable in each instance. Its current value was used alternatively with a 3-months or a 6-months lag for food, drink and tobacco and for fuels and lubricants imports, alternatively with a 3-months or a 6-months lead for crude materials, and alternatively with a 3-months lag or lead for miscellaneous items. The use of leads is not a usual feature in economic models but seems in order here as no causality is specified, nor are the equations designed for short-term forecasting.

The price variable consists in a difference between wholesale price indices for imports and home production. Those chosen, shown in Appendix Table A6, refer to personal consumption in the case of food, drink and tobacco and of fuels and lubricants, to crude products in the case of crude materials, and to more elaborately transformed products in the case of miscellaneous goods. This was felt to be the best way of getting over the difficulty of finding really appropriate price indices. In each case, a current term or a term lagged one quarter were investigated alternatively.

By comparing, for any given import category, the goodness of fit obtained by alternative regressions, some general results were obtained. One finding was the absence of any lag in imports behind production but the presence of a 3-months to 6-months lead of crude materials imports over industrial production. The hypothesis of a 6-months lead yields a similar value of R^2 but a value of d nearer to 2 than the alternative hypothesis and therefore seems preferable. This lead of materials imports is, of course, plausible.

Furthermore, prices seem to operate upon imports with a 3-months lag, except in the case of food, drink and tobacco imports for which no lag is discerned. There is a strong time trend for imports of miscellaneous goods but the trend, if any, is negligible for fuels and lubricants and of doubtful significance for the other import categories.

The results for the various import categories will now be considered individually. In the equations which follow, m^{fdt} indicates food, drink and tobacco, m^{cm} crude materials, m^{fl} fuels and lubricants and

m^{mg} miscellaneous goods imports. Δp^{co} denotes the wholesale differential (imported less home produced goods) for personal consumption. Δp^{cr} refers to crude and Δp^{el} to elaborately transformed products.

The relatively best equation for food, drink and tobacco imports is:

$$m^{fdt} = 0.5394q - 1.1885\Delta p^{co} + \begin{cases} 27.32 \\ 14.57 \\ 13.40 \\ 35.64 \end{cases} + u \qquad (2)$$
$$\phantom{m^{fdt} =} (0.1196) \quad (0.3936)$$

$$(R^2 = .720, \ d = 1.49)$$

The introduction of time would leave the value of R^2 and d practically unchanged. There is evidence of positive serial correlation in the residuals, which transformation to first differences might have removed and which limits the value of the equation as the applicability of ordinary significance tests is in doubt. Otherwise, both regression coefficients appear significant at least at the 5% level.

The point estimates for the elasticity with regard to production is 0.78 and for the elasticity with regard to price is -1.59. Thus food imports appear to be moderately sensitive to price influence and to increase less than proportionately to industrial production, though approximately in proportion to gross national product and personal consumption. But these imports are subject to relatively large fluctuations; income and price factors between them only explain a moderate part of these fluctuations, and a more complex explanation would have to be sought to be fully satisfactory.

For crude materials the equation is according to whether time is excluded or included

$$m^{cm} = 0.8323q_{+2} - 0.4080\Delta p^{cr}_{-1} + \begin{cases} 34.27 \\ 17.59 \\ 20.22 \\ 26.65 \end{cases} + u$$
$$\phantom{m^{cm} =} (0.0680) \quad (0.1931)$$

$$(R^2 = .817, \ d = 1.62) \qquad (3a)$$

or

$$m^{cm} = 1.0676q_{+2} - 0.2731\Delta p^{cr}_{-1} - 0.4611t$$
$$\phantom{m^{cm} =} (0.2047) \quad (0.2216) \quad\quad (0.3787)$$
$$+ \begin{cases} 14.58 \\ -2.64 \\ 1.73 \\ 5.19 \end{cases} + u \qquad (3b)$$

$$(R^2 = .824, \ d = 1.73)$$

where $t = 0$ for 1953 II.

In this case, the equation gives a reasonably good explanation for the movements of imports; some

coefficients are of doubtful statistical significance, but they are retained on theoretical grounds. The average elasticity of crude materials imports amounts to 0.83 with regard to industrial production and to -0.35 with regard to price. Crude materials imports thus tend to move in proportion to industrial output and to be little affected by relative price movements. Their lead over production has already been mentioned.

The equation for fuels and lubricants is

$$m^{fl} = 0.3201q - 0.3702\Delta p^{co}_{-1} + \begin{cases} 80.34 \\ 82.30 \\ 79.12 \\ 84.46 \end{cases} + u \qquad (4)$$
$$\phantom{m^{fl} =} (0.1059) \quad (0.3538)$$

$$(R^2 = .375, \ d = 2.25)$$

It has some unusual features. In the first instance, the constant terms for the four quarters are practically the same, and thus one relationship virtually holds whatever the season. Secondly, the equation leaves a very large proportion of the fluctuations in fuel imports unexplained. Thirdly, there is an indication of negative rather than positive serial correlation of residuals, or in ordinary language, that a relatively high level of imports in one quarter tends to be accompanied by a relatively low level in the next and vice versa. This suggests that the quarter-to-quarter fluctuations in fuel imports are to some extent due to irregularities in timing, imports commonly being anticipated by or delayed for a quarter.

The numerical influence of the variables q and Δp_{-1} is relatively small, the associated average elasticities being estimated at 0.33 and -0.35 respectively. Thus fuel and lubricants imports tended to increase less than proportionately not only to industrial production but also to gross national product or personal consumption at constant prices.

For the final import equation, the inclusion of time is strongly suggested by a significance test and by the fact that its omission results in a d-statistic of 1.02. The chosen equation thus is

$$m^{mg} = 1.6011q - 2.1176\Delta p^{el}_{-1} - 1.1386t$$
$$\phantom{m^{mg} =} (0.1766) \quad (0.6481) \quad\quad (0.2524)$$
$$- \begin{cases} 33.07 \\ 48.31 \\ 56.39 \\ 54.85 \end{cases} + u \qquad (5)$$

$$(R^2 = .950, \ d = 1.63)$$

The fit of the equation to the data is good and all coefficients are highly significant.

Imports of miscellaneous goods appear to be sensitive with regard to changes in industrial

production and in relative prices, the estimated elasticities being 1·53 and −1·86 respectively. To some extent, however, these elasticities represent short-term influences, the effect of which is counteracted in the long-run by a declining trend. This trend may partly reflect long-run adjustments to increases in production and price changes which somewhat offset the large short-run effects. Nevertheless, the equation explains the sharp increase in miscellaneous goods imports which occurred, by the rapid industrial growth and relative cheapening of imports.

The relatively high import price sensitivity of imports in the miscellaneous category as compared with crude materials and fuels is in accordance with common-sense and also in broad agreement with the findings for the United Kingdom by Scott (1963). It is true that nothing like the very large absolute value of the price elasticity for imports of manufactures—suggested by Scott to be in the neighbourhood of −7—is obtained for Ireland; but of course the classification adopted is different and the miscellaneous goods category contains goods in various stages of production.

Combining the import functions (2) to (5) by applying the 1953 weights 25·32, 8·64, 11·99 and 54·05 respectively, a built-up function for all merchandise imports can be obtained. Choosing the option (3b) in preference to (3a), the built-up import function becomes

$$m = (1·0404q + 0·0922q_{+2})$$

$$-(0·300^{co}9\Delta p + 0·0444\Delta p^{co}_{-1} + 0·0236\Delta p^{cr}_{-1}$$

$$+1·1446\Delta pel_{-1}) - 0·6553t - \begin{Bmatrix} 0·06 \\ 12·79 \\ 17·45 \\ 10·41 \end{Bmatrix} + u \qquad (6)$$

The equation gives a fairly good fit to the volume of all merchandise imports, particularly if this is calculated from the individual volume indices by applying the weights given above; we then get a coefficient of determination $R^2 = ·951$. Compared with (1b) it is also based on an extended observation period and may thus be considered as a superior import function.

Further improvements might have been effected by formulating and testing more elaborately specified import functions. In view of the previously mentioned data limitations, it was, however, not thought worthwhile to look for great refinements in this direction.

The import-function (6) is based on observations up to the second quarter of 1964. If used for extrapolation, the following theoretical figures are obtained for the volume of imports in the subsequent four quarters, showing the actual figures in brackets: 1964 third quarter 163·1 (158·3); fourth quarter 180·7 (170·9); 1965 first quarter 179·7 (178·3); second quarter 181·5 (187·3). The mean of these four theoretical figures is 176·2 and the actual mean 173·7. The fit seems reasonable and the equation may thus be useful for conditional forecasting, especially in connection with medium-term projections.

It goes without saying that the equation is not intended for short-term forecasting use. It would be no different if the production term with the lead was eliminated, as in practice information about imports becomes available earlier than information about production and one would predict production from imports rather than the other way round. The present model may, however, be used to check the consistency of projected figures for production, prices and imports.

5. IMPORT FUNCTIONS FOR SITC DIVISIONS

It has been shown earlier that even within each of the four categories of imports there have been considerable changes in composition. It therefore seems worthwhile to supplement the macro-analysis carried out in the previous section by a more detailed commodity analysis. For this purpose, annual data at current prices have to be used and the statistical treatment therefore follows a somewhat different approach.

The basic data used are the value figures for 55 SITC divisions (or combinations of divisions) which are given in the Appendix and which have been utilised for the construction of Tables 6 and 7. Only the years from 1954 to 1964 are used as earlier years show too many irregular features to be suitable for an econometric analysis.

The first step in the analysis consisted in expressing all original data as percentages of total final expenditure on goods, as shown in the top half and middle column of figures in Table 3. The percentages then add up to the series shown in rounded form in the top half and last column of Table 3. The relative constancy of this percentage of imports in final expenditure on goods has already been commented upon. It therefore seems natural to investigate to what extent the import figures for individual items also form virtually constant proportions to final expenditure and in which cases there are significant departures from a constant ratio. The percentages form the dependent variables in the regression analysis which is to follow and they are shown in Appendix Table A2. Their mean value, standard deviation and coefficient of variation are given in Table 11.

TABLE 11: IMPORTS BY SITC DIVISION AS PROPORTION OF TOTAL FINAL EXPENDITURE ON GOODS, 1954–64 SUMMARY MEASURES

SITC code	Short description	% final expenditure on goods, 1954–64		
		Mean	Standard deviation	Coefficient of variation (%)
00	Live animals	0·879	0·539	61
01	Meat and meat preparations	0·030	0·008	27
02	Dairy products and eggs	0·017	0·013	76
03	Fish and fish preparations	0·121	0·036	30
04	Cereal and cereal preparations	1·313	0·340	26
05	Fruit and vegetables	1·066	0·062	6
06	Sugar, sugar preparations and honey	0·321	0·103	32
07	Coffee, tea, cocoa, spices, etc.	1·235	0·378	31
08	Feeding stuffs for animals	0·514	0·084	16
09	Miscellaneous food preparations	0·073	0·031	42
11	Beverages	0·307	0·032	10
12	Tobacco and tobacco manufactures	0·602	0·091	15
21	Hides, skins and undressed furskin	0·096	0·026	27
22	Oil seeds, nuts and kernels	0·102	0·022	22
23	Crude rubber	0·195	0·036	18
24	Wood, lumber and cork	0·701	0·201	29
25	Pulp and waste paper	0·263	0·042	16
26	Textile fibres and waste	1·102	0·113	10
27, 28	Crude fertilisers and minerals, metal ores and scrap	0·347	0·037	11
29	Crude animal and vegetable materials	0·286	0·100	35
32	Coal, coke and briquettes	1·427	0·404	28
33	Petroleum and petroleum products	2·728	0·394	14
34, 35	Gas and electrical energy	0·023	0·010	43
41	Animal oils and fats	0·058	0·025	43
42	Vegetable oils and fats	0·149	0·021	14
43	Processed oils, fats and waxes	0·032	0·009	28
51	Chemical elements and compounds	0·384	0·041	11
52	Crude chemicals from coal, petroleum, etc.	0·038	0·013	34
53	Dyeing, tanning and colouring materials	0·204	0·017	8
54	Medicinal and pharmaceutical products	0·404	0·055	14
55	Perfume materials, toilet preparations, etc.	0·124	0·017	14
56	Manufactured fertilisers	0·761	0·075	10
57	Explosives and pyrotechnic products	0·038	0·004	11
58	Plastic materials, cellulose and resins	0·323	0·171	53
59	Miscellaneous chemical materials and products	0·295	0·047	16
61	Leather, leather manufactures and dressed furskin	0·195	0·032	16
62	Rubber manufactures	0·194	0·022	11
63	Wood and cork manufactures	0·214	0·038	18
64	Paper, paperboard and manufactures thereof	0·881	0·080	9
65	Textile yarn, fabrics, made-up goods, etc.	2·370	0·134	6
66	Non-metallic mineral manufactures	0·370	0·056	15
67	Iron and steel	0·969	0·113	12
68	Non-ferrous metals	0·488	0·082	17
69	Manufactures of metal	1·100	0·121	11
71	Non-electric machinery	3·404	0·553	16
72	Electrical machinery and appliances	1·263	0·358	28
73	Transport equipment	2·737	0·140	5
81	Plumbing, heating and lighting fixtures and fittings	0·183	0·036	20
82	Furniture	0·043	0·016	37
83	Travel goods, handbags, etc.	0·020	0·009	45
84	Clothing	0·252	0·052	21
85	Footwear	0·055	0·018	33
86	Instruments, optical goods, watches and clocks	0·309	0·046	15
89	Miscellaneous manufactured articles	0·947	0·090	10
9	Unclassified commodities and transactions	2·520	0·200	8
	All merchandise imports	35·073	1·161	3

Source: Derived from Appendix Table A2.

These 55 percentages, denoted by w, are all taken as linear functions of the same three variables x_1, x_2 and x_3. For the first variable x_1, the natural logarithm of final demand for goods at constant prices has been chosen, subtracting the 1953 value. x_1 multiplied by 100 thus represents approximately the percentage increase in final demand over 1953 and for the years 1954–64 it assumes the following values: 0·000, 0·052, −0·006, −0·011, −0·022, 0·060, 0·121, 0·203, 0·235, 0·301, 0·378. With the help of this variable the hypothesis may be tested that more or less than proportionate increases in imports for the particular commodity group are associated with economic growth. Furthermore, if b_1 is the regression coefficient, the expression $1 + b_1/\bar{w}$ can be considered as a kind of average income elasticity of the particular import demand.

The variable x_2 is simply time, taken as 0 for 1953. It is introduced to test the hypothesis that the import percentage w is subject to a steady increase or decrease over the observation period.

As the data are measured in value terms, changes in relative import prices are not reflected in the figures insofar as they are offset by proportional quantity changes in the opposite direction; and as far as they are long-term changes they may be confounded with the trend effect. Allowance must, however, be made for changes in customs duties which bring about changes in import quantities without being reflected in import prices, imports being valued before duty is paid. The main difference has been between the years 1956 and 1957 on one and the remaining years on the other hand, as these two years saw the main effect of the import levies. This factor has therefore been handled by a dummy variable x_3, being 1 in 1956 and 1957 but 0 otherwise. The variable tests the hypothesis of specific effects being associated with the import levies, apart from the general effect of reducing total final expenditure.

If the percentage of all merchandise imports among the final demand for goods is regressed on x_1, x_2 and x_3 the equation obtained is

$$w = 36\cdot325 + 13\cdot377x_1 - 0\cdot4438x_2 - 1\cdot138x_3 + u \quad (7)$$
$$(3\cdot324) \quad (0\cdot1318) \quad (0\cdot506)$$

$$(R^2 = \cdot833)$$

The coefficient of x_1 appears significant at the 1% level and the associated income elasticity is 1·38. The trend, significant at the 5% level, suggests an autonomous decline of $4\frac{1}{2}$ percentage points per decade. Although of doubtful statistical significance, the coefficient of x_3 indicates that the import percentage was reduced by one percentage point below its normal level in 1956 and 1957. With only 12

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observations over time, autocorrelation tests are not required.

For the 55 import percentages, regressions were constructed on the full set of variables x_1, x_2 and x_3; but variables which were not significant even at the 10% level or which did not materially improve the fit of the equation to the data, were subsequently dropped. Some judgment rather than a strict statistical criterion was used; in some cases, variables which appeared significant at the 10% or even 5% level were dropped if a high value of R^2 was obtained without them.

It was found in the first instance that in the case of six items, mostly foodstuffs, no satisfactory statistical explanation by any of the independent variables was possible, because the variations were either very small or of an irregular character. The items concerned are: meat and meat preparations (01); dairy products and eggs (02); fruit and vegetables (05); sugar, sugar preparations and honey (06); crude rubber (23); and transport equipment (73). For these goods, the import value can be said to have been virtually proportionate to total final expenditure during 1954–64, the proportion being given in Table 11. The inclusion of transport equipment in this category may cause some surprise.

For the remaining items, the regressions chosen explain between 30% and 95% of the variations in w, and the numerical results are summarised in Table 12. The interpretation of the results is effected with the help of Table 11 and follows.

Firstly, the specific effects of the import levies and other factors associated with the years 1956 and 1957 upon the pattern of imports appear to be relatively limited. In these years imports of the following items declined significantly more than proportionately with final expenditure: fish and fish preparations; cereal and cereal products; coffee, tea, cocoa, spices, etc.; tobacco and tobacco manufactures; dyeing, tanning and colouring materials; leather, leather manufactures and dressed furskin; rubber manufactures; manufactures of metal; non-electric machinery; instruments, optical goods, watches and clocks; unclassified commodities and transactions. The sharp fall in these imports was partly offset by relatively high imports of textile fibres and waste and of petroleum and petroleum products, whether due to a low sensitivity or to high prices in 1956–57. For other commodities, imports in 1956 and 1957 fell approximately in proportion to total final expenditure on goods. It may also be noted that when the years 1956 and 1957 are excluded, imports of textile fibres and waste and of rubber manufactures followed the general trend of final expenditure.

Next consider the commodity groups for which the elasticity of imports with regard to total final

TABLE 12: RESULTS OF REGRESSION ANALYSIS FOR SITC DIVISIONS

$$w = a + b_1 x_1 + b_2 x_2 + b_3 x_3 + u$$

SITC code	a	b_1	b_2	b_3	R^2
00	0·057	—	+0·1370	—	·711
03	0·201	+0·323	−0·0190	−0·030	·834
04	1·855	—	−0·0757	−0·480	·557
07	1·912	—	−0·1018	−0·364	·690
08	0·424	—	+0·0150	—	·347
09	0·063	+0·319	−0·0047	—	·981
11	0·255	—	+0·0086	—	·810
12	0·687	−0·419	—	−0·190	·623
21	0·129	—	−0·0055	—	·480
22	0·116	−0·114	—	—	·534
24	1·174	+2·769	−0·1347	—	·864
25	0·316	—	−0·0088	—	·491
26	1·072	—	—	+0·164	·345
27, 28	0·322	+0·201	—	—	·574
29	0·356	−0·582	—	—	·646
32	2·139	—	−0·1186	—	·946
33	2·844	−1·726	—	+0·508	·931
34, 35	0·007	−0·151	+0·0056	—	·686
41	0·093	—	−0·0058	—	·581
42	0·181	—	−0·0053	—	·685
43	0·028	+0·038	—	—	·348
51	0·290	−0·305	+0·0217	—	·847
52	0·057	—	−0·0031	—	·646
53	0·243	+0·092	−0·0079	−0·014	·811
54	0·308	—	+0·0160	—	·924
55	0·137	+0·251	−0·0072	—	·866
56	0·671	−0·859	+0·0322	—	·428
57	0·043	—	−0·0008	—	·385
58	0·021	—	+0·0504	—	·951
59	0·247	—	+0·0079	—	·318
61	0·172	—	+0·0051	−0·041	·773
62	0·201	—	—	−0·036	·417
63	0·296	+0·405	−0·0219	—	·698
64	1·070	+1·144	−0·0546	—	·886
65	2·590	+1·725	−0·0715	—	·561
66	0·377	+0·680	−0·0150	—	·929
67	0·891	+0·648	—	—	·624
68	0·427	+0·504	—	—	·717
69	1·056	+0·523	—	−0·107	·679
71	3·024	+3·501	—	−0·237	·933
72	1·144	+3·605	−0·0527	—	·929
81	0·232	+0·581	−0·0198	—	·898
82	0·060	+0·259	−0·0080	—	·937
83	0·026	+0·129	−0·0036	—	·887
84	0·361	+0·793	−0·0342	—	·825
85	0·014	−0·136	+0·0097	—	·914
86	0·280	+0·280	—	−0·028	·950
89	0·896	+0·420	—	—	·414
9	2·670	−0·679	—	−0·372	·400
01, 02, 05 } 06, 23, 73 }	4·366	—	—	—	/
Total	36·401	+14·219	−0·4710	−1·227	/

expenditure appears to differ significantly from 1 but which do not exhibit a significant trend. These items and their respective elasticities, are as follows: tobacco and tobacco manufactures 0·30; oil seeds, nuts and kernels −0·12; crude fertilisers and minerals, metal ores and scrap 1·58; crude animal and vegetable materials −1·03; petroleum and petroleum products 0·37; processed oils, fats and waxes 2·19; iron and steel 1·67; non-ferrous metals 2·03; manufactures of metal 1·48; non-electric machinery 2·03; instruments, optical goods, watches and clocks 1·91; miscellaneous manufactured articles 1·44; unclassified commodities and transactions 0·73. In the majority of cases we have high elasticities, and low elasticities are in some instances the result of special factors such as the effect of the new oil refinery on the cost of petroleum imports.

In a number of other cases, imports seem to move in proportion to total final expenditure but to be subject to a trend. This trend is in the upward direction for imports of: live animals; feeding stuffs for animals; beverages; medicinal and pharmaceutical products; plastic materials, cellulose and resins; miscellaneous chemical materials and products; leather, leather manufactures and dressed furskin. A downward trend, on the other hand, is observed for: cereals and cereal preparations; coffee, tea, cocoa, spices, etc.; hides, skins and undressed furskin; pulp and waste paper; coal, coke and briquettes; animal oils and fats; vegetable oils and fats; crude chemicals from coal, petroleum, etc.; explosives and pyrotechnic products.

The remaining eighteen commodity groups show a more complex behaviour. A positive association with growth, combined with a negative trend, is found for imports of: fish and fish preparations; miscellaneous food preparations; wood, lumber and cork; dyeing, tanning and colouring materials; perfume materials, toilet preparations, etc.; wood and cork manufactures; paper, paperboard and manufactures thereof; textile yarn, fabrics, made-up goods, etc.; non-metallic mineral manufactures; electrical machinery and appliances; plumbing, heating and lighting fixtures and fittings; furniture; travel goods, handbags, etc.; clothing. In the cases of miscellaneous food preparations and of electrical machinery and appliances the trend effect is small and the elasticity of imports with regard to total final expenditure is high. The reverse of negative association with growth and a positive trend is rarer and only applies in the cases of: gas and electrical energy; chemical elements and compounds; manufactured fertilisers; footwear.

It may be noted that the built-up equation for all imports obtained by adding the significant regression coefficients listed in Table 12 is very close to the estimated import function (7). Thus Table 12 may be used to give a micro-analytic content to the macro-equation (7). It shows, for example, that the positive association with growth in (7) is largely explained by the results for both non-electric and electrical machinery; similarly the negative trend is particularly marked for cereals, tea, wood, coal and allied products.

6. EXPORTS AND THE BALANCE OF PAYMENTS

It has been shown that the pattern of imports has undergone substantial changes. In the case of some commodities, demand has stagnated or substitution of imports by home-produced goods has occurred on a large scale; imports of other commodities, however, have increased sharply. Nevertheless, the value of all merchandise imports together has remained a virtually constant proportion of final expenditure on goods, i.e. personal consumption of goods plus investment plus merchandise exports, all measured in current prices. This feature may be contrasted with the behaviour of exports.

Table 13 shows the value of merchandise exports at current prices, both in absolute terms and as a proportion of all final expenditure on goods. Live animals form about one-third of the export total and indications are that they follow a quite different rhythm from that of other exports, therefore the two classes of exports are also shown separately. The distinction between live animals and other exports is believed to be more meaningful than a largely arbitrary division into agricultural and industrial exports.

TABLE 13: MERCHANDISE EXPORTS, 1953–64

Year	Export value (£ million)			Exports as % of final expenditure on goods		
	All merchandise	Live animals	Other goods	All merchandise	Live animals	Other goods
1953	114·5	32·7	81·8	21·9	6·3	15·7
1954	115·8	41·6	74·2	22·2	8·0	14·2
1955	110·9	44·6	66·3	19·7	7·9	11·8
1956	108·1	45·4	62·7	20·0	8·4	11·6
1957	131·3	54·3	77·0	23·6	9·8	13·9
1958	131·3	47·3	84·0	22·7	8·2	14·5
1959	130·6	39·2	91·4	21·1	6·3	14·8
1960	152·7	44·7	108·0	23·1	6·8	16·4
1961	180·5	55·4	125·1	24·8	7·6	17·2
1962	174·4	47·5	126·9	22·5	6·1	16·4
1963	196·0	52·8	143·2	23·3	6·3	17·0
1964	222·6	66·7	155·9	23·1	6·9	16·2
Mean proportion				22·3	7·4	15·0

Source: Exports from Irish Statistical Bulletin and Trade Statistics of Ireland (1953 and 1954 figures adjusted); percentages based on total in Table 3.

Between 1953 and 1964, visible exports approximately doubled in value. The rise in exports did not follow a steady trend but occurred exclusively between 1956 and 1957, between 1959 and 1961 and since 1962; in other periods exports remained at a steady level or declined. The irregularities in the course of exports are largely accounted for by the behaviour of live animal exports for which large fluctuations appear to be superimposed upon a rising trend. Other exports as a whole fell between 1953 and 1956 but subsequently showed a steady increase, although the increase between 1961 and 1962 was negligible.

Seen as a percentage of final expenditure, total merchandise exports also fluctuated considerably, varying between 19·7% and 24·8% between 1953 and 1964, with a coefficient of variation of 6·6%. The corresponding percentage for imports varied during this period between 33·1% and 36·9%, the coefficient of variation amounting to 3·2% only.

The share of exports in final expenditure thus varied substantially from year to year and its

fluctuations cannot be ascribed to live animal exports alone; if these are omitted, the range within which the percentages lie is even greater—between 11·6% and 17·2%. Variability is considerable for both live animal and other exports, live animal exports having the smaller standard deviation—1·13 against 1·83—but the higher coefficient of variation—16% against 12%.

Both classes of exports also exhibit considerable short-term fluctuations, as measured by variations within calendar years for quarterly export value in absolute terms (not as percentages). A seasonal analysis similar to that presented for imports in section 3 has been carried out for the two export categories, based on the period 1953–64. The seasonal indices obtained for each quarter are as follows:

Live animal exports	108·4	89·5	108·8	93·3
Other exports	92·3	95·5	102·9	109·3

Both seasonal patterns are very marked and quite distinct from each other, live animal exports being high in the first and third quarter while other exports are highest in the fourth quarter. For exports other than live animals, the seasonal element accounts for most of the quarter-to-quarter variation within years. This is not the case for live animal exports for which the irregular element is dominant.

Thus live animal exports are subject to larger short-term fluctuations than the remainder of merchandise exports. In the medium long-run, however, both export categories are subject to substantial changes in relation to total final expenditure, or which comes to the same, in relation to home expenditure. In the long run, there is some tendency to stability, at least for all exports in relation to domestic expenditure.

Whilst there is thus a long-run tendency for exports and domestic expenditure to move in the same direction and proportion, this does not apply in the short run, and adjustments which tend to bring about long-term stability do not appear to become effective until a period of a few years has elapsed. The causal direction of the relationship between exports and home expenditure or production is not obvious and has in general terms been the subject of some controversy. It will be assumed here that the economic growth is at least partially export-led and that domestic expenditure tends to adjust itself to the level of exports.

Write x for the year-to-year change in merchandise exports at current prices in £ million and h for the corresponding change in home expenditure, i.e. expenditure on goods minus merchandise exports. Based on the first differences 1953–4 to 1963–4 the estimated regression of h on x together with terms lagged one and two years x_{-1} and x_{-2}, is as follows:

$$h = -\cdot 01 + 1\cdot 038x + 1\cdot 365x_{-1} + 1\cdot 017x_{-2} + u \qquad (8a)$$
$$(0\cdot 768) \quad (0\cdot 757) \quad (0\cdot 851)$$

$$(R^2 = \cdot 398)$$

Although the individual regression coefficients are not accurately estimated it can be stated that there is no evidence of current export changes exerting a larger influence on home expenditure than changes in each of the two preceding years. The hypothesis that each of the three years has equal influence would be quite acceptable and the equation then becomes

$$h = -1\cdot 04 + 1\cdot 178(x + x_{-1} + x_{-2}) + u \qquad (8b)$$
$$(0\cdot 495)$$

$$(R^2 = \cdot 386)$$

In either case there appears to be no significant time trend in the original variables, and the autonomous changes in home expenditure are substantial but have zero mean and do not tend systematically in an upward or downward direction.

The picture is thus one of large autonomous changes in consumption and investment at home, combined with gradual adjustment in these totals to the level of exports. Thus the ratio of exports to domestic expenditure is subject to large variations. Imports, on the other hand, tend to follow the level of all final expenditure fairly closely, with the result that exports and imports do not move hand in hand in the short run. Whilst a balance of trade deficit is an invariable feature, the size of the deficit may thus vary a good deal from year to year, and with a less variable invisible export surplus the balance of payments fluctuates correspondingly.

7. SUMMARY AND CONCLUSIONS

The rates of increase in imports of individual items show marked contrasts, and their pattern differs even within the bundle of commodities which have been imported in sharply increasing amounts during the last decade. In some cases such as plastics, the increase in imports has been associated with the growth of new products and gradual transformation of the industrial structure and has thus been fairly steady; in other cases such as machinery, the rising imports have been associated mainly with the economic growth initiated at the end of the 1950s. Moreover, although imports of manufactured and semi-manufactured goods have generally risen faster than final expenditure as a whole in response to economic growth, the effect has in several instances been more than counteracted by a falling trend, as in the case of clothing.

Nevertheless it remains true that the greatest expansion in imports has occurred among manufactures and semi-manufactured goods, including chemicals and machinery. Import demand for these goods appears to be highly elastic with regard to final expenditure in general, at least in the short-run. A relative lowering of import prices combined with a high price elasticity also appears to have contributed towards expansion of import demand in these cases, even in terms of current prices.

Imports of crude materials in volume terms kept pace with industrial production, their movements preceding those in production by about half a year;

in value terms they also kept pace with total final expenditure on goods, which shows a lower quantum increase than industrial production but contains a substantial price increase element. For the food group, the increase in imports has been more moderate and has been combined with substantial changes in composition. Import demand for the fuel group has been subject to a low income elasticity and possibly a declining trend as far as coal is concerned; these imports have shown the least rise and have lost quantitatively in importance.

There remains the fact that measured in value terms, the import content and the home production content of final expenditure have moved practically in line with each other. As far as import substitution took place, it tended to set up new import requirements, be it for investment goods in connection with raw capital formation or for materials and consumer goods, from the production of which domestic resources have been switched to production of new goods.

This does not mean that it is impossible, even in the short run, to reduce the import content of final expenditure. The measures taken in 1956–57 succeeded in bringing the percentage of merchandise imports to final expenditure on goods about one

point below its normal level. Nevertheless, the main impetus toward a reduction in the total import bill at that time came from a reduction in total demand. Thus the scope for reducing imports without at the same time reducing home production appears to be severely limited.

The ratio of exports to home expenditure, on the other hand, is subject to wide variations, and the process of bringing the two into balance is slow. It follows that falling exports or even a failure of exports to expand rather than excessive imports appear to be the root of balance of payments troubles. A rise in merchandise imports to new record levels perhaps tends to cause undue concern in the public eye. The fact that an increase in imports is a more or less inevitable feature accompanying economic growth may well be overlooked.

Attention should thus be primarily directed towards the level of exports rather than that of imports. Economic growth need not necessarily be led by exports; but without an appropriate expansion in exports, growth can hardly be maintained for any length of time without leading to a balance of payments deficit which, given the level of the capital inflow, is above tolerable limits.

REFERENCES

Leser, C. E. V. (1963). *Imports and economic growth in Ireland, 1947–61.* Economic Research Institute Paper No. 14. Dublin.

Leser, C. E. V. (1966). "Direct estimation of seasonal variation", *Review of the International Statistical Institute,* vol. 34, 1966, pp. 369–375.

Scott, M. FG. (1963). *A study of United Kingdom imports.* Cambridge University Press.

APPENDIX

BASIC DATA

TABLE A1. VALUE OF IMPORTS BY SITC DIVISION, 1950-64.

(£000)

SITC div.	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
00	641	601	180	517	399	467	1,082	5,991	6,096	6,415	4,452	11,392	9,003	11,659	13,088
01	89	169	137	142	158	213	84	199	203	217	278	157	186	225	252
02	123	2,014	2,477	2,873	290	81	63	47	74	139	66	80	119	117	106
03	388	821	528	617	901	1,057	700	418	603	645	773	696	1,003	907	1,021
04	15,081	16,572	14,199	12,947	7,373	11,827	6,758	5,368	7,828	10,830	7,213	9,216	8,386	9,396	10,140
05	6,521	7,704	6,301	6,337	5,496	6,840	5,669	5,868	6,582	6,366	6,473	7,475	8,145	8,983	10,149
06	2,964	4,590	3,873	4,768	1,562	2,928	1,788	2,271	1,705	2,265	995	1,570	1,641	3,010	3,555
07	5,983	9,940	5,863	10,341	9,479	10,773	4,571	8,528	6,625	7,982	7,785	8,019	7,620	8,712	7,057
08	1,122	888	976	2,578	2,592	2,376	2,312	2,452	3,483	2,642	3,338	3,902	5,283	4,971	5,043
09	355	259	263	291	310	369	285	196	230	304	440	673	790	932	1,234
0	33,267	43,560	34,797	41,412	28,559	36,933	23,312	31,336	33,429	37,805	31,814	43,180	42,174	48,912	51,644
11	995	1,362	974	1,016	1,379	1,600	1,562	1,526	1,669	1,930	1,961	2,284	2,658	3,104	3,275
12	4,394	4,459	4,063	4,525	3,537	3,692	2,527	2,960	4,033	3,416	4,916	4,589	4,911	4,536	4,707
1	5,389	5,821	5,038	5,541	4,916	5,292	4,089	4,487	5,702	5,346	6,876	6,873	7,565	7,640	7,982
21	656	719	34	579	654	615	664	566	656	764	300	514	652	698	737
22	746	1,096	772	605	543	625	563	755	805	611	581	693	545	832	725
23	764	1,567	686	693	737	1,462	1,049	1,089	1,059	1,423	1,559	1,482	1,392	1,435	1,487
24	4,878	6,716	6,019	3,748	5,174	5,881	4,887	2,889	2,583	3,008	4,542	4,596	4,633	5,848	6,813
25	709	2,115	1,110	965	1,641	1,794	1,514	1,431	1,377	1,508	2,122	1,869	1,538	2,026	2,086
26	4,359	5,721	3,602	6,463	5,447	5,717	6,393	7,152	5,549	6,515	8,660	7,966	8,378	8,588	10,329
27	1,078	1,539	1,742	1,254	1,670	1,694	1,983	1,515	1,861	1,982	2,273	2,635	2,794	3,335	3,644
28	210	270	259	305	98	13	8	31	38	21	22	19	23	33	138
29	1,470	1,588	1,212	1,402	1,798	2,449	1,589	1,867	1,908	2,654	1,397	1,649	1,797	1,406	1,300
2	14,871	21,331	15,437	16,015	17,762	20,249	18,650	17,295	15,836	18,486	21,459	21,424	21,753	24,201	27,259
32	8,851	12,945	10,839	9,622	9,928	11,343	10,471	9,423	8,356	8,047	8,290	8,938	8,024	8,495	8,383
33	8,386	11,445	12,202	12,547	13,456	16,266	18,132	18,752	16,588	17,735	17,695	18,238	18,675	19,287	21,027
34, 35	—	—	48	54	67	59	143	178	238	230	152	77	127	165	208
3	17,237	24,390	23,089	22,223	23,450	27,668	28,745	28,353	25,182	26,012	26,137	27,253	26,826	27,947	29,618
41	374	818	644	401	459	539	494	220	210	401	387	439	357	188	339
42	1,086	1,305	3,255	1,820	948	931	847	869	860	1,000	1,103	968	970	929	1,296
43	191	269	108	149	160	184	160	185	164	161	169	185	198	432	460
4	1,650	2,392	4,006	2,369	1,586	1,653	1,500	1,274	1,234	1,563	1,659	1,591	1,526	1,549	2,094

see page 23

TABLE A1. VALUE OF IMPORTS BY SITC DIVISION, 1950-64. (*continued*) (£000)

SITC div.	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
51	888	1,110	1,061	1,288	1,558	1,844	1,969	2,073	2,266	2,588	2,798	2,918	2,924	3,477	4,138
52	129	191	269	248	268	258	281	301	304	181	145	201	222	263	243
53	1,221	1,705	870	1,269	1,282	1,250	1,082	1,107	1,112	1,283	1,370	1,399	1,516	1,597	1,848
54	1,161	1,621	1,380	1,552	1,641	1,929	1,793	2,067	2,297	2,652	2,904	3,237	3,507	3,793	4,555
55	250	290	352	537	680	743	622	658	577	619	747	962	977	1,273	1,458
56	1,743	2,794	2,146	2,500	3,660	4,087	3,661	4,966	4,794	5,376	4,989	4,958	5,587	6,690	6,905
57	313	174	185	161	221	237	229	224	177	240	278	262	247	318	320
58	232	302	274	402	495	829	836	1,292	1,557	1,939	2,263	2,731	3,225	4,768	6,174
59	1,147	1,578	1,101	1,202	1,174	1,531	1,553	1,410	1,505	1,869	2,240	2,681	2,865	2,464	2,634
5	7,084	9,765	7,639	9,158	10,979	12,709	12,025	14,099	14,591	16,747	17,734	19,351	21,070	24,643	28,274
61	1,472	1,350	740	1,065	975	958	841	782	1,028	1,366	1,503	1,536	1,491	1,885	2,298
62	948	1,237	809	999	1,150	1,133	887	925	1,028	1,134	1,475	1,647	1,579	1,528	1,828
63	1,417	2,187	992	1,077	1,324	1,691	1,126	1,247	1,221	1,055	1,307	1,289	1,359	1,683	2,215
64	4,145	6,483	5,086	4,464	5,142	5,782	5,110	4,613	4,580	4,886	5,704	6,227	6,290	7,249	8,955
65	18,205	21,914	10,767	15,335	13,780	13,447	12,992	12,494	13,357	12,991	15,528	17,463	18,297	20,020	23,891
66	2,971	3,798	3,437	2,279	1,903	2,040	1,942	1,751	1,713	2,015	2,259	2,875	2,014	3,688	4,707
67	3,523	4,551	4,972	3,243	4,377	5,328	5,496	4,131	5,399	5,497	6,698	7,632	8,036	8,845	11,008
68	1,219	1,488	2,148	1,624	2,157	2,720	2,544	2,088	2,248	3,264	3,260	3,482	4,010	4,602	6,465
69	6,281	8,601	7,142	5,231	5,215	6,148	5,334	5,005	6,808	6,032	7,044	8,892	9,641	10,264	11,670
6	40,181	51,608	36,094	35,319	36,025	39,244	36,273	33,036	37,383	38,240	44,776	51,044	53,717	59,764	73,039
71	8,882	11,376	13,416	15,577	16,496	17,561	15,422	14,752	17,400	19,913	21,465	26,800	31,118	36,304	40,149
72	5,606	7,275	7,890	5,896	5,737	6,678	5,884	4,598	5,611	5,794	7,580	9,506	12,699	15,056	18,363
73	9,721	10,234	7,823	9,100	14,185	14,861	15,270	13,706	17,167	16,828	18,159	21,093	20,978	21,910	27,045
7	24,209	28,886	29,128	30,573	36,418	39,100	36,576	33,056	40,178	42,504	47,204	57,399	64,795	73,271	85,557
81	954	1,403	1,060	965	1,093	1,224	1,032	750	767	943	1,017	1,243	1,554	1,759	2,310
82	240	266	251	259	270	314	202	125	136	161	198	323	409	550	639
83	103	95	123	130	125	125	107	55	56	58	96	156	181	284	350
84	4,539	4,470	1,342	1,634	1,631	1,919	1,437	1,306	1,255	1,095	1,338	1,539	1,806	2,269	3,000
85	283	411	144	143	126	162	203	263	383	386	460	516	577	522	640
86	1,781	1,839	1,577	1,275	1,489	1,729	1,349	1,394	1,685	1,717	1,958	2,422	2,722	3,125	3,748
89	2,901	3,493	3,850	5,806	5,399	5,056	4,817	4,640	5,330	5,821	5,665	6,521	7,371	8,915	10,856
8	10,802	11,976	8,346	10,210	10,133	10,538	9,146	8,534	9,612	10,180	10,731	12,719	14,619	17,424	21,543
9	6,131	6,346	11,387	12,591	13,140	14,277	12,531	12,703	15,811	15,733	17,839	20,568	19,676	21,549	20,803
TOTAL	160,822	206,074	174,961	185,412	182,950	207,663	182,849	184,172	198,957	212,647	226,228	261,403	273,724	306,900	347,815

Source: Trade and Shipping Statistics, Trade Statistics of Ireland; published data adjusted for comparability as far as possible. For SITC code, see Text Tables 6, 7 or 11, or United Nations, Standard International Trade Classification, revised, New York, 1961.

TABLE A2: IMPORTS BY SITC DIVISION AS PROPORTION OF TOTAL FINAL EXPENDITURE ON GOODS, 1954–64

(%)

SITC div.	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
00	0·077	0·083	0·201	1·078	1·054	1·037	0·675	1·565	1·162	1·383	1·356
01	0·030	0·038	0·016	0·034	0·035	0·035	0·042	0·022	0·024	0·027	0·026
02	0·056	0·014	0·012	0·008	0·013	0·022	0·010	0·011	0·015	0·014	0·011
03	0·173	0·188	0·130	0·075	0·104	0·104	0·117	0·096	0·130	0·108	0·106
04	1·415	2·100	1·253	0·966	1·353	1·751	1·093	1·266	1·083	1·115	1·051
05	1·055	1·215	1·051	1·056	1·138	1·029	0·981	1·027	1·052	1·066	1·052
06	0·300	0·520	0·332	0·409	0·295	0·366	0·151	0·216	0·212	0·357	0·368
07	1·819	1·913	0·848	1·534	1·145	1·291	1·180	1·102	0·984	1·033	0·731
08	0·498	0·422	0·429	0·441	0·602	0·427	0·506	0·536	0·682	0·590	0·523
09	0·060	0·066	0·053	0·035	0·040	0·049	0·067	0·092	0·102	0·111	0·128
11	0·265	0·284	0·290	0·275	0·289	0·312	0·297	0·314	0·343	0·368	0·339
12	0·679	0·656	0·469	0·532	0·697	0·552	0·745	0·631	0·634	0·538	0·488
21	0·126	0·109	0·123	0·102	0·113	0·124	0·045	0·071	0·084	0·083	0·076
22	0·104	0·111	0·104	0·136	0·139	0·099	0·088	0·095	0·070	0·088	0·075
23	0·141	0·260	0·195	0·196	0·183	0·230	0·236	0·204	0·178	0·170	0·154
24	0·993	1·044	0·906	0·520	0·447	0·486	0·688	0·632	0·598	0·694	0·706
25	0·315	0·319	0·281	0·257	0·238	0·244	0·322	0·257	0·199	0·240	0·216
26	1·045	1·015	1·185	1·287	0·959	1·054	1·312	1·095	1·082	1·019	1·070
27, 28	0·340	0·303	0·369	0·279	0·329	0·324	0·347	0·365	0·364	0·400	0·392
29	0·345	0·435	0·295	0·336	0·330	0·429	0·212	0·227	0·232	0·167	0·135
32	1·906	2·014	1·942	1·695	1·445	1·301	1·256	1·228	1·036	1·008	0·869
33	2·583	2·889	3·362	3·373	2·868	2·868	2·681	2·506	2·411	2·288	2·179
34, 35	0·013	0·010	0·027	0·032	0·041	0·037	0·023	0·011	0·016	0·020	0·022
41	0·088	0·096	0·092	0·040	0·036	0·065	0·059	0·060	0·046	0·022	0·035
42	0·182	0·165	0·157	0·156	0·149	0·162	0·167	0·133	0·125	0·110	0·134
43	0·031	0·033	0·030	0·033	0·028	0·026	0·025	0·025	0·026	0·051	0·048
51	0·299	0·327	0·365	0·373	0·392	0·419	0·424	0·401	0·378	0·412	0·429
52	0·051	0·046	0·052	0·054	0·053	0·029	0·022	0·028	0·029	0·031	0·025
53	0·246	0·222	0·201	0·199	0·192	0·207	0·208	0·192	0·196	0·189	0·192
54	0·315	0·343	0·332	0·372	0·397	0·429	0·440	0·445	0·453	0·450	0·472
55	0·131	0·132	0·115	0·118	0·100	0·100	0·113	0·132	0·126	0·151	0·151
56	0·702	0·726	0·679	0·893	0·829	0·869	0·756	0·681	0·721	0·794	0·716
57	0·042	0·042	0·042	0·040	0·031	0·039	0·042	0·036	0·032	0·038	0·033
58	0·095	0·147	0·155	0·232	0·269	0·314	0·343	0·375	0·416	0·566	0·640
59	0·225	0·272	0·288	0·254	0·260	0·302	0·339	0·368	0·370	0·292	0·273
61	0·187	0·170	0·156	0·141	0·178	0·221	0·228	0·211	0·193	0·224	0·238
62	0·221	0·201	0·164	0·166	0·178	0·183	0·223	0·226	0·204	0·181	0·189
63	0·254	0·300	0·209	0·224	0·211	0·171	0·198	0·177	0·175	0·200	0·230
64	0·987	1·027	0·948	0·830	0·792	0·790	0·864	0·856	0·812	0·860	0·928
65	2·645	2·388	2·409	2·248	2·309	2·101	2·353	2·400	2·362	2·375	2·476
66	0·365	0·362	0·360	0·315	0·296	0·326	0·342	0·395	0·389	0·437	0·488
67	0·840	0·946	1·019	0·743	0·933	0·889	1·015	1·049	1·038	1·049	1·141
68	0·414	0·483	0·472	0·376	0·389	0·528	0·494	0·478	0·518	0·546	0·670
69	1·001	1·092	0·989	0·900	1·177	0·975	1·067	1·222	1·245	1·218	1·209
71	3·166	3·119	2·860	2·654	3·008	3·220	3·252	3·683	4·018	4·307	4·161
72	1·101	1·186	1·091	0·827	0·970	0·937	1·148	1·306	1·640	1·786	1·903
73	2·723	2·639	2·831	2·466	2·968	2·721	2·751	2·899	2·709	2·599	2·803
81	0·210	0·217	0·191	0·135	0·133	0·152	0·154	0·171	0·201	0·209	0·239
82	0·052	0·058	0·037	0·022	0·024	0·026	0·030	0·044	0·053	0·065	0·066
83	0·024	0·022	0·020	0·010	0·010	0·009	0·015	0·021	0·023	0·034	0·036
84	0·313	0·341	0·266	0·235	0·217	0·177	0·203	0·211	0·233	0·269	0·311
85	0·024	0·029	0·038	0·047	0·066	0·062	0·070	0·071	0·074	0·062	0·066
86	0·286	0·307	0·250	0·251	0·291	0·278	0·297	0·333	0·351	0·371	0·388
89	1·036	0·898	0·893	0·835	0·922	0·941	0·858	0·896	0·952	1·058	1·125
9	2·522	2·535	2·324	2·285	2·734	2·544	2·703	2·826	2·540	2·556	2·156
TOTAL	35·116	36·879	33·908	33·130	34·399	34·383	34·277	35·920	35·341	36·410	36·044

Source: Derived from Table A1 and total final expenditure on goods given in Text Table 3.

TABLE A3: VOLUME OF IMPORTS EACH QUARTER
1953–64

(1953 average=100)

Year	Quarter			
	I	II	III	IV
1953 ..	99·2	96·5	92·4	111·9
1954 ..	104·0	96·0	92·2	99·6
1955 ..	116·4	104·8	99·0	110·0
1956 ..	109·8	95·1	79·7	87·1
1957 ..	91·1	87·4	82·5	94·0
1958 ..	96·1	104·4	90·3	110·1
1959 ..	111·7	111·6	104·8	110·1
1960 ..	115·7	113·7	106·1	122·3
1961 ..	133·3	136·1	123·8	130·4
1962 ..	135·6	134·1	130·0	149·0
1963 ..	137·6	158·5	137·5	171·5
1964 ..	172·3	178·3	158·3	170·9

Source: Irish Statistical Bulletin, Trade Statistics of Ireland.

TABLE A5: QUARTERLY VOLUME OF PRODUCTION,
TRANSPORTABLE GOODS INDUSTRIES, 1953–64

(1953 average=100)

Year	Quarter			
	I	II	III	IV
1953 ..	90·9	101·5	102·4	105·2
1954 ..	95·8	104·6	104·9	105·4
1955 ..	100·2	109·5	107·3	113·5
1956 ..	106·1	108·8	101·2	105·8
1957 ..	98·3	108·8	101·6	110·9
1958 ..	103·2	110·9	102·7	109·3
1959 ..	104·2	122·7	119·2	123·0
1960 ..	119·0	130·7	125·2	130·8
1961 ..	129·9	143·5	136·5	142·7
1962 ..	137·6	152·4	140·7	153·8
1963 ..	141·8	154·9	153·1	164·0
1964 ..	157·9	173·1	168·3	175·6

Source: Irish Statistical Bulletin and C.S.O. statements;
1964 figures provisional.

TABLE A4: QUARTERLY IMPORT VOLUME INDEX
NUMBERS 1953–64 (1953 average=100)

Year	Quarter			
	I	II	III	IV
Food, drink and tobacco:				
1953	104·2	92·9	84·8	118·0
1954	72·6	59·9	56·5	83·2
1955	107·5	77·7	54·2	86·0
1956	73·4	45·4	47·5	53·0
1957	78·5	58·0	58·4	80·0
1958	66·2	63·3	59·1	113·0
1959	88·7	83·2	79·1	87·0
1960	74·9	71·0	58·9	100·1
1961	90·7	97·2	105·2	109·0
1962	87·2	96·3	92·2	117·2
1963	97·4	106·2	92·0	143·9
1964	119·8	121·3	95·8	123·5
Crude materials:				
1953	96·4	86·1	94·0	123·5
1954	106·0	99·7	116·9	125·3
1955	131·6	117·9	124·2	118·8
1956	117·7	118·6	100·3	114·4
1957	110·7	101·0	94·3	103·1
1958	108·0	105·1	93·5	117·3
1959	146·1	114·1	107·3	125·5
1960	132·4	129·0	127·5	142·4
1961	150·5	140·0	125·5	127·4
1962	139·2	127·9	141·2	170·2
1963	152·3	160·0	158·2	166·0
1964	175·6	154·3	180·8	172·9
Fuels and lubricants:				
1953	98·7	95·7	102·3	103·4
1954	109·9	106·5	110·0	106·8
1955	110·9	117·9	124·8	134·6
1956	132·8	128·7	104·5	114·9
1957	74·0	134·8	88·9	113·4
1958	105·1	104·6	112·0	110·3
1959	125·9	128·3	116·3	109·4
1960	127·8	106·4	125·0	126·5
1961	121·7	126·7	131·8	131·9
1962	120·3	131·1	130·9	123·9
1963	116·3	139·8	122·1	139·6
1964	141·5	122·0	131·1	142·2
Miscellaneous goods:				
1953	95·2	98·7	95·8	110·4
1954	120·6	115·3	93·2	101·2
1955	118·5	112·6	111·2	114·3
1956	120·2	107·7	86·1	92·5
1957	96·9	85·5	88·5	100·7
1958	108·8	122·7	100·1	105·3
1959	115·5	118·2	114·6	119·0
1960	129·7	132·5	120·4	129·0
1961	152·9	155·6	131·2	140·3
1962	160·8	153·3	146·2	166·2
1963	159·2	186·7	159·1	192·2
1964	203·4	220·6	190·6	199·5

Source: Derived from Trade Statistics of Ireland with help
of C.S.O. import price index numbers.

TABLE A6: QUARTERLY WHOLESALE PRICE INDEX NUMBERS, 1953-64 (1953 average=100)

Year and Quarter	General		For personal consumption		Crude products		More elaborately transformed products	
	Imports	Home production	Imports	Home production	Imports	Home production	Imports	Home production
1953 I	100·8	100·4	99·6	99·9	100·7	102·2	100·2	100·0
II	100·3	100·6	100·8	100·1	100·1	101·3	100·3	100·2
III	99·4	99·6	100·3	99·8	99·2	98·1	99·7	100·1
IV	99·5	99·4	99·4	100·4	99·7	98·6	99·7	100·0
1954 I	98·5	98·9	99·5	99·6	98·0	96·6	100·7	99·3
II	98·6	98·9	99·5	98·5	98·1	98·4	100·4	98·9
III	99·3	97·7	101·2	97·9	99·4	97·1	100·4	98·9
IV	99·0	97·6	100·8	98·5	98·3	99·0	100·5	98·6
1955 I	99·7	100·9	99·9	99·2	98·9	111·4	102·5	98·9
II	100·7	101·9	101·6	99·2	100·3	113·7	103·4	99·3
III	100·9	100·1	102·3	98·5	100·2	103·1	103·9	100·3
IV	102·4	101·8	107·5	101·5	103·0	106·9	104·7	101·8
1956 I	103·1	100·9	108·7	100·1	104·0	101·0	104·9	102·7
II	107·1	101·8	114·7	101·5	110·1	97·0	107·6	105·3
III	110·8	101·1	119·7	102·2	116·3	89·3	110·2	107·0
IV	112·7	101·2	122·9	103·3	118·1	89·7	112·4	107·8
1957 I	113·9	104·2	124·4	103·5	118·2	100·2	113·1	108·4
II	114·8	107·8	124·6	107·4	118·0	103·1	112·4	110·4
III	114·9	110·3	121·9	111·7	118·7	105·4	112·4	113·1
IV	114·1	110·2	121·8	112·6	117·5	105·2	112·8	113·3
1958 I	113·4	111·7	121·2	112·7	116·1	106·5	112·8	114·6
II	111·6	113·2	121·3	113·8	115·1	110·9	112·2	115·2
III	110·9	113·3	119·7	114·1	114·3	110·0	112·3	115·2
IV	110·2	112·5	117·9	115·4	113·0	108·9	112·4	115·3
1959 I	110·3	114·0	117·4	114·6	112·3	114·6	113·2	115·1
II	109·4	114·5	115·6	114·0	111·3	116·2	111·7	115·1
III	109·6	112·0	116·1	113·0	110·6	102·5	112·1	115·6
IV	109·5	111·7	115·0	114·0	110·6	103·0	111·8	116·0
1960 I	110·1	112·4	114·1	113·6	110·6	106·4	112·7	116·7
II	109·9	113·2	114·5	114·4	111·3	105·5	111·7	117·4
III	110·1	112·4	115·3	114·6	110·7	99·9	113·0	117·8
IV	109·9	112·0	114·6	116·1	110·3	98·6	113·3	117·8
1961 I	109·7	113·5	115·8	115·9	110·1	104·4	113·5	118·4
II	110·1	114·3	117·3	116·7	110·8	104·4	114·4	119·2
III	111·5	113·8	120·0	117·0	113·0	99·8	114·8	120·5
IV	111·8	114·7	118·8	117·7	112·5	102·5	115·9	121·9
1962 I	111·6	116·8	117·7	118·6	112·8	107·4	115·2	123·6
II	113·0	118·6	121·3	121·0	115·2	107·9	116·6	125·9
III	113·1	118·5	120·9	122·0	115·4	104·6	116·5	126·7
IV	112·6	118·1	118·1	122·4	114·2	102·0	116·5	127·1
1963 I	112·7	119·2	118·1	122·5	114·7	106·7	116·6	127·2
II	114·1	119·5	120·9	121·7	116·5	107·8	117·1	127·6
III	115·2	119·3	124·1	121·9	117·7	105·2	117·1	128·1
IV	116·1	119·9	121·1	124·3	118·3	104·6	117·0	128·8
1964 I	118·6	123·3	123·4	124·8	122·2	113·3	118·2	131·3
II	120·2	127·5	124·7	128·5	123·7	120·7	119·6	135·2
III	121·5	128·3	124·7	130·3	125·9	120·6	119·4	136·2
IV	121·1	129·2	122·9	131·6	124·8	121·5	119·7	137·0

Source: Irish Statistical Bulletin

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