THE ECONOMIC AND SOCIAL RESEARCH INSTITUTE

QUARTERLY ECONOMIC COMMENTARY

by
T. J. BAKER and J. DURKAN
with
Special Article
by
BRENDAN M. WALSH

JUNE 1970

4 BURLINGTON ROAD DUBLIN 4

THE ECONOMIC AND SOCIAL RESEARCH INSTITUTE

COUNCIL 1969-70

QUARTERLY ECONOMIC COMMENTARY

JUNE 1970

by

T. J. BAKER and J. DURKAN*

with
Special Article
by
BRENDAN M. WALSH

Incorporating: The Confederation of Irish Industries and The Economic and Social Research Institute Joint Quarterly Industrial Survey.

Copies of this paper may be obtained from The Economic and Social Research Institute, 4 Burlington Rd., Dublin 4, price 15/- per copy, or 50/- per year.

---

*T. J. Baker is a Senior Research Officer and J. Durkan is an Assistant Research Officer of The Economic and Social Research Institute. The Commentary has been accepted for publication by the Institute. The Authors are responsible for the contents of the paper, including the views expressed therein.

CONTENTS

Note: In preparing the first three Sections of this paper, helpful criticism was received from the economic staff of the Institute, but the authors accept responsibility for the contents and conclusions of the paper and for the views expressed.

Section 5, The Joint Quarterly Industrial Survey, is prepared in conjunction with the Confederation of Irish Industries, who also supplied the commentary to this Section.

In using the forecasts in Section 2 it should be remembered that economic forecasting is an inexact science, subject to many uncertainties. In particular, projections for periods more than six months distant should not be regarded as more than a broad indication of what might be expected to happen on the specific assumptions set out.

SECTION 1: SUMMARY

The past few months have witnessed a considerable change in the short-term outlook for the Irish economy. The major reason for this change has been the influence of unusual factors, and in particular the impact of the prolonged cement dispute.

In general it is not possible to quantify the effects of these exceptional factors with any degree of confidence, but tentative calculations suggest that the cement strike must have exerted a major deflationary pressure. Including its direct effects on the construction and building industries, and the indirect multiplier effects on the remainder of the economy, it seems quite likely that the dispute has led to the loss of about 1 per cent of annual real G.N.P. This is not altogether surprising, as the effects of the cement shortage are analogous to those of a temporary sharp cut in the public capital programme allied to selective restrictions on private investment.

It must be stressed however that any assessment of the effects of the cement dispute and the other factors is inevitably subject to an extremely large margin of error. Accordingly the forecast National Accounts for 1970 set out in table 2.2 should be regarded as very tentative, and heavily dependent on the assumptions discussed in Section 3. Subject to this proviso, the forecast indicates a reasonable likelihood that the volume of G.N.P. will rise by about 3 per cent in 1970, that the implied price of G.N.P. will increase by about 9 per cent, and that the current external deficit will be reduced by about £8 million.

This forecast of a reduction in the deficit is supported by the trade statistics for the first five months of the year. The size of the forecast deficit is still uncomfortably high, implying a continued reliance on a heavy inflow of capital. On the other hand the threat of an imminent balance of payments crisis, which was still a possibility at the time of the previous Quarterly Economic Commentary, seems to have receded.

In these circumstances where major uncertainty surrounds any economic forecast which might be made but where there is no firm evidence of an impending crisis in the external deficit, there appears to be little case for taking short-term policy initiatives with regard to demand management. Later in the year, when more evidence becomes available, the situation may seem very different, but at present there is no way of knowing in which direction this difference may be.

Despite the change which the past few months have brought to the prospects for 1970, the longer term problems facing the economy have not diminished since March. The rate of price and income inflation remains intolerably high and, for the sake of social justice and stability as well as for fear of the purely economic consequences, a determined effort by the whole community is needed to bring it under control.

SECTION 2: NATIONAL ACCOUNTS FORECASTS

TABLE 2.1: PRELIMINARY NATIONAL ACCOUNTS 1969

	1968 Provisional	Change in 1969		1969 Estimate	Change in 1969		
					Price	Volume	
	£m	%	£m	£m	%	%	£m
A. Expenditure on Gross National Product							
Personal Consumer Expenditure	872	+12	+104	976	7½	4½	38
Public Net Current Expenditure	169	+12½	+ 21	190	8	4	6
Gross Domestic Fixed Capital Formation	252	+24	+ 60	312	8½	14	35
Exports of Goods and Services * ...	531	+10	+ 52	583	4	5½	30
Physical Changes in Stocks:							
Agriculture	+ 5	—	+ 5	+ 10	—	—	+5
Other	+12	—	+ 4	+ 16	—	—	+4
FINAL DEMAND	1,841	+13½	+246	2,087	6	6½	118
Imports of Goods and Services * ...	553	+17½	+ 97	650	5	12	66
GROSS NATIONAL PRODUCT AT MARKET PRICES	1,288	+11½	+149	1,437	7	4	52
B. Gross National Product by Origin							
Agriculture, etc.—Total	194	+ 3	+ 6	200			
Non-Agricultural: Wages etc.	581	+13½	+ 78	659			
Profits etc.	203	+10½	+ 21	224			
	784	+12½	+ 99	883			
Other Income (including adjustment for price of stocks)	42	+ 2	+ 1	43			
NATIONAL INCOME	1,020	+10½	+106	1,126			
Depreciation	91	+11	+ 10	101			
GNP AT FACTOR COST	1,111	+10½	+116	1,227			
Taxes on Expenditure less Subsidies ...	177	+18½	+ 33	210			
GNP AT CURRENT MARKET PRICES	1,288	+11½	+149	1,437			
C. BALANCE OF PAYMENTS ...	—22	—	—45	—67			

* Including factor flows. General Assumption: unchanged policies.
Detailed Assumptions: see Section 3.

TABLE 2.2: FORECAST NATIONAL ACCOUNTS 1970

	1969 Estimate	Change in 1970		1970 Forecast	Change in 1970		
					Price	Volume	
	£m	%	£m	£m	%	%	£m
A. Expenditure on Gross National Product							
Personal Consumer Expenditure	976	+11½	+111	1,087	8½	3	31
Public Net Current Expenditure	190	+13	+ 25	215	10	3	6
Gross Domestic Fixed Capital Formation	312	+13	+ 40	352	9½	3½	11
Exports of Goods and Services * ...	583	+12	+ 69	652	4	8	47
Physical Changes in Stocks:							
Agriculture	+10	—	—8	+ 2	—	—	—8
Other	+16	—	—7	+ 9	—	—	—7
FINAL DEMAND	2,087	+11	+230	2,317	7	4	80
Imports of Goods and Services * ...	650	+9½	+ 61	711	3½	6	39
GROSS NATIONAL PRODUCT AT MARKET PRICES	1,437	+12	+169	1,606	9	3	41
B. Gross National Product by Origin							
Agriculture etc.—Total	200	+ 2	+ 4	204			
Non-Agricultural: Wages etc.	659	+13½	+ 90	749			
Profits etc.	224	+ 7½	+ 17	241			
Total	883	+12	+107	990			
Other Income (including adjustment for price of stocks)	43	+ 7	+ 3	46			
NATIONAL INCOME	1,126	+10	+114	1,240			
Depreciation	101	+11	+ 11	112			
GNP AT FACTOR COST	1,227	+10½	+125	1,352			
Taxes on Expenditure less Subsidies ...	210	+21	+ 44	254			
GNP AT CURRENT MARKET PRICES	1,437	+12	+169	1,606			
C. BALANCE OF PAYMENTS ...	—67	—	+8	—59			

* Including factor flows. General Assumption: unchanged policies.
Detailed Assumptions: see section 3.

SECTION 3: COMMENTARY

§3.1 *Introduction*

Economic prediction is never an easy exercise, but at the present time it is more than usually difficult and uncertain. The labour disputes in the cement and banking sectors obscure, and quite possibly outweigh in importance, underlying economic trends. Not only are the current impacts of these disputes impossible to assess with any accuracy, but also at the time of writing there is no clear indication as to how long the bank dispute may be expected to last. At the same time the effects on the sensitive sectors of investment and tourism of such disturbing factors as continuing trouble in the North, political difficulties here and the world-wide fall in share prices cannot properly be quantified.

It is felt that it would be unreasonably defeatist not to attempt to make a quantified forecast of National Accounts. The point must be made however that the forecast set out in Table 2.2 is more than usually tentative, and is liable to be considerably revised later in the year.

The procedure adopted in the Commentary is to set out first the assumptions made about the various extraordinary factors, and some necessarily crude calculations as to the possible effects of these assumptions. In the light of the assumptions made, the prospects for different sectors of the economy are then briefly reviewed. It is hoped that by this procedure those who disagree with the assumptions made (and this is a matter for common-sense or political insight rather than economic expertise) will be able to gain some impression of the effect of making alternative assumptions.

§3.2 *The Cement Strike*

There can be no doubt that the cement dispute has exerted a powerful deflationary influence on the economy. The difficulty lies in trying to estimate just how strong this influence has been. Apart from the direct effects of the strike on output and earnings in the cement industry itself, it has made a strong impact on the building and construction sector, and on the related industries of concrete products and gravel quarrying.

Exact figures are not available for the number of building and construction workers who have lost their jobs as a result of the dispute, nor of the numbers who have suffered short-time working or loss of overtime. One commonly mentioned estimate is of a loss of 20,000 building and construction jobs. This estimate is not fully borne out by the unemployment statistics, although it is quite plausible on the reasonable assumptions that many who have lost their jobs have emigrated (if only temporarily) and that others who have remained have for various reasons not appeared on the live register. What is clear from the live register figures is that there was a fairly slow build-up to this situation from about the middle of March onwards, so that the estimate of 20,000 cannot be applied to the entire period of the strike.

Even so, it would appear that by the second half of June, approximately one-quarter of the building and construction labour force had been entirely out of work for an average period of three months. To this must be added the effects of short-time working by many of the remaining work-force, although there are no figures on which to base an assessment of the extent of this.

The social effects of this situation in terms of human hardship are obvious and serious, but the role of the economic commentator is rather to attempt to evaluate the

economic consequences. In National Accounts terms it is certain that the strike has led to the loss of a considerable proportion of the expected increase in real investment in 1970, particularly in the sector of house building, although other forms of building and construction have not escaped unscathed. This loss of building output, together with some associated cut-back in expenditure on plant and equipment, probably amount to between £10 million and £20 million to date. It is possible that some of this shortfall might be made good now that the strike has ended. It must be remembered however that even with the resumption of work at the cement factories it will be a considerable time before adequate supplies of cement will be available throughout the building and construction industries.

This fall in investment expenditure caused by the strike must be matched by a fall in wage earnings and profits, both in the industries directly affected, and, through the working of the multiplier, in such other sectors as retailing and the consumer goods industries. It is not possible on the basis of past experience to calculate the size of the "strike-multiplier", nor the effects on imports and savings. We are thus reduced to guesswork in assuming that both imports and savings will have been quite seriously reduced below the levels that would otherwise have obtained while social security payments and emigrants' remittances will both have risen, and that accordingly the multiplier effect on incomes will not have been unduly large.

A further corollary is of course that personal expenditure will also be lower than it would have been in the absence of the strike. Compensating to some extent for the fall in imports due to lower consumption and delays in installing some plant and machinery, imports of cement and concrete products must be allowed for, but it is most unlikely that these would match the general decline. Because of the high price of these replacement imports, and also because of the costs of delay to building programmes, some additional increase can be expected in the implied price of investment output, although here again there is no way of knowing how great an allowance to make for this factor.

The assumptions and allowances in the forecast National Accounts made specifically for the cement dispute can be summarised as follows. It is assumed that the estimate of about 20,000 workers in the construction, building and building supplies industries having lost their jobs by May is approximately correct, and that it will be some weeks before employment in these sectors returns to normal. It is also assumed that part of the loss already suffered will be made good over the remainder of the year. The net results in National Accounts terms for 1970, compared with what might have been expected in the absence of the strike, are taken as being: a loss of £15 million in real investment, partly offset by an increase of just under two per cent in investment prices; a loss (including multiplier effects) of £12 million in consumption with no effect on consumer prices; a reduction in imports of £9 million; a loss of nearly two per cent in the index of industrial production; a reduction of £11 million in wages, salaries and pensions and of £5 million in profits and own account earnings (both including multiplier effects); and a fall of £2 million in the balance of indirect taxes over subsidies. It must of course be stressed that each of these figures is an extremely crude approximation, indicating a possible order of magnitude, and should in no way be taken as representing an exercise in precise scientific measurement. If the order of magnitude is roughly correct, it would imply that the cement dispute has already cost the country about 1 per cent of real Gross National Product, and thus seriously reduced the growth rate.

§3.3 *The Bank Dispute*

The second major factor disturbing the economy is the closure of the Associated Banks due to a labour dispute. In this case there is even less quantifiable information

on which to base speculative calculations than in the case of the cement strike. The direct loss of earnings by bank employees has probably been of the order of £1 million, partly offset in recent weeks by remittances from those who have taken jobs abroad. On the national scale such magnitudes have little economic significance, unless continued for a long period, although the personal hardship involved may be considerable. What matters to the total economy in a bank closure is the effect on credit creation and the interruption to the normal processes of internal and international trade. By the nature of affairs, there is no statistical information on these effects.

During the previous bank closure of 1966, there was a very substantial expansion of credit, with bills, loans and advances increasing by 7½ per cent and total credit by 13 per cent between April and October, after a period of almost a year in which credit had been static or falling. The consensus of opinion is that so far at least there has been no comparable rise on this occasion. It is even felt that the stoppage may well have had restrictive rather than expansionary results on the level of credit. The effect of the previous dispute on the flow of trade cannot properly be assessed, as it overlapped with the U.K. seamen's strike, which itself severely distorted trade patterns. There is thus no real guidance as to the effects the dispute may be having on trade and industrial activity. The best guess is that, while many important companies will have made adequate alternative arrangements, shortage of liquidity and the problems of obtaining and handling cash as an alternative to cheque transactions will have forced many smaller firms to cut back on commitments and in particular to operate with stocks at a minimum level. Equally, many private transactions, especially in the field of housing and consumer durables, may well be inhibited by the current situation. If these suppositions are correct, then there must be an impact on both industrial output and the level of imports. How great this impact may be, and how far any distortion may be made good after the banks reopen, cannot be judged. For forecasting purposes it is assumed, on the basis that the dispute will soon end, that industrial production for 1970 as a whole will be only marginally reduced, and that there will be a reduction in imports for the year of about £3 million, largely matched by an equivalent fall in stocks. It is also assumed that the net effect on agriculture will be fairly small, although of course it may well lead to some redistribution of income within the agricultural sector.

These assumptions are highly tentative, and may greatly distort the magnitude and even the direction of the effects of the dispute. It should also be noted that the longer the banks remain closed the greater the uncertainty will become, and the very much greater could the effects become in either an inflationary or, much more probably, a deflationary direction.

§3.4 *Political Factors*

All that can usefully be said about the troubles in the North, and the associated political difficulties in the Republic is that they are among the factors exerting a downward pressure on the number of tourists and the level of industrial investment. It is not possible to apportion a precise share of this pressure to these specific factors, and they will merely be taken into account when discussing the general prospects for these sectors.

The specific assumptions are made however that sporadic strife will continue in the North but that there will be no developments in the Republic which could be construed by the outside world as a major crisis.

No allowance is made for any effects on the Irish economy in 1970 of the change of government in the U.K. It is felt that any changes in agricultural policy or in the operation of the Free Trade Agreement, if they come at all, will not become effective

during the remainder of this year. It is further assumed that the threatened national dock strike in the U.K. will either not take place or will be of only short duration.

§3.5 *Share Prices*

The world-wide fall in share prices so far in 1970 must have an inhibiting effect on investment at the present time. However it can still be regarded as a temporary factor, and there is no sign that long-term confidence in industrial investment has been seriously shaken in any of the major industrial nations. It is assumed that the fall in share prices particularly on Wall Street, will not continue to the point at which such confidence would be affected. On the other hand no dramatic change in mood, such as could result in a sustained and rapid recovery on Wall Street, is expected in 1970.

§3.6 *Policy Decisions*

It is specifically assumed that there will be no significant change in fiscal policy in the remainder of 1970. With regard to the recent Budget, the overall effect on aggregate demand can be regarded as broadly neutral, whereas in our earlier forecasts we had assumed a mildly deflationary impact. To this extent the March forecasts for consumption, investment, imports and incomes need to be adjusted upwards by a few million pounds each in current price terms. The Budget decision to double turnover tax, again contrary to the assumptions made in March, obviously necessitates an upward revision of prices compared with that earlier forecast. Allowing for the fact that the increased tax does not apply to the whole of 1970, the implied price deflator for personal consumption has been raised by a little over 2% for the year. At the same time, the figure for indirect tax receipts, minus subsidies, must be raised by about £20 million.

In respect of monetary policy, it is assumed that there will be little deviation from the existing guideline of an expansion in total credit of about £75 million for the financial year. This implies the further assumption that if the bank dispute proves to have caused such a deviation, corrective action in the appropriate direction will be taken.

§3.7 *Incomes*

The fundamental assumption of the March forecast was that industrial wage rates were likely to rise between 15% and 20% comparing the average of 1970 with that of 1969. There seems no good reason to change this assumption, although it now seems possible that there may be slightly less overtime working and other wage drift than was assumed in March. It also seems possible, on the basis of the ESB settlement and the proposals for public service pay, that the increase in non-manual earnings will be slightly less than seemed likely in March. These slightly reduced prospects for average earnings would have been offset by slightly more expansionary prospects for employment, as a result of the Budget. However, the direct and indirect loss of employment as a result of labour disputes (see §3.2) has completely outweighed these other adjustments. Consequently in table 2.2 the forecast for non-agricultural wages etc. has been reduced by £11 million compared with the March forecast. The current price forecast of a rise of 13¼ per cent or £90 million is still very high by historical standards, especially as it results almost entirely from higher money earnings. Average non-agricultural employment for the year, due to the labour disputes, is expected to be no higher than the average for 1969.

Compared to the forecast in March for non-agricultural profits and incomes of the self employed, the expansion which might have been expected from the Budget has been

more than offset by the reduction which appears likely as a result of the bank and cement stoppages, and the set-back to the tourist industry.

The increase in the forecast for miscellaneous income reflects an expectation of higher emigrants' remittances than usual, due to the temporary employment abroad of workers affected by the labour disputes.

At present it is too early in the year to make confident predictions concerning agricultural incomes. However, despite the rise in the agricultural price index in the first quarter there appears little real bouyancy in agricultural prices. At the same time the weather in the first half of the year must be regarded as unfavourable. Consequently it seems reasonable to predict only a very small rise in agricultural income, arising mainly from price increases. As usual this forecast may have to be radically revised later in the year as the weather pattern becomes clearer and more figures are available.

Thus total National Income is now forecast to rise by 10% in 1970 over 1969. The item on the income side of the projected National Accounts which seems certain to rise most spectacularly is that of net indirect taxation. Projecting the total of taxes on expenditure at an average rate of increase of between 11 and 11½ per cent, in line with consumer spending, and adding in the effects of a doubled turnover tax, one reaches a gross increase of over £50 million. Allowing for a considerable increase also in subsidies, although no major new commitments have been entered, one is left with a rise for net indirect taxation (which is the balancing item between G.N.P. at factor cost and expenditure on G.N.P.) of well over £40 million.

§3.8 *Output*

As discussed earlier, there is little reason to expect much change in the volume of agricultural net output. Of course if the weather later in the year is poor it is possible that this expectation will prove to have been optimistic and that there will in fact be a fall in output compared with last year.

The quarterly industrial inquiry for the first quarter of 1970 is not yet available. On the evidence of the CII-ESRI Quarterly Industrial Survey industrial production was comfortably above that in the first quarter of 1969. As the 1969 figure was distorted by the maintenance strike, however, this was only to be expected, and tells us little about the trend of manufacturing output since the middle of 1969. The position is further complicated by the fact that, while the Surveys conducted in the second half of 1969 suggested a continuing increase in manufacturing output, the C.S.O.'s index of industrial production for the same period showed a marked levelling off. On past experience one cannot rule out the possibility of substantial revisions to the figures for the index of industrial production. On the other hand one cannot rely in advance on the possibility of such a revision nor can one ignore the evidence of the provisional figures.

Even before taking the effects of the labour disputes into account, it therefore seems prudent to revise downward the March forecast of a 9% rise in industrial production, which was made before the fourth quarter figures for 1969 became available. When allowance is made for the disruption caused by the bank and cement closures, which on present assumptions at least match the effects of the maintenance dispute last year, an average increase of between 6 and 7 per cent for 1970 over 1969 seems a more reasonable prediction.

As so much of the expected increase in current price expenditure will be taken up by price increases, the volume output of the other non-agricultural sectors, such as

transport and distribution, now seems likely to show only a modest increase in 1970. Also, of course, allowance must be made for the loss of output in the building and construction sector discussed in §3.2.

Viewed in total, the prospects for expanding the volume of output in the economy point to a growth rate of no more than 3 per cent in 1970. The figure could well be lower than this if the bank dispute continues, if the weather is unduly poor, or if some of the assumptions and calculations made (on admittedly inadequate evidence) concerning the effects of unusual factors prove simply to be mistaken.

§3.9 *Domestic Expenditure*

Both the index of retail sales and turnover tax receipts for the first quarter of 1970 indicate a very rapid rate of increase in personal consumption. Not only are the figures 15 per cent and 13 per cent respectively above the corresponding levels in 1969 (which were depressed by the maintenance dispute) but they also showed increases of 5.7 per cent and 8.2 per cent respectively over the fourth quarter of 1969 on a seasonally corrected basis. Thus first quarter consumption was high enough to suggest that the forecast made in March for an 11 per cent increase in the value of consumption may have been a little too conservative. The Budget, considered in isolation, could also be expected to increase the likely level of personal consumption at current prices, due both to the general balance being less restrictive than had been anticipated and to the impact of the increased turnover tax on retail prices. These higher prices could be expected to have the effect of reducing consumption (compared with what it would otherwise have been) in volume terms, but increasing it, presumably at the expense of personal savings, in terms of current price values.

However, these reasons for revising upwards the forecast of current price consumer expenditure are balanced by the effects of the labour disputes in reducing personal incomes below the expected levels, and consequently forcing some reduction in personal expenditure. The net effect is that we have left the current price forecast almost unchanged at an increase of 11¼ per cent. Of course, the result of the higher turnover tax is that the forecast increase in consumer prices has been raised from 6 per cent to nearly 8½ per cent. The 4.1 per cent rise in the consumer price index between February and May to a level 8.4 per cent above that of May 1969 gives some confirmation to the revised price forecast. As a result of the higher prices forecast, the volume increase forecast for personal consumer expenditure has been reduced from the historically high figure of 5 per cent to 3 per cent, which is fractionally below the average annual increase over the past decade.

Little change has been made to the forecast figure for public authorites current expenditure, where the intentions expressed in the Estimates and Budget Statement are quite close to the assumptions made for the March forecast.

As discussed in §3.2, the increase which can be expected in the volume of fixed investment has been seriously reduced by the cement dispute. In some ways the situation is analogous to what might have happened had there been a severe cut-back in the public capital programme allied to selective measures to restrict private building, although of course there is the major difference that the present situation has the nature of an interruption rather than a halt to expansion, so that progress can be expected to be resumed as soon as adequate supplies of cement are flowing once more.

With regard to forms of investment which are not dependent on cement supplies, particularly investment in plant, machinery and vehicles, the prospect for 1970 remains one of a steady, but not spectacular, expansion. As can be seen from Section 5 of this

publication, the replies to the March Quarterly Industrial Survey confirm the picture which was emerging in the second half of 1969. This is that while more firms expect investment in 1970 to expand than expect it to contract, the margin in favour of an increase is much lower than it was in the first half of 1969. For the first time since the middle of 1968 a significant majority of firms reported that supply constraints were not preventing an increase in output, although it appears that this may reflect the easing of labour and material constraints rather than those of physical capacity. Nevertheless, the picture given by the Survey is of a situation where the pressure to invest and the intention to do so are both less than they were at a corresponding period of 1969. The prospect of a slower rise in corporate profits, the bank strike, the likelihood of continued stringency of credit supply, and the low level of share prices are all contributory reasons for this likely slowing down of private domestic investment. With regard to investment from overseas, it seems certain that the rate of Irish wage inflation, the poor state of international stock markets, and fears of political difficulties are all inhibiting factors, although their effect may well be more apparent in 1971 than in 1970 given the gestation period of major investment projects. No meaningful figures are available for net capital flows in the past few months because of the inevitable distorting effects of the bank closure.

In total, the forecast for gross fixed capital formation in table 2.2 shows an increase of 3½ per cent in volume and 13 per cent in value terms. In the circumstances the margin of error around this forecast is inevitably very large, but it is felt that the effect of the disturbing factors in reducing investment is more likely to have been understated than overstated.

Turning to physical stock changes, we enter a field of almost total speculation. With regard to changes in livestock, it appears from the U.K. trade figures that meat exports from Ireland were considerably greater in the first four months of 1970 than in early 1969, although shipments of live animals were slightly down. However, it is movements in the summer and autumn which chiefly determine the outcome for the year, and at present there seems no reason to change the forecast made in March that there will be only a marginal increase in livestock numbers in the course of 1970.

Non-agricultural stocks are even more problematical, as no figures exist other than the annual National Accounts estimates. However it seems reasonable to assume that the bank dispute must have given a powerful incentive throughout the production and distribution chain to operate on minimum stock levels, and that continuing shortage of credit for the private sector after the banks re-open will inhibit the rebuilding of stock levels. Even before the banks closed completely the relatively low import figures for the early months of the year, in a period when retail sales were bouyant and manufacturing production was probably increasing, suggest some running down of stock levels. The assumption made in Table 2.2 is that the rate of stock accumulation will be approximately halved compared with the tentative estimate for 1969. In the circumstances it could be that this assumption is unduly timid, and that there will be a far larger turn-around in the behaviour of non-agricultural stocks.

To summarise, it appears likely that domestic expenditure in 1970 will exhibit a feeble growth in real terms, although abnormally large price increases will maintain the increase in the value of domestic expenditure at a fairly high level. Nevertheless the achievement of a reasonable overall growth-rate in 1970 appears to depend heavily on the behaviour of exports.

§3.10 *Exports of Goods and Services*

Fortunately the prospects for merchandise exports in 1970 remain very good, and figures for the first five months of the year confirm that there is a strong upward trend.

Total merchandise exports in the period from January to May were £29 million higher than in the corresponding period of 1969. On a seasonally corrected basis exports in the first quarter were running at an annual rate of £411 million, compared with a total of £371 million in 1969. April and May figures suggest a further improvement. The available detailed export statistics from both Irish and U.K. sources indicate that the growth has been spread over a wide variety of products, and is not due solely to increased shipments of meat or any other single commodity.

There is good reason to expect a continuation of this broad based expansion. World trade has continued to grow at a higher rate than most commentators expected earlier in the year. The value of U.K. imports in particular should continue to increase as that economy moves to a slightly higher growth path in the second half of the year. From the supply side the slowing down of the volume increase in domestic expenditure should ensure the availability of resources to meet export demand, while the acceleration of cost inflation in most of the major overseas markets should help to keep Irish prices competitive in spite of rising Irish costs. Exports, and particularly agricultural exports are always liable to suffer unexpected reverses, but at present the balance of probability appears to be for a satisfactory year for all classes of merchandise export. This is summarised in Table 3.1.

TABLE 3.1: EXPORTS OF GOODS AND SERVICES 1968–1970

	1968 Actual £m	1969 Provisional £m	1970 Forecast £m	Change £m	Change %
Industrial: to U.K.	93	102	116	+14	+14
Other	56	74	95	+21	+28
Total ...	149	176	211	+35	+20
Agricultural	157	167	189	+22	+13
Misc. and Re-exports	26	28	32	+ 4	+14
Total Merchandise	332	371	432	+61	+16
Invisible*	199	212	220	+ 8	+ 4
Total	531	583	652	+69	+12

* Current Account Credit Movements from Balance of Payments, less total merchandise exports from Trade Statistics.

The forecast increase of £61 million in merchandise exports is higher than the figure in the March forecast, mainly because of the bouyant trend of exports so far this year. This improvement in the forecast for visible exports is offset by a reduction in the forecast for invisible exports, from a rise of £17 million suggested in March to a rise of only £8 million in the current projection.

This revision reflects the confusing, but generally rather pessimistic, reports emanating from different sections of the tourist industry. It is still too early in the season for much firm information on tourist arrivals or expenditure to be available. It does appear, however, that bookings for at least some types of accommodation and transport are running below last year's levels. Whether this is due to an impending fall in total arrivals, or whether it is merely due to changing patterns of tourist behaviour it is too early to say. If the former, it could be due to a variety of factors. The Northern troubles and the reports of difficulties in the Republic could be responsible, in which case a

set-back this year, whilst disappointing, would not carry too serious an implication for future development of the tourist industry. The same applies to some other suggested factors inhibiting tourists in 1970, such as the ban on pets from the U.K., the lifting of the U.K. restrictions on travellers' allowances, and the impact of the U.S. recession on American travelling. In any case this last suggestion does not seem well founded in view of reports from London that the U.K. is receiving a record number of U.S. visitors this year. On the other hand, if a reduction in the number of visitors (if such transpires) were due less to these temporary factors than to a reaction to the increasing price of Irish holidays, then the long-term implications would be much more serious, as no automatic recovery could be expected to follow from a return to normal conditions.

At the present time such speculations on the longer-term position are premature, as there is no firm evidence on which to base analysis. The assumption made with regard to 1970 itself is that the Northern troubles are in fact an inhibiting factor. Accordingly it is assumed that the number of visitors will be less than last year, and that total tourist expenditure (including transportation) will show a decline of about £5 million from its 1969 level, with improvements in some sectors not quite offsetting reverses in others.

Little change has been made to the March forecast for other invisible items. The assumptions are made that there will be a substantial increase in the net exports of Shannon Free Airport, and a steady expansion in other invisible receipts. The temporary emigration resulting from the labour disputes can be expected to increase emigrants' remittances above the level assumed in March.

§3.11 *Imports of Goods and Services*

Merchandise imports in the first five months of 1970 were £23 million or 9½ per cent higher than in the corresponding period of 1969. Seasonally corrected, imports in the first quarter were running at an annual rate only £6 million higher than the total for 1969, although there would appear to have been a more pronounced increase in April and May.

Nevertheless it is clear that the massive rise in imports forecast by some commentators for 1970 has not yet arrived. While it remains possible that such an increase might occur in the remainder of the year, on balance it appears unlikely. The bank closure seems quite likely to have interfered with imports during June. More important, the restricting influence of reduced expenditure due to the cement dispute is unlikely to have worked its way fully through to the import level by the end of May and conversely is likely to continue well after the settlement of the dispute itself. Moreover, on the assumption that private sector credit will remain in short supply, stockbuilding should be kept to a minimum for the remainder of the year, with an obviously dampening effect on imports.

In spite of these restraining factors, a moderate growth of merchandise imports can be expected in the second half of the year, leading to an annual increase of about £56 million or 9½ per cent. The reduction of about £20 million compared with the March forecast is due partly to the actual figures for the early part of the year being rather lower than expected, and mainly to the reduced annual forecasts of industrial production, real expenditure and stock-building. These reductions are only marginally offset by an increased allowance for the rise in import prices, from 3 per cent to 3½ per cent.

An increase of £5 million in invisible imports in 1970 seems a reasonable assumption, little changed from that in the March forecast. Thus total imports of goods and services are projected to rise by 9½ per cent or £61 million at current prices and by 6 per cent or £39 million in volume terms. This projection is slightly lower than that suggested by most of the available econometric models (which lie in the range of 10 to 14 per cent). Due to data limitations none of these models contains an adequate term for the effect of stock-building, whereas common-sense and experience in other countries both dictate that levels of non-agricultural stock-building in fact are a major factor in determining the

level of imports. As the assumption that the rate of stock-building will be reduced is central to the entire National Accounts forecast, it appears reasonable to make allowance for this factor in the import forecast.

§3.12 *General Synthesis*

As explained in the introduction to this commentary, the present situation is dominated by factors which cannot be quantified with any pretence to accuracy, and uncertainties about which assumptions must be made with little guidance from past experience. Therefore the analysis of recent trends cannot be presented with confidence, and the forecasts based on the analysis are very tentative indeed.

Bearing these provisos firmly in mind, there does appear to be enough evidence to suggest that the prospects for the economy in 1970 have altered considerably over the past few months. In March it appeared reasonable to anticipate a high growth rate in 1970, but to be worried concerning price increases and the balance of payments in both the short and long term. For various reasons, of which the effects of the cement and bank disputes are the most important, it now appears unlikely that a high growth-rate will be achieved in 1970, and indeed the forecast now made of a 3 per cent increase may itself prove to be over-optimistic. On the other hand, largely because of this slower growth, the short-term balance of payments problem looks much less intractable. Despite the possible fall in tourist earnings a worthwhile reduction in the current account deficit in 1970 seems quite probable. While the longer term problem of competitiveness remains, the evidence of increasing cost-inflation in other countries has robbed it of some of its urgency. There has however been no improvement in the prospects regarding domestic prices, and with the increase in turnover-tax providing an additional boost, a 9 per cent increase in the implied price of G.N.P. seems probable.

There is a world-wide problem of prices rising, even in conditions of recession where previous experience would have indicated that the increase in prices should have levelled off. The U.S.A. is the prime example of this tendency, where the price rise has continued unchecked in spite of falling output and growing unemployment. Ireland appears to be another extreme example, with the likelihood of a near record increase in domestic prices accompanied by a less than average increase in real G.N.P.

The forecast National Accounts set out in Table 2.3 have been compared with the results obtained from an updated version of Leser's consistency model. The comparison (assuming a 12 per cent increase in current price final demand excluding stock changes) is shown in Table 3.2.

TABLE 3.2: COMPARISON OF FORECAST WITH CONSISTENCY MODEL 1970

	% increases at current prices	
	Forecast	*Model*
Personal Consumption	11½	8.9
Public Net Current Expenditure	13	13.9
Gross Fixed Capital Formation	13	18.6
Exports of Goods and Services	12	13.1
Final Demand (excluding stock changes)	12	12
Imports of Goods and Services	9½	10.3
G.N.P. at Current Prices	12	11.5

The only serious divergences in the table concern personal consumption, where the increase in turnover tax is expected to boost the value, although reducing the volume, of consumption expenditure, and fixed capital formation, where the cement strike is the obvious distorting feature.

The consistency model results can be regarded as a "normal" pattern associated with a particular rise in final demand. Thus the fact that, in spite of the unusual circumstances and the high degree of speculative analysis which has had to be incorporated in them, the forecast National Accounts do not diverge too far from this pattern can be considered as providing some support for the credibility of the forecast. Of course the forecast may be proved wrong, but it does not appear to be internally inconsistent in the light of past experience.

§3.13 *Policy Implications*

At the time of writing it is still uncertain whether there will be an early settlement of the bank dispute. If the banks were to remain closed the cumulative effects could be very strong in either an inflationary or a recessionary direction. At present there is not sufficient information to know which threat is more likely, although either could prove difficult to counteract. This loss of information on which a coherent policy of demand management depends is one of the important consequences of a bank stoppage. It has thus become a matter of considerable economic urgency that banking services should be resumed as soon as possible.

If it is assumed that there will be a speedy settlement of the dispute, what are the other implications of the economic situation?

The most important fact about the forecast presented in this commentary, or indeed about any economic forecast made at the present time, is that it is subject to an abnormal degree of uncertainty. In these circumstances, unless a forecast shows a strong possibility of a crisis emerging, prudence counsels against the taking of short-term policy initiatives. On the whole the current forecast does not suggest the probability of an imminent economic crisis.

The current account external deficit, while still high, appears likely to be reduced in 1970. Unemployment, while temporarily high, seems likely to revert to more normal levels when the labour disputes are settled. A lower than average growth rate, although implying a waste of resources, does not in itself constitute a crisis. Prices, indeed, are rising at a rate which many people would regard as critical, but so far as 1970 is concerned the price increase is already largely a fait accompli.

Thus the forecast does not suggest the need for any hasty acts of demand management designed to influence the results for 1970, unless of course new facts emerge which invalidate some of the assumptions made.

With regard to the longer term the problems are still the same as were outlined in the March Commentary. Even if the external deficit is reduced in 1970, because of inflation in other countries and the unplanned deflationary action of the cement dispute, the domestic problems of rising prices are not diminished. Experience demonstrates that price increases of about 3 per cent per year are acceptable to most people and are quite compatible with ordered economic growth. Similarly a case could be made in favour of very occasional limited periods of faster inflation as a means of accelerating institutional changes and shifts in the distribution of income which are desired by a large proportion of society. However an indefinite period of rapid inflation, in which prices rose by nearly 10 per cent each year, would be different in kind rather than degree, from either the familiar gradual price rises or the once-for-all burst of sharp inflation.

Continuing rapid inflation holds many economic dangers, including threats to employment and social investment, and the longer it lasts the more difficult it will be to bring under control. Moreover it is not merely an economic problem. Such price increases inflict direct hardship on the least protected sections of society. The impoverishment of the weak is contrary to most people's standards of social justice, and is unlikely to be regarded as an acceptable price to pay for economic growth. The necessity of curbing the rate of price and income inflation thus remains of paramount concern. The required effort obviously involves not only the fiscal and monetary authorities but the whole community.

SECTION 4: ECONOMETRIC MACRO-MODEL BUILDING IN THE IRISH CONTEXT

by Brendan M. Walsh

Building an econometric macro-model of any country involves a major commitment of resources—research and clerical manpower, and computer time. This is so because, if it is to be useful, the model must reflect as accurately as possible, and in some detail, the complex interaction of forces that generate the time path of the national economy. This can only be done—if it can be done at all—by a close union of detailed, expert opinion on the structure of each sector of the economy and ingenious, tedious experimentation in the econometric field. A model of the national economy is more than a collection of sector by sector studies because great care must be taken to specify the interaction of the sectors, but the link between the macro-model builders and the economists who have specialised in various facets of the economy (such as consumption-savings behaviour, price formation etc.) must be very close. Since it may not be unreasonable to spend over a year producing a worthwhile study of one aspect of the national economy, obviously the time to be allocated for producing a useful macro-model must be measured in years. Klein puts it as follows:

> To build a realistic model of the American economy requires a year in data collection and preparation, another year in estimation with much experimentation following both false and fruitful leads, and finally years more of testing the model, applying it to practical problems. Every two or three years the model must be revised to keep it up to date. The magnitude of the effort involved is a definite drawback of the approach. [7, p. 269].

Unfortunately, the effort required is in no way proportional to the size of the country!

What will a satisfactory completed model look like?

The answer to this question changes with the growth of experience in model-building. Economic theory continually suggests new relationships to be included, more data are continually becoming available (the greatest change in this area has been the growing availability of quarterly series), and data processing facilities grow in size and productivity.

Most macro-models are attempts to translate the skeleton of the Keynesian system into a usable, quantified picture of how an economy actually works. For this reason, the following basic framework is still discernable beneath even the most elaborate of the macro-models that have been built: a consumption (or savings) function, an investment function, a demand for money equation, a production function, and a demand for labour equation. A model of this sort can preserve the main features of the Keynesian or post-Keynesian system and allow simultaneous determination of key macro-economic variables such as Income, Consumption, Interest and Employment. (cf. Klein, [6, Chapter 8]). These variables are 'explained' in terms of 'given' magnitudes, the so-called 'exogenous variables' (e.g. foreign economic conditions, technical change, weather), and lagged values of the endogenous variables. It is not an injustice to say that all macro-models are basically elaborations of this framework, elaborations suggested by the need to

recognise specific characteristics of the country under study (in the Irish case, for example, very special care would have to be devoted to the specification of labour demand and supply equations), and by the hope to increase accuracy by disaggregation (considering the different components of investment separately perhaps, instead of merely an aggregate investment function). All too often, compromises with theoretical preferences regarding the specification of the model are forced on the model-builder by the limitations of available data.

These points can be concretely illustrated by considering the evolution of various models of the U.S. economy in the last thirty years. (My discussion draws on Nerlove's convenient article [12] and dispenses with references to the original sources). Tinbergen's League of Nations model (1939) was based on 13 annual observations, used to 'explain' the behaviour of 14 endovariables. The Klein and Klein-Goldberber models (1955) used 20 observations (annual), including pre- and post-war years, to 'explain' 14 endovariables: the main improvement over Tinbergen consisted in the use of a more elaborate statistical procedure and incorporation of more sophisticated post-Keynesian theories in many equations. Suits' model (1962) used annual first differences (that is, the year to year changes in annual data) for 14 years to 'explain' 21 endovariables. Finally, the Brookings-SSRC model (1965 and ongoing) based mainly on quarterly data, used 60 observations, to 'explain' 272 endovariables. The progression has been towards the use of more data, far greater sophistication in the theoretical underpinnings of the equations, and disaggregation into smaller and smaller subsectors (this latter development especially noticeable in the Brookings model). Most spectacular of all, perhaps, but somewhat peripheral to the economic content of the models, has been the elaboration of statistical procedures used, from Ordinary Least Squares, to Limited Information Maximum Likelihood or Two Stage Least Squares, the last two techniques having been developed specifically by econometricians to deal with the problems arising from simultaneous equation estimation.

The contrast between the Klein-Goldberber investment function [8, p. 10] and the corresponding section of the Brookings model [4, Part II] illustrates the advances in econometrics in the post-war period: the K-G model made gross private domestic capital formation a function of lagged disposable non-wage income plus depreciation allowances and retained business profits, lagged value of end-of-year stock of capital equipment, and lagged end-of-year company liquid assets (all expressed in constant prices). In the Brookings model, producer investment decisions are dealt with for four separate sectors (durable and non-durable manufacturing, the distribution sector, and the rest of the economy), and each sector has an inventory investment equation, a fixed capital formation *intentions* (appropriations) equation, and an equation relating actual capital expenditures to intentions (realization function). In addition, there are separate supply and demand equations for new residential construction, consumer durable (especially car) expenditure, and of course farm investment is treated extensively in the separate sub-model of the agricultural sector. Each of these groups of equations has been worked on separately by one expert or more who were established authorities on the sector in question. A further elaboration of the model is to translate the disaggregated demand variables obtained from the main model into required output on the industry level through linkage with an input-output model (Cf. David T. Kresge's contribution in [4a]).

One of the reasons for the enormous increase in the complexity of macro-models over the post-war period has been the tendency to disaggregate, so that many more sectors and sub-sectors are dealt with in separate sub-models. The logic of this course of action is appealing, since it allows so much more detail to be incorporated into the model. However, the pay-off of disaggregation in terms of more accurate forecasts has not been firmly demonstrated, and it is possible to maintain that if predictions of the main macro-

variables is to be the primary application of the model then a fairly highly aggregated specification may perform no worse than a very disaggregated one.

I have given this somewhat detailed discussion of the existing work on model-building in order to gain perspective on the task facing Irish model-builders. We can gain from the experience of those who have tried the same task in other countries, but we face the disadvantage of some serious lacunae in the available data and the lack of a strong tradition of empirical work on various sectors of the economy. In addition, the increased theoretical and statistical sophistication of model-builders today compared with a generation ago prevents us from being justified in taking too simple-minded an approach to the problem.

What may reasonably be expected from a good econometric model?

The attempt to understand the way in which a particular economy works, and to specify this knowledge in a set of functional relationships, is obviously an important exercise in itself. A major consequence of this attempt could be increased awareness of gaps in existing knowledge about the economy and the need for further research on individual topics. Important as these benefits are, no doubt the chief attraction of macro-model-building lies in its promise of increased accuracy in the preparation of forecasts of the national economy: it is in this area that most users of models will seek the justification for the expense and trouble incurred in their construction.

The best models are explicitly acknowledged to be experimental, in a constant process of revision. They are not intended for mechanical application in forecasting or planning—that role must be reserved for the Input-Output models used by some Soviet-type planners for determining material balances in the absence of a price system. On the other hand, used sparingly and in conjunction with other, traditional sources of information for forecasting, a model can be of great benefit. A good example of this limited application was the use made of Brookings and other models of the U.S. economy in helping to pin down the impact of the 1964 tax-cut on consumption [4a, Part VII]. The Dutch have used their models over the years to help formulate fiscal and monetary policy, especial care being taken to evaluate the measures needed to correct balance of payments difficulties.

The Dutch have a long tradition of sophisticated applied econometrics and long experience in the area of using models as an aid to macro-management (the first macro-model was published in 1955, and is continually being improved and worked on). The main application of the Dutch model is to obtain forecasts of the key macro-variables for one year ahead. The actual data (when they become available) are then compared with the forecasts, and the performance of the model evaluated in this light. All of the equations are specified as year to year percentage changes. Despite all these advantages, the performance of the model has recently been summarized as 'hardly a brilliant record', with average prediction errors running about 40 per cent of the normal rate of change of the variables [10, pp. 295 ff.]. Of course, the accuracy of the predictions varies between the different sectors of the economy: personal consumption has generally been very accurately forecast, for example, while a poor performance has been recorded for inventory investment and non-wage income. The general tendency appears to be for the overall performance of the models to have improved over time.

A more complete, systematic evaluation of econometric models has been reported by Stekler [16]. He compared the forecasts obtained from some of the moderately elaborate U.S. models with those obtained by various naive methods (basically, using the

assumption that the change in a variable from this period to the next would be the same as that from last period to this). The results were mixed, and the reader is referred to the original article for a detailed commentary and quantified evaluation of the various models. The overall conclusion may be cited: "The combination of all the results suggests that econometric models have not been entirely successful in forecasting economic activity". (Ibid. p. 463). Stekler's research shows how hard it is to establish a clear-cut superiority for econometric-based forecasts over those relying on naive methods.

The burden of this discussion is not to suggest complete scepticism as regards the value of model-building, but rather to underline the magnitude of the task and its cost, and the comparatively small results that may be hoped for in the initial stages. On the other hand, I am firmly convinced that much, if not all, applied econometrics derives its main justification from its potential contribution to a usable macro-model. If we seriously believe that we can explain the behaviour of individual sectors and sub-sectors of the Irish economy, then some day we should be able to incorporate our partial insights into a workable model of the whole economy. At the same time it seems to me that an equally valid viewpoint consists in saying that the time has not yet come for the step of model-building, since too much is still unknown on the sectoral level. In any event it is indisputable that the commitment to model-building will result in a waste of resources unless it is understood to be ongoing, providing funds for continual revision and updating.

The Irish Context

At the onset, the particular problems facing the model-builder in Ireland must be stressed. National accounts data are available on an annual basis only. Over the post-war period the economy has been undergoing considerable structural change—associated with industrialization and changing emphases in government economic policy—and it may be questioned whether the underlying behavioural patterns have remained sufficiently stable to allow us to treat even the small number of observations at our disposal as forming one sample. Irish data (like all others) are subject to serious revisions, so that it is always many years after the publication of preliminary estimates before the final figure becomes available: in the 1963 *National Income and Expenditure* (published in 1964), for example, the preliminary figure for national income in 1963 was £672 million, while the 1968 *NIE* (published in 1970) gave a figure of £677.2 million for 1963 national income, and further revisions will probably be made. In comparison with many countries that have developed working econometric macro-models based on national accounts data, the time lag in the publication of even the preliminary estimates of the Irish national income data is so long as virtually to exclude the use of a macro-model for the preparation of helpful forecasts. If one uses an estimated model to 'predict' two years beyond the sample period for which it was estimated, in the Irish case the 'forecasts' thus prepared would at best apply to the national income magnitudes of the year in which the 'forecasts' were being prepared. Using the model to prepare genuine forecasts of future levels of GNP would involve using it for further beyond the sample period than can normally be expected not to result in serious inaccuracy.

In addition to data problems, the Irish model-builder is also hampered by the paucity of empirical studies of individual sectors of the economy. Although there has been a very dramatic increase in the output of empirical economic research in Ireland in the last decade, there are still some important sectors of the economy on which there is no usable empirical work.

Despite the fairly sceptical note I have sounded up to this point, I should like to present an outline of a model which I believe has some merit as a starting point for

discussion. Originally this specification formed part of a larger project,* in which the model was estimated and applied to the task of forecasting: some references to the outcome of these tests will be made below, but for the most part the present discussion is deliberately non-empirical. The main point of this discussion is pedagogic, and it will have attained its purpose if it serves merely as a starting point for other ventures in this area.

Technical Note

The model discussed below is a simultaneous equation system, which shares with most macro-models the property of over-identification. The single-equation estimation technique of Ordinary Least Squares (OLS) yields biased and inconsistent estimates of the parameters of such a system. A great deal of effort has been devoted in recent years to experimentation with alternative procedures, with Two Stage Least Squares (TSLS) finding some favour as a convenient and 'well-behaved' alternative. TSLS estimates are also biased, although they are consistent. In a model of the sort presented below, however, with only 19 observations and 25 predetermined variables, it is impossible to estimate the reduced-form equations (the endogenous variables each expressed as a function of all the predetermined variables), and thus only a modified form of TSLS is feasible, whose sampling properties are not well established. A possible solution to this problem consists in performing a principal component analysis of the predetermined variables and using the first half-dozen or so components as regressors in the reduced-form equations (cf. the discussion of estimation problems by Franklyn M. Fisher, in [4]).

The Structural Equations

Using annual observations, 1944-62, the following relationships were estimated. The data on earlier years were included at serious risk of errors in measurement, and if the model were to be re-estimated these years would no doubt be replaced with more up-to-date observations. Only the specification of each equation is recorded here, since the main focus of the discussion is on the type of model that should be specified. The general specification of each equation was dictated by broad theoretical considerations, but the form of the equation finally incorporated in the model frequently reflects feedback from the empirical results. For example, the decisions to use an output variable to help explain industrial capital formation is in keeping with a broad class of accelerator-type models of investment, but the actual choice of $\frac{1}{4}(Q + Q_{-1})$ instead of Q, Q_{-1} or ΔQ, for instance, was dictated by the results from experimentation with the various alternatives.

The variables are defined as they were incorporated in the model, but it by no means follows that this is how they would be defined if the model were to be up-dated. The availability of an official, constant price series on national income going back to 1947 now makes it feasible to substitute this series for the various deflated series I had to use. The implicit price deflators of GNP could now be substituted for the price indexes I used.

Equation No.

1. Industrial Production Function
$$Q = a + b\,(E_l H) + c\,(M_{nc} P_m) + d\,(t)$$

2. Industrial Production Decision
$$Q = a + b\,(C+V+G)/P + d\,(X_{na}/P_{na})$$

* This model was completed in 1966 as part of my work for a Ph.D. degree at Boston College. I am grateful to Professor Kanta Marwah (now of Carleton University, Ottawa) for her extensive involvement with this work.

3. Agricultural Production Function
$$(A/E_a) = a + b\,(R/E_a)$$

4. Agricultural Production Decision
$$A = a + b\,(X_a/P_a) + b\,(S/AP_a)_{-1} + c\,(A)_{-1}$$

5. Consumption Function
$$(C/NP) = a + b\,(AP_a/E_aP) + c\,(Z/E_iP) + d\,(WH/P)$$

6. Industrial Capital Formation
$$(V_m/P) = a + b\,(N) + c\,(Z'/P) + d\,\tfrac{1}{2}\,(Q + Q_{-1})$$

7. Agricultural Inputs Demand
$$R = a + b\,(AP_a)_{-1} + c\,(R)_{-1}$$

8. Consumption Imports Demand
$$(M_c/P_m) = a + b\,(C/P) + c\,(T_mP_m/MP)$$

9. Non-Consumption Imports Demand
$$(M_{nc}/P_m) = a + b\,(Q) + c\,(T_mP_m/MP)$$

10. Agricultural Exports Demand
$$(X_a/P_a) = a + b\,(X_a/P_a)_{-1} + c\,(GNP_{uk})$$

11. Non-Agricultural Exports Demand
$$X_{na}/P_{na} = a + b\,(GNP_{uk}) + c\,(P_{na}/P_{wuk})$$

12. Profit Level Determination
$$(Z/P) = a + b\,(Z/P)_{-1} + c\,(Q/E_iH) + d\,(\Delta Q)$$

13. Company Savings Functions
$$Z' = a + B(Z) + c\,(Z - Z' - T_z)_{-1}$$

14. Wage Rate Determination
$$\Delta WH = a + b\,(\Delta P) + c\,(U + Em) + d\,(\Delta Z)$$

15. Non-Agricultural Price Formation
$$P_{na} = a + b\,(WHE_i/Q) + c\,(P_m) + d\,(T_i/QP_{na})$$

16. Agricultural Price Formation
$$P_a = a + b\,(P_a)_{-1} + c\,(S/AP_a)$$

17. Interest Rate Determination
$$r = a + b\,(M_s/GNP) + c\,(r_d) + d\,(A_e/L)$$

18. Labour Supply
$$LS = a + b\,(W/P) + c\,(N)$$

19. Hours worked
$$H = a + b\,(\Delta Q) + c\,(H)_{-1}$$

20. Weights of Price Index
$$P = a\,(P_{na}) + b\,(P_a)$$

21. National Income Identity
$$GNP = C + G + V + X_a + X_{na} - M_c - M_{nc} +$$
(Balance of Payments, non-merchandise) + (Value of physical Changes in Stocks).

List of Variables Used in Model (Alphabetical Order)

A^*	=	Volume of net output of agriculture, excluding changes in livestock.
A_e	=	Net external assets of the banking system.
C^*	=	Personal Consumption expenditures on goods and services.
E_a^*	=	Number of males engaged in farm work, June census.
E_t^*	=	Employment in transportable goods industries.
G	=	Net expenditure by public authorities on current goods and services.
GNP_{uk}^*	=	Gross domestic product, UK, 1953 prices.
H^*	=	Average hours worked by adult wage earners in transportable goods industries.
L	=	Within-the-state liabilities of the banking system.
LS	=	Labour supply (= sum of employment, unemployment and emigration).
M_s	=	Money supply (= current outstanding plus within-the-state current deposits of commercial banks).
M_{nc}^*	=	Imports of non-consumption goods, value c.i.f.
Mc^*	=	Imports of consumption goods, value c.i.f.
N	=	Estimated mid-year population.
P^*	=	Consumer price index (all items).
P_a^*	=	Price index of agricultural products.
P_m^*	=	Import price index.
P_{na}^*	=	Price index of output of industry.
P_{wuk}	=	UK wholesale price index.
Q^*	=	Index of volume of output of transportable goods industries.
R^*	=	Value of (non-labour) input of agriculture (i.e. purchases and feeding stuff, fertiliser, etc.).
r^*	=	Weighted average of Irish government security yield.
r_d	=	Central Bank discount rate.
S	=	Value of major items of livestock on farms.
T_t	=	Excise and Sales tax receipts.
T_m	=	Value of duties on imports.
T_z	=	Value of Profit Tax receipts.
t	=	Time, in years—1944.
U_t+E_m	=	Sum of percentage of labour force unemployed and net emigration rate per 100 population.
V	=	Gross domestic fixed capital formation.
V_m^*	=	Gross domestic capital formation in manufacturing industry.
W^*	=	Index of hourly wage rates, industrial occupations.
X_a^*	=	Value of agricultural exports.
X_{na}^*	=	Value of non-agricultural exports.
Z^*	=	Trading profit of (private and public) companies.
Z'^*	=	Value of after-tax profits, less dividends.

* = endogenous variable. (All variables were included as index numbers to base 1953 = 100 in the estimated model.)

Space does not permit an adequate discussion of the data and transformations used in constructing the time series, but the following important points may be noted. A number of the series were not available continuously for the sample period, and various methods were resorted to reconcile the available series. For example, the volume index of agricultural net output for the years 1944-45 had to be linked to the new series to base 1953. The same problem arose with R (value of agricultural inputs) and P. V_m was obtained from UN data for the earlier years, and this series is likely to be seriously inaccurate for the pre-1947 period. P_{na} was calculated for the pre-1953 years on the basis of the old series for 'simply transformed' and 'more elaborately transformed' goods and their correlation with the price of output of industry since 1953. S was based on Nevin's figure for 1954 [13], updated through the figures published annually for changes in the value of livestock on farms.

The structure of the model can be explained through an equation-by-equation discussion, although it should be emphasised that the system is an inter-dependent set of equations, and hence looking at each equation in turn is only part of the story: the whole should be more than the sum of the parts. The 21 endogenous variables are Q, E_t, H, A, E_a, M_{ne}, R, M_c, C, P, Z, Z', W, V_m, X_a, X_{na}, r, P_{na}, U, P_a, GNP. The agricultural and industrial production and production decision functions aim at the determination of output and the labour input in each of these sectors. The industrial production function relied heavily on an omnibus trend variable, while the agricultural production function tried to overcome the problem of the strong negative trend in the agricultural labour force by specifying the relationship between input and output in *per caput* terms. Ideally, the industrial production function would contain an explicit measure of the capital services input to the manufacturing sector. The agricultural production sector should be specified in much greater detail (distinguishing between the various livestock and crops products, with a far more detailed specification of the non-agricultural input demand, perhaps linked into an input-output model of the farm sector). Some progress has been made in this area recently [5, 15]. The consumption function was specified so as to isolate the impact of increases in three different types of income on C, namely agricultural income, profits and wages income. No simple marginal propensity to consume can be calculated because the impact of an increase in income on consumption is seen to depend on the sector distribution of this increase. The specification could be improved, perhaps, by addition of a variable measuring the distribution of the labour force between agriculture and the rest of the economy.

Industrial investment was 'explained' in terms of company profits, a moving average of production and of interest rates. It would clearly be desirable to experiment with alternative specifications of the financial variables, using more up-to-date series, because their inclusion in this equation is crucial in establishing a link between the 'monetary' and 'real' sectors of the economy, and hence facilitating measures of the impact of monetary policy. All investment other than V_m is treated as exogenous in this model, but it would be worthwhile attempting to include items such as housing expenditures, as well as those parts of the government's capital budget that might be influenced by economic considerations. In the light of recent experience in Ireland, a usable model would also have to attempt to include a balance of payments sector, with emphasis on the capital flow: the difficulties of this extension need hardly be stressed.

The two-sector import equations relate imports to a domestic activity variable and a relative price variable (the use of the same price variable in the two equations was dictated by data availability for the earlier years). Recent work on imports by McAleese, and Baker and Durkan [11, 1] go far beyond these equations in detail and refinement, and suggest improvements that could be readily incorporated into the model.

Company profits were related to productivity and changes in output, the latter as a measure of the effect of cyclical changes in output on profits. Company saving is related to total profits and lagged distributed profits (the negative coefficient for the latter variable indicating that the higher past dividends were, other things being equal, the lower current savings are: companies try to maintain their level of dividends).

Adequate specification of a wages-prices sector is of crucial importance in allowing us to understand the process by which inflation is generated in the Irish economy. In this area in particular the need for explicit recognition of interdependence is great, since neither 'cost-push' nor 'demand-pull' by itself constitutes more than one blade of a scissors. It seems *a priori* more reasonable to discuss changes in wages, rather than their level. The role of unit labour costs, import prices and indirect taxation in determining industrial prices on the one hand, and price increases, profits changes and the condition of the labour market in determining the rate of change of wages, on the other, have been explored in much greater detail (but with substantially similar conclusions) by O'Herlihy, Cowling, and Black, Simpson and Slattery [2, 3, 14]. This segment of the model could be dissaggregated by industry, although the increase in predictive accuracy might not warrant the extra work involved. A simple extension that would add greater realism to the labour supply equation would include Em as an endogenous variable, along the lines studied by O'Herlihy and Walsh [14, 18].

The agricultural price formation equation relied exclusively on a distributed lag relationship with livestock levels to indicate supply conditions. An alternative would be to specify agricultural prices as exogenously determined in the U.K. market, but it was found that even if U.K. prices were used instead of $(P_a)_{-1}$, the stock variable still added significantly to the explained variance. The interest rate-liquidity preference function showed a positive relationship between income-velocity and interest, with the discount rate an important influence on the interest rate. The value of the British Bank Rate gave equally good results when substituted for r_d. The ratio of (net) external assets to domestic liabilities of the banking system exerted a negative influence on the interest rate. This is a very simplified monetary sector, and additional work would probably move in the direction of including M_s, A_e, L and r_d as endogenous variables. This extension of the model, taken in conjunction with the additional work on the determinants of investment demand outlined above, would be very desirable from the viewpoint of studying the role of monetary policy in controlling the economy.

The labour supply equation as specified is not very satisfactory. There is need for far more detailed statistics on the size and composition of the labour force before it will be possible to explore fully the relationship between changes in population and in measured labour force. Certainly, emigration should be included as an endogenous variable and possibly also population, since in the Irish case the principal determinant of short-run fluctuations in the domestic population is the level of net migration. If employment, emigration and population were endogenously determined it would be possible to study the year-to-year changes in participation rates and to extend the concept of measured unemployment to include the 'discouraged workers'.

The role of the industrial production function is to determine the demand for labour in the industrial sector, given the level of output (from the industrial decision function) and the level of non-labour inputs (trend is exogenous, and non-consumption imports are determined in the import equation). Similarly, the agricultural production function determines the demand for agricultural labour, although clearly the existence of under-employment in family farming means that the actual level of agricultural employment reflects non-market considerations to a very important extent. A major gap in the present model is the fact that the remainder of employment in Ireland (namely employment in the service and government sectors) is assumed exogenous: it

would be relatively easy, of course, to describe the pattern of this employment over time using a trend variable, or linking it to GNP, but there is a need to try to develop production functions for these sectors of the economy.

When applied to the task of forecasting the values of endogenous variables for years outside the sample period the model's performance was reasonably satisfactory. In a number of cases the actual values of the exogenous variables were not known for the post-sample years (a factor that should be kept in mind in building models of this type is how easy or difficult it will be to obtain the values of key exogenous variables for forecasting purposes), and their values had to be estimated or assumed from a number of sources. Some simplifications of the model's structure were necessary, since the non-linearities in the original presented difficulties in the process of solving for the values of the endogenous variables. The forecasts obtained were reasonably accurate for the majority of the endogenous variables with a mean absolute forecast error equal to 3.4 per cent of the actual values in the first post-sample year. The forecasts for agricultural exports, unemployment, non-consumption imports and company savings were noticeably inaccurate: omitting these variables the mean absolute forecast error was 2.1 per cent.

The highly inter-related nature of the structural equations becomes very clear when the model is applied to the task of forecasting. With a few exceptions it is not possible to express the endogenous variables as functions of the exogenous variables alone. Almost all the equations contain more than one endogenous variable, and hence groups of equations have to be solved simultaneously. It is possible to deal with one block first — that containing the two export equations, the agricultural production, production decision and price level equations. When the equations of this block had been solved, the resulting values of the relevant endogenous variables could be used as 'exogenous' to the block comprised by the remaing equations, with the consumption function providing the link. An important feature of the model is that although the consumption function and import and export equations are specified in real terms, the import and one of the export equations contains relative price terms, and thus the wage-price formation equations are not a separate block of equations, unlinked to the 'real' sector of the model.

The model is reasonably complete as far as the expenditure side of the national accounts is concerned: C, V_m, X_n, X_{na} are all endogenous variables. Non-manufacturing investment, however, is assumed exogenous, and this represents a serious gap which could be partly closed by an equation explaining the behaviour of housing investment. It would obviously also be helpful if G were included as endogenous, perhaps along with the various tax receipts variables. On the production side only Q and A are endogenous, and the output of the non-manufacturing, non-agricultural sector is treated as exogenous. As stressed earlier, it is very desirable that explicit production functions be estimated for this sector, although the data and conceptual problems involved are very considerable. A similar point may be made with respect to foreign trade: the model confines its attention to merchandise trade flows, partly for the very simple reason that these are better documented than the rest of the balance of payments. In view, however, of the crucial role of invisible trade and capital flows in the Irish economy, there is a high priority for work on these aspects of the foreign sector.

Conclusion

This article has aimed at providing an appreciation of the role of one type of applied economics in the formulation of economic policy. A review of the difficulties inherent in macro-economic model building has been presented and illustrated by reference to an outline model of the Irish economy. The opportunity has also been

availed of to discuss how recent empirical research on the Irish economy might be incorporated into an econometric model, and the nature of the major gaps in research that remain.

An alternative approach to econometric forecasting, which is complementary to the type of model-building discussed in the present paper, has been applied by Leser to the Irish economy [9]. The approach taken by Leser was designed to check the consistency of an overall forecast of economic growth with the behaviour of the components of final demand rather than to study the behavioural structure of the economy. The sort of model that has been discussed in this article is concerned above all with allowing policy-makers study the impact of changes, for example, in exports, government spending, taxation or interest rates on the various components of GNP. The greater disaggregation and more elaborate specifications involved in this approach may not immediately pay off in terms of more accurate forecasts of the behaviour of the economy, but in the long-run they hold promise of such returns.

REFERENCES

[1] T. J. BAKER and J. DURKAN, Quarterly Economic Commentary, December 1969, January 1969, May 1969, September 1969 (ESRI).

[2] W. BLACK, J. V. SIMPSON and D. G. SLATTERY, *Costs and Prices in Transportable Gods Industries,* ESRI Paper No. 51.

[3] KEITH COWLING, *Determinants of Wage Inflation in Ireland,* ESRI Paper No. 31.

[4] J. S. DUESENBERRY et al. (Editor), *The Brookings Quarterly Econometric Model of the United States* (Chicago/Amsterdam, 1965).

[4a] Ibid, *The Brooklings Model: Some Further Results* (Chicago/Amsterdam, 1969)

[5] E. W. HENRY and R. O'CONNOR, "Irish Agriculture and Associated Industrial 1964: Effects of Various Cereal Policies". *Economic and Social Review.*

[6] LAWRENCE R. KLEIN, *The Keynesian Revolution,* 2nd Edition (New York, 1966).

[7] LAWRENCE R. KLEIN, *An Introduction to Econometrics* (Englewood Cliffs, N.J., 1962).

[8] L. R. KLEIN and A. S. GOLDBERGER, *An Econometric Model of the United States,* 1929-1952 (Amsterdam, 1955).

[9] C. E. V. LESER, Appendix to *The Irish Economy* in 1969, ESRI Paper No. 39.

[10] ERIK LUNDBERG, *Instability and Economic Growth* (New Haven, 1968).

[11] D. McALEESE, *A Study of Demand Elasticities for Irish Imports,* ESRI Paper No. 53.

[12] MARC NERLOVE, "A Tabular Survey of Macro-Econometric Models", *International Economic Review,* 7 (2), May 1966, pp. 127-175.

[13] E. NEVIN, *The Capital Stock of Irish Industry,* 1947-59, ESRI Paper No. 17.

[14] C. St. J. O'HERLIHY, *A Statistical Study of Wages, Prices and Employment in the Irish Manufacturing Sector,* ESRI Paper No. 29.

[15] MICHEAL ROSS, "Regional Resource Allocation in Irish Agriculture", Unpublished Ph.D. thesis, University College, Dublin (1968).

[16] H. O. STEKLER, "Forecasting with Econometric Models; An Evaluation", *Econometrica,* 36 (3-4), July-Oct. 1958, pp. 437-63.

[17] ROBERT M. SUMMERS, "A Capital Intensive Approach to the Small Sample Properties of Various Simultaneous Equation Estimators" *Econometrica,* 33 (1), January 1965, pp. 1-41.

[18] B. WALSH, *Some Irish Population Problems Reconsidered,* ESRI Paper No. 42.

SECTION 5: CII/ESRI

QUARTERLY INDUSTRIAL SURVEY

MARCH 1970

The report contains the results of the March Quarterly Industrial Survey conducted jointly by the Confederation of Irish Industry and the Economic and Social Research Institute. The survey covered the First Quarter of 1970 compared with the First Quarter of 1969 with forecasts for trends in the Second Quarter of 1970 compared with the corresponding period of 1969. Over 85% of respondents replied to the survey and the results can be taken to represent the current views of a good cross-section of Irish Industry. The results of the survey are available for Dublin only and for areas outside Dublin and while the overall results only are included on this basis in this report respondents wishing to have the two sets of results for their industry may do so on request to the CII.

SECTION INDEX

C.I.I./E.S.R.I. QUARTERLY INDUSTRIAL SURVEY, MARCH 1970

Overall Results

The results of the March Quarterly Industrial Survey of the Confederation of Irish Industry and the Economic and Social Research Institute indicate that production and home sales both increased quite considerably in the first quarter of 1970 compared with the first quarter of 1969. The figures suggest, however, that home sales might have been increasing at a slower rate than in previous quarters. If the reduction in the rate of

increase of production experienced in the first quarter of 1969 due to the maintenance workers' dispute is taken into account, a general slowing down of the increase in both production and home sales is suggested.

In the December Survey the majority of firms responding indicated that they expected an increase in exports during the first quarter of 1970; a more optimistic view of export expectation than had been expected in recent surveys. This increase appears to have taken place, a considerable increase in exports being reported.

The majority of responding firms reported that employment was at the same level as in the first quarter of 1969. Most firms felt they could have produced more in the first quarter of 1970 with their existing resources. The proportion reporting that they could have produced more was the highest since the middle of 1969. Where firms thought that they could not have produced more, capacity restraints are listed as the most important factor. Different causes were listed in the December Survey when insufficient raw materials were listed as the main restriction in both country areas and "overall manufacturing". As was mentioned in that Survey this result was heavily influenced by factors in the food industry.

As regards the second quarter of 1970, production and home sales are expected to increase considerably. Exports were also expected to be higher than in the second quarter of 1969. This is a continuation of the more optimistic export expectations indicated in the December Survey. It is expected that employment will remain at much the same level as in 1969, or even decline slightly. The Survey certainly suggests that the rapid rise of industrial employment seen in 1969 is unlikely to be repeated in 1970.

As regards investment the majority of firms responding reported that investment was higher in the year ending during the first quarter 1970 than in the previous year. As was the case in the December Survey the majority of firms expect an increase in investment in the coming year. In the areas outside Dublin investment is expected to remain at the same level. It is evident, however, from results of "total manufacturing" that a slowing down in the rate of increase of investment is expected; this is specially so when results of the September and December Surveys are taken into account, as compared to the replies earlier in 1969.

Sector Results

All Sectors except Metal and Engineering reported higher production in the first quarter of 1970 compared with the corresponding period for 1969. The Metals and Engineering Industry reported that production was at the same level as in the first quarter of 1969. No industry group reported that production had fallen. The most noticeable increases took place in the Drink and Tobacco, "other manufacturing", Chemicals, Paper and Printing, and Textiles Industries.

In the case of home sales all industry groups except Chemicals reported an increase during the quarter. The Chemicals Industry reported sales to be at the same level as in the first quarter of 1969. The most noticeable increase took place in the Drink and Tobacco, "other manufacturing", Paper and Printing, Clothing, Wood and Furniture industries.

In the first quarter of 1970 the Clothing and Footwear industry reported that exports were at a lower level than in the first quarter of 1969, the Glass, Clay and Cement industry reported that exports were at the same level. All other industry groups reported that exports had increased during this period. The most noticeable increases were in the

Paper and Printing "other manufacturing" Metals and Engineering, Wood and Furniture and Chemicals industries.

Only two industry groups, Food and Paper and Printing, reported that employment had increased during the first quarter of 1970 compared with the corresponding period of 1969. In the Wood and Furniture industry and "other manufacturing" employment was reported to be at a lower level than in the first quarter of 1969. In all other cases the indications are that employment is at the same level as last year.

Most industries groups felt that stocks of finished products were adequate but in the case of the Textile industry stocks were considered to be excessive while in the Drink and Tobacco and Glass, Clay and Cement they were considered to be insufficient. The Metals and Engineering Industry reported that they had insufficient stock of raw materials but all other industry groups reported that stocks were adequate.

The majority of firms in the Textiles, Clothing and Footwear, Glass, Clay and Cement industries felt that they could not have produced more with their existing capacity in the first quarter of 1970. All other industry groups reported that they could have produced more with their existing resources. The reasons for inability to expand production are given as follows. In the case of the Textiles industry insufficient capacity was listed as the most important factor while in the Clothing and Footwear industry an insufficient supply of skilled female labour was listed as the most important restraint. This had been listed as a very important factor in the Clothing industry in several of the previous surveys. Insufficient capacity is listed as the most important factor hindering increased production in the Glass, Clay and Cement industry, although it is closely followed by "any other reason", in this case referring to the cement strike.

With the exception of Drink and Tobacco, Glass, Clay and Cement, and Metals and Engineering all industry groups expected production to be at a higher level in the second quarter of the 1970. Drink and Tobacco industry expects exports to be at the same level while the Glass, Clay and Cement industry expect exports to be at a lower level.

Most industry groups expect employment to be at the same level in the second quarter of 1970. The Clothing and Footwear industry expects employment to be higher, Food and "other manufacturing" industries expect a drop in employment.

CII/ESRI QUARTERLY INDUSTRIAL SURVEY

ALL MANUFACTURING

TREND OF REPLIES

The table set out below is designed to show the trend of replies in this and the four previous surveys. In questions 1, 2, 3, 4, 8, 9, 10, 11, 12 and 13 the difference between the positive and negative replies is taken. Where a positive sign appears before the figure in relation to these questions it indicates that the number of respondents who experienced a rise or expected one in the future quarter was that percentage higher than those who did not nor expected to experience a rise; the opposite applying where a negative sign appears.

For questions 5 and 6 the difference between the percentage of respondents reporting finished goods and raw materials was excessive and insufficient is taken. Here a positive sign before the answer arrived at indicated the number of respondents who considered that raw materials and finished goods were insufficient was that percentage higher than those who did not and a negative sign indicates that they were excessive.

To arrive at the figures given for question 7 the difference between the percentage of respondents stating that more orders could have been met in the various quarters and those replying in the negative is taken to show the trend of excessive capacity during the surveys.

TABLE 5.1

Question	April 1969	July 1969	October 1969	January 1970	April 1970
1. Total Production was	— 4	+64	+61	+52	+52
2. Homes Sales were	—	+72	+66	+53	+45
3. Exports were	—19	+15	+54	+47	+47
4. Labour Force was	— 1	+29	+22	+ 5	— 2
5. Finished Stocks were	+ 8	+ 1	+ 5	— 2	— 2
6. Materials Stocks were	— 3	+20	— 4	— 7	+ 4
7. Constraints	— 2	+ 4	—12	+ 6	+26
8. Total Production will be ...	—	+61	+46	+50	+44
9. Home Sales will be	+53	+52	+44	+52	+40
10. Exports will be	+33	+21	+10	+46	+51
11. Labour Force will be	+14	+32	+ 9	+ 6	— 7
12. Investment was	+26	+45	+44	+36	+42
13. Investment will be	+58	+47	—23	+40	+27

TABLE 5.2: INDUSTRY GROUP — ALL MANUFACTURING

	Weighted Replies (%)			Apparent Trend
In 1st quarter 1970 compared with 1st quarter 1969	Higher	Same	Lower	
1. Value of Total Production was	72	8	20	Higher
2. Value of Home Sales was	66	13	21	Higher
3. Value of Exports was	62	23	15	Higher
4. Wage Paid Labour Force was	27	44	29	Same
At end March 1970	Excessive	Adequate	Insufficient	
5. Stocks of Finished Products are considered to be	13	76	11	Adequate
6. Stocks of Materials are considered to be	7	82	11	Adequate
During 1st quarter 1970				
7. Could more be produced with present resources	*Yes* 63 *No* 37			Yes
7a. Where firms replied No, the causes responsible were	Insufficient Capacity 44 Insufficient Skilled Male Labour 8 Insufficient Skilled Female Labour 15 Insufficient Unskilled Male Labour 4 Insufficient Unskilled Female Labour 5 Insufficient Raw Mats. Supply 17 Insufficient Cash and/or Credit 2 Any other Reason 5			Insufficient Capacity
In 2nd quarter 1970 compared with 2nd quarter 1969	Higher	Same	Lower	
8. Value of Production will be	59	26	15	Higher
9. Value of Home Sales will be	56	28	16	Higher
10. Value of Exports will be	56	38	6	Higher
11. Wage Paid Labour Force will be	19	55	26	Same
For firms whose financial year ended during 1st quarter 1970	Higher	Same	Lower	
12. Capital investment in past year compared with previous year was	64	14	22	Higher
13. Capital investment in coming year compared with last year will be	42	43	15	Higher

TABLE 5.3: INDUSTRY GROUP — ALL MANUFACTURING — DUBLIN

	Weighted Replies (%)			Apparent Trend
In 1st quarter 1970 compared with 1st quarter 1969	Higher	Same	Lower	
1. Value of Total Production was	72	6	22	Higher
2. Value of Home Sales was	70	9	21	Higher
3. Value of Exports was	59	17	24	Higher
4. Wage Paid Labour Force was	22	46	32	Same
At end March 1970	Excessive	Adequate	Insufficient	
5. Stocks of Finished Products are considered to be	15	74	11	Adequate
6. Stocks of Materials are considered to be	6	80	14	Adequate
During 1st quarter 1970				
7. Could more be produced with present resources	*Yes* 72 *No* 28			Yes
7a. Where firms replied No, the causes responsible were	Insufficient Capacity 37 Insufficient Skilled Male Labour 10 Insufficient Skilled Female Labour 17 Insufficient Unskilled Male Labour 8 Insufficient Unskilled Female Labour 12 Insufficient Raw Mats. Supply 6 Insufficient Cash and/or Credit — Any other reason 10			Insufficient Capacity
In 2nd quarter 1970 compared with 2nd quarter 1969	Higher	Same	Lower	
8. Value of Production will be	49	29	22	Higher
9. Value of Home Sales will be	52	28	20	Higher
10. Value of Exports will be	52	42	6	Higher
11. Wage Paid Labour Force will be	11	56	33	Lower
For firms whose financial year ended during 1st quarter 1970	Higher	Same	Lower	
12. Capital investment in past year compared with previous year was	62	19	19	Higher
13. Capital investment in coming year compared with last year will be	52	30	18	Higher

TABLE 5.4: INDUSTRY GROUP—ALL MANUFACTURING —AREAS OUTSIDE DUBLIN

	Weighted Replies (%)			Apparent Trend
In 1st quarter 1970 compared with 1st quarter 1969	Higher	Same	Lower	
1. Value of Total Production was	72	10	18	Higher
2. Value of Home Sales was	60	20	20	Higher
3. Value of Exports was	66	29	5	Higher
4. Wage Paid Labour Force was	32	43	25	Same
At end March 1970	Excessive	Adequate	Insufficient	
5. Stocks of Finished Products are considered to be	11	79	10	Adequate
6. Stocks of Materials are considered to be	7	84	9	Adequate
During 1st quarter 1970				
7. Could more be produced with present resources	*Yes* 52 *No* 48			Yes
7a. Where firms replied No, the causes responsible were	Insufficient Capacity 49 Insufficient Skilled Male Labour 7 Insufficient Skilled Female Labour 14 Insufficient Unskilled Male Labour 2 Insufficient Unskilled Female Labour 1 Insufficient Raw Mats. Supply 23 Insufficient Cash and/or Credit 3 Any other reason 1			Insufficient Capacity
In 2nd quarter 1970 compared with 2nd quarter 1969	Higher	Same	Lower	
8. Value of Production will be	73	21	6	Higher
9. Value of Home Sales will be	62	28	10	Higher
10. Value of Exports will be	62	34	4	Higher
11. Wage Paid Labour Force will be	29	55	16	Same
For firms whose financial year ended during 1st quarter 1970	Higher	Same	Lower	
12. Capital investment in past year compared with previous year was	69	4	27	Higher
13. Capital investment in coming year compared with last year will be	25	65	10	Same

TABLE 5.5: INDUSTRY GROUP — FOOD

	Weighted Replies (%)			Apparent Trend
In 1st quarter 1970 compared with 1st quarter 1969	Higher	Same	Lower	
1. Value of Total Production was	72	8	20	Higher
2. Value of Home Sales was	58	18	24	Higher
3. Value of Exports was	60	30	10	Higher
4. Wage Paid Labour Force was	32	57	11	Higher
At end March 1970	Excessive	Adequate	Insufficient	
5. Stocks of Finished Products are considered to be	—	91	9	Adequate
6. Stocks of Materials are considered to be	2	86	12	Adequate
During 1st quarter 1970				
7. Could more be produced with present resources		*Yes* 73 *No* 27		Yes
7a. Where firms replied No, the causes responsible were	Insufficient Capacity 9 Insufficient Skilled Male Labour — Insufficient Skilled Female Labour 17 Insufficient Unskilled Male Labour 8 Insufficient Unskilled Female Labour 66 Insufficient Raw Mats. Supply — Insufficient Cash and/or Credit — Any other reason —			Insufficient unskilled female labour
In 2nd quarter 1970 compared with 2nd quarter 1969	Higher	Same	Lower	
8. Value of Production will be	59	29	12	Higher
9. Value of Home Sales will be	51	30	19	Higher
10. Value of Exports will be	60	39	1	Higher
11. Wage Paid Labour Force will be	12	77	11	Same
For firms whose financial year ended during 1st quarter 1970	Higher	Same	Lower	
12. Capital investment in past year compared with previous year was	—	—	—	
13. Capital investment in coming year compared with last year will be	—	—	—	

TABLE 5.6: INDUSTRY GROUP — DRINK AND TOBACCO

	Weighted Replies (%)			Apparent Trend
In 1st quarter 1970 compared with 1st quarter 1969	Higher	Same	Lower	
1. Value of Total Production was	100	—	—	Higher
2. Value of Home Sales was	100	—	—	Higher
3. Value of Exports was	27	73	—	Higher
4. Wage Paid Labour Force was	14	71	15	Same
At end March 1970	Excessive	Adequate	Insufficient	
5. Stocks of Finished Products are considered to be	—	73	27	Inadequate
6. Stocks of Materials are considered to be	—	100	—	Adequate
During 1st quarter 1970				
7. Could more be produced with present resources	*Yes* 100 *No* —			Yes
7a. Where firms replied No, the causes responsible were	Insufficient Capacity — Insufficient Skilled Male Labour — Insufficient Skilled Female Labour — Insufficient Unskilled Male Labour — Insufficient Unskilled Female Labour — Insufficient Raw Mats. Supply — Insufficient Cash and/or Credit — Any other reason —			—
In 2nd quarter 1970 compared with 2nd quarter 1969	Higher	Same	Lower	
8. Value of Production will be	29	60	11	Same
9. Value of Home Sales will be	29	60	11	Same
10. Value of Exports will be	7	93	—	Same
11. Wage Paid Labour Force will be	10	75	15	Same
For firms whose financial year ended during 1st quarter 1970	Higher	Same	Lower	
12. Capital investment in past year compared with previous year was	—	—	—	
13. Capital investment in coming year compared with last year will be	—	--	—	

TABLE 5.7: INDUSTRY GROUP — TEXTILES

	Weighted Replies (%)			Apparent Trend
In 1st quarter 1970 compared with 1st quarter 1969	Higher	Same	Lower	
1. Value of Total Production was	80	3	17	Higher
2. Value of Home Sales was	55	17	28	Higher
3. Value of Exports was	55	22	23	Higher
4. Wage Paid Labour Force was	30	31	39	Same
At end March 1970	Excessive	Adequate	Insufficient	
5. Stocks of Finished Products are considered to be	42	55	3	Excessive
6. Stocks of Materials are considered to be	10	90	—	Adequate
During 1st quarter 1970				
7. Could more be produced with present resources	*Yes* 26 *No* 74			No
7a. Where firms replied No, the causes responsible were	Insufficient Capacity 44 Insufficient Skilled Male Labour 23 Insufficient Skilled Female Labour 21 Insufficient Unskilled Male Labour 5 Insufficient Unskilled Female Labour 7 Insufficient Raw Mats. Supply — Insufficient Cash and/or Credit — Any other reason —			Insufficient Capacity
In 2nd quarter 1970 compared with 2nd quarter 1969	Higher	Same	Lower	
8. Value of Production will be	72	6	22	Higher
9. Value of Home Sales will be	52	46	2	Higher
10. Value of Exports will be	58	21	21	Higher
11. Wage Paid Labour Force will be	24	37	39	Same
For firms whose financial year ended during 1st quarter 1970	Higher	Same	Lower	
12. Capital investment in past year compared with previous year was	—	—	—	
13. Capital investment in coming year compared with last year will be	—	—	—	

TABLE 5.8: INDUSTRY GROUP — CLOTHING AND FOOTWEAR

	Weighted Replies (%)			Apparent Trend
In 1st quarter 1970 compared with 1st quarter 1969	Higher	Same	Lower	
1. Value of Total Production was	58	13	29	Higher
2. Value of Home Sales was	66	9	25	Higher
3. Value of Exports was	23	29	48	Lower
4. Wage Paid Labour Force was	29	48	23	Same
At end March 1970	Excessive	Adequate	Insufficient	
5. Stocks of Finished Products are considered to be	21	63	16	Adequate
6. Stocks of Materials are considered to be	19	81	—	Adequate
During 1st quarter 1970				
7. Could more be produced with present resources	*Yes* 24 *No* 76			No
7a. Where firms replied No, the causes responsible were	Insufficient Capacity 35 Insufficient Skilled Male Labour 3 Insufficient Skilled Female Labour 48 Insufficient Unskilled Male Labour 1 Insufficient Unskilled Female Labour 2 Insufficient Raw Mats. Supply — Insufficient Cash and/or Credit 5 Any other reason 6			Insufficient Skilled Female Labour
In 2nd quarter 1970 compared with 2nd quarter 1969	Higher	Same	Lower	
8. Value of Production will be	81	14	5	Higher
9. Value of Home Sales will be	76	15	9	Higher
10. Value of Exports will be	43	41	16	Higher
11. Wage Paid Labour Force will be	33	56	11	Higher
For firms whose financial year ended during 1st quarter 1970	Higher	Same	Lower	
12. Capital investment in past year compared with previous year was	—	—	—	
13. Capital investment in coming year compared with last year will be	—	—	—	

TABLE 5.9: INDUSTRY GROUP — WOOD AND FURNITURE

	Weighted Replies (%)			Apparent Trend
In 1st quarter 1970 compared with 1st quarter 1969	Higher	Same	Lower	
1. Value of Total Production was	42	46	12	Higher
2. Value of Home Sales was	67	21	12	Higher
3. Value of Exports was	76	1	23	Higher
4. Wage Paid Labour Force was	6	51	43	Lower
At end March 1970	Excessive	Adequate	Insufficient	
5. Stocks of Finished Products are considered to be	6	94	—	Adequate
6. Stocks of Materials are considered to be	3	97	—	Adequate
During 1st quarter 1970				
7. Could more be produced with present resources		*Yes* 64 *No* 36		Yes
7a. Where firms replied No, the causes responsible were	Insufficient Capacity 89 Insufficient Skilled Male Labour 11 Insufficient Skilled Female Labour — Insufficient Unskilled Male Labour — Insufficient Unskilled Female Labour – Insufficient Raw Mats. Supply – Insufficient Cash and/or Credit – Any other reason –			Insufficient Capacity
In 2nd quarter 1970 compared with 2nd quarter 1969	Higher	Same	Lower	
8. Value of Production will be	45	43	12	Higher
9. Value of Home Sales will be	62	23	15	Higher
10. Value of Exports will be	81	7	12	Higher
11. Wage Paid Labour Force will be	3	91	6	Same
For firms whose financial year ended during 1st quarter 1970	Higher	Same	Lower	
12. Capital investment in past year compared with previous year was	—	—	—	
13. Capital investment in coming year compared with last year will be	—	—	—	

TABLE 5.10: INDUSTRY GROUP — PAPER AND PRINTING

	Weighted Replies (%)			Apparent Trend
In 1st quarter 1970 compared with 1st quarter 1969	Higher	Same	Lower	
1. Value of Total Production was	80	—	20	Higher
2. Value of Home Sales was	80	—	20	Higher
3. Value of Exports was	100	—	—	Higher
4. Wage Paid Labour Force was	36	64	—	Higher
At end March 1970	Excessive	Adequate	Insufficient	
5. Stocks of Finished Products are considered to be	—	100	—	Adequate
6. Stocks of Materials are considered to be	—	87	13	Adequate
During 1st quarter 1970				
7. Could more be produced with present resources		*Yes* 89 *No* 11		Yes
7a. Where firms replied No, the causes responsible were	Insufficient Capacity 100 Insufficient Skilled Male Labour — Insufficient Skilled Female Labour — Insufficient Unskilled Male Labour — Insufficient Unskilled Female Labour — Insufficient Raw Mats. Supply — Insufficient Cash and/or Credit — Any other reason —			Insufficient Capacity
In 2nd quarter 1970 compared with 2nd quarter 1969	Higher	Same	Lower	
8. Value of Production will be	64	31	5	Higher
9. Value of Home Sales will be	69	26	5	Higher
10. Value of Exports will be	32	68	—	Higher
11. Wage Paid Labour Force will be	25	62	13	Same
For firms whose financial year ended during 1st quarter 1970	Higher	Same	Lower	
12. Capital investment in past year compared with previous year was	—	—	—	
13. Capital investment in coming year compared with last year will be	—	—	—	

TABLE 5.11: INDUSTRY GROUP — CHEMICALS

	Weighted Replies (%)			Apparent Trend
In 1st quarter 1970 compared with 1st quarter 1969	Higher	Same	Lower	
1. Value of Total Production was	90	6	4	Higher
2. Value of Home Sales was	55	6	39	Same
3. Value of Exports was	70	15	5	Higher
4. Wage Paid Labour Force was	25	40	35	Same
At end March 1970	Excessive	Adequate	Insufficient	
5. Stocks of Finished Products are considered to be	2	92	6	Adequate
6. Stocks of Materials are considered to be	7	93	—	Adequate
During 1st quarter 1970				
7. Could more be produced with present resources		*Yes* 90 *No* 10		Yes
7a. Where firms replied No, the causes responsible were	Insufficient Capacity 100 Insufficient Skilled Male Labour – Insufficient Skilled Female Labour – Insufficient Unskilled Male Labour – Insufficient Unskilled Female Labour – Insufficient Raw Mats. Supply – Insufficient Cash and/or Credit – Any other reason –			Insufficient Capacity
In 2nd quarter 1970 compared with 2nd quarter 1969	Higher	Same	Lower	
8. Value of Production will be	75	25	—	Higher
9. Value of Home Sales will be	44	56	—	Higher
10. Value of Exports will be	30	70	—	Higher
11. Wage Paid Labour Force will be	8	57	35	Lower
For firms whose financial year ended during 1st quarter 1970	Higher	Same	Lower	
12. Capital investment in past year compared with previous year was	—	—	—	
13. Capital investment in coming year compared with last year will be	—	—	—	

TABLE 5.12: INDUSTRY GROUP — GLASS, CLAY & CEMENT

	Weighted Replies (%)			Apparent Trend
In 1st quarter 1970 compared with 1st quarter 1969	Higher	Same	Lower	
1. Value of Total Production was	59	15	26	Higher
2. Value of Home Sales was	46	28	26	Higher
3. Value of Exports was	50	14	36	Same
4. Wage Paid Labour Force was	35	24	41	Same
At end March 1970	Excessive	Adequate	Insufficient	
5. Stocks of Finished Products are considered to be	—	49	51	Insufficient
6. Stocks of Materials are considered to be	—	89	11	Adequate
During 1st quarter 1970				
7. Could more be produced with present resources	*Yes* — *No* 100			No
7a. Where firms replied No, the causes responsible were	Insufficient Capacity 42 Insufficient Skilled Male Labour 12 Insufficient Skilled Female Labour 5 Insufficient Unskilled Male Labour – Insufficient Unskilled Female Labour – Insufficient Raw Mats. Supply – Insufficient Cash and/or Credit – Any other reason 41			Insufficient Capacity
In 2nd quarter 1970 compared with 2nd quarter 1969	Higher	Same	Lower	
8. Value of Production will be	47	11	42	Same
9. Value of Home Sales will be	47	11	42	Same
10. Value of Exports will be	25	11	64	Lower
11. Wage Paid Labour Force will be	47	11	42	Same
For firms whose financial year ended during 1st quarter 1970	Higher	Same	Lower	
12. Capital investment in past year compared with previous year was	—	—	—	
13. Capital investment in coming year compared with last year will be	—	—	—	

TABLE 5.13: INDUSTRY GROUP — METALS AND ENGINEERING

	Weighted Replies (%)			Apparent Trend
In 1st quarter 1970 compared with 1st quarter 1969	Higher	Same	Lower	
1. Value of Total Production was	56	6	38	Same
2. Value of Home Sales was	52	20	28	Higher
3. Value of Exports was	74	—	26	Higher
4. Wage Paid Labour Force was	27	30	43	Same
At end March 1970	Excessive	Adequate	Insufficient	
5. Stocks of Finished Products are considered to be	29	57	14	Adequate
6. Stocks of Materials are considered to be	12	54	34	Insufficient
During 1st quarter 1970				
7. Could more be produced with present resources		*Yes* 66 *No* 34		Yes
7a. Where firms replied No, the causes responsible were	Insufficient Capacity 35 Insufficient Skilled Male Labour 14 Insufficient Skilled Female Labour — Insufficient Unskilled Male Labour 14 Insufficient Unskilled Female Labour 12 Insufficient Raw Mats. Supply 23 Insufficient Cash and/or Credit 2 Any other reason —			Insufficient Capacity
In 2nd quarter 1970 compared with 2nd quarter 1969	Higher	Same	Lower	
8. Value of Production will be	50	19	31	Same
9. Value of Home Sales will be	43	28	29	Same
10. Value of Exports will be	58	34	8	Higher
11. Wage Paid Labour Force will be	19	46	35	Same
For firms whose financial year ended during 1st quarter 1970	Higher	Same	Lower	
12. Capital investment in past year compared with previous year was	—	—	—	
13. Capital investment in coming year compared with last year will be	—	—	—	

TABLE 5.14: INDUSTRY GROUP — OTHER MANUFACTURING

	Weighted Replies (%)			Apparent Trend
In 1st quarter 1970 compared with 1st quarter 1969	Higher	Same	Lower	
1. Value of Total Production was	100	—	—	Higher
2. Value of Home Sales was	100	—	—	Higher
3. Value of Exports was	100	—	—	Higher
4. Wage Paid Labour Force was	14	25	61	Lower
At end March 1970	Excessive	Adequate	Insufficient	
5. Stocks of Finished Products are considered to be	—	100	—	Adequate
6. Stocks of Materials are considered to be	—	100	—	Adequate
During 1st quarter 1970				
7. Could more be produced with present resources		*Yes* 86 *No* 14		Yes
7a. Where firms replied No, the causes responsible were	Insufficient Capacity 100 Insufficient Skilled Male Labour – Insufficient Skilled Female Labour – Insufficient Unskilled Male Labour – Insufficient Unskilled Female Labour – Insufficient Raw Mats. Supply – Insufficient Cash and/or Credit – Any other reason –			Insufficient Capacity
In 2nd quarter 1970 compared with 2nd quarter 1969	Higher	Same	Lower	
8. Value of Production will be	75	25	—	Higher
9. Value of Home Sales will be	100	—	—	Higher
10. Value of Exports will be	100	—	—	Higher
11. Wage Paid Labour Force will be	14	25	61	Lower
For firms whose financial year ended during 1st quarter 1970	Higher	Same	Lower	
12. Capital investment in past year compared with previous year was	—	—	—	
13. Capital investment in coming year compared with last year will be	—	—	—	

SECTION 6: SEASONALLY CORRECTED QUARTERLY SERIES

Introductory Notes

Since 1965 the Economic and Social Research Institute has undertaken the seasonal correction of certain important economic series. Initially the results were circulated to a restricted list of recipients; since 1968 they have been published as Section 6 of the Quarterly Economic Commentary. Commencing with the June 1970 issue of the Commentary, the number of series corrected has been extended, and the presentation revised.

One of the main extensions to the coverage involves the disaggregation of industrial production to show the performance of each of the ten industrial groups. This makes possible a comparison between the statistics in Section 6 and the results of the Joint Industrial Survey in Section 5. The other major extension is a disaggregation of the merchandise trade statistics. Imports are shown by functional category, and exports by type, and, to a limited extent, by destination. In addition, a few other series, such as cement sales and turnover tax receipts, have been included where it is felt that they help to fill gaps in the original choice of series.

All the series included are based on figures from either the Central Statistics Office or the Central Bank of Ireland. Most of the series are self-explanatory and represent either the official quarterly figures or a simple arithmetic mean of three official monthly figures for each quarter. The only set of series which involves any serious departure from familiar presentation in official sources is that dealing with the disaggregation of exports.

These series (Nos. 60 to 70) are derived from the C.S.O. publications "Trade Statistics of Ireland" and "Review of External Trade". The categories of exports shown are based on those used by the C.S.O. in the Review of External Trade, but both the "agricultural" and "industrial" categories are further disaggregated. This additional disaggregation and the division of each category into exports to the U.K. and to the rest of the world are calculated from the Trade Statistics of Ireland. Because this detailed information is not subsequently revised in line with any revisions to the total of merchandise exports, it may be noticed that the figures for the categories of exports do not always add across to exactly the total for all exports. Fortunately the discrepancies are small, and it is felt that the provision of time series for the different types of export is worthwhile in spite of this flaw.

With regard to presentation, it will be seen that the series are now grouped according to subject. Table 6.1 covers production and employment, table 6.2 prices, earnings, private consumption, government receipts and expenditure and financial series, and table 6.3 external trade. In each table are shown the annual totals or averages (as appropriate) for each year since 1962, the raw quarterly averages or totals for each series (with the exception of series 24 where a moving annual total is given) and deseasonalised quarterly averages or totals in every case where a recognisable seasonal pattern is evident. Where no seasonably corrected figures are shown it can be taken that there is not discernable seasonality in the series, and the raw data can be used directly for comparing performance in consecutive quarters. Whilst it is possible that in isolated cases, where the seasonal pattern is changing, the correction can in itself impart some instability to the trend, in general the corrected series can be used with a fair degree of confidence in

drawing inferences as to short-term trends. Caution must be exercised in interpreting trends in some series, particularly those dealing with unemployment, where changes of definition in recent years have affected the value of the figures.

The method of seasonal correction is that set out in "Seasonality in Irish Economic Statistics" by C. E. V. Leser (ESRI Paper No. 26). The correction factors for the current year are derived from the data for the preceding five year period, pre-adjusted in some instances to allow for the influence of irregular disturbing factors such as major strikes. The factors by which the original quarterly data in the current year must be divided (the result being multiplied by 100) to obtain the seasonally corrected series are set out below.

	Quarter					Quarter			
Series	I	II	III	IV	Series	I	II	III	IV
1	82.8	99.8	108.3	109.1	41	108.4	93.4	94.8	103.4
2	96.8	103.1	100.8	99.3	42	99.2	98.2	100.6	102.0
3	101.3	101.3	92.3	105.1	43	99.3	103.8	94.8	102.1
4	101.6	101.1	93.3	104.0	44	100.0	100.1	100.2	99.7
5	94.8	102.2	101.3	101.7	46	102.8	97.4	97.4	102.6
6	99.0	101.0	97.8	102.2	47	101.6	98.1	98.3	102.0
7	110.4	94.8	93.3	101.5	48	102.7	103.3	94.7	99.3
8	93.1	105.8	100.2	100.9	49	96.5	95.0	106.2	102.3
9	101.3	102.5	93.6	102.6	51	100.8	103.9	94.4	100.9
10	96.9	102.9	97.5	102.7	52	95.8	93.9	106.2	104.1
11	96.7	101.2	98.2	103.9	54	101.8	110.2	93.2	94.8
12	74.6	128.4	123.9	73.1	55	103.0	100.1	91.4	105.5
13	95.2	103.0	100.1	101.7	56	97.4	101.0	95.3	106.3
14	118.0	88.4	80.6	113.0	57	101.6	104.1	96.4	97.9
16	83.3	111.1	108.5	97.1	58	122.7	84.8	71.9	120.6
17	111.5	92.5	98.4	97.6	59	95.2	105.4	99.8	99.6
18	99.4	99.5	100.3	100.8	60	111.1	83.8	102.1	103.0
19	98.7	99.9	100.8	100.6	61	81.3	96.7	118.4	103.6
22	124.1	94.0	79.5	102.4	62	100.8	100.9	96.1	102.2
23	116.8	99.6	86.8	96.8	63	79.1	112.9	117.8	90.2
27	102.2	101.6	97.1	99.1	64	95.7	95.1	106.6	102.6
33	98.7	100.1	100.5	100.7	65	81.0	72.4	116.7	129.9
34	99.4	99.5	100.3	100.8	66	101.6	87.3	96.3	114.8
37	112.4	121.3	97.7	68.6	67	99.4	97.5	102.7	100.4
38	91.0	99.6	103.0	106.4	69	85.1	94.6	109.4	110.9
39	92.4	98.4	107.0	102.2	70	99.9	93.8	105.7	100.6
40	127.3	92.5	92.6	97.6					

Note: Series 20, 21, 35, 36 and 50 are indirectly corrected, as they are derived from other seasonally corrected or seasonality free series. The remaining 14 series exhibit no regular seasonal pattern, and accordingly are not corrected.

The seasonal corection factors for series 63 and 67 have been calculated after excluding respectively exports to the UK of petroleum and its products, and exports to the rest of the world of ships and aircraft. These two items are subject to large but non-seasonal quarterly variations, and if included would distort the true seasonal pattern of each category. In table 6.3. the uncorrected values of these items are added back to the seasonally corrected values of the remainder of their categories.

TABLE 6.1: PRODUCTION AND EMPLOYMENT

	Index of Volume of Production by Industrial Group												
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Food	Drink and Tobacco	Textiles	Clothing and Footwear	Wood and Furniture	Paper and Printing	Chemicals	Clay, Glass, Cement	Metals and Engineering	Other Manufacture	Total Manufacturing Industries	Mining Quarrying and Turf	Total Transportable Goods Industries
	Annual Averages 1953 = 100												
1962	111.3	108.8	182.3	129.5	116.8	163.5	205.5	174.5	194.0	232.0	143.6	198.8	146.1
1963	113.3	109.3	189.3	140.3	132.8	169.3	213.3	183.8	219.5	251.2	150.9	207.5	153.5
1964	116.5	109.8	204.0	147.0	136.5	177.8	218.5	212.5	243.8	292.0	163.0	223.8	165.8
1965	119.8	112.0	211.0	147.3	142.5	174.5	262.0	247.3	254.0	355.5	171.0	219.5	173.9
1966	128.5	112.8	216.0	147.5	140.8	179.0	296.8	249.8	258.0	324.8	175.1	301.3	180.3
1967	140.3	114.8	236.3	155.8	143.0	195.8	336.8	286.3	268.0	376.5	189.4	371.3	196.6
1968	146.0	122.3	265.8	167.0	153.8	214.3	415.5	322.3	309.8	417.0	209.3	454.0	218.8
1969	153.0	123.5	279.5	182.0	164.5	230.8	426.3	346.8	332.8	475.3	222.3	504.0	233.2
1970													
Quarterly Averages at Annual Rates. Not Seasonally Corrected 1953 = 100													
1967 I	115	111	236	159	130	188	369	263	271	354	180.1	266	183.8
II	139	119	240	159	146	199	333	312	276	385	193.0	519	205.3
III	152	114	218	143	146	195	296	273	244	357	184.4	430	193.8
IV	155	115	251	162	150	201	349	297	281	410	200.1	270	203.4
1968 I	119	114	255	165	144	204	386	289	298	400	192.8	281	196.7
II	146	128	270	165	150	215	382	348	318	433	211.8	584	225.8
III	157	125	246	157	154	212	428	323	285	407	207.4	573	221.2
IV	162	122	292	181	167	226	466	329	338	428	225.4	378	231.7
1969 I	113	110	257	178	149	218	444	286	312	440	198.6	345	204.5
II	162	131	291	186	170	243	436	381	353	515	234.5	603	248.5
III	172	125	265	170	165	233	384	351	312	461	221.5	649	237.6
IV	165	128	305	194	174	229	441	369	354	485	234.8	419	242.3
1970 I													
II													
III													
IV													
Quarterly Averages at Annual Rates. Seasonally Corrected 1953 = 100													
1967 I	142	114	228	158	137	187	311	285	267	362	185.3	378	192.3
II	142	117	237	160	140	199	350	301	271	379	191.5	364	200.1
III	141	114	240	151	145	202	347	269	256	362	188.9	353	196.2
IV	137	114	240	153	150	195	347	290	277	402	191.7	415	197.5
1968 I	144	117	246	164	151	203	334	307	295	404	198.4	392	205.1
II	148	125	267	165	144	214	399	331	312	426	210.1	437	220.3
III	146	125	271	167	153	219	489	323	301	417	212.5	450	223.0
IV	146	121	280	172	167	221	461	326	329	420	215.9	516	226.3
1969 I	136	112	250	176	156	217	394	301	307	448	204.5	471	213.9
II	163	127	285	185	164	241	454	362	342	505	231.0	460	240.3
III	160	125	290	181	164	240	417	353	334	473	226.7	511	239.3
IV	149	129	293	186	174	226	444	368	347	474	226.4	609	238.2
1970 I													
II													
III													
IV													

TABLE 6.1 (continued): PRODUCTION AND EMPLOYMENT

Other Output Indicators			Employment			Output per Head		Unemployment		Emigration	
14	15	16	17	18	19	20	21	22	23	24	
Electricity Output	New Houses Built	Cement Sales	Sales of Insurance Stamps	No. in Manufacturing Industries	No. in Transportable Goods Industries	In Manufacturing Industries	In Transportable Goods Industries	Benefit Claims Current	% of Insured on Live Register	Net Outflow by Sea and Air	
Mill. k.w.h.	No.	'000 tons	'000	'000	'000	1953 = 100	1953 = 100	'000	%	Moving Annual Total, '000	
2,610	6,050	—	25,307	164.0	173.2	125.1	127.0	26.22	5.7	20.8	1962
2,861	6,556	—	26,164	168.6	178.2	127.9	129.7	28.35	6.1	21.9	1963
3,102	8,064	—	27,039	171.9	181.8	135.5	137.3	27.05	5.7	22.4	1964
3,483	11,800	876.7	26,955	173.7	183.7	140.7	142.6	27.66	5.6	26.9	1965
3,760	10,171	816.1	27,030	175.3	185.6	142.7	146.3	31.02	6.1	26.3	1966
4,160	12,335	913.3	27,401	177.3	187.7	152.7	157.7	31.66	6.7	49.1	1967
4,542	11,877	1,066.0	27,338	180.9	191.2	165.3	172.3	35.32	6.7	4.5	1968
5,124	13,983	1,168.6		191.9	202.4	165.5	173.5	34.21	6.4	10.9	1969
											1970
Quarterly Averages or Totals. Not Seasonally Corrected											
1,164	3,215	201.5	7,511	175.9	185.4	146.3	149.3	40.2	7.7	13.50	1967 I
933	3,012	257.8	13,323	176.2	187.7	156.5	164.7	29.1	6.5	10.20	II
847	2,856	234.0		177.9	188.9	148.1	154.5	24.8	6.0	20.50	III
1,216	3,252	225.0	6,567	178.9	189.0	159.8	162.1	32.5	6.6	49.10	IV
1,265	2,897	217.4	7,598	176.1	185.8	156.5	159.4	40.5	7.7	38.20	1968 I
1,018	2,747	295.5	6,417	179.1	190.7	169.0	178.3	34.6	6.8	22.96	II
947	2,942	284.5	6,653	182.5	193.0	162.4	172.6	30.7	6.0	25.53	III
1,312	3,291	268.6	6,670	185.8	195.4	173.4	178.6	35.6	6.4	4.51	IV
1,488	4,053	201.8	7,869	186.2	196.3	152.4	156.9	41.9	7.5	16.75	1969 I
1,124	2,820	323.4	6,485	190.0	201.2	176.4	186.0	32.0	6.2	18.00	II
1,035	3,112	324.7	7,015	194.2	205.1	163.0	174.7	28.6	5.6	11.92	III
1,477	3,998	313.7		197.1	207.2	170.2	176.1	34.3	6.3	10.92	IV
1,620	3,714							43.1	7.5		1970 I
											II
											III
											IV
Quarterly Averages or Totals. Seasonally Corrected											
970	No	241.9	6,520	176.8	186.9	149.8	155.0	31.1	6.5	No	1967 I
1,071		232.0	7,061	177.6	188.3	154.1	160.0	31.1	6.4		II
1,056	Seasonal	215.7	7,061	177.0	187.6	152.5	157.5	32.8	7.1	Seasonal	III
1,081		231.7	6,834	177.5	188.2	154.3	158.0	32.0	6.9		IV
1,064	Pattern	261.0	6,712	177.0	187.3	160.2	164.7	31.8	6.5	Pattern	1968 I
1,161		266.0	7,059	180.5	191.1	166.3	173.0	37.3	6.8		II
1,181		262.2	6,748	181.4	191.7	167.4	175.2	40.1	7.1		III
1,159		276.6	6,855	184.5	194.8	167.2	175.0	34.4	6.6		IV
1,263		242.3	7,057	187.3	198.3	156.0	162.4	33.5	6.4		1969 I
1,274		295.6	7,011	191.1	201.2	172.7	180.1	33.9	6.2		II
1,286		299.5	7,129	193.4	203.7	167.5	176.9	36.4	6.5		III
1,303		323.1		195.5	206.6	165.5	173.6	33.6	6.5		IV
1,373								34.7	6.4		1970 I
											II
											III
											IV

TABLE 6.2: PRICES, EARNINGS, CONSUMPTION AND FINANCE

		Price Indices 1953 = 100							Money Earnings, weekly average			Real Earnings	
		25	26	27	28	29	30	31	32	33	34	35	36
		Consumer Price Index	Wholesale Price Index	Agricultural Price Index	Import Unit Value	Export Unit Value	Terms of Trade	Price of Stocks and Shares	Agricultural Minimum Wage	Earnings in Manufacturing Industries	Earnings in Transportable Goods Industries	In Manufacturing Industries	In Transportable Goods Industries
		Annual Averages 1953=100							Annual Av. Shillings	Annual Averages 1953=100			
1962		125.3	118.3	101.7	107.6	101.9	94.7	214.2	122.50	159.0	160.0	126.9	127.7
1963		128.4	119.8	102.2	109.4	103.9	94.9	261.3	127.75	165.1	165.8	128.6	129.1
1964		137.0	126.8	113.1	110.4	109.8	99.5	325.5	145.25	185.4	186.2	135.3	135.9
1965		143.9	131.6	117.7	112.9	110.9	98.2	316.2	160.75	190.9	191.7	132.7	133.2
1966		148.2	134.2	115.9	112.9	112.9	100.0	295.1	180.50	207.9	209.0	140.3	141.0
1967		152.9	137.7	118.3	112.2	112.9	100.6	294.5	180.50	222.6	223.8	145.6	146.4
1968		160.1	145.9	130.4	121.5	121.1	99.7	420.0	194.44	241.5	243.2	150.8	151.9
1969		172.0	156.4	134.0	128.5	127.2	99.0	444.0	223.63	270.7	272.9	157.4	158.4
1970													
		Quarterly Averages. Not Seasonally Corrected											
1967	I	150.6	136.3	117.9	113.4	114.3	100.8	272.2	180.5	216.4	217.6	143.7	144.5
	II	153.2	138.4	118.0	113.2	114.2	100.9	284.6	180.5	220.8	222.1	144.1	145.0
	III	153.3	137.0	114.0	112.6	112.6	99.9	300.4	180.5	223.2	224.0	145.6	146.1
	IV	154.3	139.0	123.2	113.0	114.4	101.3	320.9	180.5	230.1	231.6	149.1	150.1
1968	I	157.5	143.6	131.3	120.5	121.0	100.5	357.6	180.5	229.3	230.2	145.6	146.2
	II	160.0	145.9	130.3	122.5	122.6	100.1	410.6	195.75	237.4	240.9	148.4	150.6
	III	160.3	145.9	128.2	125.0	122.5	98.0	449.3	195.75	245.3	246.5	153.0	153.8
	IV	162.7	148.2	131.7	123.2	123.2	100.1	462.6	200.75	254.0	255.1	156.1	156.8
1969	I	168.1	153.2	136.2	128.2	124.6	97.2	473.6	200.75	259.3	260.4	154.3	154.9
	II	171.0	156.9	138.0	128.4	127.7	99.4	463.8	231.25	268.9	271.4	157.3	158.7
	III	173.8	157.1	132.9	131.1	130.7	99.7	429.2	231.25	273.8	276.4	157.5	159.0
	IV	175.1	158.3	135.2	131.8	131.3	99.6	409.4	231.25	280.9	283.3	160.4	161.8
1970	I	178.0		141.4				413.6					
	II												
	III												
	IV												
		Quarterly Av rages. Seasonally Corrected											
1967	I	No	No	116.4	No	No	No	No	No	219.3	222.1	145.6	146.8
	II			116.5						219.5	220.3	143.3	143.8
	III	Seas-	Seas-	116.1	Seas-	Seas-	Seas-	Seas-	Seas-	221.9	222.7	144.7	145.3
	IV	onal	onal	124.2	onal	onal	onal	onal	onal	229.9	231.1	149.0	149.8
1968	I			129.1						232.1	233.5	147.4	148.3
	II	Pattern	Pattern	128.4	Pattern	Pattern	Pattern	Pattern	Pattern	236.0	239.0	147.5	149.4
	III			131.4						244.3	245.5	152.4	153.2
	IV			132.8						253.5	254.6	155.8	156.5
1969	I			133.3						264.1	265.4	157.1	157.9
	II			136.1						267.8	269.8	156.6	157.5
	III			136.7						272.2	275.0	156.6	158.2
	IV			136.3						278.7	281.1	159.2	160.5
1970	I			138.4									
	II												
	III												
	IV												

TABLE 6.2 (continued): PRICES, EARNINGS, CONSUMPTION AND FINANCE

Consumption Indicators			Government		Banking and Finance Indicators						
37	38	39	40	41	42	43	44	45	46	47	
New Cars-Registered	Index of Retail Sales (value)	Turnover Tax Receipts	Revenue Receipts	Exchequer Expenditure	Money Supply (not adjusted)	Bank Debits	Bills Loans Advanced (within state)	Investments (within state)	External Assets	External Monetary Reserves	
Total '000	1961 = 100	Total £'000	Average of weekly figures £'000		Av. of Monthly £ million	Av. of Daily £ million	Average of monthly figures £ million				
31,931	107	—	3,019	3,440	236.4	10.91	224.4	29.54	227.2		1962
37,028	113	—	3,308	3,795	259.1	12.06	245.4	36.40	230.3		1963
41,352	124	13,118	3,974	4,523	294.0	13.53	278.8	35.51	235.5		1964
43,267	132	14,097	5,221	5,221	309.8	16.76	313.8	33.49	219.9	226.3	1965
39,546	135	14,867	5,016	5,632	334.5	17.74	328.4	42.0	235.4	236.0	1966
40,300	141	15,906	5,735	6,271	352.5	21.24	346.2	48.60	270.8	270.9	1967
51,360	153	17,590	6,411	7,325	384.9	23.74	398.1	62.50	256.0	286.4	1968
50,523	170	20,040	7,613	8,544	409.3	28.78	461.9	94.10	234.7	275.8	1969
											1970
Quarterly Averages or Totals. Not Seasonally Corrected											
10,740	127	3,568	7,149	6,394	339.4	20.21	339.5	49.6	254.4	254.1	1967 I
12,743	139	3,836	5,349	5,714	339.5	22.36	335.1	49.0	262.0	261.7	II
9,428	144	4,299	5,407	6,306	357.5	20.22	346.4	48.3	275.6	275.7	III
7,389	154	4,203	5,025	6,670	372.9	22.19	363.6	47.5	291.2	292.0	IV
13,300	135	3,878	7,544	7,247	373.1	21.90	379.0	49.2	284.3	292.2	1968 I
15,064	151	4,316	5,691	6,716	370.3	22.36	394.0	49.2	250.1	280.1	II
11,983	158	4,723	6,273	7,463	390.5	23.69	405.2	62.5	239.9	281.0	III
11,013	170	4,673	6,137	7,872	405.7	27.00	414.0	89.1	249.7	282.3	IV
13,212	147	4.508	8,349	8,579	402.1	26.61	437.6	87.7	240.4	284.4	1969 I
16,471	170	4,895	7,221	7,619	402.3	31.21	459.0	86.9	224.2	269.1	II
11,219	177	5,402	7,239	8,398	412.0	27.17	475.2	93.2	225.9	268.2	III
9,621	187	5,235	7,643	9,581	420.9	30.16	475.9	108.5	248.2	281.6	IV
13,856	169	5,102	9,462	10,015							1970 I
											II
											III
											IV
Quarterly Averages or Totals. Seasonally Corrected											
8,972	139.3	3,899	5,229	5,599	341.8	19.9	340.9	No	251.1	250.6	1967 I
10,985	138.1	3,879	6,141	5,879	343.3	22.1	335.1		266.0	265.4	II
9,680	140.9	4,018	5,948	6,922	360.7	21.1	345.4	Seasonal	280.7	278.7	III
11,045	143.6	4,096	5,905	6,841	363.1	21.9	363.2		285.5	288.8	IV
11,896	147.9	4,238	5,625	6,494	376.4	21.6	380.5	Pattern	279.3	288.2	1968 I
12,512	151.3	4,364	6,373	7,025	376.3	21.8	394.0		253.4	284.0	II
11,947	153.8	4,414	6,833	8,076	390.8	25.1	404.0		243.0	284.1	III
16,316	159.8	4,555	7,237	7,841	395.4	26.6	413.6		247.7	289.1	IV
11,469	160.8	4,927	6,349	7,687	405.8	26.5	438.5		233.4	280.8	1969 I
13,601	171.2	4,949	8,006	7,961	409.7	30.6	459.0		228.1	274.0	II
11,495	172.2	5,049	7,843	9,331	410.4	28.5	473.8		229.3	271.7	III
14,555	175.8	5,102	8,887	9,329	411.4	29.5	475.4		247.7	276.6	IV
12,327	185.8	5,522	7,433	9,239							1970 I
											II
											III
											IV

TABLE 6.3: EXTERNAL TRADE

	Visible Trade Indicators					Imports by Functional Category						
	48	49	50	51	52	53	54	55	56	57	58	59
	Total Imports (value)	Total Exports (value)	Import Excess (value)	Total Imports (volume)	Total Exports (volume)	Ships and Aircraft	Other Capital Goods	Food, Drink, Tobacco	Other Consumer Goods	Materials for Industry	Materials for Agriculture	Unclassified
	£ million			1953=100		£ million						
1962	273.7	174.4	99.3	137.2	149.1	0.8	38.6	17.2	40.1	149.9	15.8	11.4
1963	307.7	196.5	111.1	151.6	164.9	2.2	45.1	19.9	45.3	164.4	16.9	13.9
1964	349.3	222.0	127.3	170.7	176.5	4.0	48.2	19.8	51.4	195.5	16.5	14.0
1965	371.8	220.8	151.0	177.5	173.7	7.1	53.2	23.2	56.8	201.8	17.8	11.8
1966	372.6	244.3	128.2	177.9	188.9	4.7	53.2	23.7	60.5	203.9	15.2	11.4
1967	392.3	285.1	107.2	188.6	220.5	4.7	54.1	25.0	62.8	217.5	17.0	11.1
1968	496.1	332.5	163.6	220.2	239.5	1.2	71.5	29.5	86.5	273.5	22.6	11.4
1969	588.9	371.1	217.8	247.1	254.5	18.8	93.5	31.6	102.6	311.7	20.7	10.0
1970												
	Quarterly Totals. Not Seasonally Corrected											
1967 I	100.3	64.4	35.9	192.4	198.3	1.2	13.7	6.3	15.5	55.1	5.7	2.8
II	98.4	67.2	31.2	189.0	207.3	0.3	14.4	6.2	15.1	56.6	3.3	2.5
III	92.9	76.6	16.2	179.2	239.6	3.0	12.6	5.4	14.9	51.2	3.0	2.7
IV	100.7	76.8	23.9	193.7	236.7	0.2	13.2	7.0	17.0	53.6	5.0	3.1
1968 I	116.3	74.5	41.8	210.4	217.1	0.2	15.8	7.3	18.3	64.2	6.8	2.5
II	125.2	80.4	44.8	222.8	231.3	0.2	18.8	7.4	21.1	70.2	4.8	3.6
III	118.2	88.0	30.1	206.1	253.3	0.3	17.2	6.8	20.8	66.6	3.7	2.6
IV	136.5	89.6	46.9	241.5	256.5	0.5	19.0	8.0	26.3	72.5	7.3	2.7
1969 I	134.7	80.4	54.2	229.1	227.8	0.5	20.3	7.8	22.9	74.3	5.7	2.3
II	158.9	92.0	66.9	269.5	254.5	11.2	24.8	8.7	26.4	81.9	4.0	2.7
III	140.9	96.9	44.0	234.4	262.0	3.1	23.0	7.3	25.9	74.7	4.4	2.5
IV	154.5	101.7	52.7	255.6	273.7	4.0	25.4	7.8	27.4	80.8	6.6	2.5
1970 I	152.9	99.2	53.3									
II												
III												
IV												
	Quarterly Totals. Seasonally Corrected											
1967 I	99.4	66.5	29.9	191.1	204.2	1.2	13.6	5.9	16.0	54.9	4.3	2.9
II	94.4	72.2	22.2	182.3	224.8	0.3	13.3	6.1	14.8	55.6	4.2	2.1
III	99.6	71.6	28.0	191.9	225.6	3.0	13.7	6.5	16.1	52.5	4.1	2.7
IV	99.1	74.6	24.5	189.5	226.5	0.2	13.4	6.4	15.7	53.4	4.3	3.6
1968 I	114.6	76.8	37.8	207.1	224.3	0.2	15.5	7.0	18.9	63.1	5.2	2.6
II	120.5	85.0	35.5	214.2	247.1	0.2	17.3	7.3	20.9	68.4	6.0	3.1
III	126.0	82.6	43.4	220.9	237.8	0.3	18.5	7.9	22.2	68.9	5.3	2.7
IV	135.4	88.0	47.4	238.9	248.8	0.5	19.7	7.4	24.2	73.2	6.1	3.1
1969 I	131.1	83.5	47.6	224.2	235.3	0.5	19.6	7.5	23.4	72.8	4.3	2.4
II	152.9	97.6	55.3	260.4	279.4	11.2	22.6	8.6	25.9	78.9	4.8	2.5
III	148.8	90.8	58.0	248.8	233.0	3.1	24.7	8.2	27.8	77.2	6.1	2.5
IV	156.5	99.0	57.5	255.3	243.8	4.0	27.1	7.4	25.7	83.0	5.5	2.6
1970 I	148.9	102.8	46.1									
II												
III												
IV												

TABLE 6.3 (continued): EXTERNAL TRADE

Domestic Exports to U.K.					Domestic Exports to Rest of World						Re-Exports		
60	61	62	63	64	65	66	67	68	69	70	71	72	
Cattle and Beef	Other Agric. Products	Manufactured Goods S.I.T.C. 5-8	Other Industrial	Total to U.K.	Cattle and Beef	Other Agric. Products	Manufactured Goods S.I.T.C. 5-8	Metal Ores	Other Industrial	Total to Rest of World	To U.K.	To Rest of World	
£ million													
				103.1						65.5	1.6	3.9	1962
45.4	43.5	29.6	16.7	138.4	13.9	11.9	11.8	0.0	4.1	52.9	2.5	2.1	1963
53.5	43.9	37.7	18.1	156.5	16.1	12.3	16.6	0.0	4.9	61.0	2.5	2.4	1964
46.5	47.1	37.6	17.8	160.0	15.3	11.5	19.9	0.0	6.6	58.1	3.2	2.7	1965
51.5	46.3	43.2	18.5	164.0	13.2	14.0	24.3	3.5	6.4	71.3	5.0	3.2	1966
71.6	48.2	52.2	23.9	200.2	14.1	12.5	26.3	4.4	8.3	75.5	4.6	4.1	1967
74.1	53.4	68.8	23.9	226.4	12.0	17.8	38.2	7.9	10.0	97.0	4.4	4.7	1968
69.8	58.3	76.2	25.5	236.0	16.3	22.2	47.0	15.5	11.8	122.2	6.8	6.1	1969
													1970
Quarterly Totals Not Seasonally Corrected													
16.3	9.3	12.4	4.3	43.3	3.7	3.6	6.2	1.1	2.1	19.2	1.3	0.7	1967 I
15.8	11.6	13.2	6.7	48.4	2.6	2.5	6.4	1.3	1.6	16.9	1.2	0.8	II
20.7	14.8	12.0	6.9	55.6	3.9	2.7	6.6	1.0	2.4	19.0	0.8	1.2	III
18.8	12.5	14.6	6.0	53.0	3.9	3.7	7.1	1.0	2.2	20.4	1.3	1.4	IV
19.6	10.5	16.1	4.3	51.7	1.8	4.3	8.2	2.1	2.1	20.9	1.2	0.8	1968 I
18.7	12.6	16.8	6.0	55.7	2.1	4.0	9.6	1.3	2.4	22.2	1.1	1.4	II
18.8	16.1	16.5	7.4	60.6	3.3	4.2	9.8	2.0	2.6	24.8	1.0	1.6	III
17.0	14.2	19.4	6.2	58.4	4.8	5.3	10.6	2.5	2.9	29.1	1.1	0.9	IV
19.0	11.2	17.4	4.9	53.6	2.6	4.0	10.9	3.5	1.4	24.7	1.0	1.1	1969 I
16.2	14.9	19.3	6.9	59.2	3.0	4.9	12.1	4.2	3.4	29.9	1.7	1.2	II
17.4	15.9	18.6	6.9	60.3	5.8	5.7	12.1	3.0	3.3	32.6	2.0	2.1	III
17.2	16.3	20.9	6.8	62.9	4.9	7.6	11.9	4.8	3.7	35.0	2.1	1.7	IV
													1970 I
													II
													III
													IV
Quarterly Totals Seasonally Corrected													
13.9	11.4	12.4	5.2	44.4	3.7	3.6	6.5	1.1	2.6	18.9	No	No	1967 I
19.0	12.4	12.9	5.9	51.8	3.6	3.1	6.4	1.3	1.7	18.8			II
20.8	12.2	12.4	6.0	51.7	4.0	2.6	6.4	1.0	2.1	17.3	Seas-	Seas-	III
18.8	12.0	14.4	6.9	52.2	3.0	3.1	6.8	1.0	2.0	20.6	onal	onal	IV
16.7	12.9	16.2	5.3	53.7	1.8	4.3	8.5	2.1	2.6	20.2			1968 I
22.5	13.5	16.4	5.2	58.7	2.9	5.0	10.0	1.3	2.5	24.4	Pattern	Pattern	II
18.9	13.3	17.0	6.4	56.1	3.3	4.1	9.6	2.0	2.3	22.9			III
17.1	13.6	19.2	7.2	58.0	3.8	4.5	10.1	2.5	2.6	29.8			IV
17.0	13.8	17.4	6.1	56.4	2.9	3.8	11.0	3.5	1.6	24.3			1969 I
19.3	16.2	18.9	6.1	62.4	4.2	5.9	12.4	4.7	3.5	32.8			II
17.5	15.2	19.2	5.9	56.1	5.5	5.6	11.9	3.0	3.0	31.0			III
16.4	13.3	20.6	7.6	61.2	3.7	6.8	11.7	4.8	3.4	34.3			IV
													1970 I
													II
													III
													IV

THE ECONOMIC AND SOCIAL RESEARCH INSTITUTE

Publication Series:

1. *The Ownership of Personal Property in Ireland* — Edward Nevin
2. *Short Term Economic Forecasting and its Application in Ireland* — Alfred Kuehn
3. *The Irish Tariff and The E.E.C.: A Factual Survey* — Edward Nevin
4. *Demand Relationships for Ireland* — C. E. V. Leser
5. *Local Government Finance in Ireland: A Preliminary Survey* — David Walker
6. *Prospects of the Irish Economy in* 1962 — Alfred Kuehn
7. *The Irish Woollen and Worsted Industry,* 1946-59: *A Study in Statistical Method* — R. C. Geary
8. *The Allocation of Public Funds for Social Development* — David Walker
9. *The Irish Price Level: A Comparative Study* — Edward Nevin
10. *Inland Transport in Ireland: A Factual Survey* — D. J. Reynolds
11. *Public Debt and Economic Development* — Edward Nevin
12. *Wages in Ireland,* 1946-62 — Edward Nevin
13. *Road Transport: The Problems and Prospects in Ireland* — D. J. Reynolds
14. *Imports and Economic Growth in Ireland,* 1947-61 — C. E. V. Leser
15. *The Irish Economy in* 1962 *and* 1963 — C. E. V. Leser
16. *Irish County Incomes in* 1960 — E. A. Attwood and R. C. Geary
17. *The Capital Stock of Irish Industry* — Edward Nevin
18. *Local Government Finance and County Incomes* — David Walker
19. *Industrial Relations in Ireland: The Background* — David O'Mahony
20. *Social Security in Ireland and Western Europe* — P. R. Kaim-Caudle
21. *The Irish Economy in* 1963 *and* 1964 — C. E. V. Leser
22. *The Cost Structure of Irish Industry,* 1950-60 — Edward Nevin
23. *A Further Analysis of Irish Household Budget Data,* 1951-1952 — C. E. V. Leser
24. *Economic Aspects of Industrial Relations* — David O'Mahony
25. *Psychological Barriers to Economic Achievement* — P. Pentony
26. *Seasonality in Irish Economic Statistics* — C. E. V. Leser
27. *The Irish Economy in* 1964 *and* 1965 — C. E. V. Leser
28. *Housing in Ireland: Some Economic Aspects* — P. R. Kaim-Caudle
29. *A Statistical Study of Wages, Prices and Employment in the Irish Manufacturing Sector* — C. St. J. O'Herlihy
30. *Fuel and Power in Ireland: Part I. Energy Consumption in* 1970 — J. L. Booth

31. *Determinants of Wage Inflation in Ireland* — Keith Cowling

32. *Regional Employment Patterns in the Republic of Ireland* — T. J. Baker

33. *The Irish Economy in* 1966 — The Staff of the E.S.R.I.

34. *Fuel and Power in Ireland: Part II. Electricity and Turf* — J. L. Booth

35. *Fuel and Power in Ireland: Part III. International and Temporal Aspects of Energy Consumption* — J. L. Booth

36. *Institutional Aspects of Commercial and Central Banking in Ireland* — John Hein

37. *Fuel and Power in Ireland: Part IV. Sources and Uses of Energy* — J. L. Booth

38. *A Study of Imports* — C. E. V. Leser

39. *The Irish Economy in* 1967 — The Staff of the E.S.R.I.

40. *Some Aspects of Price Inflation in Ireland* — R. C. Geary and J. L. Pratschke

41. *A Medium Term Planning Model for Ireland* — David Simpson

42. *Some Irish Population Problems Reconsidered* — Brendan M. Walsh

43. *The Irish Brain Drain* — Richard Lynn

44. *A Method of Estimating the Stock Capital in Northern Ireland Industry; Limitations and Applications* — C. W. Jefferson

45. *An Input-Output Analysis of the Agricultural Sector of the Irish Economy in* 1964 — R. O'Connor with M. Breslin

46. *The Implications for Cattle Producers of Seasonal Price Fluctuations* — R. O'Connor

47. *Transport in the Developing Economy of Ireland* — John Blackwell

48. *Social Status and Inter-Generational Social Mobility in Dublin* — Bertram Hutchinson

49. *Personal Incomes by County,* 1965 — Miceal Ross

50. *Income-Expenditure Relations in Ireland,* 1965-1966 — John L. Pratschke

51. *Costs and Prices in Transportable Goods Industries* — W. Black, J. V. Simpson, D. G. Slattery

52. *Certain Aspects of Non-Agricultural Unemployment in Ireland* — R. C. Geary and J. G. Hughes

53. *A Study of Demand Elasticities for Irish Imports* — Dermot McAleese

54. *Internal Migration in Ireland* — R. C. Geary and J. G. Hughes
with Appendix — C. J. Gillman

55. *Religion and Demographic Behaviour in Ireland* — Brendan M. Walsh
with Appendix — R. C. Geary and J. G. Hughes

PRINTED BY MOUNT SALUS PRESS LTD., DUBLIN