THE ECONOMIC AND SOCIAL RESEARCH INSTITUTE

THE IRISH ECONOMY IN 1967

by

The Staff of The Economic and Social Research Institute

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CONTENTS

CHARTS AND TABLE

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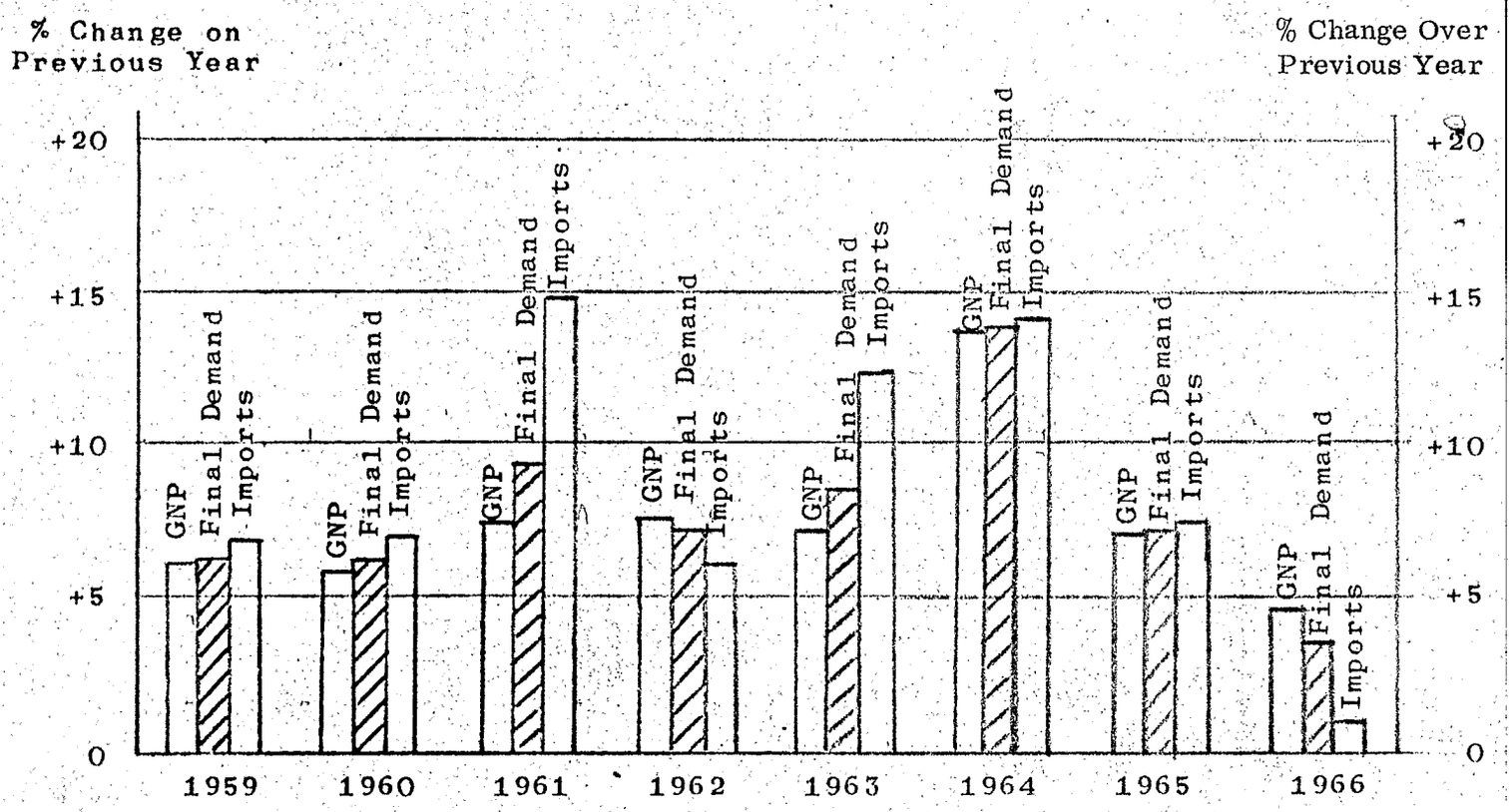
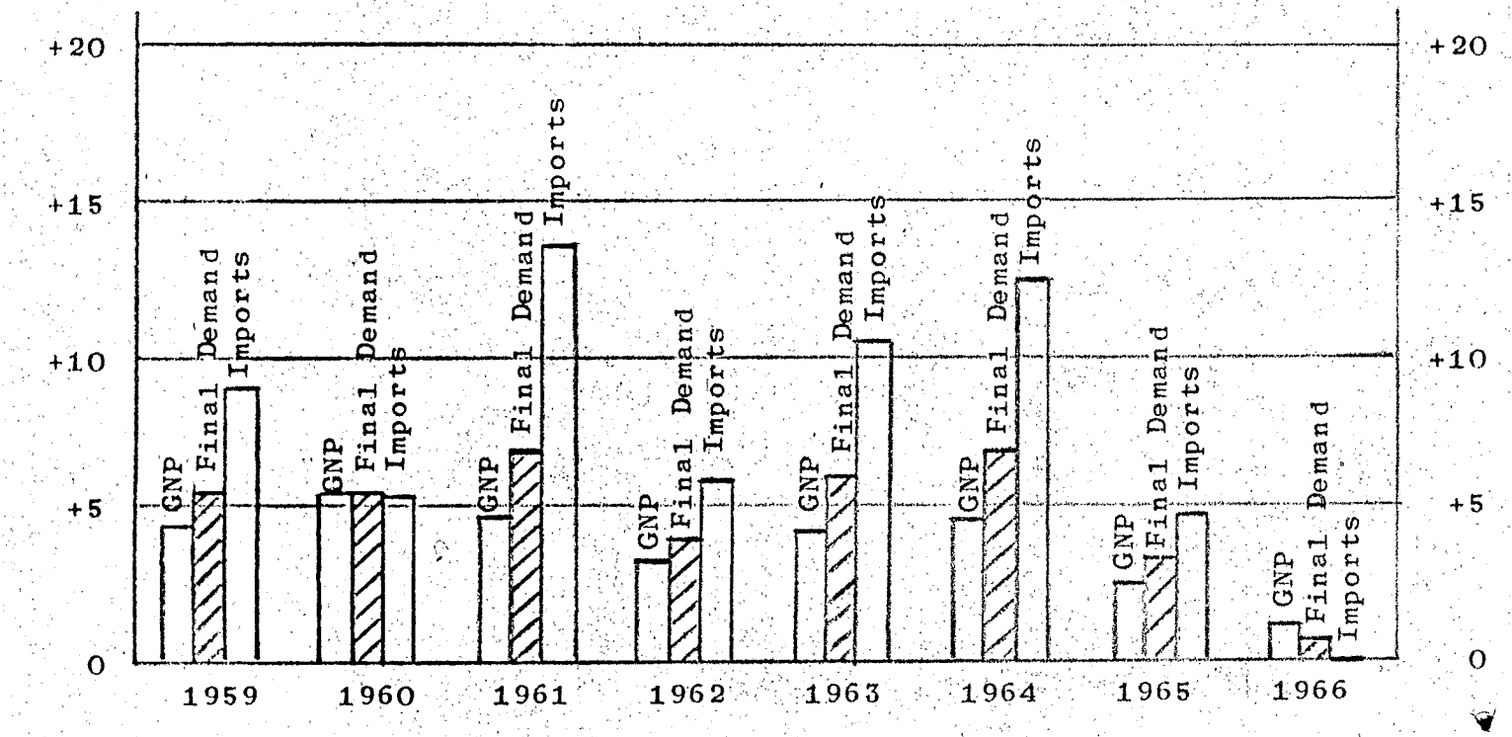
Chart 1: Annual Changes in Final Demand, GNP and Imports

A. At Current Prices



B. At Constant 1958 Prices



Balance of Payments (C/A)								
£m.	-8.7	-0.8	-1.2	-13.4	-22.1	-31.4	-41.8	-16

Change in "External Assets"								
£m.	+4.4	-0.3	+14.6	+9.5	+2.9	+5.2	-18.0	+29.4

Part I

THE IRISH ECONOMY IN RECENT YEARS

The behaviour of the Irish economy in 1966 can best be understood in relation to the developments of the preceding years. In particular, 1966 represented the trough of a typical example of the post-war minor economic cycle. We hope that by studying the evolution of this cycle with the benefit of hindsight, some lessons can be learnt that will be applied with foresight in the future, so as to minimise the wastage caused by this cyclical path of economic advance.

A. Annual Movements

(i) Description. Charts 1 and 2 show the annual percentage changes in expenditure on Gross National Product from 1959 to 1966.[1] Chart 1 plots the changes in Final Demand (FD) and in the sources from which it is supplied, namely Gross National Product (GNP) and Imports of Goods and Services (M). Chart 2 shows the annual changes in the principal components of Final Demand, namely, Personal Expenditure (C), Government Current Expenditure (G), Gross Fixed Capital Formation (I) and Exports of Goods and Services (including Net Factor Income) (X). All items in the Charts are shown in both Current and Constant Price terms. Beneath Chart 1 are shown the Balance of Payments on Current Account for each year, and the change in the level of the External Assets of the Banking System and Departmental Funds in the course of each year.

It can be seen from these charts that the growth of Final Demand at current prices was reasonably steady up to 1963. The fact that large increases in Investment and Exports coincided in 1961 raised the increase in Final Demand (and in Imports) for that year above the rate of the other years, but not sufficiently to induce a large rise in prices (as measured by the difference between the current and constant price increase in Final Demand) or to lead to a large deficit on current account. In 1959, 1962 and 1963, no more than one component each year (usually Investment) rose by more than 10%.

In 1964 on the other hand, every component rose by more than 10% at current prices, pushing the increase in Final Demand to nearly 14%. The most notable increase was in Government Current Expenditure, which rose by 20% at current prices. Allowing that most of this increase was in "prices" (which in this case primarily means in wage and salary levels), the remaining constant price increase in Government spending was still considerably higher than in any other year during the period. About half of the increase in Final Demand, and two-thirds of the increase in GNP, was accounted for by price, rather than volume increases.

1965 saw the rise in Final Demand at current prices revert to roughly its average for the years before 1964, although the constant price increase was lower than in any of these years. Despite this, the Balance of Payments was the most unfavourable in the period, and this was the only year in which the level of External Assets fell. 1966 saw

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[1] All figures are taken from "National Income and Expenditure 1965", "Review of 1966 and Outlook for 1967" and the Central Bank "Report on Year Ended March 1967".

by far the smallest rise in Final Demand during the period, either in current or constant price terms. This was the only year in which Fixed Capital Formation actually fell, while the rise in Personal Consumption was the lowest since 1959 at current prices, and during the whole period at constant prices. A moderate rise in Exports and a very small rise in Imports combined to produce a strong recovery in the Balance of Payments, and a dramatic rise in External Assets.

(ii) Analysis. Viewing the period as a whole, Charts 1 and 2 suggest a few tentative conclusions. Only in 1960, when the economy was recovering from the recession of the late fifties, did the rise in GNP at constant prices exceed 5%. In 1964, when the Final Demand was manifestly high, the constant price increase in GNP was only 4½%. Although the Charts by themselves are far from sufficient evidence, they do lend credence to the view that, except at times when noticeable slack is being taken up, the economy is unable to sustain a growth rate in "real" GNP of more than 4 to 4½%. This may very well change in time, as the structure of the economy and the pattern of investment are altered, but at present it seems to represent the maximum growth rate of productive capacity.

Secondly the Charts illustrate one of the points which emerges from Leser's model of the economy which appears as Appendix I of this paper. This is that Imports depend on the composition of Final Demand as well as on its overall size. Specifically, equation 1 of Leser's model demonstrates that, in the period from 1953 to 1965, changes in Imports can be related to changes in Fixed Capital Formation and in Exports, adjusted to include changes in Agricultural Stocks. It can be seen on inspection that the three years in which Imports rose by more than 10% are the three years in which both Investment and Exports also rose by about 10% or more. How well this model explains the changes in Imports in the period can be seen from the following comparison of computed and actual changes.

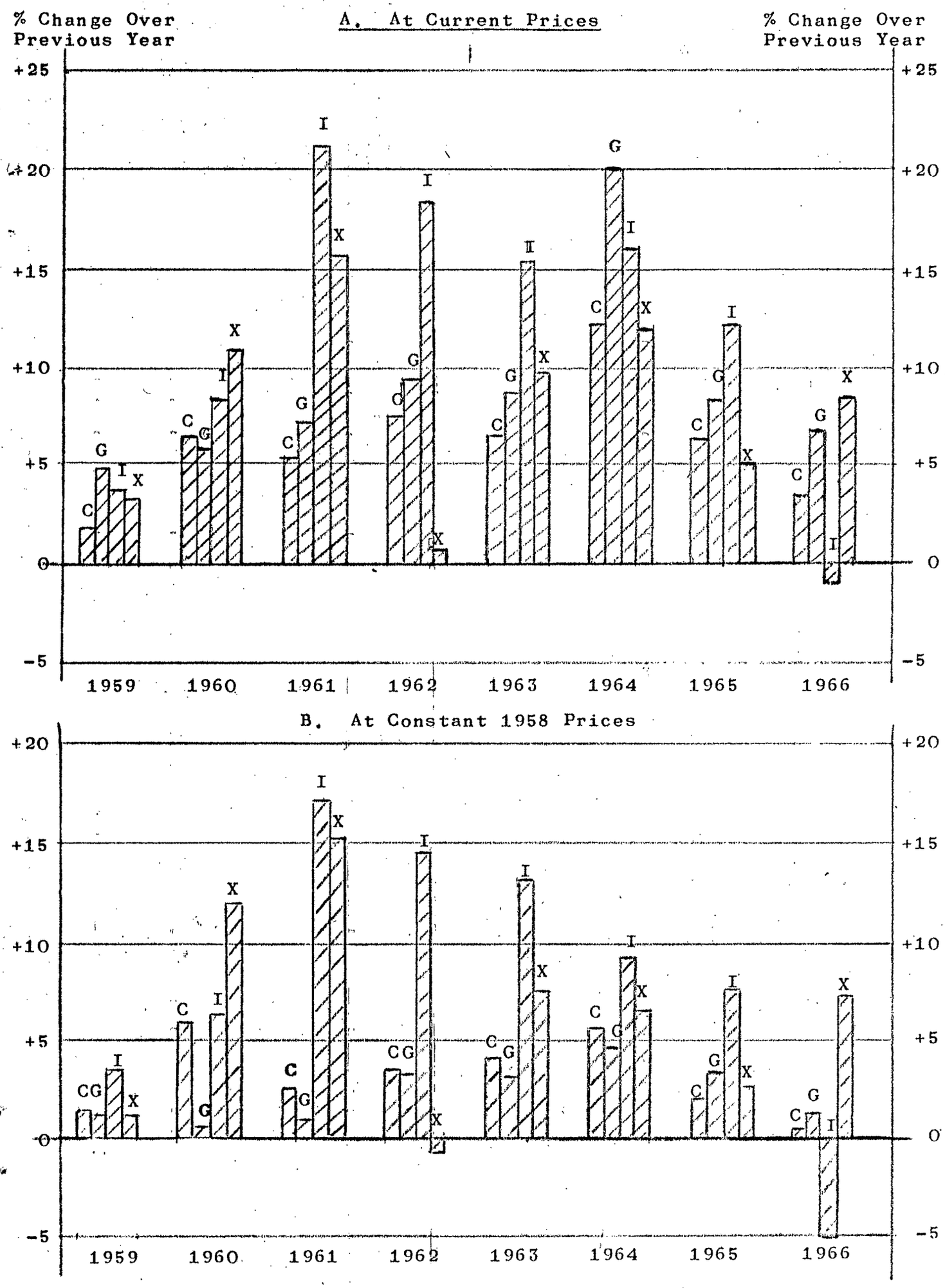
Changes in Imports of Goods and Services

£ million

Year	Computed Change	Actual Change
1959	12.6	16.1
1960	15.5	16.9
1961	34.9	35.4
1962	23.3	17.6
1963	32.8	36.6
1964	46.0	48.5
1965	32.7	25.8
1966	9.0	5.0

The importance of this finding lies in the demonstration that it is through cutting Investment that deflationary measures have their greatest impact on the level of Imports, and consequently on the Balance of Payments. This is partly through the direct effect on imports of capital goods, and partly through the indirect effects of curtailing construction, that most labour elastic of industries.

Chart 2: Annual Changes in Components of Final Demand



The third point which appears to emerge from Charts 1 and 2 is that the relationship between the size of increases in Final Demand and the rise in prices is far from simple. While it is true that 1964 saw the greatest rise in both Final Demand and in prices, the reduction in the rate of growth of Final Demand in 1965 and 1966 did not bring the rise in prices down to the levels of 1959 and 1960. There are two possible explanations for this. In the first place it is possible that institutional factors, such as regular economy-wide wage rounds, and growing dependence on broadly based indirect taxation, have to some extent divorced the behaviour of prices from considerations of overall demand, so that price increases must now be taken as largely autonomous, regardless of the state of demand. Secondly it could be that the long cycle from the trough of the late fifties to the trough of 1966 merely illustrates what could be called the "Paish hypothesis",[2] that in periods of recovery from recession increases in output and productivity are sufficient to offset increases in wages, but that at all the stages of the cycle, including that of active deflation, they are not. Probably there is some truth in each of these explanations.

B. Quarterly Movements

(i) Description. For an examination of how the reasonably stable growth from 1958 to 1963 was transformed into the unsustainable boom of 1964, and of how the subsequent restrictive measures have worked on the economy, it is better to work on quarterly than annual data. Quarterly National Accounts Estimates do not exist, but other indicators can show the approximate movements of most of the larger and more volatile elements of Final Demand. Chart 3 shows the seasonally corrected quarterly movements in Retail Sales (approximating to Personal Expenditure), Exchequer Expenditure (indicating Government Current Expenditure plus part of Fixed Capital Formation), Merchandise Exports (the larger and more volatile part of Total Exports) and Merchandise Imports. The first three items on Chart 3 can therefore be taken as showing the more precise timing involved in most of the changes in Chart 2. The only significant item missing is Private Capital Formation, for which no quarterly indicator can at present be found.

In Chart 3 the quarterly changes in the series are shown in the form of linked indices, in which the first quarter of 1961 = 100, and subsequent changes in each quarter are expressed as a percentage of the level in the previous quarter and then added to level at which the index stood in that quarter. The result is very similar to that which would obtain had simple indices been used and the results plotted on a logarithmic scale. Trend lines for the period have been calculated, and are shown as the straight dotted lines. In interpreting the chart, it should be remembered that the steeper the line, the greater the increase (or decrease) between the two quarters involved, while the further the line is from its trend, irrespective of slope, the more that series can be regarded as being at an absolutely high (or low) level. The basic data for the chart have been taken from the ESRI "Statistics of Economic Level and Trend", with the appropriate series carried back to 1961. The dotted section of the lines represent periods during which special factors (e.g. bank and shipping strikes)

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[2] F. W. Paish, 'Studies in an Inflationary Economy'.

interfered with either the availability of figures or the normal seasonal pattern, and during which, accordingly, adjustments have been made to the raw data, over and above the normal seasonal correction.

Chart 2 showed how all components of Final Demand showed a massive increase in 1964, after maintaining a reasonable balance, with only one at a time showing a large increase, in most previous years. Chart 3 also illustrates this pattern. Retail Sales grew fairly steadily along their trend line from 1961 to 1963. Likewise Exchequer Expenditure, having fallen below its (admittedly much steeper) trend line in the middle of 1962, remained roughly parallel with it throughout 1963. Exports fell fairly steeply in 1962, but recovered in the middle of 1963 and ended that year just a little below the trend.

The first quarter of 1964 saw a massive rise in exports, with a further small rise in the second quarter followed by a substantial decline in the second half of the year. Meanwhile both Retail Sales and Exchequer rose very sharply in the second and third quarters of 1964, so that each was well above its trend line. Although Retail Sales levelled off in the fourth quarter, and Exchequer Expenditures fell slightly, each remained above its trend line.

1965 saw Retail Sales increasing at a more moderate rate than 1964 for the first three quarters, but still remaining well above the trend line. Similarly, Exchequer Expenditure, although following a less smooth path, remained above its trend line for most of the year. Exports continued their decline in the first quarter, recovered only slightly in the second, and then showed a vigorous recovery to a record level in the third quarter.

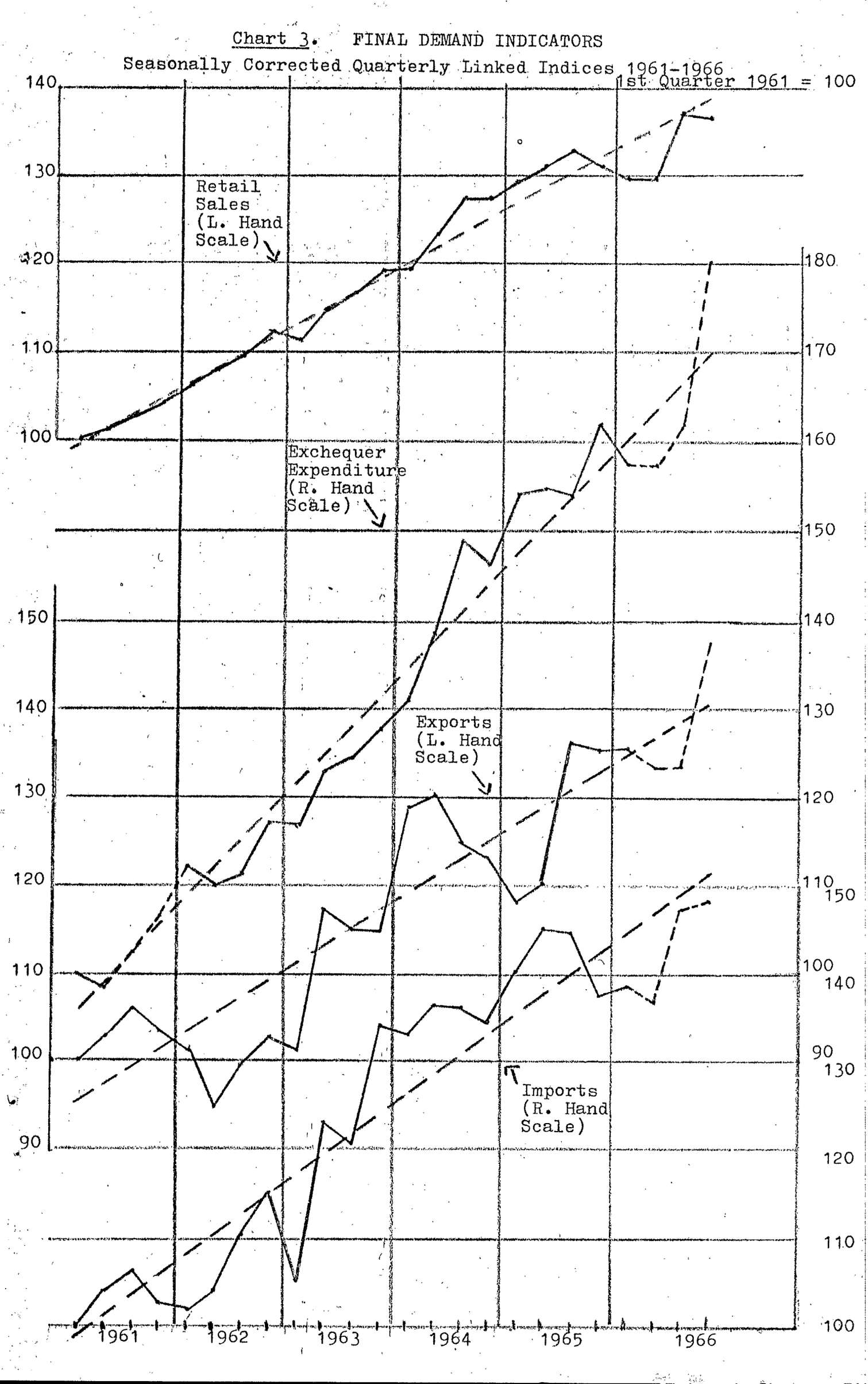
The fourth quarter of 1965 and the first quarter of 1966 both saw declines in Retail Sales, the first time since the index started in 1961 that there had been a decline in two successive quarters. The index levelled off in the second quarter of 1966, then rose very sharply in the third quarter, and almost maintained the level thus reached in the final quarter. Exchequer Expenditure, which had risen in the fourth quarter of 1965, fell sharply at the beginning of 1966, and, so far as can be gathered from the data available, remained at this lower level until the third quarter of the year, before increasing very strongly in the fourth quarter. Exports followed a somewhat similar pattern (after correction for the seamen's strike), declining gently from the third quarter of 1965 to the third quarter of 1966 and then rising sharply in the last quarter.

Throughout the period, Merchandise Imports reflected, slightly capriciously, the behaviour of the three approximate components of Final Demand. Remaining mostly below the trend line until the third quarter of 1963, as had two of the three indicators, Imports preceded the indicators in showing a strong rise to a level far above the trend in the final quarter of 1963. Throughout 1964, Imports remained high, although showing little further increase. There was a further strong increase in the first two quarters of 1965, with a levelling off in the third quarter followed by a severe fall in the fourth. Like the Final Demand indicators, Imports stayed below the trend line in the first half of 1966, before risig steeply in the third quarter and gently in the fourth.

Chart 3. FINAL DEMAND INDICATORS

Seasonally Corrected Quarterly Linked Indices 1961-1966

1st Quarter 1961 = 100



Like Retail Sales, but unlike Exchequer Expenditure and Exports, Imports nevertheless ended 1966 at a level a little below the five year trend line.

Thus the pattern which emerges from Chart 3 is of a strong boom in the middle of 1964, which continued at a more gentle rate until a sharp downturn towards the end of 1965, with stagnation continuing until the middle of 1966. This pattern needs careful explanation if lessons for the future are to be drawn.

(ii) Analysis. In absolute terms, the Retail Sales Index is the most important of the indicators used, as Personal Expenditure is not only by far the largest of the components of Final Demand but also has important effects in inducing private Fixed Capital Formation and in influencing the level of non-agricultural stocks.

Baker's model, which appears in Appendix 2 of this paper, explains quarterly movements in the seasonally corrected Retail Sales Index by changes in Industrial Earnings, Consumer Credit, and the timing of major changes in Indirect Taxation. This model seems to account for the timing of the consumer boom in 1964 quite satisfactorily. Between the fourth quarter of 1963 and the second quarter of 1964, Average Weekly Earnings in the Transportable Goods Industries, rose by just over 12 per cent, due to the 12 per cent (ninth) Wage Round which was agreed in January 1964. In the same period Consumer Credit, defined as Hire Purchase Debt Outstanding plus Personal and Professional Bank Advances, rose by over 11 per cent.

The fact that these increases occurred in the first and second quarters, while the increase in Retail Sales was greatest in the second and third quarters, is accounted for by two factors. In the first place the effect of changes in Earnings on the Index of Retail Sales appears in general to be lagged by about 6 weeks. In the second place, Retail Sales in the first quarter of 1964 were depressed by a reaction to the Turnover Tax, which had been introduced in November 1963, and which appears to have had the effect of shifting sales forward from the first quarter of 1964 to October 1963. (This also accounts for the otherwise inexplicably steep rise in Retail Sales in the fourth quarter of 1963.)

For the fourth quarter of 1964 and the first three quarters of 1965, Consumer Credit continued to expand rapidly, although not so fast as in the earlier part of 1964. This expansion was sufficient to outweigh the relative stability of Industrial Earnings during this period, and thus to allow Retail Sales to continue their steady growth at a level well exceeding their trend line.

The credit restrictions introduced in the summer of 1965 reduced the total of Consumer Credit for three successive quarters, from the fourth quarter of 1965 to the second of 1966. In spite of a mild upward push in each of these quarters from Earnings (allowing for the 6 week time lag), Retail Sales, in the face of the fall in Consumer Credit, declined in two of the quarters and remained level in the other.

The tenth Round Wage increase, the unplanned relaxation in Consumer Credit during the Bank dispute, and anticipatory purchasing before the Wholesale Tax, all combined to bring about in the third quarter of 1966 the

greatest rise in the Retail Sales index since its inception. However the reaction from the Wholesale Tax, and a slight reduction in Consumer Credit were sufficient in the last quarter of the year to offset a further considerable increase in the lagged index of Weekly Earnings, so that there was a slight fall in the Retail Sales Index from the high level it had reached in the third quarter.

No such detailed analysis of Exchequer Expenditure has been made, but it is clear from the timing that much of the large increase in the middle of 1964 must have been due to increases in the wages and salaries of government staff under the ninth wage round, and that the tenth round is partly responsible for the rise in the second half of 1966. However, Chart 2 made it apparent that there was an abnormally large rise during 1964 in Public Authorities Net Current Expenditure at Constant Prices, that is, after full allowance has been made for wage increases.

Short-term fluctuations in Exports are extremely difficult to explain, largely because they are so dependent on variations in the number of cattle exported in one form or another. In many ways it is more instructive to study the effects of these fluctuations than to seek their causes. Thus the steep rise in exports in the first quarter of 1964, and the holding of this high level in the second quarter, added to the high pressure of demand on the economy in this period. At the same time, however, they obscurred the danger to the Balance of Payments of this high level of demand. So long as high exports, based on a heavy volume allied to rising prices in the cattle trade, continued, the economic boom could be afforded in Balance of Payments terms. If the export level could not be sustained however, the economy would be very exposed to a Balance of Payments crisis. In point of fact of course, there was a severe decline in cattle shipments in the second half of 1964, which continued until the middle of 1965, aggravated in the first half of 1965 by the slight setback in industrial exports occasioned by the U.K. Import Levy.

At the same time as high exports tended to produce a mood of emphoria in the early part of 1964, the behaviour of imports was also tending to be misleadingly reassuring. The steep rise in imports in 1963, which in itself had proved manageable in Balance of Payments terms, was followed in 1964 by a rise that was much gentler, if measured in seasonally corrected form. If measured as compared with the corresponding quarter of 1963, the rate of growth of imports was declining throughout 1964. It was not until the first half of 1965 that the continued increase in Personal Expenditure, combined with a continuing high level of Capital Investment (not shown in Chart 2), caused a further spurt in Imports. This, coinciding with the fall in Exports in the same period, fully revealed the danger of the situation and forced the authorities to take action, which proved highly effective in reducing imports and keeping them at a low level until the relaxation of mid-1966.

C. Conclusions

It appears from this study of both annual and quarterly data that the economy was growing along a tolerably steady course until the end of 1963. From a

position at that time which was making fairly full use of the resources available (taking the structure of the economy and the composition of the work-force into account), an unstable boom was allowed to develop in the early part of 1964, and to continue until the middle of 1965.

The unprecedented size of the ninth Wage Round was a major factor in causing this boom, because of its effects on both private and government consumption. However if Baker's model is accepted as a reasonable explanation of private consumption (and the statistical evidence is in favour of its acceptance), this increase in money earnings cannot be regarded as the sole cause of the boom in Retail Sales. The very rapid rise in the Retail Sales Index in 1964 took place because Consumer Credit was allowed to rise paripassu with Industrial Earnings. Had hire purchase controls been tightened and the growth of personal and professional advances been checked early in 1964, the rise in Personal Consumption as measured by the Retail Sales in that year would have been much more modest. The continued rise of the Index during the first three quarters of 1965 also owed much to the increase in Consumer Credit in that period, according to the model.

Similarly the jump in Exchequer Expenditure in 1964 cannot be attributed solely to the increase in wages and salaries. As Chart 2 showed, the increase in the volume of Government Current Expenditure in 1964 was the highest in the period under consideration. Had action been taken to offset the increase in wages by some curtailment in the volume of Government Consumption rather than to augment it by an expansion, the pressure of Government spending on Final Demand would have been less sudden and less severe.

Thus it appears, with benefit of hindsight, that the authorities were mistaken in early 1964 in failing to counteract, by appropriate policies with regard to the volume of Public Expenditure and the availability and attractiveness of Consumer Credit, the abnormally large rise in wage and salary rates which had been permitted to take place at the beginning of that year. The explanation of this failure presumably lies in the misleading temporarily reassuring trends of Merchandise Imports and Exports in the first half of 1964, the continuing substantial inflow of long term capital, and the absence at the time of a sufficient body of responsible opinion pointing out the dangers of the situation. Ironically, much of what criticism was made at the time of the ninth Wage Round was directed at its supposed effects on the competitiveness of industrial exports, of which deleterious effects there has subsequently emerged no evidence (for industrial exports continued to rise strongly in 1964, and satisfactorily overcame the effects of the U.K. import levy in 1965), rather than on its effects, unless counterbalanced by other actions, on the level of domestic demand, of which there has been ample evidence.

The action in the fields of credit control and public spending which should have been taken in 1964 was finally forced on the authorities in the middle of 1965, as the trade figures for the first half of that year and the state of External Assets became known. By this time there was little upward pressure on demand from rising wages, so that the effect of the measures, instead of moderating the rate of growth, as they would have done in 1964, was to cause an actual downturn in economic activity. This was aggravated by the fact that the credit restriction directly affected private investment, which in any case was becoming effectively discouraged by downturn in Consumer Expenditure.

Given the state of the Balance of Payments in mid-1965, it was probably necessary to bring about some check to the rise in Capital Formation, as this component of Final Demand seems to have the largest effect on the level of Imports. However, in retrospect, it appears that the action taken was rather too vigorous, although this view is certainly debatable, and it is perhaps unfair to criticise the authorities for the precise strength of any action they take in circumstances of uncertainty. What is much clearer, and was pointed out at the time, is that the restrictions introduced in 1965 were maintained for far too long into 1966. In the first half of 1966 the Balance of Payments had already recovered, due to the officially induced fall in Imports and the autonomous recovery of Exports. At the same time, apart from the Export recovery, there were no stimulating factors at work on Final Demand.

The extent to which the economy had been over-deflated in the earlier part of the year was demonstrated in the third quarter, when the tenth Wage Round coincided with an unplanned but subsequently sanctioned jump in Consumer Credit, and with anticipatory purchasing induced by the imminent Wholesale Tax, to bring about the largest ever single quarter rise in the Retail Sales Index. This was absorbed by the economy without any undue strain in the fields of prices, employment or Balance of Payments. Had such a rise been permitted to occur in a situation of more fully utilised resources, the result would almost inevitably have been one of severe strain, as in 1964. Conversely, had official reflationary action preceded the increase in earnings, with moderate control kept during the actual period of the wage increases, the recovery of the economy would have been likely to be much smoother and more certain.

To summarise these conclusions, it appears quite apparent from the evidence that the timing of short-term economic policy measures since 1964 has been far from ideal. Both the Department of Finance and the Central Bank have tended to delay their decisions, whether restrictive or expansionary, so long that they have had a destabilising effect on the level of Final Demand, rather than the stabilising effect which surely should be aimed for. In all fairness it should be pointed out that the Irish economic authorities are by no means unique in this tendency. Most other countries can point to similar instances of official mis-timing.

The major lesson which thus emerges from this analysis of the recent past is therefore that the authorities should in future endeavour to so time their actions as to ensure as smooth a growth in Final Demand as possible, within the limitations set by the tendency of exports to grow along a somewhat erratic path. Deliberate fiscal action, in the conventional Keynesian sense of budgetting for a deficit or surplus in particular years, seems to remain out of favour as a policy tool. Thus, in practice, the lesson means that decisions as to the <u>volume</u> of Public Expenditure and the availability of credit (including the conditions of hire purchase transactions) should be taken with the conscious aim of minimising the fluctuations in Final Demand which would otherwise be induced by the curiously step-like progress of wage and salary earnings. In periods when a Wage Round is foreseen, the growth in Consumer Credit and Government Spending at constant prices

should be restricted. During the intervening periods of relative wage stability the growth in Consumer Credit and Government spending can be allowed to go ahead more rapidly.

In the longer term, it seems quite probable that the task of ensuring reasonably steady growth would be made much simpler if the current system of Wage Rounds were discontinued, and a system of more continuous industry by industry wage bargaining were adopted. However this problem raises many questions, of which that of short-term economic management is only one, and consequently this paper is not the correct place to pursue it further.

PART II

THE IRISH ECONOMY IN 1967

A. The First Half-Year

Chart 4 opposite, and the latest "Statistics of Economic Level and Trend" attached to this paper as Appendix 3, show the latest developments in the economy, as indicated by the behaviour of certain seasonally corrected key series.

The dotted sections of line in Chart 4 represent periods for which figures are less reliable than usual, because of:

(a) absence of detailed monthly figures due to the bank dispute, (Exchequer Receipts and Expenditure);

(b) adjustments made to allow for delays caused by the shipping strike, (Merchandise Exports and Imports);

and (c) the estimate for the latest quarter being based on two months' figures only, (Retail Sales).

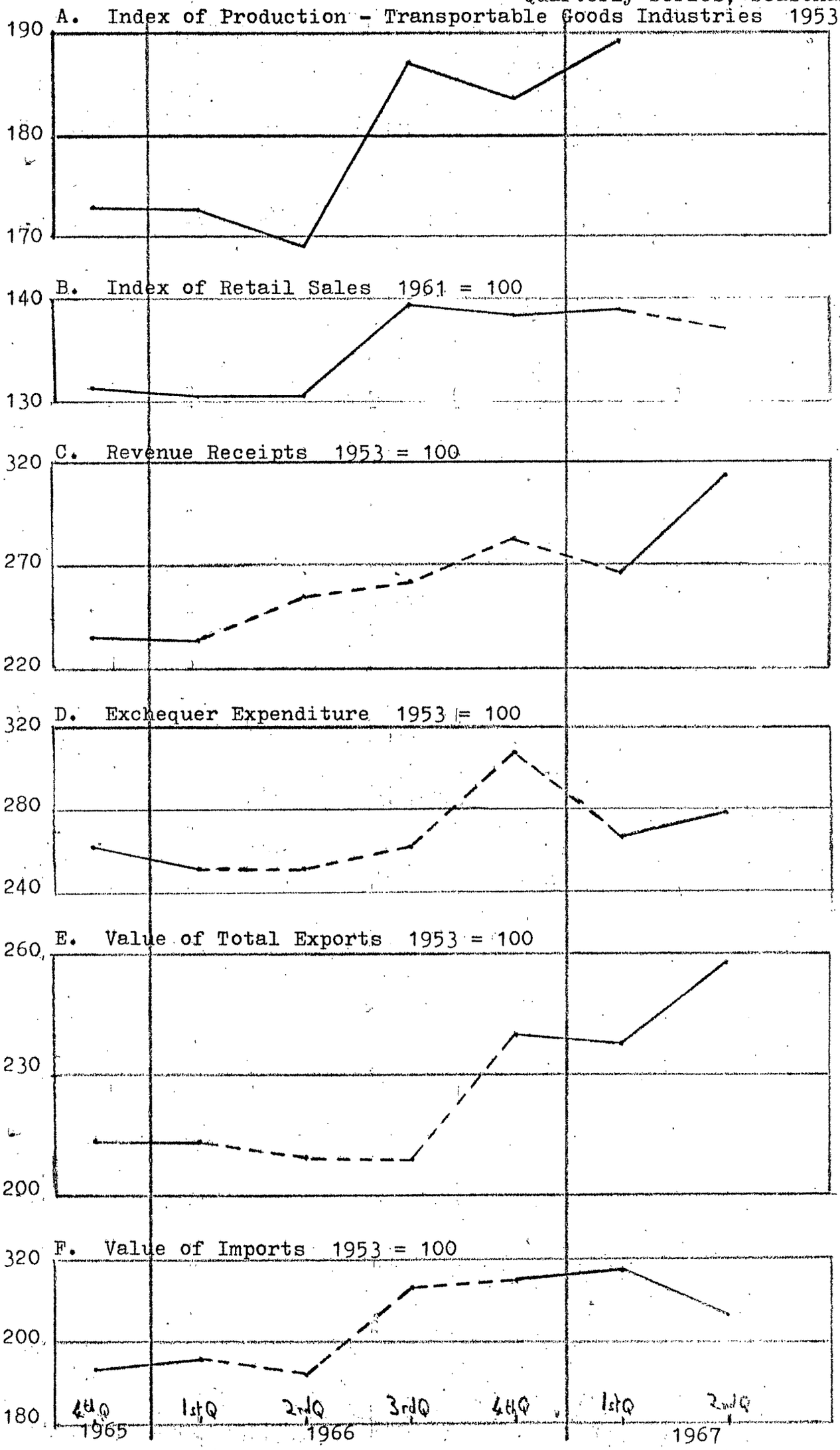
In most cases the results obtained by these adjustments appear reasonable, but in the case of Exchequer Expenditure the result for the fourth quarter of 1966 may well be an aberration. Either the allocation between the quarters (based on the 1963 to 1965 pattern) of the average weekly expenditure from May to October 1966 (the only information available) may be at fault, or there may have been a genuine change in the seasonal pattern of Exchequer Expenditure, rendering inappropriate the seasonal correction factor (based on previous years).

With the exception of this series, the pattern of the chart is fairly clear. In each other series there was a large and well defined "step" in the second half of 1966; between the second and third quarters in the cases of the Index of Industrial Production, Retail Sales and Imports, and between the third and fourth quarters in the cases of Exports, Exchequer Receipts and probably (in spite of the doubts raised) Exchequer Expenditure. Since these "steps", Retail Sales and Imports have remained on a plateau with the provisional results for the second quarter of 1967 rather below the level reached in the third quarter of 1966. Similarly, even if the fourth quarter peak is redistributed, it is clear that the seasonally adjusted average of Exchequer Expenditure was no higher in the first half of 1967 than in the second half of 1966.

The only series to show clear evidence of further advance in 1967 are Exports and Exchequer Receipts, which both rose substantially in the second quarter. Indeed the rise in the latter, coupled with the stability of Exchequer Expenditure, implies that, temporarily at least, fiscal activity has been exerting a deflationary influence on the economy in the past few months. This, as well as the factors of relatively stable earnings and the slow growth of Consumer Credit discussed in Appendix 2, probably helps to account for the stagnant position of Retail Sales.

Chart 4. ECONOMIC INDICES 1966-1967

Quarterly Series, Seasonally Corrected



Taking the Index of Production in the Transportable Goods Industries as the best indicator of the general state of the economy, reflecting the movements in the other series, it seems probable that on balance there has been a very slight upward trend in economic activity during the first half of 1967. Seasonally adjusted, the Index stood at a record level in the first quarter, fractionally above the level reached in the third quarter of 1966. On the evidence of the unemployment statistics (where Benefit Claim Current remained at the same level, after seasonal correction, in the second quarter as the first, in spite of the fact that the mild winter must have tended to reduce the first quarter level), and the FII-ESRI Joint Quarterly Industrial Survey (in which the results reported for the second quarter were marginally better than those for the first), it seems likely that the Index of Industrial Production will prove to have risen slightly in the second quarter. If this is so, it is due entirely to the rise in Exports, which has probably been sufficient to outweigh the putative decline in Retail Sales.

Thus the first half of 1967 has shown a very gentle rise in overall economic activity, wholly accounted for by a fairly vigourous expansion of exports. The latest FII-ESRI Survey shows that only about 9 per cent of the sample of firms are finding their output restricted by shortage of capacity. The same Survey and the unemployment figures also suggest that there is no general labour constraint on expansion. It is thus clear that it must be a shortage of domestic demand that is keeping the rate of growth at such a low level, and permitting a surplus of both capital and labour resources to remain unused.

At the same time it cannot be maintained that the Balance of Payments is operating as a constraint which is forcing the authorities to hold back demand. The relative behaviour of merchandise exports and imports in the first half of 1967 has led to a situation where the import excess is the same as in the first half of 1966, in spite of the fact that this figure in 1966 was artificially reduced by the effects of the seamen's strike. Also, despite disappointment over certain aspects of tourism, it is almost certain that net invisible exports are higher so far in 1967 than in 1966, so that if figures were available, it might very well prove that there has been no seasonally adjusted deficit at all in the Balance of Payments on Current Account over the past six months. This view receives some confirmation from the fact that the External Assets of the Banking System and Departmental Funds have risen by over £12 million, during the period of the year when the trade balance is generally unfavourable.

B. The Second Half of 1967

The behaviour of the economy in the remainder of the year depends heavily on two imponderables. The first is the behaviour of exports, and the second is the behaviour of the authorities in encouraging an expansion of private consumption.

With regard to merchandise exports, some fall from the very high annual level at which they have recently been running must be expected. Chart 3 in Section 1 of this paper illustrates how, after almost every jump in exports, a period of either decline or stability follows.

An analysis of the composition of exports in recent months supports this expectation. A very crude attempt at seasonal correction of the categories of exports given in the "Review of External Trade", based on the period from 1962 to 1965, permits Chart 5 to be constructed. This shows how both Agricultural and Industrial Exports shared in the increase in total Domestic Exports after the set-back caused by the seamen's strike. In both cases part of the increase, especially in the third quarter of 1966, must have been due merely to the making good of delays caused by the strike. However, in the case of Industrial Exports, part of the subsequent increase must also have been due to the temporary stimulus of the removal of the U.K. Import Levy.

The effect of this removal on the timing of exports, although not of course on their long-term level, had presumably been worked through by the end of the first quarter of 1967. If this is so, it is reasonable to suppose that there has been a slight fall in the seasonally adjusted level of Industrial Exports in the second quarter. The chart shows that except in exceptional circumstances, such as the period when the U.K. Levy was first imposed and the period of the shipping strike, there has not been any sub-stantial or prolonged fall in industrial exports in the five years covered, and there seems no reason to expect such a down-turn now. However there have been periods of relative stability, and it seems reasonable to anticipate such a period for the remainder of 1967, as shown in the "Forecast" section of the chart.

If the estimate that Industrial Exports fell slightly in the second quarter is correct, then there must have been a very large rise in Agricultural Exports to account for the published figures for Total Domestic Exports. The Trade Statistics for April confirm that this picture of what has happened is plausible. Unlike Industrial Exports, Agricultural Exports, as shown by the chart, do tend to fall substantially at times, especially after steep rises. Thus, on past experience, as well as in view of current statements regarding the condition of the U.K. beef market, it seems prudent to allow for a substantial fall in the seasonally corrected value of Agricultural Exports in the second half of 1967.

If these guesses at the situation were to prove correct, the actual level of Domestic Exports in the second half of 1967 would still be rather above the level achieved in the second half of 1966, as the following table shows.

Domestic Exports - Not Seasonally Corrected, £m.

	1966		1967	
	1st half	2nd half	1st half (estimate)	2nd half (forecast)
Agricultural	55.0	70.7	64.9	66.9
Industrial	43.0	52.7	55.2	60.2
Unclassified	6.9	7.3	7.1	7.2
Total	104.9	130.3	127.2	134.3

Chart 5. DOMESTIC MERCHANDISE EXPORTS

Composition 1962-1967 Seasonally Adjusted £m

In remaining above the level reached last year, when they were boosted by making good the strike delays, Exports would be performing quite well. Nevertheless it is quite possible that the forecast made above will prove to be pessimistic, and that the seasonally corrected level of the first half of the year will be maintained. If it were, Domestic Exports in the second half of the year would be in the region of £141 million. In view of the disappointment felt with the tourist returns so far this year, an increase of about £9½ million (5.7 per cent) in invisible exports (including factor flows) for 1967 as a whole, seems a reasonable forecast.

With regard to the second major point of uncertainty, the likely effects on Personal Consumption of alternative assumptions concerning the volume of Consumer Credit are discussed in the final part of Appendix 2. It would appear that on present policies only a slow rise in Consumer Credit can be expected over the remainder of the year. Present regulations concerning minimum deposits and repayment periods for hire purchase and other credit transactions are in most cases still of the restrictive nature introduced in 1965. While such regulations remain in force the volume of hire purchase debt outstanding is unlikely to grow very rapidly, especially in the absence of any stimulus from increased wages. While Central Bank advice on the level of total credit extended is reasonably liberal at present, it is possible that the banks are also taking into account the advice to discriminate in favour of advances for exporting and productive purposes, and therefore, by corollary, against leading for consumption. Such discrimination, if it exists, would seem to be out of place in the present circumstances of sluggish consumer demand.

As in the case of Exports, the assumption made must be regarded as on the pessimistic side. If there is any change in official policy, it will presumably be towards greater relaxation, and indeed such a change is advocated in this paper. Nevertheless for forecasting purposes, unchanged policies seems to be the most realistic as well as the simplest assumption to adopt. Thus it is assumed that a postulated rise of 4 per cent in the Index of Retail Sales will be boosted by other types of expenditure to an overall rise of 4.8 per cent in Personal Consumption.

For the other components of Final Demand, some guidance can be obtained from the Budget Tables as regards government spending, both current and capital, and from the FII-ESRI Joint Survey in the case of private investment. However, while the forecast made in this paper of Public Authorities Net Current Expenditure is unlikely to be seriously wrong, that for Gross Domestic Fixed Capital Formation must be regarded with considerable reserve. The relatively low percentage increase forecast (compared with increases in most previous years) is based on the following factors.

(a) There will be a considerable increase in Public Fixed Capital Formation, as implied by the Capital Budget for 1967/1968. The housing statistics so far available for 1967 confirm that there has been a substantial increase in this sector of Public Capital Expenditure.

(b) Most manufacturing industry appears to have sufficient capacity at the present moment, and, given the very slow growth in the volume of retail sales, has little apparent incentive to expand capacity immediately.

(c) Replies to the FII-ESRI Joint Industrial Survey by firms completing their financial years in the first half of 1967 suggest that the pace of industrial investment may be slowing down rather than increasing.

(d) Imports of "Producers' Capital Goods" in the first quarter of 1967 showed only a moderate increase over either those a year earlier or those in the second half of 1966.

It must however be admitted that each of these indications is rather vague, and is only taken into account because of the lack of adequate statistics. It is quite possible that, in the event, capital investment in 1967 will be considerably higher than this "best guess". It seems unlikely to be significantly lower.

The rather sluggish performance of Personal Consumption seems likely to restrict the building up of Non-Agricultural Stocks. An increase of £10 million in Non-Agricultural Stocks seems a fair estimate, with Agricultural Stocks, in view of the high level of agricultural exports so far this year, rising by only £2 million. As with fixed investment however, forecasts of stock changes must be regarded in present circumstances as inherently unreliable.

With regard to Imports the situation is much clearer. Not only are statistics of Merchandise Trade available for the first half of 1967, but also fairly reliable econometric models are available to relate changes in Imports to changes in the other components of Final Demand. Leser's latest model (described in Appendix 1) suggests that on the basis of the forecasts for Investment, Exports and Agricultural stocks, total Imports would rise by £33 million. Leser's earlier model, relating Imports to Final Demand, suggest an increase of 8 per cent or £34 million. Accordingly the higher figure of a £34 million increase in Total Imports (including factor flows) has been taken. This implies an increase of about £6 million (12 per cent) in invisible imports for the year as a whole, and merchandise imports for the second half of the year of about £202 million. Seasonally adjusted, this is about 5½ per cent above the level in the first half of 1967, and about 5 per cent above the level in the second half of 1966, after allowance has been made for the delays caused by the shipping strike. These increases seem to be of the correct order of magnitude in the light of the forecast developments with regard to Consumption, Exports and Investment.

C. National Accounts Forecast for 1967

The table opposite sets out the results of these various forecasts and assumptions. Part A of the table, dealing with National Income by Sector of Origin is only indicative. It has been assumed that Wages, Salaries and Pensions in the Non-Agricultural Sector will increase by about the same percentage as Earnings in the Transportable Goods Industries. Other assumptions are that the Agricultural Sector will do little more than recover the ground lost in 1966 (in terms of current prices) that Non-Agricultural Profits etc will show only a moderate growth, and that Depreciation will grow no more rapidly than last year, reflecting the lack of buoyancy in Investment.

With regard to the Expenditure section of the table, a comparison with the NIEC Forecast made in March is instructive. The respective changes foreseen for 1967 are as follows:

FORECAST OF NATIONAL ACCOUNTS, 1967

	1965 Actual £m.	1966 Provisional £m.	Change in 1967 %	Change in 1967 £m.	1967 Forecast £m.
A. National Income by Sector of Origin, Current Price					
Agriculture, Forestry & Fishing - Total	166	160	+5.0	+ 8	168
Non-Agricultural Sector					
Wages, Salaries & Pensions	444	477	+7.0	+33	510
Profits etc	165	167	+4.8	+ 8	175
Total	609	644	+6.4	+41	685
Other Income (including adjustment for price of stock)	42	40	-	0	40
NATIONAL INCOME	817	844	+5.8	+49	893
Depreciation	70	77	+9.1	+ 7	84
GNP at FACTOR COST	887	921	+6.1	+56	977
Taxes on Expenditure less Subsidies	131	144	+6.9	+10	154
GNP at CURRENT MARKET PRICES	1,018	1,065	+6.2	+66	1,131
B. Expenditure on GNP at Current Market Prices					
Personal Expenditure	715	739	+4.8	+35	774
Public Authorities Net Current Expenditure	130	139	+7.2	+10	149
Gross Domestic Fixed Capital Formation	193	191	+8.4	+16	207
Exports of Goods and Services*	377	408	+8.9	+36	444
Value of Physical Changes in Stocks	+22	+12	-	+ 2	+14
FINAL DEMAND	1,437	1,489	+6.6	+99	1,588
Imports of Goods and Services*	418	424	+8.0	+34	458
GNP at CURRENT MARKET PRICES	1,018	1,065	+6.1	+65	1,130
C. Estimated Price Change %	-	+3.4%	+3.0	-	-
GNP at CONSTANT 1965 PRICES	1,018	1,030	+3.0	+31	1,061
D. Balance of Payments on Current Account	- 42	- 16	-	+ 2	- 14

* Including Factor Flows

	NIEC £ million	ESRI £ million
Personal Expenditure	+ 44	+ 35
Public Consumption	+ 9	+ 10
Gross Capital Formation	+ 17	+ 16
Value of Physical Stock Changes	+ 4	+ 2
Exports of Goods and Services	+ 33	+ 36
FINAL DEMAND	+107	+ 99
Imports of Goods and Services	+ 40	+ 34
GNP at CURRENT MARKET PRICES	+ 67	+ 65

It can be seen that although there is little difference between the forecasts of GNP, there are very considerable differences at the level of Final Demand and among the various components. Most important, our forecast of Imports is substantially below the NIEC figures. As is argued in Appendix I, the NIEC estimate appears high, even on their own assumptions, while the Trade Returns to date, if allowance is made for the distortion caused in 1966 by the shipping strike, confirm that our lower figure seems the more realistic.

In the cases of Personal Expenditure and Capital Formation, the reasons for our reduced estimates have already been set out, while our slightly higher figure for Exports owes much to the half yearly trade returns.

One very striking and important result of these differences between the NIEC Forecast made in March, and our own, made in August, is the reduction in the estimate of the Current Account Balance of Payments Deficit from £23 million to £14 million. If this is correct, and it should be remembered that we regard our export forecast as being cautious, then it appears that the Balance of Payments cannot seriously be regarded as a constraint to economic expansion during the remainder of 1967.

D. Conclusion

On the evidence of available statistics for the first part of the year, and on the basis of reasonable projections for the second half, it appears likely that, if official policy remains unchanged, GNP will show an annual increase in 1967 of just over 6 per cent at current prices and about 3 per cent at constant prices. Econometric models, where applicable, confirm the consistency of this forecast.

If the economy does grow at this rate, the deficit on the Balance of Payments is likely to be small, probably in the region of £14 million. In this respect it should also be remembered that the component of Final Demand which is most likely to exceed the forecast we have made is Exports. If these do exceed the forecast, it will boost the growth of GNP, perhaps by ½ per cent, but at the same time it would reduce the Balance of Payments deficit still further.

Thus the Balance of Payments situation would appear to permit a higher rate of growth in 1967 than appears likely to be achieved on the basis of present policies. At the same time there is evidence that considerable surplus capacity, both of labour and capital, persists in the economy. The way thus seems open for some changes in policy with the aim of stimulating the economy further during the remainder of 1967. Both for its own sake, and with the intention of giving an indirect encouragement to private capital formation, Personal Consumption appears to be the obvious sector to stimulate. On the assumption that the 11th Wage Round will not take place in 1967, action in the sphere of consumer credit would appear to be the most appropriate form of administering this stimulus. Central Bank advice on the level of total credit is already sufficiently liberal. It is possible that a slightly higher proportion of bank lending could be in the form of personal and professional advances. However the most suitable action would be some immediate relaxation of the regulations concerning deposits and repayment periods on hire purchase and other credit transactions. This should lead to a fairly rapid rise in the volume of hire purchase debt outstanding, and to a higher level of Personal Consumption for the remainder of the year than that forecast on the basis of present policies. This additional increase in Personal Consumption might amount to some four or five million pounds. If the indirect effects on Stockbuilding, and perhaps even on Fixed Capital Formation are also taken into account, it is possible that Final Demand would rise by about £8 million more than shown in the Forecast Table. Assuming this to be split fairly evenly between Imports and GNP, the growth rate of GNP would be a little over 6½ per cent at current prices and nearly 3½ per cent at constant prices. The Balance of Payments deficit would remain comfortably under £20 million.

It must however be stressed that there is a vital qualification to this advice to encourage an expansion of consumer credit. To be beneficial, such an expansion must be matched by a willingness to reimpose moderate restrictions when the 11th Wage Round occurs, some time in 1968. Rapidly growing consumer credit in 1968, coinciding with a substantial increase in industrial earnings, would almost certainly lead to a dangerously rapid growth of Personal Consumption. Thus, unless there is a willingness to reverse policy over such a comparatively short period of time, it would be wiser to leave the regulations as they now stand, rather than relax them. The worst of both worlds would be obtained by delaying a relaxation to the end of 1967, and then, guided by the reassuring Balance of Payments figures, expand consumer credit at the same time as wages can be expected to rise.

Part I of this paper showed how official mistiming has timing has aggravated, if not indeed caused, the economic difficulties of Ireland since 1964. Now seems a good time to launch a new policy of attempting to use official powers, both fiscal and with regard to credit, so as to offset other destabilising influences and to ensure a reasonably smooth path of growth. Such a policy involves keeping up a much more continuous watch on the performance of the economy, and a willingness to take decisions far more frequently, than has hitherto been the normal practice. It also involves the willingness to take action on incomplete evidence, and even in anticipation of expected events, such as wage rounds. In operating a conscious policy of stabilising growth, timing is of prime importance. If decisions are delayed until all the relevant statistics are available, often many months after the events they describe,

it is a near certainty that official weight will be applied to the wrong end of the economic see-saw.

Looking ahead, it seems highly probable that 1968 will see a rapid rise in economic activity whether the advice of this paper is followed or not. If it is not, GNP could perhaps rise at over 8 per cent at current prices, and say 4½ per cent at constant prices, with an increase of over £50 million in Imports, and a Balance of Payments deficit of rather over £30 million. However, in this case, there would be a considerable risk that Balance of Payments considerations would force the authorities to impose fairly severe restrictions in the course of 1969. On the other hand, if relaxation during the remainder of 1966 is followed by reasonable restraint in 1968, there seems no reason, barring an unexpected setback in exports, why the economy should not once more settle on a fairly steady growth path, as in the early 1960's. In this case, starting from a slightly higher base in 1967, one could perhaps look for an increase in 1968 of about 7½ per cent in Final Demand, 7 per cent in GNP at current prices (nearly 4 per cent at constant prices) and a Balance of Payments Deficit for 1968 in the neighbourhood of £25 million. From this position, expansion could be maintained at a fairly steady rate in 1969.

Inevitably such forecasts beyond the end of 1967 must be regarded as highly tentative. However, the speculative figures given here are consistent in an econometric sense, and on the assumption that 1968 sees some upturn in world trade in general and the U.K. economy in particular, they do not appear to be unreasonable.

APPENDIX 1

A new basic model of the Irish economy

by

C. E. V. Leser

The problems involved in the construction of econometric macro-models are well known and have been discussed extensively in general terms, and also in relation to Irish data [2,5]. One of the difficulties arises out of the nature of the model and the purposes which it is intended to serve. If the equations of the model are designed to explain the working of the economy, they may not be very suitable for short-term forecasting; if on the other hand they make considerable use of leading indicators and other forecasting devices, their theoretical content may be very limited.

Another antithesis is that between small-scale and large-scale models, the relative merits of which were extensively debated in the discussion on a paper by Friend and Jones [4]. A small-scale model containing only a few equations is obviously less ambitious in scope than a very large and complex model, but on the other hand permits more intensive testing of various alternatives. This applies particularly to interdependent systems, in which the specification of any one equation affects the estimation of several or even all the other equations.

In a recursive model which specifies that there is no true cross-relationship between the endogenous variables but only an influence in one direction, the difficulties are not so great as it is possible to start from a small basic model and to enlarge it by adding further equations. Since each equation of such a system may be individually estimated, alternative variants of one equation may be considered without having to worry about the remainder.

These reasons of convenience do not by themselves justify the use of recursive systems if genuine interdependence is specified on theoretical grounds. Recursive models have, however, been used with advantage in the field of demand and supply analysis on the micro-level, and their application in the macro-economic field may deserve further consideration wherever the specification of a causal chain appears to be at least a reasonable working hypothesis.

The model introduced here is designed to explain short-term movements, from one year to another, in some of the key national accounts variables. The relationships are such as to allow theoretical interpretation provided the specification is correct; failing the latter, they may still be used as prediction relationships. The model may be used in connection with short-term forecasting though it is not specifically designed for that purpose, as it does not explicitly introduce short-term indicators such as quarterly or monthly data which could be used for forecasting purposes.

The model is fully recursive, specifying clearly the direction in which the relationships are supposed to work. It is a basic model with imports of goods and services, gross national product, personal disposable income and personal expenditure as endogenous variables, all of them in current prices. It could well be further extended to cover price indices and constant price terms, employment and other variables of this kind.

The variables of the model are:

M imports of goods and services

Y gross national product at market prices

Y_d personal disposable income

C personal expenditure

G public authorities'net current expenditure

I gross domestic fixed capital formation

X exports of goods and services

B_a value of physical changes in agricultural stocks

B_n value of physical changes in non-agricultural stocks

e weekly earnings index in transportable goods industries

z, z' dummy variables

All variables are measured in £ mill. in current prices, except for the dummies which will be explained later and the annual earnings index numbers which have October 1953 as base and which refer to October except that the September index was used for 1965. Imports and exports follow the old official definition, including all factor income flows. Personal disposable income is defined as personal income less direct taxes on personal income and thus represents personal expenditure plus personal savings.

After some experiments, the structural equations were formulated as follows, apart from dummy variables:

$$\Delta M = \alpha_1 + \beta_{11} \Delta I + \beta_{12} (\Delta X + \Delta B_a)$$

$$\Delta Y - \Delta G = \alpha_2 + \beta_{21} \Delta I + \beta_{22} (\Delta X + \Delta B_a) + \beta_{23} \Delta e$$

$$\Delta Y_d = \alpha_3 + \beta_{31} (\Delta Y - \Delta G)$$

$$\Delta C = \alpha_4 + \beta_{41} \Delta Y_d + \beta_{42} \left(\frac{Y_d - C}{Y_d} \right)_{-1}$$

to which may be added the identity

$$\Delta B_n = (\Delta M + \Delta Y) - (\Delta C + \Delta G + \Delta I + \Delta X + \Delta B_a)$$

the symbol Δ indicating year-to-year changes.

The first equation represents an import function. It tacitly assumes that a change in imports depends on changes in fixed capital formation and exports as well as on an expected change in personal expenditure, which in turn has a constant term and variable terms depending on fixed investment and exports. For this purpose, agricultural stock changes are treated as potential exports and are therefore separated from non-agricultural stock changes and added on to actual exports.

The second equation which may be described as a production decision function is similarly specified. Government expenditure is assumed to be fully translated into home production but without any multiplier effect. The price element in the valuation of national product is taken care of by industrial earnings as a cost indicator.

The very simple form of the income formative equation which follows implies that only that part of gross national product which is not induced by government spending influences personal disposable income. This may not apply in a country which makes extensive use of budget surpluses and deficits to influence consumer spending, but appears valid in the Irish context where balanced budgets have hitherto been the rule and therefore an increase in government expenditure was fully matched by increased taxation.

In the consumption function given by the fourth equation, ρ_{41} represents the short-term propensity to consume, and in addition there is an adjustment from the existing ratio C/Y_d towards a long-term equilibrium value

$$\left(\frac{C}{Y_d}\right)_e = 1 + \frac{\alpha_4}{\rho_{42}} \qquad \begin{pmatrix} \rho_{42} > 0 \\ \alpha_4 < 0 \end{pmatrix}$$

This would be in accordance with the permanent income hypothesis, and would still comply with it if the specification was less restrictive.

Finally, non-agricultural stock changes are neither taken as exogenous nor directly estimated by the model equations but obtained by difference. The structure of the model is considerably simplified by this procedure.

The latest available figures for the variables from 1953 to 1965 were taken from official publications [1,3] and converted into first differences, thus giving 12 observations. Furthermore, dummy variables were used for the import and consumption functions. In the import function z indicates the anticipation of import levies in 1955, their introduction in 1956 and removal or reduction in 1958: thus

$$z = \begin{cases} 1 \text{ for } 1954\text{-}5,\ 1957\text{-}8 \\ -2 \text{ for } 1955\text{-}6 \\ 0 \text{ otherwise} \end{cases}$$

There appeared to be a similar but lagged effect in the consumption function, the dummy variable z' for which was taken as

$$z' = z + z_{-1}$$

thus

$$z' = \begin{cases} 1 \text{ for } 1954\text{-}5,\ 1957\text{-}8,\ 1958\text{-}9 \\ -1 \text{ for } 1955\text{-}6 \\ -2 \text{ for } 1956\text{-}7 \\ 0 \text{ otherwise} \end{cases}$$

Least-square estimation then yielded the following results:

$$\Delta M = \underset{}{1.200} + \underset{(0.1717)}{0.8238}\ \Delta I + \underset{(0.1216)}{0.5574}\ (\Delta X + \Delta B_a) + \underset{(2.242)}{11.416}\ z$$

$$\Delta Y - \Delta G = \underset{}{1.623} + \underset{(0.2761)}{0.5491}\ \Delta I + \underset{(0.1629)}{0.9214}\ (\Delta X + \Delta B_a) + \underset{(0.6776)}{1.7976}\ \Delta e$$

$$\Delta Y_d = \underset{}{-\ 3.980} + \underset{(0.0815)}{0.9762}\ (\Delta Y - \Delta G)$$

$$\Delta C = \underset{}{-\ 32.520} + \underset{(0.0685)}{0.6469}\ \Delta Y_d + \underset{(100.58)}{508.81}\left(\frac{Y_d - C}{Y_d}\right)_{-1} + \underset{(2.071)}{4.325}\ z'$$

All regression coefficients are significant at the 10% level, and all except those of ΔI in the second and z' in the fourth equation at the 5% level at least. The coefficients of determination and standard errors of estimate (in £ mill) are as follows:

	R^2	S_e
ΔM	.948	5.30
$\Delta Y - \Delta G$	.944	7.09
ΔY_d	.935	6.91
ΔC	.937	5.84

The coefficients of determination are high for equations in terms of first differences. This is satisfactory though it does not prove the specification to be correct as there is a fair degree of correlation between most national accounts data even in terms of first differences. There remain moderately high unexplained elements in the endogenous variables as evidenced by the standard errors of estimate. If the dummy variable was ommitted from the consumption function we would obtain $R^2 = .903$ therein.

The first two equations show that fixed investment has a larger effect upon imports than have exports, whilst the opposite applies to domestic production. This is what we should expect to find. The sum of the coefficients of ΔI in the two equations is greater than 1, as is also the sum of coefficients of $\Delta X + \Delta B_a$; thus the increase in imports and home production which is meeting increased personal expenditure seems to vary very largely in step with the increase in exogenous demand.

The consumption function shows that in the short run about two-thirds of any addition to personal disposable income tends to be spent. In the long run, however, the proportion of disposable income spent

appears to adjust itself to about .936 since:

$$1 - \frac{32.520}{508.81} = .9361$$

Personal disposable income, personal expenditure and non-agricultural stock changes could be expressed in terms of predetermined variables if desired. It should be noted that government expenditure does then disappear from these equations.

The model may be applied to 1965-6 and to 1966-7, though conditions in 1966 have shown so many abnormal features that this does not constitute a fair prediction test; it rather shows what might have been expected to happen in more normal circumstances. Using official and N.I.E.C. estimates and forecasts [3,6], estimating Y_d as 816 in 1966 for the purpose of the 1967 consumption forecast and assuming a 1966-7 earnings increase of 3% or 6.5 index points, we obtain for the exogenous variables

	1965-6	1966-7
ΔI	-2	17
ΔX	31	33
ΔB_a	-14	-2
ΔG	9	9
Δ^e	23.0	6.5
$\left(\frac{Y_d - C}{Y_d}\right)_{-1}$	.0949	.0944

The predicted changes in the endogenous variables then are as follows :

	1965-6		1966-7	
	Model	Official or NIEC	Model	Official or NIEC
M	9	5	32	40
Y	67	47	60	67
Y_d	53		46	
C	50	24	45	44
B_n	2	4	-10	6

Thus the model gives an estimate of how much sharper gross national product and personal expenditure would have risen in 1965-6 in the absence of strikes and credit restrictions other than those holding back capital formation. On the other hand, a pure model prediction would give a smaller rise in imports and gross national product than the N. I. E. C. forecast, and with $B_n = 6$ for 1966, this would imply a fall in non-agricultural stocks in 1967 by £4 mill. In an actual prediction one would be inclined to make allowance for the deficiencies in ΔM and ΔY for 1965-6, though it is difficult to see to what extent.

A number of questions remain unanswered. To what extent do the equations formulated and estimated here have real structural content, and alternatively how useful are they for prediction ; or else has the model fallen between two stools? If using it for short-term forecasting, should one make use of independent information about the endogenous variables, particularly about non-agricultural stock changes, and if so, in what way? There is no simple answer to these questions. What seems to have been established is the possibility of building a reasonably satisfactory recursive macro-economic model which includes a consumption function as an integral part, and which permits further elaboration by both improving the existing and adding on further relationships.

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APPENDIX 2

Retail Sales - A Quarterly Model

by

T. J. Baker

For the purposes of short-term forecasting, models based on quarterly data possess an obvious attraction. They allow the use of more up-to-date information, they can permit the identification of fairly precise turning points in economic trends, and they enable a sufficient number of observations to be made within a period short enough for the basic structure of the economy to have remained relatively unchanged.

As quarterly National Accounts estimates are not made in Ireland, it is not possible either to extend any of Leser's annual models[1] to a quarterly basis, or to construct any alternative system dealing with the whole economy within a National Accounting framework. Nevertheless with the data available it should prove possible to construct prediction models for a number of important variables such as retail sales, merchandise imports, industrial production, industrial employment, and perhaps consumer prices, which are themselves important as the indicators on which short-term policy decisions must be based, and which are also fairly closely related to, or important components of, national accounts identities.

As a first step in such a project it was decided to attempt the construction of a simple model in which the dependent variable is retail sales. On an annual basis the index of retail sales gives a reasonably close approximation to the national accounting item "Personal expenditure on consumers' goods and services". Since the retail sales index was started in 1961, the annual percentage changes in the two series have been as follows:

(1) C.E.V. Leser: The Irish Economy in 1964 and 1965, ERI Paper No. 27; C.E.V. Leser: A New Basic Model of the Irish Economy, Memorandum Series No. 41; Staff of ERI: The Irish Economy in 1966, ERI Paper No. 33.

Change over previous year in	Retail Sales Index	Personal expenditure on consumers' goods and services
1962	7.0%	7.5%
1963	6.5%	6.5%
1964	8.8%	12.2%
1965	6.5%	6.3%
1966	2.3%	3.3% (Provisional)

Furthermore, personal consumption, whether measured in national accounts terms or by the Index of Retail Sales, has a direct influence on most other series, such as imports, industrial production, employment, investment and prices, and is thus a logical starting point for any series of equations. From a policy point of view, accurate forecasts of personal consumption, even in isolation are clearly of great importance.

While it is hoped that the specification of the model is theoretically sound (although necessarily not comprehensive) the choice of explanatory variables has been dictated in large part by considerations of practical utility. As the Retail Sales Index itself is one of the earliest indicators to be published for any period, there is no point in choosing explanatory variables merely on grounds of earliest availability. In any case the aim is to attempt to forecast changes up to a year ahead. Rather the intention has been to choose explanatory variables which are easier to forecast than retail sales themselves, and which the authorities have some degree of control over. Naturally such variables must have a theoretically causal relationship with retail sales, must be available on a quarterly basis, must have their values in the recent past available without undue delay.

The explanatory variables chosen for investigation were suggested by C. E. V. Leser's consumption model published in ERI Paper No. 33,"The Irish Economy in 1966", and by the conviction, which has been strengthened by the behaviour of

Table 1: Quarterly % changes 1961 to 1966

Period	Retail Sales Index	Weekly Earnings Index	Agricultural Price Index	Consumer Credit	Dummy for Tax Changes
	(c)	(e)	(p)	(h)	Z
1	-	1.49	0.50	-	-
1961 2	1.54	0.70	-0.70	3.43	0
3	1.83	0.83	0	2.76	0
4	1.20	4.62	1.71	0.18	0
1962 1	1.97	2.37	0.79	1.61	0
2	1.54	1.93	-0.59	3.52	0
3	1.71	2.59	1.38	1.70	0
4	2.52	0.80	-1.56	1.67	0
1963 1	-0.82	-1.28	-0.79	2.96	0
2	3.40	2.23	0.80	4.79	0
3	1.69	1.69	2.57	2.59	0
4	2.80	0.18	0	1.49	+1
1964 1	0.26	7.31	2.60	5.42	-1
2	3.90	4.71	4.98	5.69	0
3	3.84	-0.37	4.48	3.68	0
4	0.16	-0.80	0.94	1.90	0
1965 1	1.81	0.70	1.53	2.74	0
2	1.62	1.01	-0.84	3.87	0
3	1.52	1.68	-1.69	2.21	0
4	-1.49	1.03	-0.77	-0.68	0
1966 1	-1.06	0.31	-0.61	-2.30	0
2	0	4.54	2.43	-0.35	0
3	7.21	5.62	-2.63	4.36	+1
4	-0.79	1.11	0	-0.56	-1

the economy over the past two years, that the availability of consumer credit has an important influence on the level of consumption.

The series tested, in different combinations, and with different assumptions concerning lags, were:

E, weekly earnings in the transportable goods industries,
P, the agricultural price index,
H, hire purchase debt outstanding plus personal and professional bank advances,
and Z, a dummy variable representing major changes in indirect taxation, (specifically the introduction of Turnover and Wholesale Taxes), as independent variables, acting on:
C, Index of Retail Sales, as dependent variable.

In the cases of C, E and P, seasonally corrected figures were used, as published in Statistics of Economic Level and Trend (carried back to 1961 using the same seasonal correction factors for 1961 and 1962 as for 1963). There did not appear to be any seasonality in series H, which was constructed from data in the Central Bank Quarterly Bulletin.

The period covered was from the first quarter of 1961 to the last quarter of 1966. With the exception of the tax dummy, figures for all series were expressed as percentage changes from the previous quarter. Thus 23 observations were obtained, the values being as shown in Table 1, with $c = \frac{\Delta C \times 100}{C_{-1}}$, $e = \frac{\Delta E \times 100}{E_{-1}}$, etc.

The values of (e) and (p) for the first quarter of 1961 are shown as they were used in lagged terms. The value of (h) for the third quarter of 1966 is partly conjectural, as, due to the bank stoppage, the actual figure for personal and professional bank advances for that quarter is unknown. It was assumed to the same as in the following quarter. Hire purchase debt outstanding (which accounts for about half the value of (H)) is known and is included at its actual level. The tax dummy (Z) is used purely as a distributor through time,

to represent anticipatory purchases before the imposition of a major new indirect tax, and a subsequent reaction after its imposition. No attempt is made to allow for the effect of the actual level of taxation, either direct or indirect.

Linear regressions by least squares were run for various combinations of the series and their lagged terms (by courtesy of the Statistical Section of An Foras Taluntais and their computer) and the best result obtained was in the form:

$$c = a + b_1 e + b_2 e_{-1} + b_3 p_{-1} + b_4 h + b_5 Z + u$$

This worked out as:

$$c = -0.26 + \underset{(.105)}{.184}e + \underset{(.102)}{.225}e_{-1} + \underset{(.140)}{.117}p_{-1} + \underset{(.119)}{.434}h + \underset{(.542)}{2.40}Z + u. \qquad R^2 = .808$$

The R^2 is quite satisfactory for what are, in effect, logarithmic first differences. All the coefficients except that for agricultural prices are significant at the 10% level. If this is excluded from the regression the R^2 falls only to .800. The equation can be further simplified by combining the current and lagged terms for industrial earnings. If this is done, the equation worked out at:

$$c = -0.29 + \underset{(.127)}{.419}e_{-\frac{1}{2}} + \underset{(.102)}{.470}h + \underset{(.472)}{2.62}Z + u \,. \quad R^2 = .796$$

In this case all coefficients are significant at the 1% level. A refinement of the model was tested in which $e_{-\frac{1}{2}}$ was replaced by $(.em)_{-\frac{1}{2}}$ where M was seasonally corrected employment in the transportable goods industries. This weighting of earnings by numbers employed produced a slightly higher R^2 than in the simpler equation, .810 against .796. This seemed insufficient improvement to justify the inclusion of a term which is difficult to forecast and which in any case is as likely to be a result of change in retail sales as a cause of them.

Table 2: Computed and Actual % Changes in Retail Sales Index

	Computed Change c'	Actual Change c	Computed Change c"	Actual Change c
1961 2	1.76	1.54		
3	1.33	1.83		
4	0.95	1.20		
1962 1	1.91	1.97		
2	2.27	1.54	6.8	7.0
3	1.48	1.71		
4	1.20	2.52		
1963 1	0.97	-0.82		
2	2.17	3.40	6.8	6.5
3	1.75	1.69		
4	3.42	2.80		
1964 1	1.21	0.26		
2	4.88	3.90	10.7	8.8
3	2.30	3.84		
4	0.36	0.16		
1965 1	1.00	1.81		
2	1.88	1.62	5.8	6.5
3	1.30	1.52		
4	-0.04	-1.49		
1966 1	-1.09	-1.06		
2	0.58	0	2.7	2.3
3	6.52	7.21		
4	-1.79	-0.79		

Table 2 shows the actual value of c for each quarter since 1961 compared with the value computed according to the simplified equation. In columns three and four it also shows the annual values for c which can be derived from the model. In this case the formula is $c'' = 4a + b_1 e' _{-\frac{1}{8}} + b_2 h' + b_3 Z + u$, where the value of Z is either 0, $\frac{1}{4}$ or $-\frac{1}{4}$, and e' and h' are the annual percentage changes, lagged by six weeks in the case of e'.

It seems fair to say that in no period either of a quarter or a year does the computed value appear to be seriously misleading; the worst single result being that for the first quarter of 1963 when the weather may well be the explanation for the fall in actual sales below their computed value.

It is not yet possible to test the model outside the period within which observations were made, as estimates for hire purchase debt outstanding in the first quarter of 1967 are not available. If it is assumed that this rose slightly offsetting the marginal fall in personal and professional advances; so that h = 0, the computed value of c' for the first quarter of 1967 is 0.17 against an observed value of c of 0.36.

Conclusions

A model based on seasonally corrected quarterly data which appears to explain four-fifths of the logarithmic first differences in the retail sales index must be regarded as promising. Furthermore, the explanatory variables of industrial earnings, consumer credit and the timing of indirect tax changes are all factors which are at least partly amenable to official policy influence.

It can of course be argued that the relationships discovered are not causal but merely associative. There may be some truth in this charge, in that the overtime element in industrial weekly earnings reflects rather than causes the level of retail sales, and that the rate of growth of consumer credit in periods of expansion, follows rather than leads, the

advance of relevant retail sales. On the other hand, wage rates are clearly the major determinant in industrial earnings,[1] decreases in consumer credit are certainly the result of official action in reducing bank credit on imposing hire purchase restrictions, and increases can be either prevented or encouraged, if not actually brought about, by official intervention.

On a priori grounds therefore it seems reasonable to claim that the relationship is primarily causal, and that by influencing either earnings (through their attitude to changes in wage rates) or consumer credit (through Central Bank advice to member banks and changing the conditions of hire purchase transactions) the authorities can influence the level of retail sales to a degree which is fairly precisely measurable.

It is perhaps not surprising that agricultural prices, which Leser found to be a significant determinent of private consumption in his annual model, should lose much of their significance in this model based on quarterly first differences. There are three possible reasons why this should be so. In the first place the structural importance of agricultural earnings is lower in the period (1961-66) of the present model than in the period (1948-64) of Leser's model. In the second place the time horizon in farming, by the nature of the occupation, may be annual rather than weekly or monthly as in the case of industrial employees, so that quarterly changes of price are not of great significance to farmers, while annual changes are. Thirdly, the explanation may be purely statistical. In the period considered most of the large changes in the agricultural price index occured at the same time as large changes in the same direction in one or more of the other variables, so that changes in agricultural prices appear to have little significance in the equations. It is just possible that the result is rather misleading, and it might be a wise precaution in any period where large changes in agricultural prices are foreseen (such as transition to the Common Market), to use the full

[1 See ERI Papers 24, 29 and 31]

rather than the simplified version of the model, in spite of the apparent low significance of agricultural prices, and indeed even to be prepared for the coefficient of correlation between agricultural prices and retail sales to prove higher than emerged from the equation.

In more normal times, such as the current year, it seems safe to work on the simplified model, bearing in mind only that if the anticipated fall in agricultural prices does occur in the second half of the year it may impose a marginally depressing effect on the level of retail sales. With regard to the other variables it seems increasingly probably that the 11th round of wage increases will not get seriously under way in the course of 1967. If this is so the increase of earnings in 1967 compared with 1966 is unlikely to be much more than 8% (implying that the seasonally corrected index would reach about 230 in the fourth quarter) while it may be as low as 6½% (with the index at 225 in the fourth quarter). In the absence of any expansion of consumer credit above the level of the fourth quarter of 1966, these increases in earnings would suggest a rise in retail sales in 1967 over 1966 of only 3.3% or 2.9% respectively.

A gentle rise in consumer credit of £1m. per quarter after the first quarter, which appears a reasonable estimate of the outcone of present policies, would lead to an annual rise in retail sales, of about 4.1% or 3.7% according to which assumption is adopted concerning earnings. Only if consumer credit is increased by about 7% on an annual basis, does the model suggest that retail sales would increase by more than 5½%, which is probably the minimum necessary if a reasonable rate of growth in the economy as a whole is to be achieved for 1967. As there appears to have been little growth in consumer credit in the first half of the year, an annual increase of 7% would call for a very substantial increase (from a level of about £89 million in the first half to about £96 million in the

second) in the second half of the year. Past experience suggests that such an increase could be obtained by an early relaxation of hire purchase and related controls, and by a hint from the Central Bank to the member banks that some increase in personal and professional loans would be in order.

Of course, it would be possible to continue to restrain credit, and to encourage the onset of the 11th wage round, but such a course would have little to recommend it in terms of international competitiveness or internal social justice. It would seem more reasonable to encourage the growth of credit in 1967, when wage pressures are relatively weak, and to impose more credit restrictions when the 11th round finally comes in 1968. In this way a beginning can be made to a policy of the conscious use of credit control to offset wage increases and thus attain a reasonably steady growth of consumption, which would be in marked contrast to the experience of early 1964, and the winter of 1965-66, when allowing the credit variable to move with rather than against the earnings variable led to unstable rises and falls in retail sales.

Such a conclusion may appear to be a drastic one to reach on the sole evidence of a more or less untested model. On the other hand, retail sales in the first four months of 1967 shows very little advance on the level reached at the end of 1966, unemployment remains obstinately high, and most important of all, the trade balance remains sufficiently favourable to permit a certain amount of experimentation without undue risk. It seems a good time to test a policy which has logic and reasonable statistical evidence on its side.

T. J. Baker

17 July 1967

APPENDIX 3

TABLE 1.

Selected Quarterly Economic Series,

No.	Series	Unit
	PRODUCTION	
	Industry	
	Transportable goods industries:	
1	Production volume	1953=100
2	Production per worker (a)	1953=100
3	New houses built, State-aided	No.
4	Electricity output	Mill.kw.h.
	Agriculture	
5	Total farm sales	£Mill.
6	Farm costs (excl. wages)	£Mill.
7	Net cash farm income	£Mill.
	EMPLOYMENT, UNEMPLOYMENT, EMIGRATION	
	Employment	
8	Sales of insurance stamps	'000
9	No. in transportable goods industries	'000
	Unemployment	
10	Benefit claims (current)	'000
11	Live register as proportion of insured	%
12	Net passenger movement outward, sea and air*	'000
	PRICES	
13	Wholesale	1953=100
14	Consumer	1953=100
15	Agricultural	1953=100
16	Import (unit value)	1953=100
17	Export (unit value)	1953=100
18	Terms of trade	1953=100
19	Stocks and shares, ordinary	1953=100
	WAGES, EARNINGS	
20	Agricultural minimum wages	shs.
	Transportable goods industries, weekly	
21	Money earnings	1953=100
22	Real earnings (b)	1953=100
	CONSUMPTION	
23	Retail sales	1961=100
24	New cars registered	No.
	GOVERNMENT	
25	Revenue receipts (weekly av.)	£000
26	Exchequer expenditure (weekly av.)	£000
	EXTERNAL TRADE	
	Imports	
27	Value	£Mill.
28	Volume	1953=100
	Exports	
29	Value	£Mill.
30	Volume	1953=100
31	Import excess value	£Mill.
	BANKING, FINANCE	
32	Money supply (c)	£Mill.
33	Bank debits, non-government (daily av.)	£Mill.
	Within the State	
34	Bills, loans, advances	£Mill.
35	Investments	£Mill.
36	External assets, banking system and G. Depts.	£Mill.

* Estimated (half-yearly figure only published).

** Twelve-month aggregate ended quarter shown.

(a) Quotient of 1 by 9.

(b) Quotient of 21 by 14.

(c) Sum of monetary circulation and current accounts within the State.

(d) Figures not available due to Bank Strike.

(e) Weekly average May - Oct. 1966 distributed according to 1965 monthly pattern

(f) Daily average, 30th Mar - 18th Oct 1966.

II 1965 to II 1967

1965			1966				1967	
II	III	IV	I	II	III	IV	I	II
176.6	169.0	175.8	165.7	175.6	184.0	188.0	181.0	
145.0	137.7	143.0	136.6	144.8	147.6	150.5	147.6	
2,921	2,521	2,736	2,228	2,560	2,135	2,520	3,015	
733.7	708.4	1,026.8	1,068.8	812.4	753.8	1,124.9	1,164.4	933(P)
42.52	66.63	52.81	42.82	44.33	65.90	63.02	-	-
24.68	22.40	19.45	25.33	25.91	24.00	20.10	-	-
17.84	44:23	33.36	17.49	18.42	41.90	42.92	-	-
6,290*	6,594*	6,650	7,633	5,884	6,806	6,707	7,511	
183.4	184.8	185.2	182.8	182.7	187.7	188.1	184.7	
24.6	21.2	30.8	37.8	29.7	23.4	33.2	40.2	29.1
5.5	4.7	5.6	6.9	6.3	5.2	6.0	7.7	6.7(P)
25.40	28.74	26.94	29.42	36.74	30.80	26.32	9.95	
132.7	131.6	131.2	133.0	135.7	134.3	134.0	136.3	
144.3	144.8	144.8	144.9	147.6	150.0	150.4	150.6	153.2
119.8	114.3	115.0	117.2	119.1	112.6	114.2	118.2	117.6(P)
114.1	113.9	113.9	114.1	115.1	113.6	114.3	113.4	
111.9	112.1	110.4	111.7	114.8	113.7	110.8	114.3	
98.0	98.3	97.0	97.9	99.8	100.1	96.9	100.8	
328.8	303.4	298.2	306.2	303.9	294.2	275.9	272.2	284.6
153.1	160.8	160.8	160.8	164.2	173.5	180.5	180.5	180.5
191.4	192.9	196.5	193.9	206.2	215.9	219.8	217.6	
132.6	133.2	135.7	133.8	139.7	143.9	146.1	144.5	
132	136	140	120	130	142	147	127	137 (P)
13,925	10,602	5,062	12,410	9,840	11,165	5,949	10,373	12,750(P)
4,061	4,038	3,928	6,295	4,379(e)	4,681(e)	4,709(e)	7,159	5,349
5,002	4,695	5,389	6,027	5,130(e)	5,020(e)	6,353(e)	6,394	5,714
99.12	88.89	91.00	90.42	85.65	97.00	99.81	100.20	98.45
187.4	168.3	172.4	171.1	160.5	184.2	188.2	190.7	
48.23	63.31	61.28	57.91	50.87	66.09	68.86	64.16	66.79
148.2	194.0	190.6	179.1	154.8	201.4	217.0	196.5	
50.89	25.58	29.72	32.51	34.63	31.28	30.96	36.04	31.66
307.2	310.7	321.2	318.2	(d)	(d)	351	334.9	
17.82	16.89	17.86	17.98	17.04(f)	17.04(f)	18.90	20.21	22.5 (P)
317.4	319.8	319.8	320.2	(d)	(d)	339.3	339.5	335.1
33.77	33.37	32.93	32.33	(d)	(d)	51.8	49.6	48.9(P)
213.8	210.4	222.9	232.8	(d)	(d)	244.4	254.4	262.0

TABLE 2

Certain Quarterly Series

No.	Series
4	Electricity output (Mill.kw.h.)
5	Total farm sales (£Mill.)
6	Farm costs (excl. wages) (£Mill.)
7	Net cash farm income (£Mill.)
8	Sales of insurance stamps ('000)
24	New cars registered (No.)
27	Value of imports (£Mill.)
29	Value of exports (£Mill.)
31	Import excess (£Mill.)
9	Employment in transportable goods industries ('000)
10	Benefit Claims ('000)
11	Live register as proportion of insured (%)
25	Av. weekly revenue receipts (£000)
26	Av. weekly exchequer expenditure (£000)
32	Money Supply (£Mill.)
33	Av. daily bank debits, non-government (£Mill.)
36	External assets, banking system & Govt. Depts. (£Mill.)
1	Production volume - transportable goods industries
2	Production per worker " " "
4	Electricity output
5	Total farm sales
6	Farm costs (excl. wages)
7	Net cash farm income
8	Sales of insurance stamps
9	Employment in transportable goods industries
10	Benefit Claims ('000)
11	Live register as proportion of insured
15	Agricultural prices
21	Money earnings - transportable goods industries
22	Real earnings - " " "
24	New cars registered
25	Av. weekly revenue receipts
26	Av. weekly exchequer expenditure
27	Value of imports
28	Volume of imports
29	Value of exports
30	Volume of exports
31	Import excess value
32	Money supply
33	Av. daily bank debits, non-government
36	External assets, banking system and Govt. Depts.
	1961=100:
23	Retail sales

Corrected for Seasonality

1965			1966				1967	
II	III	IV	I	II	III	IV	I	II
			Equivalent Annual Aggregates					
3,380	3,489	3,644	3,545	3,731	3,741	4,000	3,878	4,280(P)
203.7	210.5	186.0	223.0	210.1	205.2	228.3	-	-
102.8	97.0	87.6	84.2	104.2	103.1	92.3	-	-
100.9	113.5	98.4	138.8	105.9	102.1	136.0	-	-
27,831	26,969	27,971	26,424	25,751	27,922	27,917	26,080	
45,280	44,546	31,474	46,048	31,816	46,715	34,587	34,606	42,785(P)
385.7	384.4	354.4	358.5	328.8	415.86	392.95	397.22	377.92
207.4	240.3	238.7	239.1	218.6	247.07	267.42	264.85	286.96
178.3	144.1	115.7	119.4	110.2	168.79	125.53	132.37	90.96
			Actual Value During Quarter					
183.2	184.4	184.5	184.0	182.9	187.0	187.3	186.0	
26.3	27.7	30.5	29.3	31.8	30.7	32.7	31.1	31.1
5.47	5.59	5.89	5.81	6.26	6.15	6.28	6.47	6.64(P)
4,772	4,347	4,632	4,598	5,028(e)	5,150(e)	5,533(e)	5,229	6,141
5,141	5,109	5,522	5,278	5,278(e)	5,510(e)	6,516(e)	5,599	5,879
310.3	314.5	313.6	320.4	(d)	(d)	342	337.2	
17.9	17.7	17.4	17.7	16.8(f)	17.8(f)	18.7	19.9	22.2
215.3	214.5	220.5	229.8	(d)	(d)	240	251.1	266.0
			Index Numbers (1953 = 100)					
169.6	172.6	173.2	172.8	169.3	187.6	183.8	189.5	
139.5	141.0	141.4	141.5	139.5	151.0	147.7	153.4	
271.3	280.0	292.5	284.5	300.2	300.2	321.0	311.2	343(P)
144.0	148.8	131.4	169.6	148.5	145.0	161.3	-	-
183.9	173.5	156.7	150.6	186.4	184.4	165.1	-	-
117.9	132.6	115.0	162.1	123.7	119.2	158.9	-	-
120.9	117.1	121.5	114.7	111.8	121.3	121.2	113.3	113.3
121.6	122.4	122.5	122.1	121.4	124.2	124.4	123.5	
66.2	69.8	76.8	73.8	80.2	77.3	82.4	78.3	78.3
57.0	58.2	61.4	60.5	65.6	64.1	65.4	67.4	69.2(P)
118.6	116.6	115.7	115.2	118.0	114.9	114.9	116.7	116.1(P)
190.1	193.3	195.3	195.9	204.8	216.3	218.7	221.1	
131.7	133.5	134.9	135.2	138.7	144.2	145.4	146.8	
321.4	316.2	223.4	326.8	225.8	331.6	245.5	245.6	304(P)
244.0	222.2	236.8	235.1	257.1(e)	263.3(e)	282.9(e)	267.3	314.0
244.2	242.7	262.3	250.7	250.7(e)	261.8(e)	309.5(e)	266.0	279.3
210.9	210.2	193.9	196.1	179.9	227.5	215.0	217.3	206.8
182.3	181.9	167.9	169.6	154.0	200.3	185.2	189.0	
186.2	215.7	214.2	214.6	196.2	221.7	240.0	237.7	257.5
159.4	184.1	185.6	184.8	166.3	193.6	210.7	202.8	
259.3	209.5	168.2	173.6	160.2	245.4	182.5	192.5	132.3(P)
192.1	194.7	194.2	198.4	(d)	(d)	211.8	208.8	
298.3	295.0	290.0	295.0	280.0(f)	296.7(f)	311.7	331.7	370.0(P)
97.0	96.7	99.4	103.6	(d)	(d)	108.2	113.2	119.9
131.8	133.8	131.8	130.4	130.4	139.8	138.7	139.3	137.1(P)

Notes

Following recent practice, this issue assembles 36 selected quarterly economic series for the last nine calendar quarters. Most of the data have been taken from the Economic Series and Quarterly Industrial Inquiry published by the Central Statistics Office in the Irish Statistical Bulletin, with stencilled supplements for up-to-date figures, and from the Quarterly Bulletin of the Central Bank of Ireland. The series relating to agricultural output have been supplied by E. A. Attwood and B. Kearney of An Foras Taluntais.

Table 1 shows the actual data as far as available. In some cases, the most recent figures given here and in the following tables represent estimates based on partial data for one or two months of the quarter; such figures are indicated by P.

Since most Irish economic series are subject to seasonal fluctuations, Table 2 is also given, containing seasonally corrected figures.

Table 2 shows the seasonally corrected figures for the 25 out of 36 series in Table 1 which analysis of variance has shown to be subject to significant fluctuations. The seasonal indices used for deflating the original data for 1964 and 1965 respectively, have been derived from a period of up to five years ending in 1963 and 1964 respectively; together with the method used for their derivation, they have been given in "Seasonality in Irish Economic Statistics" by C. E. V. Leser, ERI Paper No. 26. In addition, seasonal indices have now been used to deflate the data for average weekly exchequer expenditure; by excluding years prior to 1962 from the base period, a regular pattern becomes now apparent. The seasonal indices which are and will be used for 1967, based mostly on the period 1962-1966, are as follows:

Series No.	Quarter I	II	III	IV
1	95.5	102.8	99.2	102.5
4	120.1	87.2	80.2	112.5
5	76.8	84.4	128.4	110.4
6	120.3	99.5	93.1	87.1
8	115.2	90.8	97.9	96.1
9	99.3	99.6	100.7	100.4
10	129.1	93.6	75.7	101.6
11	119.1	100.9	84.5	95.5
15	101.3	101.3	98.2	99.2
21	98.4	100.8	100.6	100.2
23	91.4	99.9	102.4	106.3
24	111.9	119.2	100.1	68.8
25	136.9	87.1	90.9	85.1
26	114.2	97.2	91.1	97.5
27	100.9	104.2	93.3	101.6
29	96.9	93.1	107.0	103.0
32	99.3	98.9	99.1	102.7
33	101.5	101.4	96.0	101.1
36	101.3	98.5	98.2	102.0

In a few cases, the seasonal variations are small though consistent over the years. Series No.2, 7, 22, 28, 30 and 31 are indirectly corrected by derivation from other, seasonally corrected or seasonality-free, series. No seasonal corrections are required for series 3, 12, 13, 14, 16, 17, 18, 19, 20, 34 and 35.

The figures in Table 2 make it possible to interpret and compare changes between consecutive quarters, where otherwise comparisons would have to be confined to the corresponding quarter last year or over an average of years. Whilst less significance attaches to seasonally corrected estimates for quarters of seasonally low values than to those of seasonally high values, and whilst irregular movements are not eliminated by seasonal correction, nevertheless the figures permit some inferences as to the recent trend to be made.

In January 1966 the basis for compilation of the total Live Register was changed. For Series 10 the Live Register total has accordingly been replaced by Unemployment Benefit Claims Current, the figures for which remain comparable between 1966 and previous years.

Series 11 has not been changed, and the 1966 figures for this series are therefore not directly comparable with those for earlier years.