Income Maintenance Payments in Ireland, 1953-1971: Cyclical Variations and Long-Term Growth.

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THREE contributions have appeared in recent issues of this *Review* on the topic of Ireland's social security payments viewed in relation to the growth of national income. The original Note by Geary [2] clearly raised some very important issues. In their Comment [7], O'Hagan and O'Higgins questioned the validity of Geary's approach, while not directly disagreeing with his main conclusion. The Rejoinder by Geary [3] left some of their objections unanswered.[1] In the present brief study, I should like to return to the methodology of Geary's Note, in the hope of extending the analysis and shedding some further light on the factors affecting the growth of social security payments in Ireland.

Definition of "Social Security Payments"

Geary's Note provides no definition of what should be included, and what excluded, from "social security payments". In a key passage he does, however, state the hypothesis "that income redistribution must depend on taxable capacity, which is usually progressive in marked degree" [2, p. 344]. Thus the redistributive aspect of the payments in question is highlighted, presumably with reference to redistribution between income groups. This raises questions not only about the

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1. A surprising feature of this debate is the absence of reference to the earlier study by Kennedy [4] in which the growth and structure of public authority social expenditure were analysed in some detail.

nature of the transfers, but also about the method by which they are financed. O'Hagan and O'Higgins quote an International Labour Office definition of social security payments as transfers

> the object of which is (*a*) to grant curative or preventive medical care or (*b*) maintain income in case of involuntary loss of earnings or of an important part of earnings or (*c*) to grant supplementary incomes to persons having heavy responsibilities. [quoted in 7, p. 116].

Geary relies on the item called "other transfer income" in the Irish national income accounts to measure social security payments. (This is Item 70, Table A7 in *National Income and Expenditure*, (*NIE*), 1971). If, however, the components of this Item are studied (in Table A19 of *NIE*) it will be seen that it is very misleading to equate it with "social security payments". Many of the items included in "other transfer income" certainly are social security payments in the sense of the ILO definition given above, but five headings call for careful study. They are:

Public authorities current transfers:

university education
secondary education
other education
scholarships and prizes
grant to Hospitals' Trust fund.

These amounted to 22 per cent of Item 70 in 1971. If social security is defined to include transfers (in kind) through the educational and health services, the above headings are a very incomplete measure. This may be seen by studying *NIE* Table A23 ("expenditure of public authorities classified by purpose of expenditure and economic category"). Even if we limit our attention to the *current* items appearing under Health and Social Security in this Table, we see how misleading it is to use Item 70, which concentrates on *current transfers*, as a measure of social security payments. The latest data given in Table A23 relate to 1970/71, and the following are the relevant entries:

Education	£'000s
Current transfers	25,750
Current expenditure on wages and salaries	45,160
Total Current	70,910

Health	£'000s
Current transfers	4,750
Current expenditure on wages and salaries	60,680
Total Current	65,430

Now only the items labelled "current transfers" are included in Item 70, Geary's measure of social security expenditure, which therefore excludes over 63 per cent of the State's current expenditure on Education, and almost 94 per cent of its current expenditure on Health. The reason for this confusion is that primary school teachers and public health doctors and nurses are employed directly by the public authorities, but secondary and university teachers are employed by private non-profit institutions, and hence Government payment of salaries to the second group are current *transfers* but the first group's salaries are current *expenditure*.[2]

In 1962 a substantial revision was made in the component of Item 70 called "maintenance, clothing, and treatment in institutions, etc." (the series was revised back to 1953). The notes on "current changes in concepts and methods" explaining this revision help to clarify the principles used for defining the non-educational items in "other transfer income":

> All expenditure on Local Authority health services except actual grants in cash or kind to private persons is now treated as expenditure of public authorities. Previously the expenditure on goods in connection with the health services was treated as a transfer payment . . .[*NIE*, 1962, p. 33].

If the five educational and health headings listed above are subtracted from "other transfer income" the remainder is an accurate measure of what may be called "income maintenance payments", that is transfers of type (*b*) and (*c*) of the ILO definition of social security payments quoted above. The only omission of any consequence is the element of income maintenance involved in some agricultural price subsidies—a topic requiring research in its own right.

The interrelationships of the various proposed measures of transfer income may be illustrated for 1970:

2. The Irish entry under "current transfers to households and private non-profit institutions" in UN and OECD publications is simply Item 70 from *NIE*. The points raised in the text must therefore be borne in mind in connection with Tables 1 and 2 in O'Hagan-O'Higgins and Table 2 in Doherty and O'Neill [1]. Kennedy, however, used *NIE* Table A23 in her work, and thus avoided the confusion caused by the use of Item 70.

"Income Maintenance Payments" (Item 70 less current transfers to health, education)	*Geary's "Social Security Payments" (Item 70)*	*"Income Maintenance Payments" plus total current expenditures on health and education (The relevant current items in Table A23)*
	£m	
118·96	149·07	258·90
	Per cent of National Income	
9·0	11·3	19·6

From the viewpoint of studying the economic correlates of transfer payments, there are good reasons for excluding health and educational expenditures, whose determinants warrant a separate, large-scale research project. Moreover, if, as Geary suggests, our interest lies in the "redistributive" aspect of the payments, then this is a further reason for excluding health and educational outlays, whose effects on the income distribution are by no means unequivocal. Expenditure on income maintenance is more clearly redistributive in nature: by definition, in the case of social welfare schemes, and social insurance schemes at least achieve some redistribution within the insured class and for individuals over the course of their own lifetime.[3]

Unfortunately, details of "other transfer income" are not published before 1953, and it proved impossible to derive them from the Budgetary statements, so that the present study has had to be limited to the period 1953–71.

Specification of a Model

Geary's investigations began from a regression of the share of Irish personal income represented by his definition of social security payments (Y) on real personal income per head of population (X). He does not present the results of this test, but characterises it a "failure" due to the persistence of significant non-randomness in the residuals of the estimated equations. This evidence of mis-specification did not lead him to explore the possible shortcomings of the model he was using. Instead, the results of some experimentation with regression of both X and Y on an orthogonal polynomial are presented. When, however, Geary

3. These schemes (e.g. Unemployment Benefit, Contributory Pensions, Redundancy Payments, etc.) are not financed on a strictly actuarial basis. The Government generally contributes about one-third of the sum disbursed each year, employees one-third and employers one-third. The employee and employer contributions are included under "wages and salaries" and under "taxes on personal income" in the national income accounts, and are counted in "other transfer income". The Government contribution is financed from general taxation.

returns to the question posed in the title of his Note, he relies on the fact that the ratio X/Y was roughly the same at the beginning and end of his sample period (close to its mean value of 28) for projection purposes. In other words, Geary settles for a relationship of the form

$$Y = 1/aX, \text{ where } a = \bar{X}/\bar{Y}.$$

The use of any econometric relationship for projection purposes is associated with larger standard errors of forecasting the further the relationship is projected beyond the mean values of the variables in the sample period. Geary's final statement on the Irish performance in the area of social security payments is based on a projected value of Y obtained from an X value of £896, but the relationship above was estimated from a range of X values between £143 and £311.[4] When viewed in the light of these considerations, Geary seems unjustified in dismissing O'Hagan and O'Higgins's objections to the projection as "anti-econometric" [3, p. 123].

In searching for a more satisfactory specification of the influences on current transfer payments, inspection of Geary's chart suggests that the share of income devoted to these items lay well above its long-run trend during the prolonged depression of the late 1950s. This is hardly surprising: many of the items included in any measure of social security payments are highly sensitive to business cycle conditions. Geary's original hypothesis appeared to refer to the association between rising living standards and the ability of a population to afford (or its willingness to support) higher level of transfer payments. This hypothesis is about the *rates* (of income maintenance, etc.) payable. The measure of transfer payments used in the Note, however, is the total *sums* disbursed as a proportion of Personal Income. Now these sums can vary for reasons other than a change in the rates payable. In a recession, more unemployed men and women, for example, claim benefits and assistance and, unless the rates payable are reduced, the sums disbursed must rise. If income is falling, the proportion of income going in such transfers will *a fortiori* rise. This "non-discretionary" feature of social security payments is familiar to economists who have studied the "built-in" or "automatic" stabilisers produced by income-related tax and transfer regimes.[5] We in Ireland would also suspect that more or less autonomous shifts in the age-structure of the population can exert an important influence on the amount disbursed in social security payments, even if the rates payable remain unaltered.

These considerations lead to the specification of the following model:

4. The X value used for projection purposes was national and not personal income: moreover, the X values used to estimate a were in constant (1958) £, but the ratio of X values used in the projection were in current $US.

5. Mention of this phenomenon in the Irish context is made by Ryan [8, p. 260].

TABLE 1: *Data used in Regression Analysis*

	Income maintenance payments per head of pop. (constant 1958 prices) £	*Income maintenance payments per head of dependent pop. (constant 1958 prices)* £	*National Income per head of pop. (constant 1958 prices)* £	*Income maintenance payments as Percentage National Income per cent*	*Non-agricultural unemployment rate per cent*	*Dependency ratio (pop. minus Employed LF divided by Employed LF)*
	M/P	*M/D*	*Y/P*	*M/Y*	*U*	*D/P-D*
1953	10·82	17·89	169·9	6·37	9·6	1·53
54	10·81	17·88	171·0	6·32	8·1	1·53
55	11·12	18·31	176·9	6·29	6·8	1·55
56	11·56	18·89	172·8	6·69	7·7	1·58
57	12·17	19·49	171·8	7·08	9·2	1·66
58	11·67	18·66	169·6	6·88	8·6	1·67
59	11·77	18·76	180·1	6·54	8·0	1·68
60	12·18	19·41	192·8	6·32	6·7	1·68
61	13·24	21·13	205·4	6·45	5·7	1·68
62	13·43	21·47	211·9	6·34	5·7	1·67
63	14·81	23·65	217·0	6·82	6·1	1·67
64	15·50	24·76	230·4	6·73	5·7	1·67
65	16·34	25·84	232·8	6·98	5·6	1·69
66	17·72	28·11	233·8	7·58	6·1	1·71
67	18·59	29·36	246·5	7·54	6·7	1·73
68	20·07	31·69	266·1	7·54	6·7	1·73
69	22·39	35·39	274·6	8·15	6·4	1·72
70	25·17	39·46	279·8	9·00	7·2	1·76
71	27·20	42·12	289·3	9·40	7·2	1·82
Annual Average Growth Rate	5·2 per cent	4·9 per cent	3·0 per cent	2·2 per cent	—	—

Definitions and data sources:

M = "Other transfer income" less "university, secondary, other education", "scholarships and prizes", and "grant to Hospitals' Trust Fund", deflated by implicit price index of personal expenditure on consumers' goods and services. *Sources: NIE*, 1962 for years 1953–57; *NIE*, 1969, for years 1958–64; *NIE*, 1971 for years 1965–71. "Other transfer income" is Item 70 (Table A7) in *NIE* 1971, details of its components are in Table A19. Implicit price index is Item 51 divided by Item 59 (Tables A5, A6).

Y = National Income before adjustment for stock appreciation, (*NIE*, 1971, Item 67, Tables A7, B7), deflated by the implicit price index used with M above.

U = Non-agricultural unemployment rate: percentage of insured persons on Live Register, excluding agriculture, fishing and private domestic service. Annual average. *Trend of Employment and Unemployment*, 1971, Table 17, and corresponding Table in earlier years.

P = Total population (mid-April estimate), from *Annual Report on. Vital Statistics* and Vol. 1 of *Census of Population*, 1971.

D = "Dependent population", that is, total population less the employed labour force: updated from Kennedy and Dowling [5].

Let M = income maintenance payments in constant prices
Y = national income in constant prices[6]
P = total population
D = "dependent" population, i.e. those not in the employed labour force
U = the non-agricultural unemployment rate.

A simple relationship between income maintenance payments, income, and the unemployment and dependency rate may be posited:

$$\ln M/P = \ln a + b \ln Y/P + c \ln U + d \ln (D/P - D) \qquad (I)$$

The income variable is included either as a measure of "taxable capacity" or of the standard of living to which the income of those maintained by transfer payments should be related. The non-agricultural unemployment rate is taken as the most satisfactory available measure of the business cycle as it affects income maintenance payments. The last variable is the "employment dependency ratio" defined by Kennedy and Dowling [5], which measures movements in the age and employment structure of the population. All coefficients are expected to be positive.

Considerable interest attaches to the coefficient b. If $b > 1$, the share of M in Y will tend to rise with the growth of income. However, a disadvantage of this functional form is that it constrains the proportionate increase in M resulting from a change in Y to a constant at all levels of Y. Thus, there is no "satiety" level of M, and $b > 1$ implies that eventually all of income would be devoted to M.

6. Geary used personal income: O'Hagan and O'Higgins suggest that gross national product is the appropriate measure. If the underlying hypothesis is a notion of taxable capacity, then national income seems the appropriate concept. Moreover, even if transfer payments are regarded as an item of expenditure on the part of the "benefactors", national rather than personal income still seems more relevant since the Government is the "benefactor". This is also the econometric objection to the use of personal income that it includes the dependent variable ("other transfers"), which is not part of national income. Personal income double counts certain items such as social insurance contributions (see footnote 1 above), and hence personal *disposable* income is to be preferred.

For this reason, great circumspection is required when using an equation like (1) for extra-sample projections.

Geary specified the *ratio* of other transfer income to (personal) income as the dependent variable. The equivalent specification for the present study would be:

$$ln\ M/Y = ln\ a' + b'\ ln\ Y/P + c'\ ln\ U + d^1\ ln\ (D/P - D) \qquad \text{(II)}$$

In this formulation, $b' = b-1$, where b is from equation (1). One advantage of working with M/Y as dependent variable is that it may reduce the problem that could arise from the dominance of a common trend in M/P and Y/P. Using Specification (II) as opposed to (I) will affect the $\bar{R}^2$ obtained, but will have no effect on the parameter estimates.

The question of the contemporaneous and lagged effects of income on the dependent variable must be considered. Logically, it seems unlikely that income maintenance payments adjust instantaneously to current income levels. It is frequently suggested that one of the injustices of an inflationary period is that those living on transfer payments are always somewhat late in benefiting from the growth of money income in the community as a whole. The nature of the lagged response is not, however, easily specified *a priori*, nor is it readily established empirically with a set of time series consisting of 19 annual observations. Unfortunately, the familiar Koyck transformation of the simple distributed lag function is not very useful when the specification involves a lagged response for one of the regressors (income) but more or less instantaneous responses for the others (unemployment, dependency). In the present situation, therefore, I have tried to estimate the influence of income lagged one or two years, either in addition, or as an alternative, to current income.

The Empirical Results

The data used, and detailed notes on definitions and sources are set out in Table 1. In addition to the dependent variables, M/P and M/Y, the values of M/D (income maintenance payments per dependant) are recorded. It may be seen that whereas real national income per person grew at 3·0 per cent, income maintenance payments per person grew at 5·2 per cent, and income maintenance payments per dependant at 4·9 per cent. The ratio of M/Y grew at an average rate of 2·2 per cent.[7]

In testing the hypotheses embodied in specifications (I) and (II) above, we are interested in the magnitude and significance of individual coefficients as well as the overall goodness of fit of the estimated equations. The most appropriate combination of current and lagged values of income is an open question, to be decided on statistical criteria.

7. Geary's measure of the ratio of social security payments to income grew at an annual average rate of 5·75 per cent. Part of this growth was a reflection of the upsurge in education expenditure related to the new post-primary scheme introduced in the late 1960s.

Table 2 sets out the estimated (ordinary least squares) equations. All variables have been entered as natural logarithms. The values of $\bar{R}^2$ obtained are uniformly very high (>·98 for specification (I), >·88 for specification (II)). Attention is directed towards the significance levels of the variables' coefficients, and to the absence of evidence of mis-specification (as shown by the Durbin-Watson and Geary tau statistics). The highly significant, positive coefficients of U and $D/P—D$ in most of the equations support my hypothesis concerning the importance of "automatic" counter-cyclical effects through the level of transfer payments. The importance of current and lagged values of income supports the hypothesis that economic growth is a major factor in the long-run growth of income-maintenance payments. The most important income variable appears to be income lagged one year, with current income contributing some additional explanatory power to the equation, but income lagged two years adding nothing. Thus, equation 2 may be accepted as the "best" result.

The lag structure implied is, on reflection, very reasonable. The income variable is designed to account for "discretionary" changes in income maintenance payments. These are generally announced in an April Budget, for implementation in October. Even if current income levels influence the changes announced in the Budget, this would exert only a minor influence on the year's outlays. The fact that income lagged one year performs so well is evidence of a very short lag between increases in national income and the decision to pass these on to recipients of transfer payments.

The long-run "income elasticity" for transfer payments derived from equation 2 is 1·6, of which 29 per cent occurs in the current year and 71 per cent in the following year. This evidence of a high "income elasticity" for income maintenance payments suggests that as the nation has become more prosperous, the lot of those supported by transfer payments has improved at a faster rate than the overall growth rate of income.

An econometric point may be made. It might be argued that the use of $ln\ Y/P$, $ln\,(Y/P)—1$ is merely a method of fitting a time trend to the dependent variable. It must be conceded that any empirical work of this type is generally not able to discriminate very clearly between the hypothesis that the growth in income is responsible for the long-run trend in the dependent variable and the alternative hypothesis that the dependent variable has "drifted' up over time in response to general forces such as, in the present example, a growth in social "awareness". However, when a trend variable (implying a constant growth rate) was substituted for the two income variables in equation 2, the result was a definite deterioration on two scores: the value of D-W fell to 1·08, of Geary tau to 5, and the coefficient of $D/P—D$ became negative. The evidence therefore favours income, as opposed to trend, as explaining the growth of transfer payments.

These results may be used to illustrate the importance of one component of the "automatic" stabilisers in the Irish economy. Chart 1 sets out the growth in income maintenance payments as calculated from equation (2) of Table 2 using (*a*) the actual values of all the regressors and (*b*) the actual values of Y/P, $(Y/P)—1$

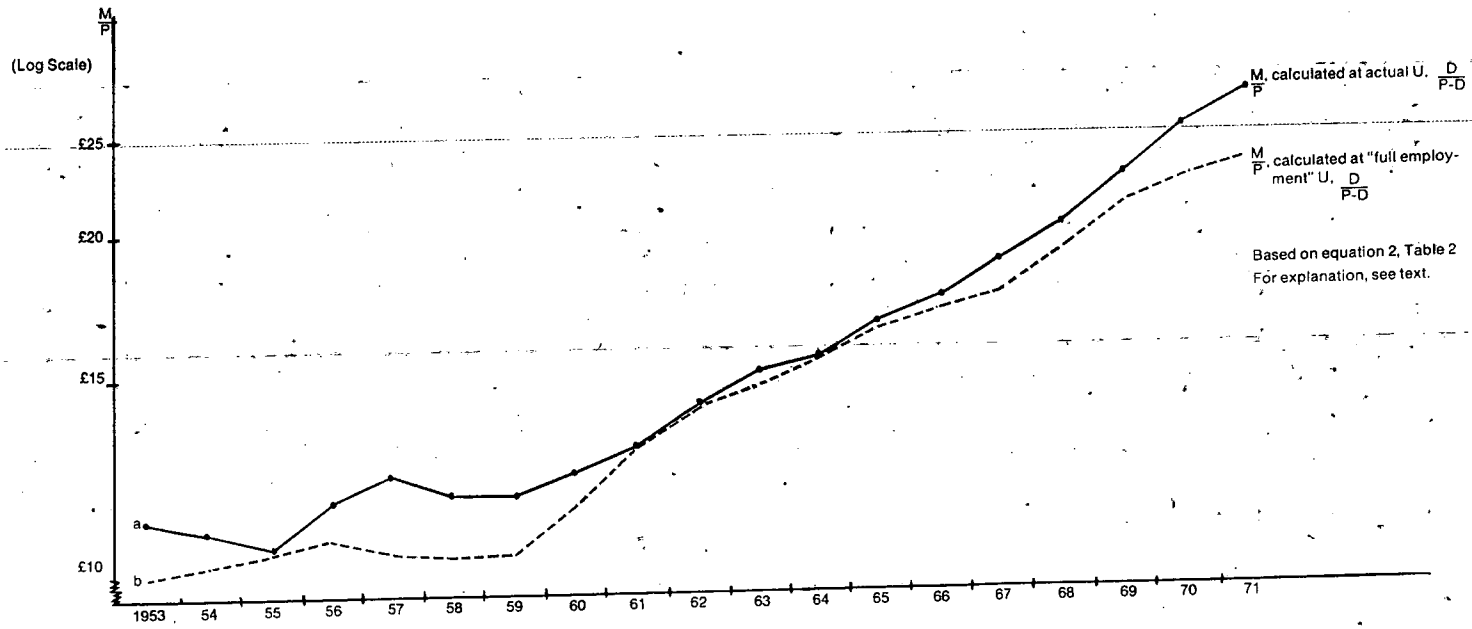
M/P
(Log Scale)
£25
£20
£15
£10
a
b
1953
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
M, calculated at actual U. D/P-D
M/P, calculated at "full employment" U. D/P-D
Based on equation 2, Table 2
For explanation, see text.

Chart 1.

TABLE 2: *Estimated Regression Coefficients (with t-ratios in parenthesis) for Equations (1) and (2) of Text. All variables in Natural Logarithms. Annual Data, 1953–71*

Equation No.	Intercept	Regressors					R^2		DW	Geary Tau
		ln (Y/P)	ln (Y/P)–1	ln (Y/P)–2	ln U	ln (D/P–D)	For Dependent Variable			
							ln M/P	ln M/Y		
1	—6·86	1·59 (16·09)			0·40 (5·67)	0·59 (1·61)*a*	0·98	0·88	1·32	9
2	—6·85	0·47 (1·95)	1·14 (4·87)		0·34 (7·41)	0·66 (2·84)	0·99	0·95	1·82	11
3	—6·83	0·48 (1·97)	0·90 (2·34)	0·24 (0·81)*a*	0·31 (5·29)	0·62 (2·58)	0·99	0·95	1·54	7
4	—6·68		1·39 (4·36)	0·20 (0·62)*a*	0·28 (4·53)	0·75 (2·94)	0·99	0·94	1·78	7

a=not significant, 10 per cent level.

Note : The estimated coefficients of (Y/P)–1, (Y/P)–2, U and (D/P–D) are identical regardless of whether M/P or M/Y is specified as the dependent variable. When M/Y is the dependent variable, the coefficient of Y/P equals the coefficient obtained with M/P as dependent *minus* unity. See text. (Equation 4 presents the coefficients obtained with M/P as dependent.)

but 1964 values of U and $D/P-D$. The years 1961, 1962 and 1964 represent "full employment" in the sense that the weighted sum of the unemployment and dependency variables is at a minimum (using the regression coefficients as weights). Line (*b*) on Chart 1 may be taken as a measure of the growth in "discretionary" payments, and the vertical difference between the two lines as a measure of the automatic stabilisation effect of income maintenance payments. It may be seen that this difference reached a maximum in 1957 and was very small in the years 1962–65, but grew larger again towards the end of the period. When the "full-employment" values of M/Y are calculated by the same procedure, a value of 6·1 per cent is for 1957, compared with the actual value of 7·1 per cent. Thus the impact of automatic stabilisers through income maintenance payments amounted to 1 per cent of national income in 1957.

Conclusions

In this article I have not attempted directly to answer Geary's original question: "Are Ireland's Social Security Payments Too Small?" It has been stressed that there are compelling reasons for not attempting to answer this question as posed. First, a valid international comparison of social security payments would require very intensive investigation of the data in order to insure comparability. This cannot be done on the basis of UN or OECD tabulations, where for example the Irish entry under "other transfer income" is misleading due to inclusion of post-primary teachers' salaries.

Secondly, projections of the Irish level of social security payments based on an econometric relationship estimated from post-war data are not very meaningful as a guide to the probable level of these payments by the time our income has reached the present EEC average.

Thirdly, the question of the adequacy or otherwise of transfer payments is best considered by comparing for example rates of unemployment benefits with average industrial earnings, rather than by looking at the movement of total payments in relation to national income.[8]

The positive findings emerging from the present study are:

1. The growth in income maintenance payments in Ireland over the period 1953–71 has been very closely associated with the growth in real national income. The evidence suggests that for every 10 per cent growth in real income, income maintenance payments have grown by about 16 per cent. Furthermore, the impact of rising income on the level of income maintenance payments appears to be felt with at most a one-year lag. Thus, the poorest sections of Irish society have benefited more than proportionately from the accelerated economic growth of the 1960s. This conclusion is consistent with the main theme of Geary's Note.

8. In another study [9], I have calculated that the unemployment benefit payable to a married man with four children has risen from 40 per cent of average male industrial earnings in 1954 to 56 per cent in 1973. Entitlement to Benefits (as opposed to Assistance) has been extended from six months to a year.

It must, however, be borne in mind that as national income grows the level of income considered necessary to maintain a family above the "poverty line" also tends to rise. One recent US study found that for every 10 per cent growth in income, the public's estimate of the poverty line income grows by about 6 per cent [6]. This "income elasticity of the poverty line" is lower than the present study's estimate of the "income elasticity of income maintenance payments", and hence if the former is approximately valid in Ireland, it can be concluded that economic growth has reduced the incidence of poverty in this country.

2. The amount of money disbursed in income maintenance payments varies counter-cyclically, due to fluctuations in the level of unemployment and dependency. This results in an automatic stabilisation effect that has been quite important in recession years, amounting for example to one per cent of national income in 1957.

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