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**PAYROLL TAX INCIDENCE, THE DIRECT  
TAX BURDEN AND THE RATE OF RETURN  
ON STATE PENSION CONTRIBUTIONS  
IN IRELAND**

GERARD HUGHES

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## CONTENTS

	<i>Page</i>
<i>General Summary</i>	1
<i>Introduction</i>	7
<i>Chapter</i>	
1     Growth and Financing of Social Insurance in Ireland since 1952 and Expenditure on the Main Social Security Programmes	9
2     Estimates of Payroll Tax Incidence in Ireland	27
3     Effects of Social Insurance Contributions on Effective Tax Rates and the Distribution of Income for PAYE Taxpayers	49
4     Determinants of Old Age and Other Social Welfare Benefits	76
5     Development of State Pension Schemes and Rates of Return on Social Insurance Pension Contributions	94
6     Summary and Conclusions	121
<i>References</i>	127
<i>Appendix Tables</i>	134

## LIST OF TABLES

<i>Table</i>	<i>Page</i>
1.1 Ordinary social insurance contribution rates per week for men and women and employers and employees, and proportion of total contribution paid by the employer, 1953-1982	10
1.2 Total social insurance contribution as a percentage of average weekly earnings of adult and non-adult male and female workers in Transportable Goods Industries, 1953-1982	12
1.3 Number of persons insured for some or all benefits; actual and per cent of total labour force, 1953-1980	16
1.4 Social insurance income and expenditure, year ended 31 March, 1953-1982	18

1.5	Distribution of social insurance income and expenditure, year ended 31 March, 1953-1982	19
1.6	Social assistance income and expenditure, year ended 31 March, 1953-1982	21
1.7	Distribution of social assistance expenditure, year ended 31 March, 1953-1982	23
1.8	Ratio of insurance to assistance expenditure on unemployment, survivors' pensions, old age pensions, and total and percentage of total social security income provided out of general taxation, year ended March, 1953-1982	24
1.9	Social security contributions by employees and employers in some OECD countries in 1981 as a percentage of total taxation	26
2.1	Wages, prices and taxes in Ireland, 1953-80, Sweden and the United States, 1950-78	38
2.2	Unconstrained and constrained OLS estimates of payroll tax incidence in Transportable Goods Industries in Ireland, 1953(3)-1980(4). Dependent variable is $\ln$ AHEADJ	41
2.3	Unconstrained and constrained 2SLS estimates of payroll tax incidence in Transportable Goods Industries in Ireland, 1954(2)-1980(4). Dependent variable is $\ln$ AHEADJ	43
3.1	Average wage per employee and poverty lines for various family sizes: selected years 1953-1980	50
3.2	Amount and effective rate of income and payroll tax on specimen incomes, 1953-54	51
3.3	Amount of effective rates of income and payroll tax on specimen incomes, 1963-64	55
3.4	Amount and effective rates of income and payroll tax on specimen incomes, 1973-74	57
3.5	Amount and effective rates of income and payroll tax on specimen incomes in 1980-81	62
3.6	Reconciliation of numbers assessed for PAYE and standard rate PRSI contributors in 1979-80	67
3.7	Comparison of estimated and actual social insurance revenue, 1979-80	68
3.8	Actual income tax and estimated payroll tax borne by each income class insurable at standard PRSI class rate in 1979-80	69



3.9	Amount and effective rates of income and payroll tax on specimen incomes, 1979-80	70
3.10	Estimate of revenue from PRSI at standard rate where lower earnings are partially exempt and upper earnings limit is abolished, 1979-80	74
3.11	Estimate of revenue from PRSI in 1979-80 under <i>Programme for Government Proposals</i>	75
4.1	Percentage increases in the unemployment and disability benefit scale rates and in average pre-tax earnings of male workers in Transportable Goods Industries, 1952-82	79
4.2	Percentage increases in old age contributory pension scale rates for a single adult and in average pre-tax earnings of male workers in Transportable Goods Industries, 1961-1982	80
4.3	Ratios and elasticities of social welfare benefits with respect to pre- and post-tax average industrial earnings, 1952-81	86
4.4	Equivalence scales implicit in payments of dependants of welfare recipients	90
4.5	Regression results for effect of political influence on social welfare payments, 1952-1981	92
5.1	Number of persons and qualified dependants in receipt of contributory and non-contributory old-age pensions on 31 March, 1952-1980	101
5.2	Number of persons and qualified dependants in receipt of retirement pensions on 31 March, 1971-1980	102
5.3	Pensioners and adult dependants as a percentage of those of pension age, 1952-1979	102
5.4	Compounded growth rate per annum over the period 1961-1982 of £1 invested 1 January 1961 (with dividends re-invested)	104
5.5	Contributory and retirement pension element in weekly social insurance contributions, 1961-1982 (£ or %)	105
5.6	Annual contributions for contributory and retirement pensions, 1961-1982 (£)	106
5.7	Estimated average social insurance tax-benefit ratios under various assumptions for persons retiring in 1982 (per cent)	108

5.8	Estimated social insurance tax benefit ratios under various assumptions for persons retiring in 2006 (per cent)	111
5.9	Approximate real rates of return on total social insurance contributions for persons with different earnings retiring in 2006 (per cent)	113
5.10	Approximate real rates of return on social insurance contributions attributable to employees with different earnings retiring in 2006 (per cent)	114

### LIST OF CHARTS

<i>Figure</i>		<i>Page</i>
1.1	Ordinary rate social insurance contributions as a percentage of average weekly earnings in Transportable Goods Industries on the date at which contribution rates were changed, classified by age and sex, 1953-82	13
3.1	Income and payroll tax rates for different household sizes, 1953-54	52
3.2	Combined income and payroll tax rates for different household sizes, 1953-54	53
3.3	Income and payroll tax rates for different family sizes, 1963-64	56
3.4	Income and payroll tax rates for different household sizes, 1973-74	58
3.5	Combined income and payroll tax rates for different household sizes, 1963-64	60
3.6	Combined income and payroll tax rates for different household sizes; 1973-74	61
3.7	Income and payroll tax rates for different household sizes, 1980-81	64
3.8	Combined income and payroll tax rates for different household sizes, 1980-81	66
3.9	Hypothetical income and payroll tax rates for different household sizes and actual average income tax rates, 1979-80	71

3.10	Combined actual and hypothetical income and payroll tax rates for different household sizes, 1979-80	73
4.1	Cumulative percentage increases since 1952 in single person's unemployment and disability benefit, average male industrial earnings before tax, and the consumer price index	81
4.2	Cumulative percentage increases since 1961 in single adult's old age contributory pension, average male industrial earnings before tax, and the consumer price index	82
4.3	Single person's unemployment benefit as a proportion of average male industrial earnings before and after tax, 1952-81	89

#### APPENDIX TABLES

<i>Figure</i>		<i>Page</i>
A.1	Basic data for payroll tax shifting model for Irish Transportable Goods Industries, 1953(1)-1980(4)	134
A.2.	Weekly rates of unemployment and disability benefit for a single adult, a married couple, and a family of four, 1952-82	137
A.3	Weekly rate of unemployment assistance (urban areas) for a single adult, a married couple and a family of four, 1952-1982	138
A.4	Weekly rates of old age contributory pension for a single adult, a married couple, and a family of four (basic rate for pensioner under 80 with adult dependant under pension age) 1952-1982	139
A.5	Weekly rates of old age non-contributory pension for a single adult, a married couple and a family of four (basic rate for pensioner under 80), 1952-1982	140
A.6	Pre- and post-tax male average industrial earnings (£) on CIP Survey data preceding date of increase in social welfare benefits, 1951-1981	141
A.7	Ratios and elasticities of social welfare benefits with respect to pre- and post-tax average industrial earnings, 1952-1982	142
A.8	Comparison of $R^2$ for regression equations including and excluding data for 1982	143

### *General Summary*

The main objectives of this study are to estimate the incidence of the payroll tax in Ireland, to analyse the effective burden of direct taxation when the incidence of the payroll tax is taken into account, to consider if the benefits paid by the State's main social welfare programmes are linked in any way to changes in living standards, and to bring together the cost and benefit sides of part of the social insurance system by looking at the value which insured workers with different incomes get for the contributions which they and their employers make to the State old age contributory and retirement pension plans.

Since the unification of the State's social insurance programmes in the early 1950s the total social insurance contribution has grown from around 4 per cent of the average industrial wage to nearly 20 per cent in the early 1980s and the proportion payable by the employer has risen from a half to two-thirds. The insured labour force has grown from around 725,000 to over 1,000,000 while the proportion of the labour force covered for some social insurance benefits has risen from under 60 per cent to over 80 per cent. The revenue provided by employer and employee contributions, £4.5 million in 1953 and £537 million in 1982, has never been enough to finance all of the income maintenance payments which are made to insured workers and the deficits have been met by the State out of general revenue. In 1953 income provided by the State amounted to £2.2 million or 30 per cent of the total while in 1982 it amounted to £207 million or 28 per cent of the total. Since Ireland joined the EEC successive governments have pursued a policy of making social insurance more self-financing by reducing the State's share and increasing the employers' share.

If the cost of social insurance can be reallocated between insured workers, their employers and the community at large by legislative decree the effectiveness of the payroll tax as an instrument of economic policy would be considerably enhanced and it is important for this and other reasons to investigate where the incidence of the tax lies. The incidence of the tax is examined by means of a standard wage-price regression model using quarterly data for the manufacturing sector for the period 1953(1)-1980(4).

Both OLS and 2SLS estimators are used and it is found that there was very little difference in the results for the preferred regression equation. The coefficient of the employer payroll tax variable indicates that an increase of one per cent in the payroll tax is associated with a decrease of approximately one half of a per cent in the money wage rate while the coefficient

of the employee tax variable indicates that a one per cent increase in the proportion of earnings which is taken in income or payroll tax would push up the nominal wage rate by one half of one per cent. Employers and employees are therefore able to partially shift their components of the payroll tax and the legal and effective incidence of this tax are not the same.

Employer organisations have argued that the effect of the payroll tax on job creation has become increasingly disadvantageous as the legal burden of the tax on employers has increased over the years. The estimate of the proportion of the employer payroll tax which is shifted is used to evaluate the effect of the tax on employment in manufacturing. It appears that a reduction in the employer's PRSI contribution to 2 per cent in 1979 would have increased employment in the industrial sector by approximately 1,500 or by considerably less than the increase of 2,700 which the Labour Intensive Group Committee of the Confederation of Irish Industry implies would occur in *labour intensive industries alone*. The employers arguments about the magnitude of the effect of the payroll tax on employment cannot, therefore, be accepted unless further evidence to support their case is forthcoming. It should also be noted that the employment elasticity of a payroll tax cut in Ireland appears to be very low and that it would seem to be far more costly to use payroll tax cuts as a method of job creation than the policy of direct grant aid which has been used so successfully in the past.

The results of the tax incidence investigation are used to provide an analysis of effective direct tax rates (i.e., income tax plus the social insurance contribution paid by the employee plus that part of the employer social insurance contribution passed back to the employee) on specimen incomes in 1953/54, 1963/64, 1973/74 and 1980/81 and on actual incomes in 1979/80. The progressivity of the income tax in the lower income ranges was offset by the payroll tax because of the absence of a lower earnings limit for social insurance contributions and the use of flat-rate rather than earnings related contributions until the mid-1970s. The adverse effects of the payroll tax on direct tax rates of those on lower incomes worsened over the years as the cost of financing social insurance increased. In the last year in which flat-rate charges alone were used, 1973/74, direct tax rates were regressive for most taxpayers because of the considerable excess of the payroll tax rate over the income tax rate. Low income earners got some relief from the excessive burden of the payroll tax in the following year when the flat-rate contribution was supplemented by an earnings related contribution up to a specified income level. The regressive effect of the payroll tax was eliminated in 1979/80 when the combined flat-rate and pay-related social insurance contributions were abolished and replaced by a fully pay-related social insurance (PRSI) system. Direct tax rates became pro-

portional over the lower income ranges and progressive thereafter according to the specimen income data for 1980/81. This is confirmed by the Revenue Commissioners actual income distribution data for 1979/80. In addition, the data shows that the payroll tax still imposed a considerable burden on low income taxpayers. One-sixth of all PAYE taxpayers were exempt from income tax in 1979/80 because they earned less than the tax exemption limit yet they had to bear a payroll tax rate of 8.3 per cent on their incomes because of the lack of a lower earnings limit for payment of the tax. The close correspondence between income tax exemption limits and poverty lines for different household sizes suggests that the payroll tax still hits the poor the hardest while virtually sparing the rich.

Proposals for reform of social insurance financing made by the Commission on Taxation and the coalition government of Fine Gael and Labour in their *Programme for Government* are examined and it is shown that there would be revenue shortfalls under both of them. It is suggested that one way in which the burden of the payroll tax on the poor could be considerably lightened and an element of progressivity introduced into the tax would be to abolish the upper earnings limit and to exempt those who are already exempt from income tax except for a token payment to maintain entitlement to social insurance benefits. Costings of this suggestion indicate that it would have been possible to raise the same payroll tax revenue as was done in 1979/80 while reducing the standard rate contribution by over one and a half per cent.

The old age contributory and retirement pension schemes now account for a larger proportion of social insurance expenditure than any of the other main insurance programmes and an analysis of some economic aspects of these schemes is overdue as they have been relatively neglected by economists in the past, unlike other components of the social insurance system such as the unemployment and disability benefit schemes. In order to undertake an analysis of the value for money which insured workers get from the contributory pension schemes it is necessary to establish if there is a link between the pension benefits and general living standards. As the benefits paid by different social welfare programmes are interrelated the analysis of the link between benefits and living standards is extended to cover payments to the unemployed and the sick. Investigation of the relationship between social welfare benefits, wages and prices during the post-war period suggests that successive governments have implicitly adopted an indexation formula which links these benefits with changes in average gross industrial earnings. This method of implicit indexation has had two drawbacks in the post-war period. The first is that short-term social welfare benefits have risen relative to net wages as they are either not liable to tax or below the level of tax free

allowances and this has caused unintended work disincentive effects for some recipients of insurance benefits. The second is that the method of indexation does not take account of demographic and other changes which reduce the number of social insurance contributors per beneficiary.

It is recommended that the authorities should consider indexing benefits to take-home pay to ensure that the benefits of increased prosperity are equitably distributed among all sectors of the insured population. An advantage of doing so would be that there might then be no need to tax short-term social welfare benefits to deal with the work disincentive effects of high replacement ratios. It is also suggested that when demographic or other changes occur which increase the cost of social insurance, consideration should be given to adjusting insurance benefits as well as contributions to ensure that the burden is shared between the working and non-working members of the insured population rather than being borne by the working population alone.

The existence of a relationship between social insurance benefits and average industrial earnings permits a rate of return analysis of total social insurance pension contributions and of the component attributable to employees alone to be made. A tax-benefit model encompassing the main features of the contributory old age and retirement pension schemes is used to compare the cost of State pensions to people retiring in 1982 who had entered the scheme at its inception in 1961 with the cost to those who were blanketted-in when the income eligibility limit was abolished in 1974. It is found that all of those retiring in 1982 would benefit far more from the State pension than it cost them and that those who were blanketted-in would benefit considerably more than those who had contributed to the scheme from its beginning. An analysis of expected rates of return on the total pension contribution and on the component attributable to employees retiring in 2006, when the contributory pension scheme attains maturity, is carried out using different assumptions about the expected rate of interest, the rate of growth of earnings and ranking in the earnings distribution. It is found that all those who joined the State pension scheme in 1961 at age 20 and who will retire in 2006 at age 65 will have large positive real rates of return on the total pension contribution which will range from a low of around 4 per cent for a single man earning one and a half times the average industrial wage with an earnings growth rate of one per cent to a high of around 11 per cent for a married man whose earnings are half the industrial average and whose earnings growth rate is assumed to be 3 per cent per annum. The corresponding figures for the pension contributions attributable to employees are 6 per cent and 13 per cent, respectively. Given the low real rates of return on stocks and bonds in Ireland in the last two decades the

average contributor to the State pension schemes would find it extremely difficult to get a rate of return approaching the yield on State pension contributions and it is concluded that if the structure of the scheme remains unchanged it will give very good value for money to insured workers retiring in 2006.

The size of the internal rate of return for the average insured worker retiring in 2006 does, however, raise questions about the cost of maintaining the current relationships between social insurance pension contributions, benefits and average industrial earnings in the future. The cost implications of maintaining the current relationships until 1991 are explored using projections of the number of pensioners made for the NESC by Courtney and McCashin (1983) and the effects on costs of variations in their dependency assumptions, in contributory pension age, and in the rate of growth of earnings are also investigated. It appears that if earnings grow at 2 per cent per annum, the contributory pension age is reduced to 65, and dependency ratios increase as hypothesised in Chapter 5, flat-rate contributory and retirement pension costs would rise by nearly 85 per cent in real terms over the next decade. This cost increase would have to be met by a 50 per cent increase in the proportion of the wage bill which would be used to finance State pensions in 1991. In view of the low level of social security taxes in Ireland relative to other EEC countries it is argued that cost increases of this magnitude would not impose an unsustainable burden on the working population. It is important, however, that workers and employers are prepared for such increases and it is argued that a very good case can be made on the basis of the value of the services which industry gets from the State's retirement income programmes.



## *Introduction*

In common with developments in other Western countries the general acceptance which the social insurance system commands in Ireland has begun to weaken in recent years under the strains imposed by recession, increasing cost, and demographic changes. The most dramatic manifestation of Irish workers' discontent with the system occurred in 1982 after social insurance contributions were increased from 14.8 to 19.1 per cent. The tax revolt which this sparked off eventually forced the Government to introduce a special PRSI tax allowance for ordinary rate contributors to offset the rise in the contribution rate to some extent. The dissatisfaction which the working population feels with the social insurance system embraces such questions as the incidence of social insurance contributions and of the benefits which they finance, and the future cost of maintaining the present system. Very little research has been done on these questions in Ireland, possibly because of the data deficiencies concerning social policy which have been documented by the NESC (1983, Appendix 1, Section 4), but this paper will attempt to answer some of them by utilising models which have been successfully applied to social insurance systems in other countries.

In public discussion of social insurance programmes their cost is often presented as a burden without proper consideration of the benefits which they provide. We will, therefore, try to balance our discussion of how much the social insurance system costs and who pays for it by considering some of the benefits which are provided and we will also try to bring the cost and benefit sides together by looking at rates of return on public pension contributions. The order of discussion is largely determined by the dependence of the benefit analysis on the cost calculations. Hence, we will outline in Chapter 1 how the social insurance system has grown over the last thirty years, how it has been financed, and how expenditure on the main social welfare programmes has changed. The second chapter will deal with the incidence of the payroll tax in Ireland in the context of a standard wage-price model and will present estimates of the degree to which the tax is shifted by those who are legally obliged to pay it. The effects of social insurance contributions on effective tax rates for selected years between 1953/54 and 1980/81 will be discussed in Chapter 3 and some suggestions will be made for reform of social insurance financing which could alleviate the burden on low income earners. The fourth chapter will examine the benefit structures of the four biggest social welfare programmes to see if any consistent policy is used to determine the levels of benefits paid and

Chapter 5 will consider whether the benefits paid to old age contributory and retirement pensioners represent good value for money and what the future cost of maintaining these benefits might be in view of the increasing maturity of the social insurance system. The last chapter will summarise results and conclusions.

## Chapter 1

### *GROWTH AND FINANCING OF SOCIAL INSURANCE IN IRELAND SINCE 1952 AND EXPENDITURE ON THE MAIN SOCIAL SECURITY PROGRAMMES*

#### *1.1 Introduction*

This chapter will present information on the financing of social insurance in Ireland since the introduction of the unified social insurance scheme in 1952. It will also trace the growth in coverage of the scheme in the post-war period and look at trends in expenditure on the main social insurance and social assistance schemes. It will not give detailed information on the historical development of the main social security programmes as this has already been done by Farley (1964). An up-to-date guide to the modern social services is provided by Curry (1980) while Kennedy (1975) gives comparisons of social expenditure in Ireland and other countries during the period 1955-72.

#### *1.2 Social Insurance Contributions, 1953-82*

Since the Social Welfare Act, 1952 unified the State's main social insurance schemes three methods of financing the system have been used as will be seen from Table 1.1:

- (i) flat-rate contributions levied from January 1953 to April 1974;
- (ii) flat-rate and pay-related contributions levied from April 1974 to April 1979;
- (iii) pay-related contributions levied from April 1979 to date.

All three methods have been accompanied by an upward trend in the proportion of the social insurance contribution nominally payable by the employer. The contributions were split 50:50 between employer and employee for men up to May 1967 and 60:40 approximately for women up to January 1961 when the proportion payable by the employer was reduced to 55 per cent. Further reductions in the employer contribution for female employees were made between 1961 and 1967 which eventually brought the employer proportion for women into line with that for men. The policy of having the employer pay roughly the same proportion of the total insurance contribution for men and women has been maintained since 1967 when it was increased to about 57 per cent for both sexes. The employer proportion was maintained at around this level until October 1971 when it was reduced

Table 1.1: *Ordinary social insurance contribution rates per week for men and women and employers and employees, and proportion of total contribution paid by the employer, 1953-1982*

Date payment commenced	MEN					WOMEN				
	Payable by:				Percentage payable by employer	Payable by:				Percentage payable by employer
	Employer		Employee			Employer		Employee		
FR(£)	PR(%)	FR(£)	PR(%)	FR(£)	PR(%)	FR(£)	PR(%)	FR(£)	PR(%)	
5 Jan. 1953	0.12	—	0.12	—	50.0	0.10	—	0.07	—	58.8
3 Sept. 1956	0.14	—	0.14	—	50.0	0.12	—	0.08	—	60.0
2 Jan. 1961	0.23	—	0.23	—	50.0	0.21	—	0.17	—	55.3
7 Jan. 1963	0.26	—	0.26	—	50.0	0.25	—	0.21	—	54.3
6 Jan. 1964	0.30	—	0.30	—	50.0	0.28	—	0.24	—	53.8
3 Jan. 1966	0.37	—	0.37	—	50.0	0.35	—	0.31	—	53.0
31 Oct. 1966	0.37	—	0.37	—	50.0	0.35	—	0.32	—	52.2
1 May 1967	0.48	—	0.37	—	56.5	0.43	—	0.32	—	57.3
1 Jan. 1968	0.55	—	0.45	—	55.0	0.51	—	0.40	—	56.0
6 Jan. 1969	0.67	—	0.55	—	55.0	0.62	—	0.49	—	55.9
5 Jan. 1970	0.77	—	0.64	—	55.0	0.72	—	0.58	—	55.4
5 Oct. 1970	0.91	—	0.78	—	53.8	0.86	—	0.71	—	54.8
4 Oct. 1971	1.01	—	1.02	—	49.7	0.96	—	0.95	—	50.3
2 Oct. 1972	1.25	—	1.21	—	50.8	1.19	—	1.14	—	51.1
2 July 1973	1.72	—	1.36	—	55.8	1.67	—	1.29	—	56.4
1 April 1974	1.44	2.00	1.22	1.00	57.8	1.39	2.00	1.15	1.00	56.6
1 July 1974	1.84	2.00	1.42	1.00	59.1	1.79	2.00	1.35	1.00	58.6
6 Jan. 1975	1.84	2.00	1.53	1.00	57.4	1.79	2.00	1.46	1.00	57.1
7 April 1975	2.72	2.00	1.95	1.00	59.8	2.67	2.00	1.88	1.00	59.6
5 April 1976	3.89	2.00	2.60	1.00	61.6	3.84	2.00	2.53	1.00	61.0
4 April 1977	4.31	2.00	2.87	1.00	61.9	4.26	2.00	2.80	1.00	61.3
3 April 1978	5.26	2.00	3.42	1.00	61.5	5.21	2.00	3.35	1.00	61.7
6 April 1979	—	8.75	—	4.40	66.5	—	8.75	—	4.40	66.5
6 April 1980	—	9.80	—	4.50	68.5	—	9.80	—	4.50	68.5
6 April 1981	—	10.05	—	4.75	67.9	—	10.05	—	4.75	67.9
6 April 1982	—	11.61	—	7.50	60.8	—	11.61	—	7.50	60.8

Sources: *Reports of the Department of Social Welfare, 1954-1958, 1959-1962, 1963-1966, 1967-1971, 1972-1975, 1976-1978, and 1979-1980, Department of Social Welfare, Summary of Social Insurance and Social Assistance Services, April 1981 and April 1982.*

- Notes:
- (i) Pay-related contributions were chargeable on employees current gross earnings up to a ceiling of £2,500 between April 1974 and April 1979, £5,500 between April 1979 and April 1980, £7,000 between April 1980 and April 1981, £8,500 between April 1981 and April 1982, and £9,500 from April 1982. The contribution rates from April 1982 include a 1% Youth Employment Levy which continues to be payable on all earnings in excess of £9,500. Average industrial earnings were used to work out the percentage payable by the employer from April 1974 onwards.
  - (ii) The decimal currency system was introduced in February 1971. Contribution rates for preceding years were converted to decimals and rounded up to the nearest penny.
  - (iii) FR = flat-rate, PR = pay-related.

to about 50 per cent. In July 1973 and again in April 1974 when pay-related contributions were introduced it was increased back up to 57 per cent from which level it rose to about 62 per cent by April 1978 and then to 67 per cent in April 1979 when the changeover to a fully pay-related system was made. The peak in the employer proportion was reached in April 1980 when it was only 1.5 points short of 70 per cent. Since then the employer proportion has fallen to its present level of 61 per cent.

At the beginning of 1953 the ratio of the employer contribution for female employees to that for male employees was 0.83 while the corresponding ratio for the employee contribution was 0.58. The differences in the rate structure for male and female employees, seem, therefore, to have taken some account of differences in the average earnings of the sexes. Recognition of these differences was important because it spread the burden of the payroll tax more equally between the sexes than would have been possible under an undifferentiated rate structure. Less importance was always given to differentiating the employer payments for each sex than to differentiating the employee payments, so that by 1963 the employer contribution was more or less the same for male and female employees while a significant gap still existed between the amounts payable by male and female workers. This gap, however, was much narrower in 1963 than it had been in 1953 and by 1973 it had been virtually eliminated.

An important consequence of the use of flat-rate contributions to finance social insurance in Ireland and the convergence of the rate structure to similar payments for men and women was, as will be evident from Table 1.2 and Figure 1.1, that the principle of vertical equity in the tax system was violated and the extent to which the principle was departed from worsened until 1979 when a proportional rate structure replaced the existing flat-rate and pay-related structure.<sup>1</sup> At the beginning of 1953 the burden of the social insurance contribution was heaviest on young persons just entering the labour force. The total contribution for males less than 18 accounted for 11.5 per cent of earnings while for females less than 18 the corresponding figure was 9.1 per cent. By 1974, the last year for which earnings data for non-adult workers are available, the proportion of earnings by males less than 18 accounted for by the social insurance contribution was 19.2 while for females it was 22.8 per cent. Adult male workers had higher average earnings throughout the period we are concerned with than any of the other groups identified in Table 1.2 yet the proportion of their earnings accounted for by the social insurance contribution was only 3.5 per cent in 1953 and

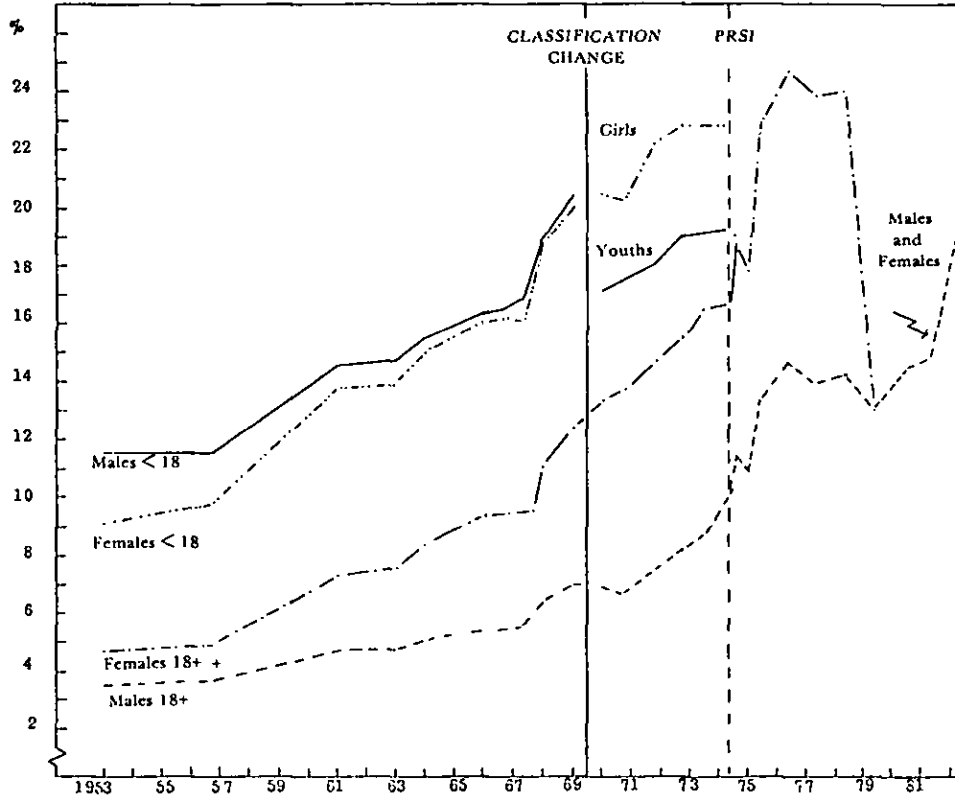
1. It is not implied that a proportional contribution guarantees vertical equity. A proportional contribution does, however, ensure greater vertical equity than a fixed-rate contribution.

Table 1.2: *Total social insurance contribution as a percentage of average weekly earnings of adult and non-adult male and female workers in Transportable Goods Industries, 1953-1982*

<i>Date payment commenced</i>	<i>Males</i>		<i>Females</i>	
	<i>Less than 18</i>	<i>18 plus</i>	<i>Less than 18</i>	<i>18 plus</i>
5 Jan. 1953	11.5	3.5	9.1	4.6
3 Sept. 1956	11.5	3.6	9.6	4.9
2 Jan. 1961	14.5	4.6	13.6	7.2
7 Jan. 1963	14.6	4.6	13.8	7.5
6 Jan. 1964	15.4	4.9	14.9	8.3
3 Jan. 1966	16.3	5.3	16.0	9.3
31 Oct. 1966	16.5	5.4	16.2	9.4
1 May 1967	16.8	5.5	16.1	9.5
1 Jan. 1968	18.8	6.3	18.7	11.1
6 Jan. 1969	20.4	6.9	19.9	12.3
5 Jan. 1970	17.1	6.8	20.5	13.3
5 Oct. 1970	17.5	6.6	20.3	13.6
4 Oct. 1971	18.0	7.5	22.2	14.6
2 Oct. 1972	18.9	7.9	22.8	15.5
2 July 1973	—	8.6	—	16.5
1 April 1974	19.2	10.2	22.8	16.6
1 July 1974	—	11.5	—	19.1
6 Jan. 1975	—	10.8	—	17.7
7 April 1975	—	13.2	—	22.8
5 April 1976	—	14.6	—	24.6
4 April 1977	—	13.9	—	23.8
3 April 1978	—	14.3	—	24.0
6 April 1979	—	13.2	—	13.2
6 April 1980	—	14.3	—	14.3
6 April 1981	—	14.8	—	14.8
6 April 1982	—	19.1	—	19.1

*Sources:* As for Table 1.1, *Irish Statistical Bulletin 1954-1979*, and Department of Social Welfare, *Summary of Social Insurance and Social Assistance Services, 1979-1981* and *Rates of PRSI Contributions under Pay-related Social Insurance, 1982*.

Figure 1.1: Ordinary rate social insurance contributions as a percentage of average weekly earnings in transportable goods industries on the date at which contribution rates were changed classified by age and sex, 1953-82



10.2 per cent in 1974 compared with 4.6 per cent for adult females in 1953 and 16.6 per cent in 1974.<sup>2</sup> The gap between the proportion of adult male and female earnings accounted for by social insurance contributions widened from 6.4 points in 1974 to 9.7 points in 1979. This gap was eliminated in April 1979 when a fully Pay-Related Social Insurance (PRSI) system was adopted in which male and female employees paid the same proportion of their earnings into the Social Insurance Fund and the proportion paid by the employer was the same for men and women.<sup>3</sup> The adoption of proportional rather than flat-rate contribution rates eliminated one of the main sources of inequality in the social insurance system but the system still has features which violate the principle of vertical equity, e.g., the upper earnings limit on which contributions are payable leads to workers with high incomes paying a smaller proportion in payroll tax than workers on lower incomes.<sup>4</sup>

Apart from differences in the proportion of income paid by or on behalf of male and female and younger and older workers the other main point which is brought out by Table 1.2 in relation to the financing of social insurance in Ireland is that the proportion of average earnings accounted for by social insurance contributions has risen approximately five times from around 4 per cent in 1953 to 20 per cent in 1982. This may have occurred mainly because of the demand from the insured population for a wider range of benefits than was originally provided rather than from improvements in existing benefits. In 1961, for example, contributory old age pensions were provided for the first time and these were partly financed by increasing the flat-rate contribution so that the proportion of earnings payable by or on behalf of male employees rose from 3.6 per cent to 4.6 per cent and for females from 4.9 per cent to 7.2 per cent. At the same time flat-rate Unemployment and Disability Benefit payments have been maintained at a con-

2. It will be recalled from the data in Table 1.1 that the employer flat-rate contribution was almost the same for males and females throughout the period 1953-79 while there was a significant difference in the employee contributions for men and women. Relating the total contributions to average earnings by age and sex rather than the employee contributions makes no difference, therefore, to the ranking of the social insurance burden by age and sex.

3. It is interesting to note from the *Reports of the Department of Social Welfare 1972-75 to 1979-80* that the amount collected in pay-related contributions during the period April 1974-December 1978, £108 million, greatly exceeded the amount paid out in pay-related benefit, £61 million. Since the Social Insurance Fund was in balance during this period the excess of pay-related contributions over pay-related benefits appears to have been used to replace some of the State contribution to flat-rate benefits.

4. Social insurance contributions will often be referred to as a payroll tax in this paper as many economists now accept that this is a more accurate description of levies on employers and workers which have only a tenuous connection with insurance as it is commonly understood. The analogy of social insurance to private insurance is misleading mainly because social insurance contributions are involuntary, contributions are not related to individual risks, contributions are not accumulated in a fund to finance benefits, and benefits are only weakly related to contributions (see Brittain (1972) and McClements (1978) for a discussion of these points in relation to the American and British social insurance schemes).



stant proportion of average industrial earnings from 1953 to the present as will be shown in Chapter 4.

### 1.3 *Growth in Insured Labour Force, 1953-80*

There are nine different categories under which employees covered by social insurance in Ireland are classified. The largest category refers to persons who are insured for All Benefits while the smallest is for persons insured for Retirement, Old Age Pensions and Death Grants. The numbers included in the various categories have fluctuated over the years as new insurance programmes have been introduced, income limits raised or the coverage of existing programmes expanded. In this section we will focus on two categories only (i) the number insured for All Benefits and (ii) the number insured for Some Benefits. The latter are mainly public sector employees who are insured only for widows' pension and occupational injuries benefits. The numbers in each category and the proportion which they form of the total labour force are given in Table 1.3. In 1953 there were 635,909 persons or 51.7 per cent of the labour force insured for All Benefits and 88,388 persons or 7.2 per cent of the labour force insured for Some Benefits. The number covered for All Benefits was virtually static between 1953 and 1963 although the proportion of the labour force covered rose from 51.7 per cent to 57.1 per cent because the number in the labour force declined from 1.2 million to 1.1 million due to large-scale emigration during the 1950s. The number covered by Some Benefits actually declined by around 10,000 during the decade 1953-63 because of a reduction in employment in the public sector. After 1963 the number covered for All Benefits increased each year until it reached 832,042 or nearly three-quarters of the labour force in 1975. Those covered for Some Benefits increased by around 7,000 between 1963 and 1966 but declined by 25,000 in the following year when some women who had previously been covered for everything except unemployment benefit had their cover extended to All Benefits. Since 1967 the number covered for Some Benefits has grown steadily as public sector employment has increased (see Sexton (1982) for details of changes in public sector employment between 1961 and 1979). The proportion of the labour force covered for Some Benefits nearly tripled from 5.4 per cent in 1967 to 15.0 per cent in 1980. The big increase in the number in this category occurred in 1974 and 1975 when the income limit above which non-manual workers ceased to be insurable was abolished in 1974. The number in the All Benefits category also increased substantially because of the abolition of the income limit.<sup>5</sup>

5. In 1953 non-manual workers earning more than £600 per annum were not eligible for social insurance. The income limit was raised to £800 in December 1958, to £1,200 in September 1965, and to £1,600 in May 1971. The ratio of the income limit to average male industrial earnings at these

Table 1.3: *Number of persons insured for some or all benefits; actual and per cent of total labour force, 1953-1980*

Year	Some Benefits	All Benefits	Per cent of total labour force covered for:	
			Some Benefits	All Benefits
1953	88,388	635,909	7.2	51.7
1954	88,832	638,733	7.2	52.0
1955	86,784	639,184	7.2	52.9
1956	85,966	647,177	7.2	54.5
1957	82,783	638,349	7.2	54.9
1958	78,974	623,288	6.9	54.6
1959	87,990	619,008	7.8	54.8
1960	85,783	624,784	7.7	55.9
1961	83,630	629,316	7.5	56.8
1962	78,603	633,699	7.1	56.9
1963	78,466	640,689	7.0	57.1
1964	75,150	655,977	6.7	58.4
1965	72,799	671,233	6.5	59.9
1966	85,667	688,410	7.7	61.6
1967	60,544	710,699	5.4	63.7
1968	66,807	714,536	5.9	63.6
1969	67,235	727,756	6.0	64.9
1970	66,433	729,731	5.9	65.3
1971	75,348	732,943	6.7	65.5
1972	78,217	739,590	7.0	66.0
1973	72,808	742,879	6.5	66.2
1974	91,705	761,787	8.1	67.2
1975	137,446	832,042	12.0	72.6
1976	144,808	825,973	12.5	71.6
1977	153,225	821,645	13.1	70.1
1978	161,545	820,136	13.5	68.6
1979	166,037	820,000	13.6	67.3
1980	186,055	837,318	15.0	67.7

Sources: *Reports of the Department of Social Welfare, 1954-1958, 1959-1962, 1963-1966, 1967-1971, 1972-1975, 1976-1978, 1979-1980, Economic Review and Outlook, 1982 and 1980, Review of 1973 and Outlook for 1974, Review of 1970 and Outlook for 1971, Economic Statistics, Budget 1965 and 1964, and information supplied by Department of Social Welfare.*

times was, 1953 1.73, 1958 1.75, 1965 1.67, 1971 1.29. The downward trend in the ratio and the infrequent changes in the income limit suggest that the proportion of higher earners ineligible for social insurance increased over the years to April 1974 and hence that the tax base must have narrowed.

The proportion of the labour force covered for Some or All Benefits has risen from around 60 per cent in 1953 to over 80 per cent in 1980. This growth in coverage of the social insurance scheme has occurred mainly because of successive increases in and eventual abolition of the earnings limit used to restrict entry into the scheme and also to the decline in the importance of self-employed people in agriculture and services.

#### *1.4 Income from Social Insurance 1953-82*

The combined effect of the four-fold increase in the proportion of average industrial earnings paid into the Social Insurance Fund and the increase of over a quarter in the number of persons insured for All Benefits since 1953 has been a 120-fold increase in social insurance contributions provided by employers and employees from £4.5 million in 1953 to £537 million in 1982 as will be seen from Table 1.4. Up to 1967 the revenue yielded by the employer and employee contributions was more or less the same but with the changeover in 1967 to larger employer than employee contributions the yield from the employers began to exceed that from employees and when pay-related contributions were introduced in 1974 a very large gap opened in the revenue yielded from the two main sources of finance for social insurance. This gap widened during the remainder of the 1970s and by March 1982 the income provided by employers was two-and-a-half times that provided by employees. Table 1.4 also shows that the State contribution out of general taxation to the Social Insurance Fund was nearly always greater than the employee contribution until 1974 when the revenue provided by employees was boosted by partially relating contributions to earnings. The State contribution to the fund remained less than the employee contribution until the year ended March 1981 when it exceeded the employee contribution by a significant amount. The same thing happened in the year to end March 1982. There are two reasons for the upsurge in the State contributions in 1981 and 1982, (a) the increase in Unemployment Benefit payments due to the recession and (b) the substantial increase in social insurance benefits in the Budgets of 1980 and 1981. The social insurance scheme in Ireland has operated on a pay-as-you-go basis since its inception but small surpluses of income over expenditure have accumulated over the years and these have been invested to give a small but regular source of income. Apart from the growth in different sources of income for the Social Insurance Fund we are also interested in changes in the proportion of income provided from each source and these are shown in Table 1.5. At the beginning of the period the State, the employers, and the workers each provided about one-third of social insurance income in accordance with the financial arrangements proposed in the White Paper on social

Table 1.4: Social insurance income and expenditure, year ended 31 March, 1953-1982

Year	INCOME PROVIDED (£'000) BY:						EXPENDITURE (£'000) ON:							Excess (+) or deficiency (-) of income provided	Year
	State	Employer	Employee	Interest on invested funds	Other receipts	Total	Unemployment benefit	Disability, invalidity and occupational injuries benefit	Survivors' pensions	Old age and retirement pensions	Other benefits	Administration	Total		
1953	2,206	2,409	2,071	499	106	7,291	1,814	2,291	1,191	-	855	863	6,994	+297	1953
1954	3,551	2,756	2,462	477	13	9,259	2,741	2,951	1,354	-	711	871	8,608	+651	1954
1955	2,156	2,773	2,477	517	353	8,256	2,585	2,994	1,392	-	798	1,032	8,601	-345	1955
1956	2,483	2,796	2,501	516	22	8,318	2,297	3,034	1,459	-	1,175	1,052	9,017	-699	1956
1957	3,727	2,973	2,590	547	-	9,837	3,293	3,467	1,674	-	879	1,104	10,417	-580	1957
1958	4,527	3,091	2,697	514	50	10,879	3,325	4,047	1,867	-	448	1,220	10,907	-28	1958
1959	4,427	3,064	2,694	529	42	10,756	3,108	3,981	1,921	-	505	1,229	10,744	+12	1959
1960	3,965	3,223	2,828	552	16	10,586	2,900	3,975	1,970	-	446	1,252	10,543	+43	1960
1961	4,666	3,626	3,256	564	52	12,144	2,624	4,369	2,243	802	541	1,322	11,901	+243	1961
1962	6,348	5,384	4,981	561	85	17,359	2,863	4,965	3,226	4,637	669	1,394	17,754	-395	1962
1963	7,648	5,734	5,329	551	19	19,281	3,204	5,345	3,488	4,896	629	1,509	19,124	-157	1963
1964	8,894	6,737	6,327	542	305	22,805	3,784	6,776	4,166	5,735	790	1,571	22,822	-17	1964
1965	9,599	7,639	7,241	561	440	25,480	4,094	7,419	4,750	6,466	917	1,983	25,629	-149	1965
1966	11,061	8,181	7,775	590	130	27,737	4,458	8,025	5,177	7,045	968	1,975	27,648	+89	1966
1967	13,557	9,841	9,395	607	150	33,550	5,718	9,613	6,379	8,464	1,125	2,218	33,517	+33	1967
1968	13,268	12,905	10,130	615	185	37,103	5,762	10,739	6,844	8,797	1,355	2,269	35,746	+1,357	1968
1969	14,102	13,527	12,318	724	844	43,515	7,377	12,510	7,915	9,876	1,408	2,363	41,449	+2,066	1969
1970	15,614	18,030	14,924	931	584	49,883	8,129	15,404	9,430	11,362	1,403	2,701	48,429	+1,454	1970
1971	20,197	21,795	18,449	990	311	61,742	10,656	18,897	12,126	14,286	1,681	3,017	60,665	+1,079	1971
1972	26,142	25,779	22,313	1,166	645	76,045	11,808	22,691	14,703	17,755	2,162	3,855	72,974	+3,071	1972
1973	26,288	30,185	25,822	1,432	459	84,186	13,093	24,681	17,031	22,048	2,474	4,340	83,669	+517	1973
1974	31,301	41,217	31,124	1,621	330	105,593	13,661	30,183	21,442	30,260	2,994	5,558	104,098	+1,495	1974
1975	33,710	71,369	45,442	1,859	179	152,540	24,134	45,412	27,304	41,835	4,757	8,022	151,465	+1,076	1975
1976	45,671	102,277	59,996	1,889	181	210,014	43,121	60,592	34,458	55,493	6,403	11,338	211,406	-1,391	1976
1977	51,015	131,110	73,390	1,963	220	257,698	51,407	75,735	41,680	68,422	8,045	14,208	259,497	-1,799	1977
1978	54,931	156,331	83,021	1,853	270	296,406	52,121	89,947	48,366	81,775	10,076	17,302	299,789	-3,381	1978
1979	68,471	186,496	87,609	1,491	118	344,185	52,124	105,478	56,095	98,863	12,074	18,754	343,388	+797	1979
1980	91,114	231,841	97,417	1,356	123	421,851	60,963	125,962	69,703	122,204	14,414	23,259	416,505	+5,350	1980
1981	143,113	301,428	116,978	2,023	290	563,832	102,734	158,598	93,227	164,094	19,747	25,742	564,133	-301	1981
1982	207,394	384,166 <sup>c</sup>	152,943	3,031 <sup>c</sup>	618	748,152	157,318	196,012 <sup>c</sup>	120,522	211,996	26,086 <sup>c</sup>	32,318	744,252	+3,900	1982

Source: Reports of Department of Social Welfare, 1954-1958 to 1979-1980, *Parliamentary Debates*, Dáil Éireann, 13 May 1982, cols. 1253-4, and information supplied by Department of Social Welfare.

- Notes: (i) Government accounts were changed to a calendar year basis in 1974. Figures for 1975 and succeeding years were derived by linear interpolation.  
(ii) Other benefits include Maternity Allowance, Maternity Grant, Treatment Benefit, Deserted Wives' Benefit, Death Grant, and Other Insurance Payments.  
(iii) c = estimates based on income from occupational injuries insurance contributions by employers, interest on invested funds, and other receipts in 1982, bearing the same relationship to social insurance income under these headings as in 1981. Payments out of the occupational injuries fund in 1982 are assumed equal to employers' contributions and administration costs are assumed equal to balance of income received.

Table 1.5: Distribution of social insurance income and expenditure, year ended 31 March, 1953-1982

Year	State	INCOME PROVIDED BY:				EXPENDITURE ON:						Total	Year
		Employer	Employee	Interest on invested funds and other receipts	Total	Unemployment benefit	Disability, invalidity and occupational injuries benefit	Survivors' pensions	Old age pensions	Other benefits	Administration		
1953	30.3	33.0	28.4	8.3	100.0	25.9	32.8	17.0	—	11.9	12.3	100.0	1953
1954	38.4	29.8	26.6	5.3	100.0	31.8	34.0	15.7	—	8.3	10.1	100.0	1954
1955	25.9	33.6	30.0	10.5	100.0	27.7	34.8	16.2	—	9.3	12.0	100.0	1955
1956	29.9	33.6	30.1	6.5	100.0	25.5	33.6	16.2	—	13.0	11.7	100.0	1956
1957	37.9	30.2	26.3	5.6	100.0	31.6	33.3	16.1	—	8.4	10.6	100.0	1957
1958	41.6	28.4	24.8	5.2	100.0	30.5	37.1	17.1	—	4.1	11.2	100.0	1958
1959	41.2	28.5	25.0	5.3	100.0	28.9	37.1	17.9	—	4.7	11.4	100.0	1959
1960	37.5	30.5	26.7	5.4	100.0	27.5	37.7	18.7	—	4.2	11.9	100.0	1960
1961	38.4	29.9	26.6	5.1	100.0	22.0	36.7	18.8	6.7	4.5	11.1	100.0	1961
1962	36.6	31.0	28.7	3.7	100.0	16.1	28.0	18.2	26.1	3.8	7.9	100.0	1962
1963	39.7	29.7	27.6	3.0	100.0	16.8	27.9	18.2	25.6	3.3	7.9	100.0	1963
1964	39.0	29.5	27.7	3.7	100.0	16.6	29.7	18.3	25.1	3.5	6.9	100.0	1964
1965	37.7	30.0	28.4	3.9	100.0	16.0	28.9	18.5	25.2	3.6	7.7	100.0	1965
1966	39.9	29.5	28.0	2.6	100.0	16.1	29.0	18.7	25.5	3.5	7.1	100.0	1966
1967	40.4	29.3	28.0	2.3	100.0	17.1	28.7	19.0	25.3	3.4	6.6	100.0	1967
1968	35.8	34.8	27.3	2.2	100.0	16.1	30.0	19.1	24.6	3.7	6.4	100.0	1968
1969	32.4	35.7	28.3	3.6	100.0	17.8	30.2	19.1	23.8	3.4	5.7	100.0	1969
1970	31.3	36.1	29.9	2.6	100.0	16.8	31.8	19.5	23.5	2.9	5.6	100.0	1970
1971	32.7	35.3	29.9	2.1	100.0	17.6	31.2	20.0	23.5	2.8	5.0	100.0	1971
1972	34.4	33.9	29.3	2.4	100.0	16.2	31.1	20.1	24.3	3.0	5.3	100.0	1972
1973	31.2	35.9	30.7	2.2	100.0	15.7	29.5	20.4	26.4	3.0	5.2	100.0	1973
1974	29.6	39.0	29.5	1.8	100.0	13.1	29.0	20.6	29.1	2.9	5.3	100.0	1974
1975	22.1	46.8	29.8	1.3	100.0	15.9	30.0	18.0	27.6	3.1	5.3	100.0	1975
1976	21.7	48.7	28.6	1.0	100.0	20.4	28.7	16.3	26.2	3.0	5.4	100.0	1976
1977	19.8	50.9	28.5	0.8	100.0	19.8	29.2	16.1	26.4	3.1	5.5	100.0	1977
1978	18.5	52.7	28.0	0.7	100.0	17.4	30.0	16.1	27.3	3.4	5.8	100.0	1978
1979	19.9	54.2	25.5	0.5	100.0	15.2	30.7	16.3	28.8	3.5	5.5	100.0	1979
1980	21.6	55.0	23.1	0.4	100.0	14.6	30.2	16.7	29.3	3.5	5.6	100.0	1980
1981	25.4	53.5	20.7	0.4	100.0	18.2	28.1	16.5	29.1	3.5	4.6	100.0	1981
1982	27.7	51.3	20.4	0.5	100.0	21.1	26.3	16.2	28.5	3.5	4.3	100.0	1982

security issued by the Department of Social Welfare in 1949 (see Department of Social Welfare, 1949). Equi-proportionate financing by the three parties involved in the social insurance system was maintained until 1957 when demands on the fund due to rising unemployment, because of the recession starting in 1956, forced the State to increase its contribution by nearly 50 per cent. As a consequence its share of the income provided went up from around 30 per cent to very nearly 40 per cent. The proportion of insurance income provided by the State was maintained at this level until 1967, partly due to the downturn in economic activity at the end of the 1950s and to the introduction of contributory old age pensions in 1961. A comparison of the expenditure figures for contributory and non-contributory old age pensions in Tables 1.4 and 1.6 suggests that contributory pensions were partly financed by the State switching some of the income it provided for pensions from the assistance to the insurance programmes. The replacement of the Workmen's Compensation system by Occupational Injuries benefit in 1967 led to a permanent decrease in the proportion of the insurance programme financed out of general taxation and a permanent increase in the proportion financed out of the employer contribution because the employer was obliged to pay the total contribution for occupational injuries cover in line with recommendations in the Minority Report of the Commission on Workmen's Compensation (see Farley (1964, pp. 14-15)). The downward trend in the proportion of social insurance income provided out of general taxation was reinforced in 1974 when pay-related contributions became part of the means of financing social insurance. This decrease in reliance on State financing of social insurance was offset by increasing reliance on employer financing of the system in order to bring "the Exchequer's overall share of income maintenance expenditure more in line with practice in other EEC countries, and of making the Social Insurance Fund more self-financing" as the Minister for Finance, Mr. Ryan, said in his Budget Speech (Ireland, 1975, p. 23) in 1975. Some progress towards this objective was made in the next three years but the onset of the second oil crisis and the subsequent recession forced the State to increase its contribution to the fund to meet the rising cost of unemployment from 1979 to date. The proportion of income provided out of employee contributions remained more or less constant from 1953 to 1978 at about 30 per cent of the total. There was a decrease to 25 per cent in 1979 with the introduction of PRSI and to 20 per cent in 1982.

The transfer of part of the State's share of the cost of social insurance to the employers and the near constancy in the employees' share suggests that the distributional impact of the original equi-proportionate method of financing has not changed radically over the years as far as employees are

Table 1.6: Social assistance income and expenditure, year ended 31 March, 1953-1982

Year	INCOME PROVIDED (£'000) BY:				EXPENDITURE (£'000) ON:							Year
	State	Local authorities	Other receipts	Total	Unemployment assistance	Survivors' pensions	Old age pensions	Children's allowances	Other assistance schemes	Administration	Total	
1953	16,649	256	4	16,909	1,437	1,364	8,769	4,413	254	813	17,050	1953
1954	18,206	276	4	18,486	1,330	1,571	9,258	5,197	267	863	18,486	1954
1955	18,054	279	12	18,345	1,227	1,546	9,229	5,276	287	780	18,345	1955
1956	18,985	289	10	19,284	1,031	1,712	10,195	5,312	314	720	19,284	1956
1957	19,177	293	10	19,480	1,137	1,682	10,179	5,365	324	793	19,480	1957
1958	21,191	311	11	21,513	1,430	1,702	10,501	6,829	343	708	21,513	1958
1959	21,218	301	29	21,548	1,400	1,645	10,366	7,073	302	762	21,548	1959
1960	21,677	315	23	22,015	1,265	1,694	10,916	7,079	307	754	22,015	1960
1961	21,799	306	21	22,126	1,083	1,781	11,071	7,095	280	816	22,126	1961
1962	19,724	315	137	20,176	1,093	1,812	9,054	7,094	253	870	20,176	1962
1963	20,648	322	51	21,021	1,374	1,885	9,434	7,144	260	924	21,021	1963
1964	22,364	323	40	22,727	1,581	1,947	9,778	8,321	264	836	22,727	1964
1965	25,479	329	54	25,862	1,718	2,068	10,524	10,136	262	1,154	25,862	1965
1966	27,882	328	38	28,248	2,070	2,294	12,173	10,246	275	1,190	28,248	1966
1967	29,697	354	31	30,082	2,793	2,412	12,915	10,294	323	1,345	30,082	1967
1968	32,416	373	62	32,851	4,437	2,422	13,798	10,338	562	1,294	32,851	1968
1969	35,509	382	59	35,950	5,110	2,625	15,459	10,361	978	1,417	35,950	1969
1970	44,041	395	74	44,510	6,695	3,011	17,759	13,852	1,517	1,676	44,510	1970
1971	52,635	409	99	53,143	9,241	3,422	20,272	16,368	1,880	1,960	53,143	1971
1972	58,808	420	109	59,337	10,474	3,904	22,639	17,135	3,028	2,157	59,337	1972
1973	66,456	408	146	67,010	14,051	4,347	24,983	17,253	3,728	2,648	67,010	1973
1974	99,446	428	119	99,993	19,216	5,464	33,475	32,755	5,537	3,546	99,993	1974
1975	138,065	446	153	138,664	28,234	6,475	47,961	42,784	9,087	4,123	138,664	1975
1976	174,774	456	212	175,442	41,231	7,080	62,755	45,650	13,252	5,474	175,442	1976
1977	204,177	472	330	204,979	51,825	7,820	74,010	46,917	17,421	6,985	204,979	1977
1978	231,223	482	383	232,088	58,746	8,404	84,114	49,271	22,967	8,586	232,088	1978
1979	261,575	494	640	262,709	64,136	9,096	96,861	53,860	29,307	9,449	262,709	1979
1980	310,260	502	850	311,611	70,148	10,926	114,408	65,800	38,566	11,764	311,611	1980
1981	401,555	511	1,205	403,271	88,494	14,960	149,216	81,326	51,433	14,599	400,028	1981
1982	530,485	675 <sup>c</sup>	1,592 <sup>c</sup>	532,752	121,881	19,833	187,596	111,778	72,161	19,503 <sup>c</sup>	532,752	1982

Sources: Reports of Department of Social Welfare, 1954-1958 to 1979-1980, Estimates for Public Services 1982, and information supplied by Department of Social Welfare.

Notes: (i) Other assistance schemes comprise Social Assistance Allowances and Miscellaneous Grants.  
(ii) e = estimate based on proportion of total accounted for by this category in previous year.

concerned. This will depend, however, on the effective incidence of the payroll tax. If the employer contribution is not shifted then employees and other taxpayers will have benefited at the expense of employers whereas if some of the employer contribution is shifted the burden of financing will have increased on employees with limited ability-to-pay and the progressivity of the method of financing will have lessened. The question of the incidence of the payroll tax in Ireland will be taken up in the next chapter.

Expenditure on the main social insurance programmes for unemployment, sickness, survivorship, and old age increased rapidly between 1953 and the present. For the programmes which existed at the beginning of the period the largest increase occurred in expenditure on disability, invalidity, and occupational injuries programmes and the smallest increase was for expenditure on other benefits. The distribution of expenditure by programme, shown in Table 1.5, shows that constant proportions of the total were spent on sickness ( $\approx 30$  per cent) and survivorship ( $\approx 18$  per cent) while the proportion spent on unemployment declined from around 30 per cent in the 1950s to less than half that by 1980 but rose again to around 20 per cent by 1982. This change is clearly related to the introduction of the contributory old age pension programmes because many older workers who had been in receipt of unemployment benefit prior to 1961 qualified for a contributory old age pension or a retirement pension when these programmes became operational in 1961 and 1971.

It will be evident from the foregoing that the four main social insurance programmes are interconnected and that analysis of developments in expenditure on any one of them should be related to developments in the others. A similar point can be made about the State's social assistance programmes which, as Table 1.6 shows, are almost entirely financed out of general taxation. It is clear from the social assistance expenditure data by programmes in Table 1.6 and its distribution in Table 1.7 that the State's assistance programmes provide for the same contingencies (apart from Children's Allowances which is a non-means tested universal benefit) as the insurance programmes for people who are not covered by the insurance programmes or whose eligibility has been exhausted. The insurance and assistance programmes interact in a way which makes it unwise to consider them as totally separate. The main point which needs to be made about the insurance and assistance programmes during the post-war period is that there has been gradual progress towards replacement of social assistance by social insurance. As will be seen from Table 1.8 expenditure on social assistance was much greater in 1953 than expenditure on social insurance. By 1966 the same amount was being spent on each but since then expenditure on insurance programmes has outweighed expenditure on assistance programmes. The interaction of individual



Table 1.7: *Distribution of social assistance expenditure, year ended 31 March, 1953-1982*

Year	EXPENDITURE ON:						Total
	Unemployment assistance	Survivors' pensions	Old age pensions	Children's allowances	Other assistance schemes	Administration	
1953	8.4	8.0	51.4	25.9	1.5	4.8	100.0
1954	7.2	8.5	50.1	28.1	1.4	4.7	100.0
1955	6.7	8.4	50.3	28.8	1.6	4.3	100.0
1956	5.3	8.9	52.9	27.5	1.6	3.7	100.0
1957	5.8	8.6	52.3	27.5	1.7	4.1	100.0
1958	6.6	7.9	48.8	31.7	1.6	3.3	100.0
1959	6.5	7.6	48.1	32.8	1.4	3.5	100.0
1960	5.7	7.7	49.6	32.2	1.4	3.4	100.0
1961	4.9	8.0	50.0	32.1	1.3	3.7	100.0
1962	5.4	9.0	44.9	35.2	1.3	4.3	100.0
1963	6.5	9.0	44.9	34.0	1.2	4.4	100.0
1964	7.0	8.6	43.0	36.6	1.2	3.7	100.0
1965	6.6	8.0	40.7	39.2	1.0	4.5	100.0
1966	7.3	8.1	43.1	36.3	1.0	4.2	100.0
1967	9.3	8.0	42.9	34.2	1.1	4.5	100.0
1968	13.5	7.4	42.0	31.5	1.7	3.9	100.0
1969	14.2	7.3	43.0	28.8	2.7	3.9	100.0
1970	15.0	6.8	39.9	31.1	3.4	3.8	100.0
1971	17.4	6.4	38.1	30.8	3.5	3.7	100.0
1972	17.7	6.6	38.2	28.9	5.1	3.6	100.0
1973	21.0	6.5	37.3	25.7	5.6	4.0	100.0
1974	19.2	5.5	33.5	32.8	5.5	3.5	100.0
1975	20.4	4.7	34.6	30.9	6.5	3.0	100.0
1976	23.5	4.0	35.8	26.0	7.6	3.1	100.0
1977	25.3	3.8	36.1	22.9	8.5	3.4	100.0
1978	25.3	3.6	36.2	21.2	9.9	3.7	100.0
1979	24.4	3.5	36.9	20.5	11.2	3.6	100.0
1980	22.5	3.5	36.7	21.1	12.4	3.8	100.0
1981	22.1	3.7	37.3	20.3	12.9	3.6	100.0
1982	22.9	3.7	35.2	21.0	13.5	3.7	100.0

insurance and assistance programmes is illustrated in Table 1.8 where insurance expenditure on unemployment, survivorship, and old age is shown as a ratio of assistance expenditure on each. For most of the period expenditure on Unemployment Benefit was greater than expenditure on Unemployment Assistance but this changed with the onset of the oil crisis in 1973 and consequent increase in unemployment during the remainder of the decade. As unemployed persons exhausted their entitlement to Unemployment

Table 1.8: *Ratio of insurance to assistance expenditure on unemployment, survivors' pensions, old age pensions, and total and percentage of total social security income provided out of general taxation, year ended March, 1953-1982*

<i>Year</i>	<i>Unemployment</i>	<i>Survivors' pensions</i>	<i>Old age pensions</i>	<i>Total expenditure</i>	<i>Percentage of total income provided by the State</i>
1953	1.26	0.87	—	0.41	77.9
1954	2.06	0.86	—	0.46	78.4
1955	1.94	0.90	—	0.47	75.9
1956	2.23	0.85	—	0.47	77.8
1957	2.90	0.99	—	0.53	78.1
1958	2.33	1.10	—	0.51	79.4
1959	2.22	1.17	—	0.50	79.4
1960	2.29	1.16	—	0.48	78.7
1961	2.42	1.26	0.07	0.54	77.2
1962	2.62	1.78	0.51	0.88	69.5
1963	2.33	1.85	0.52	0.91	70.2
1964	2.39	2.14	0.59	1.00	68.7
1965	2.38	2.30	0.61	0.99	68.3
1966	2.15	2.26	0.58	0.99	69.6
1967	2.05	2.64	0.66	1.11	68.0
1968	1.30	2.83	0.64	1.09	65.3
1969	1.44	3.02	0.64	1.15	62.4
1970	1.21	3.13	0.64	1.09	63.2
1971	1.15	3.54	0.70	1.14	63.4
1972	1.13	3.77	0.78	1.23	62.7
1973	0.93	3.92	0.88	1.25	61.3
1974	0.71	3.92	0.90	1.04	63.6
1975	0.85	4.22	0.87	1.09	59.0
1976	1.05	4.87	0.88	1.20	57.2
1977	0.99	5.33	0.92	1.27	55.2
1978	0.89	5.76	0.97	1.29	54.1
1979	0.81	6.17	1.02	1.31	54.4
1980	0.87	6.38	1.07	1.34	54.7
1981	1.16	6.23	1.10	1.41	56.3
1982	1.29	6.08	1.13	1.40	57.6

Benefit due to the increase in the average duration of unemployment their only recourse in the absence of jobs was to Unemployment Assistance. Expenditure on Unemployment Benefit in fiscal years 1980/81 and 1981/82 exceeded expenditure on Unemployment Assistance as large numbers of workers who were entitled to claim unemployment benefit lost their jobs

as the recession deepened. Survivors' pensions were mainly provided out of the assistance scheme in the early 1950s but by the end of that decade most of the cost was met from the insurance fund. By March 1982 over six times as much was spent on contributory as on non-contributory survivor's pensions. The cost of old age pensions was mainly met by general taxation during the period we are dealing with because a contributory scheme was not introduced until 1961. The contributory scheme has grown over the years as entitlement has grown and in 1979 the amount spent on contributory old age pensions outweighed the amount spent on non-contributory old age pensions for the first time. In the years since then expenditure on contributory old age pensions has always exceeded expenditure on non-contributory old age pensions.

An important consequence of the growth in importance of the State's social insurance programmes, as will be seen from Table 1.8 is the decline in the proportion of total expenditure on assistance and insurance programmes financed by the State from 75 per cent in 1953 to around 60 per cent in 1982.

### *1.5 International Comparison of Social Security Taxes*

It is sometimes argued that the imposition of social charges by the Government has a disadvantageous effect on the competitiveness of export industries so it is of interest to compare social security taxes here with those in other countries. Such comparisons are difficult because there are significant differences between countries in the way in which social security is financed. However, comparable data on social security contributions by employees and employers in 1981 are published by the OECD. Table 1.9 shows social security contributions as percentages of total taxation for the seven big OECD countries and for four small OECD countries including Ireland. The proportion of total taxation accounted for by employer contributions is lower in Ireland than any of the other countries except the United Kingdom and Canada, while the proportion accountable for by employee contributions is lower in Ireland than any of the other countries except Canada or Sweden. Employer and employee contributions combined account for 14.09 per cent of total taxation in Ireland and the only country which has a figure lower than this is Canada. In nearly all of the remaining countries social security taxes account for at least one quarter of total tax receipts while in some, such as France and Germany, the figure is over a third, or two and a half times the Irish proportion. It would appear, therefore, that if social security taxes exert any influence on competitiveness their low level in Ireland should be an advantage rather than a disadvantage.

Table 1.9: *Social security contributions by employees and employers in some OECD countries in 1981 as a percentage of total taxation*

<i>Country</i>	<i>Social security contributions by:</i>		<i>Total</i>
	<i>Employees</i>	<i>Employers</i>	
France	10.90	29.00	39.90
Germany	15.86	19.06	34.92
The Netherlands	16.79	17.94	34.73
Sweden	—	28.51	28.51
Belgium	9.31	18.86	28.17
Italy	5.45	21.86	27.31
Japan	10.67	15.36	26.03
United States	10.25	15.53	25.78
United Kingdom	6.74	9.08	15.82
Ireland	4.85	9.24	14.09
Canada	3.99	7.33	11.32

*Source:* OECD (1983b).

## Chapter 2

### *ESTIMATES OF PAYROLL TAX INCIDENCE IN IRELAND*

#### *2.1 Introduction*

The familiar split in the social insurance contribution into an employer and an employee portion dates from the National Insurance Act, 1911. During the debate surrounding that Act it was argued that the Government's intention that the employer should share part of the burden would be frustrated by the operation of market forces which would shift the employer contribution backwards onto the employee or forwards onto the consumer. Beatrice Webb, for example, tried to persuade the Royal Commission on the Poor Law, of which she was a member, that income maintenance payments during sickness, unemployment and old age, should be financed out of general taxation rather than by a charge on employers and employees because workers would end up bearing the employers' contribution as well as their own (see HMSO, 1909, pp. 1199-1200) and Gilbert (1966, p. 270) has noted that:

Trade unionists and radicals feared that any insurance contribution by an employer would be added to his wage cost and so would be finally paid by the worker. They sought, therefore, to make any government contribution as large as possible.

In Ireland conflict over how the legal cost of social insurance should be shared among the parties that benefit from it has become particularly acute during the last decade as the Government has pursued a policy of bringing the shares of employers, employees and the Exchequer into line with the distribution of costs among these parties in other EEC countries. Since 1972, just before Ireland joined the EEC, this has resulted in a decrease in the State's share from a third to just over a quarter, a decrease in employees share from a third to a fifth and an increase in employers share from a third to over a half.

These changes in the distribution of the legal burden of the payroll tax combined with the increase in the rate of tax for an adult male worker from 8 per cent in 1972 to just under 20 per cent at present lend particular interest to the argument that market forces could shift the employer and employee components of the tax away from those who it was intended should pay them.

## 2.2 *Views of Irish Commentators on Burden of Social Insurance Contributions*

Some of those who have commented on the Irish payroll tax adopt a neutral stance on the incidence question or else assume that the legal and effective incidence coincide. Kaim-Caudle (1964, p. 23), for example, took a neutral position when he argued that:

Social security contributions, irrespective of whether they are paid by employers or employees are a pay roll tax on wages — highly regressive in their incidence

whereas O'Hagan (1977, p. 28) accepted that there was no difference between the legal and effective incidence when he conducted his analysis of employers' social welfare contributions by "assuming the employer must bear the cost" and the Committee of the Irish Council of the European Movement, which commissioned his report, agreed with him when it asserted (O'Hagan, pp. 7-8) that:

... given free labour flows, the elasticity of supply of labour is in the long run very high, then the incidence of the tax falls on the employer who will either reduce the scale of his activities or substitute capital for labour by way of reaction. This view implies that social welfare contributions are a tax on employment.

Dowling (1977, p. 46) also appeared to share this view when he pointed to the consequences of the flat rate social insurance contribution for employment "... especially if the tax is borne by the employer". A similar position on the incidence question was taken by Walsh (1978). In his discussion of the growing gap between total labour costs and take-home pay he reviewed the arguments concerning the shifting of the employer's social insurance contribution and noted the difficulty which employers in exposed sectors of small open economies face in passing the tax onto consumers through increased prices. He doubted the relevance of Britain's (1971) evidence from an international cross-section study on data for the 1950s that all of the payroll tax is shifted to labour in the form of reduced take-home pay on the grounds that in Ireland in the 1970s (Walsh, 1978, p. 45):

... employees increasingly bargain in terms of net or take-home pay, and resist any erosion of income due to higher taxes or other levies. To the extent that this resistance is successful, increases in the gap between take-home pay and total costs ... will tend to have employment-depressing effects.

In an example of how a payroll tax that is neither fully borne by labour or absorbed by consumers can affect employment, Walsh (1978, Figure 5) shows that if the labour supply curve is Keynesian rather than Classical in shape

it will be completely elastic over the relevant range and this implies that the burden of the tax will fall entirely on employers while the adverse effect on employment will be greater than would be the case if some of the burden was borne by employees.

In view of the potential importance of the incidence of the payroll tax for employment in Ireland, Walsh (1978) pointed to the need for further work on the effects of the tax on the price of labour and employment. O'Caseide (1978) has analysed the effect of employer and employee taxes on employment in Transportable Goods Industries. He found that the labour supply curve is not completely elastic and that taxes affecting both the demand for and supply of labour do reduce employment. Unfortunately it is not possible to say anything about the effect of these taxes on the price of labour because of the way in which his model is specified. Kirwan (1979) has examined the effects of changes in the ratio of non-wage to wage costs on employment and average hours worked in Irish manufacturing industry. The employer social insurance contribution is the main non-wage cost involved. He found that an increase in the fixed to variable labour cost ratio led to an increase in average hours worked and a decrease in employment as predicted by the standard cost minimising model of the firm's demand for labour. Kirwan's estimates of the elasticities of demand for men and hours with respect to the fixed/variable wage cost ratio are  $-0.03$  and  $0.02$ . Using these figures he estimates that a reduction of £1 per week in the employer's social insurance contribution in mid-1977 would have led to the creation of 1,200 extra jobs in manufacturing industry. In percentage terms this would mean that a 17 per cent reduction in the employer contribution would have increased the number employed in manufacturing by just over a half of one per cent.

The effects of the employer and employee components of the payroll tax on the price of labour have been looked at by Bradley and Cassidy (1979) in the context of the Phelps-Friedman excess demand-price expectations version of the Phillips curve which was made operational by Parkin, Sumner and Ward (1976). This model incorporates variables for employer payroll taxes and employee personal disposable income (i.e., income after deducting income tax and social insurance contributions). Using annual data for the period 1959-76 they found that the coefficient of the disposable income variable had the wrong sign and that changes in the employer social insurance tax variable had no discernible effect on the rate of change of average earnings in industry or services.

It is evident from the work which has been done on payroll tax incidence in Ireland that we do not have satisfactory estimates of how the burden of this tax is shared between employers and employees. We need to know how the burden is shared in order to discuss the equity of the social insurance

contribution system, the rates of return accruing to different groups of contributors and the extent to which wage-cost increases are attributable to payroll tax increases.

### 2.3 *A Model of Payroll Tax Incidence*

The two main approaches to measuring the incidence of the payroll tax are the labour demand approach and the Phillips curve approach. In the first a labour demand equation is derived from a production function and expressed in a way which enables an indirect estimate to be made of the effect of the payroll tax on factor shares, the real wage or the demand for labour. The second approach uses a Phillips curve framework in which to examine the effects of changes in the employer and employee components of the payroll tax on wages. The amount of the tax which is shifted is indicated by the coefficients of the tax variables.

In the last decade or so around a dozen empirical studies of payroll tax incidence have been carried out for other countries in which both the labour demand and Phillips curve approaches were used. A curious feature of the results has been that many of the labour demand studies, including one which the author did in an earlier draft of this paper, found tax shifting coefficients significantly greater than the theoretical maximum of 1 while the Phillips curve studies yielded estimates which Holmlund (1981, p. 24) described as "ambiguous to an embarrassing degree" because some researchers found that the employer component of the tax was completely shifted back within a fairly short period while others found no evidence of backward shifting at all.<sup>6</sup> Holmlund argues that the ambiguity of the tax shifting results in the Phillips curve framework is due to dealing with multi-collinearity in the wage equation by including only one of the two payroll tax variables and to the failure to include a consumer price variable as well as an output price variable in the wage equation. He developed a model (see Holmlund 1983) based on Parkin, Sumner and Ward's framework to deal with these problems and using annual data for the period 1950-79 estimated that about half of the post-war increases in the employer payroll tax in Sweden were directly shifted back onto labour as lower wage increases whereas increases in employees income tax were not shifted at all. It is possible, with some modifications, to apply Holmlund's model to the quarterly data which are available on wages, prices and taxes for Transportable Goods

6. A survey of the labour demand and Phillips curve studies of payroll tax incidence is given in Hughes (1982b, Chapter 6) together with an analysis of the Irish payroll tax in a labour demand framework. The estimate of the tax shifting coefficient for Transportable Goods Industries suggested that more than 100 per cent of the total payroll tax was shifted to labour and it was acknowledged that this was unsatisfactory on theoretical grounds.



Industries to get estimates of payroll tax incidence for the manufacturing sector in Ireland.

Assume a Cobb-Douglas production function of the form

$$Q = AN^\alpha e^{\lambda\tau} \quad (2.1)$$

where  $Q$  is output,  $N$  is labour input and  $\tau$  is time. The time coefficient reflects growth in capital and knowledge. Define the profit function,  $\pi$ , as

$$\pi = P_q Q - W(1 + S)N - F \quad (2.2)$$

where  $P_q$  is the price of output,  $W$  is the wage rate,  $S$  is the employer payroll tax rate and  $F$  includes capital costs and fixed costs. The labour demand function for a profit maximising firm is derived by differentiating the profit function with respect to labour input and solving the resulting equation for  $N$ . Thus,

$$\frac{\partial \pi}{\partial N} = P_q \alpha AN^{\alpha-1} e^{\lambda\tau} - W(1 + S) = 0 \quad (2.3)$$

and

$$N^D = \left[ \frac{W(1 + S)}{P_q \alpha A e^{\lambda\tau}} \right]^{\frac{1}{\alpha-1}} \quad (2.4)$$

The firm's demand for labour depends, according to Equation (2.4) on the ratio of the total cost of labour (including the employer payroll tax and any fringe benefits, such as occupational sick pay or pension benefit, paid by the firm) to the price of the firm's output, the efficiency with which it organises production, and the rate of growth of its capital stock. Taking natural logarithms of Equation (2.4) gives

$$\ln N^D = \epsilon_D \ln W + \epsilon_D \ln(1 + S) - \epsilon_D \ln P_q - \epsilon_D \lambda\tau - \epsilon_D \ln(\alpha A) \quad (2.5)$$

since  $\frac{1}{\alpha-1} = \epsilon_D$ , the price elasticity of demand for labour.

Regarding the supply of labour by employees Holmlund notes that it depends on the ratio of the net wage received by employees to the price they have to pay for consumption goods. The relationship between the amount of labour supplied and the after-tax real wage can be written in general form as

$$N^S = S \left( \frac{W(1 - T)}{P_c} \right) \quad (2.6)$$

where  $(1 - T)$  is the proportion of the gross wage retained by employees

after payment of income tax and social insurance contributions and  $P_c$  is an index of consumer prices. The labour supply function can be linearised by taking natural logarithms of both sides. Hence

$$\ln N^S = \beta_0 + \beta_1 \ln\left(\frac{W(1-T)}{P_c}\right) \quad (2.7)$$

Since  $\beta_1 = \epsilon_s$ , the price elasticity of labour supply, we can write Equation (2.7) as

$$\ln N^S = \beta_0 + \epsilon_s \ln W + \epsilon_s \ln(1-T) - \epsilon_s \ln P_c \quad (2.8)$$

As the wage level is set by bargaining between trade unions and employers it is assumed that the participants in the labour market adjust wages so that changes in the excess demand for labour, given the expected behaviour of prices and taxes, eliminates all or part of recently observed excess demand for labour. Holmlund proposes the disequilibrium reaction function shown in Equation (2.9) to capture this adjustment towards equilibrium in the labour market

$$\Delta \ln\left(\frac{N^D}{N^S}\right) = -\mu \ln\left(\frac{N^D}{N^S}\right) + \eta \quad (2.9)$$

where  $\eta$  is a stochastic error term whose presence reflects the failure of labour market participants to predict with certainty the consequences of their actions for labour demand and supply. The money wage path is derived by differentiating Equations (2.5) and (2.8), substituting into Equation (2.9) and solving for the logarithmic rate of wage change.

$$\begin{aligned} d\ln W = & \frac{\epsilon_D \lambda}{\epsilon_D - \epsilon_s} - \frac{\epsilon_D}{\epsilon_D - \epsilon_s} d\ln(1+S) + \frac{\epsilon_s}{\epsilon_D - \epsilon_s} d\ln(1-T) - \frac{\mu}{\epsilon_D - \epsilon_s} \ln\left(\frac{N^D}{N^S}\right) \\ & + \frac{\epsilon_D}{\epsilon_D - \epsilon_s} d\ln P_q - \frac{\epsilon_s}{\epsilon_D - \epsilon_s} d\ln P_c + \frac{\eta}{\epsilon_D - \epsilon_s} \end{aligned} \quad (2.10)$$

Equation (2.10) implies certain restrictions on the coefficients which can be specified more easily if we re-write it as follows:

$$\begin{aligned} d\ln W = & \gamma_1 + \gamma_2 d\ln(1+S) + \gamma_3 d\ln(1-T) + \gamma_4 \ln\left(\frac{N^D}{N^S}\right) + \gamma_5 d\ln P_q \\ & + \gamma_6 d\ln P_c \end{aligned} \quad (2.11)$$

where  $\gamma_1 = \frac{\epsilon_D \lambda}{\epsilon_D - \epsilon_s}$ ,  $\gamma_2 = \frac{-\epsilon_D}{\epsilon_D - \epsilon_s}$ ,  $\gamma_3 = \frac{\epsilon_s}{\epsilon_D - \epsilon_s}$ ,  $\gamma_4 = \frac{-\mu}{\epsilon_D - \epsilon_s}$

$$\gamma_5 = \frac{\epsilon_D}{\epsilon_D - \epsilon_s}, \quad \gamma_6 = \frac{-\epsilon_s}{\epsilon_D - \epsilon_s}.$$

The restrictions are  $\gamma_2 + \gamma_5 = 0$ ,  $\gamma_3 - \gamma_6 = 0$  and  $\gamma_5 + \gamma_6 = 1$  and they indicate that

- (i) a one per cent increase in the employer payroll tax variable should have the same effect on the wage level as a one per cent decrease in output prices;
- (ii) a one per cent increase in the proportion of the wage retained by workers should have the same effect as a one per cent decrease in consumer prices;
- (iii) a simultaneous increase of one per cent in output and consumer prices will increase the wage level by one per cent. This restriction imposes the natural unemployment rate property that participants in the labour market do not suffer from money illusion.

The wage Equation (2.10), can be used to estimate the extent to which tax shifting by employers and employees takes place. The coefficient of the employer payroll tax variable should indicate the proportion of the tax shifted back to labour in the form of a lower rate of increase in the nominal wage whereas the coefficient of the employee tax variable should show how much of any increase in direct taxes on employees is recouped in a higher rate of increase in the nominal wage.

Equation (2.10) is formulated in terms of expectations of the explanatory variables. In order to estimate this equation we represent price expectations by unrestricted four-period lags of the form

$$d \ln P_q = \sum_{i=0}^4 \phi_i d \ln P_{q-i} \quad (2.12)$$

in the case of the output price variable and similarly for consumer prices and we assume expected tax changes are equal to actual tax changes because social insurance contribution rates and income tax rates are fairly predictable.

### *The Data*

Ireland's social insurance scheme was reformed in 1952. As the first year for which information concerning the operation of the reformed system is available is 1953, the commencement date for the regression analysis will be the first quarter of 1953 while the finishing date will be the last quarter of 1980, the latest period for which all of the data we need is available. It is evident from Equation (2.10) that we need data on the average wage rate, the employer payroll tax rate, the employee direct tax rate, excess demand

in the labour market, and output and consumer prices if we are to derive estimates of payroll tax shifting. The only published information which is available in a form that corresponds to these variables is the Central Statistics Office's (CSO) series on output prices for industry and the consumer price index. The data needed to represent the remaining variables is constructed from information published by the CSO, the Department of Social Welfare and the Revenue Commissioners and it is presented in Appendix Table A.1. The series corresponding to each of the variables in Equation (2.10) are as follows:

$W$  = average hourly wage rate for industrial workers in Transportable Goods Industries. The CSO publishes a quarterly series of average earnings of industrial workers in Transportable Goods Industries,  $E$ , but this includes overtime earnings at premium rates of pay and is not an adequate proxy for the price of labour as it introduces a volume component into the price indicator. Unfortunately the official series on actual hours of work in Transportable Goods Industries,  $H$ , does not distinguish between standard hours,  $SH$ , and overtime hours. However, some information on standard hours is available from the CSO's annual *Statistics of Wages, Earnings and Hours of Work* in a wide variety of occupations up to 1970, when the publication was discontinued, and from Kirwan's (1979, p. 243) examination of evidence on standard hours in industry since the late 1960s from successive Employment Period Orders and National Wage Agreements. This evidence suggested that a forty-hour week was the standard which operated in industry during the 1970s. Examination of some of the standard hours series for different occupations in industry suggested that they moved closely together during the years 1953-1970 and it was decided to use the series for semi-skilled bacon factory workers in Dublin as representative of standard hours in Transportable Goods Industries during these years. Standard hours from 1971 to 1980 were taken to be forty hours per week and the adjusted hours series,  $HADJ$ , was derived by subtracting standard hours from actual hours worked and assuming that the overtime premium is "time and a half". Hence,

$$HADJ = \begin{cases} H + \frac{3}{2}(H - SH), & \text{if } H > SH \\ H, & \text{if } H < SH \end{cases} \quad (2.13)$$

where  $SH$  is standard hours. We now have two ways of representing the dependent variable. The first is by average hourly earnings,  $AHE = E/H$ , and the second is by average hourly earnings adjusted for overtime,  $AHEADJ = E/HADJ$ . The correlation between  $d \ln AHE$  and  $d \ln AHEADJ$  is = .984

so we would not expect the tax shifting estimates to be sensitive to whichever of these measures is used in the regression equation.

$(1 + S)$  = employer payroll tax rate plus one. Three different methods have been used to pay for social insurance since 1953. Flat-rate contributions were used up to the second quarter of 1974, a combination of flat-rate and pay-related contributions between the second quarter of 1974 and the first quarter of 1979 and a pay-related contribution since the second quarter of 1979. Up to 1974, therefore, we had a per unit tax on labour, from 1974 to 1979 a combination of per unit and *ad valorem* taxes, and since 1979 an *ad valorem* tax. It can be inferred from Musgrave's (1959, ch. 13) comparison of the effects of per unit and *ad valorem* taxes of equal yield that they have the same effect on the final price of the taxed factor and hence that the ability to shift the tax will not be affected by whether it is flat-rate or related to the value of the taxed factor. The employer payroll tax variable is, therefore, represented as an effective tax rate on average industrial earnings. It is calculated as a weighted average of the amounts paid at the standard rate for male and female employees divided by average industrial earnings in Transportable Goods Industries. The weights used are the numbers of males and females employed in these industries at the time at which the annual Census of Industrial Production is taken.<sup>7</sup> Hence, the employer payroll tax rate,  $S$ , can be written as

$$S = [\theta(FR_m^c + PR^c \cdot E_m) + (1 - \theta)(FR_f^c + PR^c \cdot E_f)] \div E \quad (2.14)$$

where  $\theta$  is the proportion of employees in Transportable Goods Industries that is male,  $FR_m^c$  and  $FR_f^c$  are the employer standard flat-rate social insurance contributions for male and female employees,  $PR^c$  is the employer pay-related social insurance contribution rate and  $E_m$  and  $E_f$  are average earnings for males and females in Transportable Goods Industries.

$(1 - T)$  = the proportion of gross earnings retained by the average employee after payment of income tax and social insurance contribution. This is generally referred to as the "retention ratio". It is calculated by deriving the

7. Up to 1968 the employment figures for males and females in Transportable Goods Industries were published in the Principal Results of the Census of Industrial Production in the *Irish Statistical Bulletin* as part of the analysis of the earnings distribution. When this analysis was discontinued in 1969 publication of aggregate employment figures for Transportable Goods Industries also ceased. The employment figures for 1969 and subsequent years were derived by aggregating the employment data for individual industries. CIP results for 1978-80 are not yet available so the weights for 1978 (.7039 for men and .2961 for women) and 1979 (.7027 for men and .2973 for women) were derived by using the changes in the composition of the number of men and women insured for all benefits in 1978 and 1979, as shown in the *Reports of the Department of Social Welfare, 1976-78* and 1979-80, to extrapolate the weights for 1978 and 1979(1). No weights are needed for 1979(2) and subsequent quarters as the percentage of earnings payable by the employer has been the same for men and women since PRSI was introduced in April 1979.

amount of income tax paid by a single worker in receipt of the average industrial wage, adding in the social insurance contribution, which is a weighted average of the standard payments by male and female employees, subtracting the total from the gross wage and expressing the net wage as a proportion of the gross. Formally, the employee tax rate is

$$T = [\eta(E - TFA^s) + \theta (FR_m^w + PR_m^w \cdot E_m) + (1 - \theta)(FR_f^w + PR_f^w \cdot E_f)] \div E \quad (2.15)$$

where  $TFA^s$  is the single worker's tax free allowance (including the allowance for the pension element in the social insurance contribution),  $\eta$  is the average income tax rate,  $FR_m^w$  and  $FR_f^w$  are the standard flat-rate social insurance contributions for male and female employees, and  $PR_m^w$  and  $PR_f^w$  are the pay-related contributions for male and female employees in receipt of average earnings for males and females in Transportable Goods Industries.

$\frac{N^D}{N^S}$  = excess demand in the labour market. The normal measure which is used is the registered unemployment rate. While the CSO published monthly unemployment rates for 24 industrial groups it does not publish an aggregate rate for Transportable Goods Industries as a whole. A quarterly unemployment rate for Transportable Goods Industries, URTGI, has been calculated from the CSO's tables showing the "percentage unemployed among currently insured persons in different industrial groups (excluding agriculture, fishing and private domestic service)" by weighting the unemployment rates in March, June, September, and December in the industrial groups which broadly coincide with those included in Transportable Goods Industries by the number of persons insured in each industrial group. Hence

$$URTGI = \frac{13}{\sum_{i=1}^{13} \theta_i} \theta_i \mu_i \quad (2.16)$$

where  $\theta_i$  is the proportion of the total number of insured persons in the  $i$ th industrial group, and  $\mu_i$  is the unemployment rate in the same group. The registered unemployment rate may not be a good proxy for excess demand for labour, as Phelps (1970) and Taylor (1972), among others, have pointed out, because it does not take account of movements in the vacancy rate which are independent of the unemployment rate or of the existence of labour hoarding or hidden unemployment. In addition, Geary and Jones (1975, p. 63) in their study of the appropriate measure of unemployment in an Irish Phillips curve suggest that the unemployment rate may not be an adequate indicator of excess demand because of the openness of the economy. Because of the unsatisfactory nature of Swedish unemployment figures as

indicators of demand pressure in the labour market Holmlund proposes as an alternative proxy the log of detrended output,  $\ln(Q/\hat{Q})$ , where  $Q$  is the index of the volume of industrial production and  $\hat{Q}$  is predicted output from the regression

$$Q = \alpha_0 e^{\alpha_1 \tau} \quad (2.17)$$

where  $\tau$  is time. We will include the  $\ln(Q/\hat{Q})$  as an alternative measure of excess demand in Ireland.

$P_q$  = wholesale price series for output of industry. The CSO publishes a monthly index of the wholesale price of industrial output. A quarterly series was derived by averaging the monthly figures.

$P_c$  = series for price of goods consumed by workers. The CSO quarterly consumer price index was used to represent this series.

$S_1, S_2, S_3$  = seasonal dummy variables. These have been included to correct for seasonality as quarterly data are used to estimate the wage equation.

A comparison of some basic data about wages, prices and taxes in Ireland, Sweden and the United States during the years 1953-80 for Ireland and 1950-78 for the other two countries is given in Table 2.1. The employer payroll tax rate has increased from 1.68 per cent to 9.8 per cent in Ireland, from 4.09 per cent in Sweden to 39.12 per cent and from 2.59 per cent in the United States to 8.33 per cent. The nominal burden of the payroll tax on employers in Ireland during the post-war period has, therefore, been comparable to that borne by employers in the United States and the burden in both countries has been relatively light by Swedish standards. The direct tax rate for employees in Ireland was less than half that in the other two countries at the beginning of the 1950s but its rate of increase was such that by the beginning of the 1980s it was about the same as the Swedish rate and considerably in excess of the direct tax rate in the United States.

The average real wage increase in terms of output prices has been 1.09 per cent per year in Ireland and 0.94 per cent in terms of consumer prices. When changes in income tax and social insurance contributions for employees are allowed for the increase in after-tax real wages was 0.66 per cent per year while real wage costs for firms rose by 1.15 per cent per year after payroll tax changes for employers have been taken into account. In Sweden the average real wage increase for employees after direct taxes was 2.8 per cent while for firms it was 5.81 per cent. In the United States the corresponding figures were 1.64 per cent and 1.81 per cent. The rate of growth in the tax

Table 2.1: *Wages, prices and taxes in Ireland, 1953-80, Sweden and the United States, 1950-78*

Variable name		Mean	Min.	Max.
Ireland, 1953(2)-1980(4)				
Wages	$100.\Delta \ln W$	2.72	-1.23	9.28
Producer prices	$100.\Delta \ln P$	1.63	-7.18	12.91
Consumer prices	$100.\Delta \ln P_c^q$	1.78	-1.72	7.73
Employer payroll tax rate	S	4.31	1.68	9.80
Relative change in employer payroll taxes	$100.\Delta \ln(1+S)$	0.06	-0.51	1.86
Employee direct tax rate	T	15.91	5.13	30.48
Relative change in retention ratio	$100.\Delta \ln(1-T)$	-0.28	-2.97	2.50
Sweden, 1950-78				
Wages	$100.\Delta \ln W$	9.39	4.38	20.96
Producer prices	$100.\Delta \ln P$	4.59	-8.99	33.85
Consumer prices	$100.\Delta \ln P_c^q$	5.88	0.74	14.03
Employer payroll tax rate	S	12.57	4.09	39.12
Relative change in employer payroll taxes	$100.\Delta \ln(1+S)$	1.01	-0.55	5.42
Employee direct tax rate	T	21.00	12.99	28.47
Relative change in retention ratio	$100.\Delta \ln(1-T)$	-0.71	-1.99	3.07
United States, 1950-78				
Wages	$100.\Delta \ln W$	5.13	2.36	10.18
Producer prices	$100.\Delta \ln P$	3.50	-1.47	17.20
Consumer prices	$100.\Delta \ln P_c^q$	3.47	0.87	10.08
Employer payroll tax rate	S	4.97	2.59	8.33
Relative change in employer payroll taxes	$100.\Delta \ln(1+S)$	0.18	-0.19	0.79
Employee direct tax rate	T	16.95	11.04	21.33
Relative change in retention ratio	$100.\Delta \ln(1-T)$	-0.02	-0.08	0.19

*Sources:* The Irish data are derived from Appendix Table A.1 and the Swedish and American data are reproduced from Holmlund (1981, Table 1 and Appendix C).

*Note:* The Swedish data refer to adult male workers in manufacturing industry while the American data refer to the total economy.

wedge between the price of labour to employers and employees was, therefore, very much greater in Sweden than in either Ireland or the United States.

### *Regression Results*

Experiments with different lag structures on the price variables resulted in only a one-quarter lagged output price variable being retained in the payroll tax equation. A comparison of unconstrained and constrained ordinary least squares (OLS) estimates of regression equations with changes in the natural log of adjusted,  $d \ln AHEADJ$ , and unadjusted,  $d \ln AHE$ , average hourly earnings as the dependent variables indicated very little difference in the fit



of the equations. However, the unconstrained regression in which the adjusted earnings series was used gave a slightly better fit than that in which the unadjusted series was used and the adjusted series was, therefore, selected in preference to the unadjusted series.

The effect of the two measures of excess demand,  $\ln(Q/\hat{Q})$  and  $\ln\text{URTGI}$ , on the constrained and unconstrained OLS estimates of the regression model was assessed in terms of the significance of each measure and its contribution to the overall fit of the regression equations. The coefficients of the unemployment rate in the industrial sector were not significantly different from zero in any case whereas those for the deviation of industrial output from trend were significant in all cases. The unemployment rate variable made no contribution to the overall fit whereas the output measure of excess demand did so. The  $\ln(Q/\hat{Q})$  was, therefore, selected for inclusion in the regression model.

The presence of current period price variables in the wage equation may lead to simultaneous equation bias of the regression coefficients so a two-stage least squares (2SLS) estimator is used in addition to the ordinary least squares (OLS) estimator.<sup>8</sup> The instruments which were used, in addition to the predetermined variables in the wage equation, were changes in import prices (current and lagged one year), labour productivity, adjusted average hourly earnings (lagged one and four periods), and a dummy variable for the third quarter of 1975. These instruments have been derived from the prototype wage-price model which has been used extensively to study wage and price inflation in many countries and from a recent study by Hackett and Honohan (1981) of the determinants of consumer prices in Ireland. The standard form of the output price equation, as presented by Lipsey and Parkin (1972) for example, is:

$$d\ln P_q = \delta_0 + \delta_1 d\ln W + \delta_2 d\ln P_m + \delta_3 d\ln G \quad (2.18)$$

where  $P_m$  and  $G$  are indices of import prices and labour productivity. Hackett and Honohan's (1981, p. 5) preferred consumer price equation is:

8. Of the five quarterly studies which have analysed payroll tax incidence in a Phillips curve framework, i.e., Perry (1970), Gordon (1971), Parkin, Sumner and Ward (1976), Halpern and Munnell (1980), and Sumner and Ward (1983), none have provided 2SLS estimates because of data problems or because price expectations were measured directly by using survey data. Sumner and Ward (1983) minimised simultaneity problems by entering the price variables with a one-quarter delay. Of the four annual studies of payroll tax shifting in a Phillips curve model, i.e., Hagens and Hambor (1979), Bradley and Cassidy (1979), Sumner (1978), and Holmlund (1983), only one, Holmlund (1983), has provided 2SLS estimates and they differed hardly at all from his OLS estimates.

$$\begin{aligned} d\ln P_c = & \phi_0 + \phi_1 d\ln W + \phi_2 d\ln W_{-1} + \phi_3 d\ln W_{-4} - \phi_4 d\ln H \\ & - \phi_5 d\ln H_{-1} + \phi_6 d\ln P_m + \phi_7 d\ln P_{m-1} + \phi_8 D + \phi_9 d\ln P_{c-4} \end{aligned} \quad (2.19)$$

where  $D$  is a dummy variable to exclude the influence of food subsidies on consumer prices in the third quarter of 1975. The hours variables,  $H$  and  $H_{-1}$ , in this equation are included to reflect the influence of variations in hours of work. As our earnings series are already adjusted for variations in hours of work we do not include the hours variables in the set of instruments. The data needed to instrument the current price variables are given in Appendix Table A.1.

Unconstrained and constrained OLS estimates of the wage equation for the period 1953(3)-1980(4) are presented in Table 2.2 while 2SLS estimates for the period 1954(2)-1980(4) are presented in Table 2.3.<sup>9</sup> The differences between the OLS and 2SLS estimates are not very marked except in the case of the output and consumer price variables. In the OLS estimates the coefficients of the lagged consumer price variable are nearly always significant whereas in the 2SLS estimates none of them are. Furthermore, the coefficients of the current output and consumer price variables are nearly always larger in the 2SLS than in the OLS estimates. The simultaneity problem, therefore, is important as far as the price variables are concerned.

The F-tests for overall significance of the regression equations indicate that the joint influence of the explanatory variables on the dependent variable is relatively strong in all the equations. The statistics for the condition of the  $X$  matrix,  $\text{cond}(X)$ , suggests very weak dependence among the explanatory variables as the condition numbers are all less than 30, the threshold value suggested by Belsley *et al.* (1980, p. 157), hence multicollinearity should not affect the regression estimates in Table 2.2. The Durbin-Watson statistics are insignificant in all cases so the estimates should not be affected by serial correlation of the residuals. The results of testing the validity of the restrictions on the regression coefficients in the OLS case indicate that they are not rejected in the case of equations (2) and (4). As it is not appropriate to use the F-test in the 2SLS case, given the way in which the residuals are estimated, t-tests are used in Table 2.3 to judge if the estimated coefficients differ significantly from those which we expected on theoretical grounds. As will be seen from Table 2.3 none of the restrictions are rejected in the 2SLS case. The non-rejection of the restrictions implies that money illusion

9. When this paper was in galley proofs some anomalies in the 2SLS results were pointed out by Patrick Honohan. These were due to an error in using the 2SLS option in TROLL when restrictions are imposed on the coefficients of endogenous variables. I am indebted to Patrick Honohan for his comments and to Denis Conniffe and John Fitzgerald for their assistance in rectifying the error. Further information on how the 2SLS option in TROLL should be used when it is necessary to impose restrictions on the coefficient of endogenous variables is available from the author on request.

Table 2.2: Unconstrained and constrained OLS estimates of payroll tax incidence in Transportable Goods Industries in Ireland, 1953(3)-1980(4). Dependent variable is  $d\ln AHEAD_j$

	(1)	(2)	(3)	(4)	(5)
Constant	0.014 (3.90)	0.016 (4.31)	0.017 (4.90)	0.012 (3.44)	0.015 (4.62)
$d\ln(1+S)$	-1.221 (2.76)	-0.478 (3.90)	-0.389 (3.43)	-1.383 (3.15)	-0.478 (4.79)
$d\ln(1-T)$	-0.965 (3.85)	-0.858 (3.49)	-0.461 (4.34)	-0.927 (3.66)	-0.522 (5.23)
$\ln(\hat{Q}/Q)$	0.223 (1.67)	0.213 (1.58)	0.181 (1.34)	0.219 (1.62)	0.185 (1.36)
$d\ln P_q$	0.228 (2.16)	0.280 (2.75)	0.242 (2.40)	0.247 (2.33)	0.277 (2.79)
$d\ln P_{q-1}$	0.212 (2.14)	0.198 (1.98)	0.147 (1.52)	0.257 (2.65)	0.201 (2.20)
$d\ln P_c$	0.380 (2.84)	0.322 (2.47)	0.461 (4.34)	0.496 (4.13)	0.522 (5.23)
S1	-0.003 (0.66)	-0.005 (1.08)	-0.008 (1.72)	-0.004 (0.82)	-0.009 (1.75)
S2	0.003 (0.57)	0.001 (0.25)	-0.002 (0.40)	0.001 (0.22)	-0.003 (0.61)
S3	-0.010 (2.15)	-0.011 (2.35)	-0.011 (2.52)	-0.010 (2.15)	-0.011 (2.49)
$\bar{R}^2$	0.503	0.493	0.482	0.491	0.474
F	13.26	14.25	15.49	14.12	17.37
S.E.R.	0.016	0.016	0.016	0.016	0.017
D.W.	1.95	1.95	1.92	1.99	1.95
Cond (X)	6.35	5.55	5.15	4.63	4.11
F (restriction)	-	3.08	3.21	3.59	3.10
F (critical, 5%)	-	3.94	3.09	3.94	2.70

Note: The following restrictions have been imposed on the coefficients in Equations (2) to (5):

Equation (2)  $d\ln S + d\ln P_q + d\ln P_{q-1} = 0$ .

Equation (3)  $d\ln S + d\ln P_q + d\ln P_{q-1} = 0, d\ln(1-T) + d\ln P_c = 0$ .

Equation (4)  $d\ln P_q + d\ln P_{q-1} + d\ln P_c = 1$ .

Equation (5)  $d\ln S + d\ln P_q + d\ln P_{q-1} = 0, d\ln P_q + d\ln P_{q-1} + d\ln P_c = 1, d\ln(1-T) + d\ln P_c = 0$ .

is not a feature of the wage determination process in Ireland and that changes in taxes and prices will have similar effects on the nominal wage. While we cannot use  $\bar{R}^2$  for Equation (5) in Table 2.3 to compare goodness of fit with studies for other countries, as most of them used OLS rather than 2SLS estimation, the OLS estimates for our preferred equation differ hardly at all from the 2SLS estimates so it is possible to use the OLS results for such a comparison. The percentage of the variance in the dependent variable which is explained by Equation (5) in Table 2.2, 47.4 per cent, compares favourably with the percentage explained in other quarterly studies. Parkin, Sumner and Ward (1976), for example, explained 43.2 per cent of the variation in the wage rate in Britain using the same basic model for the period 1956(2)-1971(4) and Parkin (1978, p. 24) subsequently commented:

considering that the dependent variable is a highly noisy quarterly first difference of logarithms, the explanatory power is good.

Most of the variables in Equation (5) in Table 2.3 are statistically different from zero. The major exception is the excess demand variable which is represented here by the deviation of industrial production from trend. The lack of significance of this variable confirms the findings of a number of studies of Irish inflation based on annual data by Geary (1976), Geary and Jones (1975), and Geary and McCarthy (1976) that the relationship between wage inflation and excess demand in Ireland is very weak and it provides evidence that an alternative output-based measure of excess demand does not modify their general conclusion.

The coefficient of the employer payroll tax variable in Equation (5) Table 2.3 is significant and it has a value of -0.488 which implies that an increase of one per cent in the payroll tax variable is associated with a decrease in the money wage rate of approximately one-half of a per cent. In terms of wage costs a percentage point increase in the employer social insurance contribution rate, from its April 1980 level of 9.8 per cent to 10.8 per cent, would have added 0.46 per cent to the cost of labour to the employer. This is evident from the fact that:

$$\frac{d \ln W(1+S)}{dS} = \frac{d \ln W}{dS} + \frac{1}{1+S} \quad (2.20)$$

and 
$$\frac{d \ln W}{dS} = \frac{d \ln W}{d \ln(1+S)} / (1+S) \quad (2.21)$$

These results indicate that employers in Ireland were able to shift back on to labour in the form of a lower rate of increase in wages a significant part of any increase in the employer social insurance contribution during the post-

PAYROLL TAX INCIDENCE

Table 2.3: Unconstrained and constrained 2SLS estimates of payroll tax incidence in Transportable Goods Industries in Ireland, 1954(2)-1980(4). Dependent variable is  $d\ln AHEADJ$

	(1)	(2)	(3)	(4)	(5)
Constant	0.014 (3.51)	0.016 (3.88)	0.016 (4.26)	0.013 (3.39)	0.016 (4.43)
$d\ln(1+S)$	-1.170 (2.29)	-0.779 (2.71)	-0.444 (2.34)	-1.272 (2.51)	-0.488 (2.90)
$d\ln(1-T)$	-0.895 (3.41)	-0.846 (3.04)	-0.500 (2.97)	-0.860 (3.26)	-0.512 (3.04)
$\ln(Q/\hat{Q})$	0.238 (1.56)	0.208 (1.29)	0.184 (1.20)	0.223 (1.45)	0.173 (1.13)
$d\ln P_q$	0.295 (0.55)	0.704 (2.31)	0.418 (1.77)	0.219 (0.41)	0.468 (2.16)
$d\ln P_{q-1}$	0.123 (0.90)	0.075 (0.55)	0.026 (0.20)	0.116 (0.84)	0.020 (0.16)
$d\ln P_c$	0.472 (0.91)	0.083 (0.26)	0.500 (2.97)	0.665 (1.39)	0.512 (3.04)
S1	-0.006 (0.96)	-0.008 (1.31)	-0.011 (1.99)	-0.007 (1.11)	-0.011 (2.12)
S2	0.001 (0.15)	0.002 (0.32)	-0.003 (0.60)	-0.001 (0.13)	-0.003 (0.65)
S3	-0.009 (1.91)	-0.011 (2.13)	-0.011 (2.25)	-0.009 (1.81)	-0.011 (2.22)
$\bar{R}^2$	0.484	0.394	0.447	0.466	0.436
F	12.06	9.63	13.25	12.58	14.66
S.E.R.	0.016	0.018	0.017	0.017	0.017
D.W.	1.98	1.86	1.94	2.04	1.94
Cond (X)	22.73	10.62	8.24	5.10	4.62
t (first restriction)	0.90	-	-	1.3	-
t (second restriction)	0.73	1.61	-	0.37	-
t (third restriction)	0.88	1.06	0.30	-	-
t (critical)	1.98	1.98	1.98	1.98	-

Note: (i) The restrictions specified in Table 2.2 have been imposed. The first restriction is  $d\ln S + d\ln P_q + d\ln P_{q-1} = 0$ , the second is  $d\ln(1-T) + d\ln P_c = 0$  and the third is  $d\ln P_q + d\ln P_{q-1} + d\ln P_c = 1$ .

(ii) The residual sum of squares is calculated by inserting the coefficient estimates into the structural equation. This explains why  $\bar{R}^2$  does not necessarily decrease when additional restrictions are imposed.

war period. The employer tax-shifting coefficient for Sweden has been estimated as 0.496 by Holmlund (1983) using annual data for the years 1951-79 and as 0.706 for the UK by Parkin, Sumner and Ward (1976) using quarterly data for the period 1956-71. Approximately half of any increase in the employer part of the payroll tax is, therefore, shifted back on to labour in Ireland and Sweden while over two-thirds of it is shifted on to labour in Britain.

The coefficient of the employee tax variable,  $-0.512$ , is also significant and it indicates that for every one per cent decrease in the retention ratio due to higher income tax or employee social insurance contributions the nominal wage is pushed up by around a half of one per cent. A number of commentators on developments in the Irish labour market, e.g., Walsh (1978) and Durkan (1983), have argued that Irish workers would attempt to resist erosion of their earnings due to higher direct taxes by negotiating larger increases in their basic rates of pay. Our results provide the first hard evidence that net of tax, wage bargaining takes place in the Irish labour market and it adds to the evidence which is available for other countries, cf., OECD (1976) and Auld (1977), which indicates that such bargaining becomes the norm when high tax rates take back the bulk of the annual increase in workers' earnings. As Dernburg (1974) pointed out a decade ago wage retaliation is likely to occur in countries where most of the labour force is organised into a few large unions and where wage bargaining takes place on a collective rather than a free-for-all basis. The combination of high unionisation rates and centralised bargaining facilitates large unions in exercising their preferences for jobs and take-home pay, which are characteristic of the utility function of union leaderships, as Joll *et al.* (1983, Ch. 5) note, by substituting higher pre-tax wage rates for lower employment when tax rates are increased. Unionisation rates in Ireland were relatively high and rising over the period with which we are concerned, 42.0 per cent of employees in 1953 and 54.1 per cent in 1977 according to Sapsford's (1984) estimates, and the unions' inclination to bargain in net-of-tax terms was strengthened by the incorporation of more and more workers into the tax net following the introduction of the PAYE income tax system in 1960/61. It will be seen from Appendix Table A.1 that employees in receipt of the average industrial wage in the early 1950s paid less than 6 per cent of their income in direct tax deductions, that this had increased to less than 8 per cent by 1960 whereas the proportion taken in tax had risen to around 20 per cent by 1970 and 30 per cent by 1980.

The data period which we have used in our analysis is one in which significant changes have occurred in the income tax system, the financing of social insurance and the economy as a whole. Two of these changes virtually

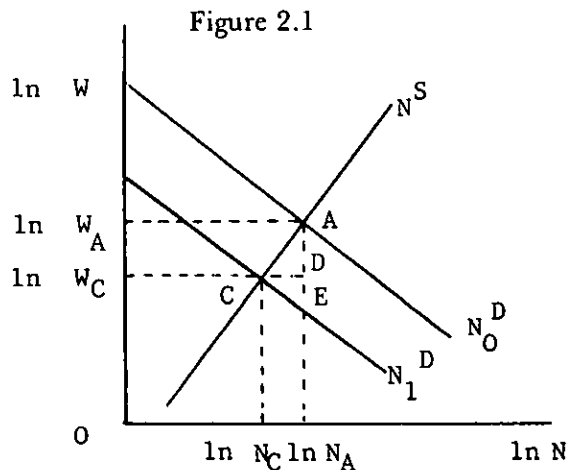
coincided, viz., the first oil crisis which occurred at the end of 1973 and the change over to a partially pay-related social insurance contribution system in the second quarter of 1974, and they could have induced a structural change in the set of regression coefficients in Equation (5) Table 2.3. However, t-tests of the stability of the coefficients did not indicate any significant differences in the coefficients for the period 1954(2)-1980(4) and for the sub-periods 1954(2)-1974(1) and 1974(2)-1980(4).

To sum up our results to date, they indicate that the nominal and effective incidence of the employer and employee social insurance contribution in Ireland are not the same, that employers are able to shift a part of their contribution back on to labour and that employees are able to partially indemnify themselves against increases in income and payroll taxes by increases in wages.

#### 2.4 Effect of Employer Social Insurance Contribution on Employment

Considerable attention has been given by employer organisations in recent years to the effect of the employer social insurance contribution on employment. The Confederation of Irish Industry, for example, in a recent submission to the Government by its Labour Intensive Group Committee, reported in the *CII Newsletter* on 17 January 1984, argued that a PRSI reduction to 2.0 per cent for employers in labour intensive industries could save 2,700 jobs in manufacturing and the same number elsewhere in the economy.

The implications for employment of our estimate of the proportion of the employer payroll tax which is shifted can be worked out by noting that if our labour demand and supply functions are graphed in wage-employment space as in Figure 2.1



they can be written as

$$\ln N^D = \ln \alpha - \epsilon_D \ln \left[ \frac{W(1+S)}{P_q} \right] \quad (2.22)$$

$$\ln N^S = \ln \gamma + \epsilon_s \ln \left[ \frac{W(1-T)}{P_c} \right] \quad (2.23)$$

The labour demand curve shifts downward by the vertical distance AE in response to an increase in the employer component of the payroll tax. Since some of the tax is shifted the portion which is borne by employees is represented by the distance AD =  $\ln W_A - \ln W_C$ , the reduction in the gross wage due to the tax. At point A the amount of labour actually supplied is

$$\ln N_A^S = \ln \gamma + \epsilon_s \ln \left[ \frac{W_A(1-T)}{P_c} \right] \quad (2.24)$$

while at point C it is

$$\ln N_C^S = \ln \gamma + \epsilon_s \ln \left[ \frac{W_C(1-T)}{P_c} \right] \quad (2.25)$$

The change in employment as a consequence of the tax is

$$\ln N_A^S - \ln N_C^S = \epsilon_s (\ln W_A - \ln W_C) \quad (2.26)$$

From our estimate of the proportion of the employer social insurance contribution which is shifted back to employees we know that a one per cent increase in the payroll tax variable will reduce the wage received by employers by 0.49 per cent. The percentage change in employment can be derived from Equation (2.26) by inserting an estimate of the elasticity of labour supply with respect to the price of labour. Unfortunately efforts to derive the price elasticity of labour supply at the aggregate level for the Irish economy have so far been unsuccessful because of deficiencies in the annual data relating to the population and the labour force which are discussed by Bradley and Fanning (1984, p. 170). However, the coefficients on the price and tax variables in the preferred equation in Table 2.3 imply that the price elasticity of labour supply for the manufacturing sector is 1.05 times the price elasticity of demand for labour. A study by Geary, Walsh and Copeland (1975) of the cost of capital to Irish industry indicated that the price elasticity of demand for labour ranged from -0.1 to -0.5 while direct estimation of the price elasticity, in studies by Walsh (1978) and Hughes (1982b), from a labour demand equation based on a CES production function indicated that it was



approximately -0.2. We will use an estimate of 0.21 ( $= 0.2 \times 1.05$ ) for the supply elasticity to test the sensitivity of employment in manufacturing to changes in the employer component of the pay-related social insurance contributions. Given that in 1979 there were 228,625 persons employed in Transportable Goods Industries it appears that a reduction in 1979 in the employer contribution to 2 per cent for *all* industries would have increased the number employed by approximately 1,500 persons or by about half the increase estimated by the CII for labour-intensive industries alone. The CII argument that 2,700 jobs in labour-intensive industries could be saved by a reduction to 2 per cent in the employer social insurance contribution for those industries cannot, therefore, be accepted unless further evidence is supplied to support the case.

The implications of our results for employment in manufacturing can also be compared with Kirwan's (1979) estimate of the consequences of a reduction of £1 per week in the employer social insurance contribution. He calculated that this would have led to the creation of 1,200 extra jobs in manufacturing in mid-1977 and that multiplier effects in non-manufacturing would have increased this figure somewhat. At the end of June 1977 the average industrial wage was £61.88 per week, the employer social insurance contribution rate was 8.94 per cent so the amount which the employer had to pay to the government was £5.53 per week. A reduction of £1 per week in the employer contribution would have resulted in a reduction of 1.5 per cent in the employer payroll tax variable. If the elasticity of labour supply was 0.21, as our estimates suggest, the number employed in Transportable Goods Industries in mid-1977 would have increased from 213,500 to 213,840 or by 340 persons. This is approximately one-quarter of the number of new jobs which Kirwan calculated would result from a reduction of £1 per week in the employer social insurance contribution. Most, if not all, of the difference between the two estimates can be accounted for by the fact that an implicit assumption underlying Kirwan's calculations is that the price elasticity of labour supply is around 0.74. This is a much higher value than anyone else has suggested for the Irish economy.<sup>10</sup> Pending further evidence Kirwan's estimate of the employment effect of a payroll tax cut should be treated sceptically.

Kirwan (1979, p. 250) noted that the direct cost to the Exchequer of a reduction of a £1 a week in the employer social insurance contribution in

10. Efforts to estimate labour supply price elasticities by Bradley *et al.* (1981, p. 55) and by Bradley and Fanning (1984, pp. 170-171) were unsuccessful or else yielded a very low value, 0.021, which is tentative because of deficiencies in the data used to estimate it. Greenhalgh and Mayhew (1981, p. 50) in a survey of the empirical evidence for Great Britain of supply elasticities with respect to wage rates conclude that "the typical result in many studies using individual data is a very poor fit and apparently inelastic supply" for both labour force participation and hours of work functions.

mid-1977 would have been around £200,000 per week or £10.4 million per year but he was unable to consider this cost in the context of revenue received from the manufacturing sector because of absence of data. The CSO has supplied us with information on payroll tax receipts for the manufacturing sector from which it appears that employers social welfare contributions in 1977 amounted to £48 million for that sector. Hence, if the employer social insurance contribution had been reduced by £1 per week in 1977 there would have been a decrease of over 20 per cent in revenue from the employer payroll tax and an increase of only 0.16 per cent in employment. The employment elasticity of a payroll tax cut in Ireland, therefore, appears to be rather low. In addition it would seem to be far more costly to use payroll tax cuts as a method of creating employment than the policy of direct grant aid which has been used so successfully in the past. According to calculations in the Telesis Report (NESC, 1982, Tables 6.4 and 6.5), for example, the grant cost in 1980 pounds of each job actually created by foreign and domestic companies between 1973 and 1980 was £8,991 whereas a payroll tax cut of £1 per week in the employer contribution would have involved a recurring annual loss of payroll tax revenue of nearly £42,000 per job in 1980 pounds if our assumption about the price elasticity of labour supply is correct.<sup>11</sup>

11. The cost per job in 1980 pounds of a payroll tax cut is derived by inflating the 1977 figure of £31,325 by the percentage change in the GDP deflator over the period 1977-80, 42.2 per cent, as shown in OECD (1983a, Table 3).

## Chapter 3

### *EFFECTS OF SOCIAL INSURANCE CONTRIBUTIONS ON EFFECTIVE TAX RATES AND THE DISTRIBUTION OF INCOME FOR PAYE TAXPAYERS*

#### *3.1 Introduction*

In 1981 effective employee payroll tax contributions amounted to over a quarter of the net receipts from PAYE taxpayers. It is important, therefore, to consider the effect which the payroll tax has had over the years on the equity of the tax system for insured workers. Studies of tax burdens by income class for Ireland usually include only the social insurance contribution paid by the employee as part of the direct tax burden.<sup>12</sup> The finding in the previous chapter that part of the employer social insurance contribution is shifted back to the employee means that a portion of the employer as well as the employee contribution should be assigned to individual earners. This can be done by assuming that the effective social insurance contribution for employees in each income class, i.e., the employee contribution and that part of the employer contribution which is shifted to employees, reduces their annual earnings proportionally just as the average contribution reduces the average wage in Transportable Goods Industries. Using this assumption we have calculated the amount and effective rates of payroll tax and of direct tax (i.e., payroll tax plus income tax) on specimen incomes for selected years from 1953-54 to 1980-81 and on actual incomes in 1979-80. The part of the employer contribution which is shifted is treated as income of employees. Hence, adjusted rather than actual money income figures will be used in the tax burden tables which follow.

#### *3.2 Effective Income and Payroll Tax Rates, 1953-54 to 1980-81*

We would like to be able to indicate how many taxpayers were affected by each tax rate but data on the distribution of income by number of taxpayers are not available before 1974-75. We can, however, get some indication of numbers affected by considering the average wage per employee and we can judge how the income and payroll tax rates bear on the poor by considering their effect on incomes below the poverty standard adopted by

12. The distribution of employees' social insurance contributions by income class has been examined by Reason (1960-61), NESO (1975), Norton (1976), Nolan (1977-78), the Central Statistics Office (1980), Nolan (1981), and O'Connell (1982).

Table 3.1: *Average wage per employee and poverty lines for various family sizes: selected years 1953-80*

Year	Wages, salaries and pensions (£m)	Employees (000s)	Average wage per employee (£)	Poverty level (£) for:		
				Single person	Married couple	Married couple with three children
1953	219.6	690.5	318	87.36	131.04	182.00
1963	381.9	675.7	565	136.50	263.90	387.66
1973	1377.0	769.3+	1790	476.84	786.24	1164.80
1979	4368.5	855.2	5108	1168.44	1929.20	2882.88
1980	5342.0	877.9*	6085	1488.76	2453.36	3676.40

Sources: *National Income and Expenditure*, 1969, 1977 and 1980; *Census of Population of Ireland 1981: Five Per Cent Sample Estimates of Age, Marital Status, and Labour Force*; *Labour Force Survey 1979 Results*; Hughes (1972, Table A6), and *Reports of the Department of Social Welfare* 1950-54, 1963-66, 1972-75, 1979-80.

Notes: + Refers to 1975; \* Refers to 1981.

Rottman, *et al.* (1982).<sup>13</sup> The relevant information is given in Table 3.1 and the income and payroll tax rates for different family sizes in 1953-54 are shown in Table 3.2 and Figure 3.1. Bearing in mind that average income per employee in 1953 was £318 a year and that the poverty line was a quarter of this for a single worker, two-fifths for a married couple, and three-fifths for a married couple with three children it is evident from Figure 3.1 that most workers would not have paid any income tax in 1953-54 whereas the majority of them would have been subject to payroll taxation. Since income tax rates were progressive for all family sizes and payroll tax was regressive, workers earning less than the poverty standard would have been taxed more heavily than many workers who were comparatively well off. The combined effect of both taxes on typical households is shown in Figure 3.2. The curves are v-shaped for all household sizes so the direct tax system in 1953-54 was regressive through the poverty range and up to tax exempt income levels and progressive thereafter. Given average incomes in 1953, however, most workers would have had incomes in the regressive ranges and the general effect of the direct tax system would have been to increase rather than reduce inequality. The way in which the combined effect of the two taxes ran counter to the ability-to-pay principle of tax equity can be illustrated by the tax burdens borne by two families with three children living on £203

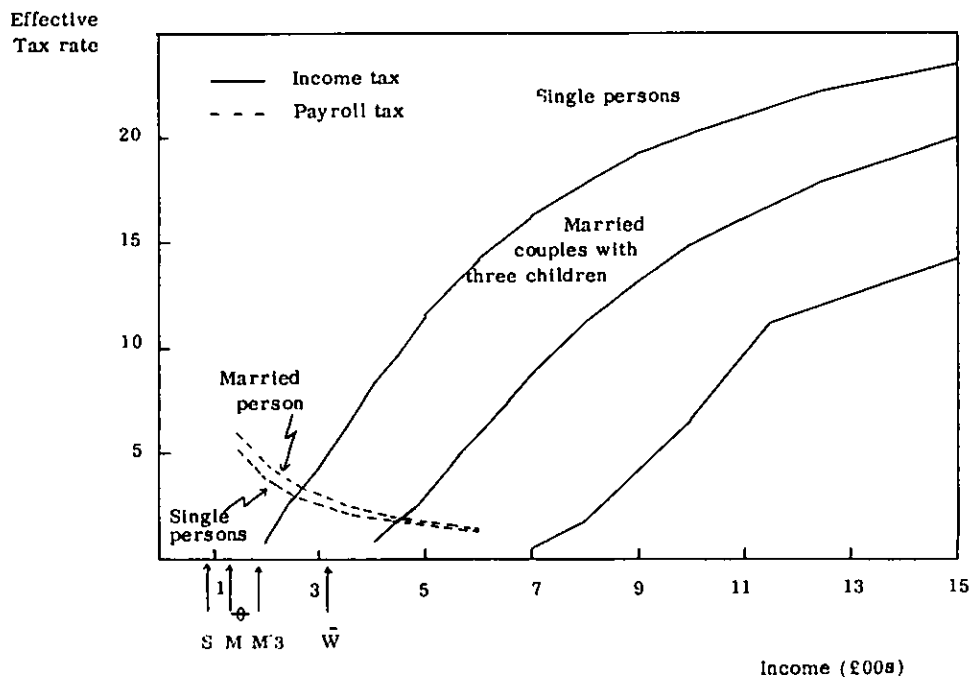
13. The poverty line used by Rottman *et al.* (1982) was set at 140 per cent of the Unemployment Benefit entitlement for different sized households.

Table 3.2: Amount and effective rate of income and payroll tax on specimen incomes 1953-54

Adjusted income	Amount of income tax	Effective rate of income tax	Amount of payroll tax	Effective rate of payroll tax	Combined income and payroll tax	Combined direct tax rate
<i>Single persons</i>						
153	—	—	7.93	5.2	7.93	5.2
203	1.50	0.8	7.93	3.9	9.43	4.6
253	7.12	2.8	7.93	3.1	15.05	5.9
303	12.75	4.2	7.93	2.6	20.68	6.8
353	21.75	6.2	7.93	2.2	29.68	8.4
403	33.00	8.2	7.93	2.0	40.93	10.2
453	44.25	9.8	7.93	1.8	52.18	11.5
503	58.12	11.6	7.93	1.6	66.05	13.1
603	86.25	14.3	7.93	1.3	94.18	15.6
700	114.37	16.3	—	—	114.37	16.3
800	142.50	17.8	—	—	142.50	17.8
900	172.50	19.2	—	—	172.50	19.2
1,000	202.50	20.2	—	—	202.50	20.2
1,250	277.50	22.2	—	—	277.50	22.2
1,500	352.50	23.5	—	—	352.50	23.5
<i>Married couples, no children (One spouse working)</i>						
153	—	—	9.03	5.9	9.03	5.9
203	—	—	9.03	4.4	9.03	4.4
253	—	—	9.03	3.6	9.03	3.6
303	—	—	9.03	3.0	9.03	3.0
353	—	—	9.03	2.6	9.03	2.6
403	3.00	0.7	9.03	2.2	12.03	3.0
453	8.62	1.9	9.03	2.0	17.65	3.9
503	14.25	2.8	9.03	1.8	23.28	4.6
603	36.00	6.0	9.03	1.5	45.03	7.5
700	61.87	8.8	—	—	61.87	8.8
800	90.00	11.3	—	—	90.00	11.3
900	120.00	13.3	—	—	120.00	13.3
1,000	150.00	15.0	—	—	150.00	15.0
1,250	225.00	18.0	—	—	225.00	18.0
1,500	300.00	20.0	—	—	300.00	20.0
<i>Married couples, three children (One spouse working)</i>						
153	—	—	9.03	5.9	9.03	5.9
203	—	—	9.03	4.4	9.03	4.4
253	—	—	9.03	3.6	9.03	3.6
303	—	—	9.03	3.0	9.03	3.0
353	—	—	9.03	2.6	9.03	2.6
403	—	—	9.03	2.2	9.03	2.2
453	—	—	9.03	2.0	9.03	2.0
503	—	—	9.03	1.8	9.03	1.8
603	—	—	9.03	1.5	9.03	1.5
700	3.30	0.5	—	—	3.30	0.5
800	14.55	1.8	—	—	14.55	1.8
900	38.10	4.2	—	—	38.10	4.2
1,000	66.37	6.6	—	—	66.37	6.6
1,250	141.37	11.3	—	—	141.37	11.3
1,500	216.37	14.4	—	—	216.37	14.4

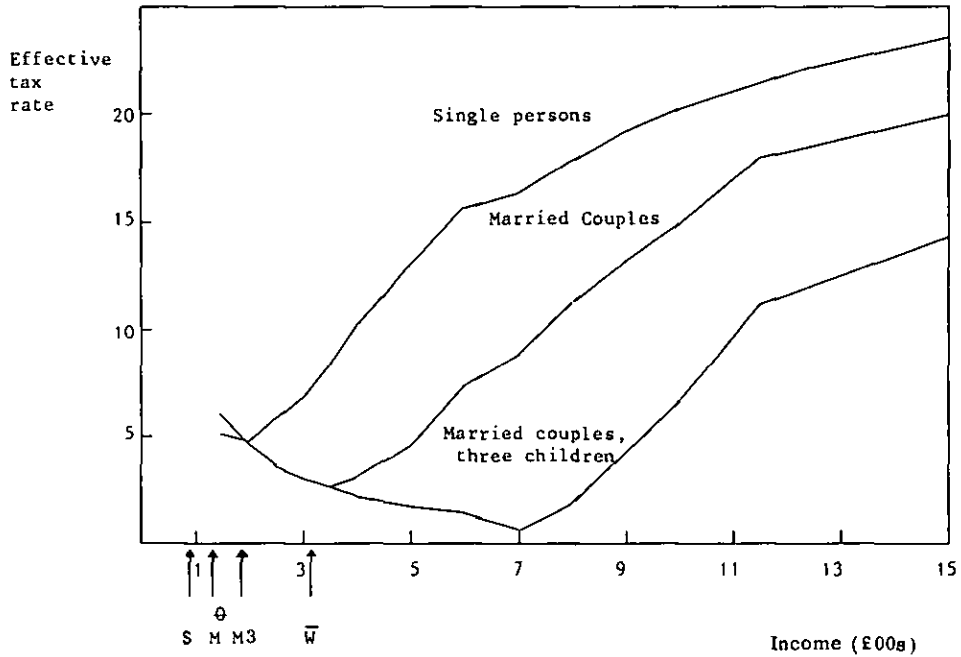
Source: *Thirty-First Annual Report of the Revenue Commissioners, Year Ended 31st March, 1954*, Table 70 and author's calculations.

Note: The income limit for social insurance contributions in 1953/54 was £600.

Figure 3.1: *Income and payroll tax rates for different household sizes, 1953-54*

*Note:*  $\theta$  indicates the poverty line for single persons (S), married couples (M), and for married couples with three children (M3).  
 $\bar{W}$  indicates the average wage per employee.

Figure 3.2: Combined income and payroll tax rates for different household sizes, 1953-54



Note:  $\theta$  indicates the poverty line for single persons (S), married couples (M), and for married couples with three children (M3).

$\bar{W}$  indicates the average wage per employee.

and £900 a year respectively, i.e., on two-thirds of the average wage and three times the average. The first family would have had a payroll tax rate of 4.4 per cent while the second would have had a combined income and payroll tax rate of 4.2 per cent. Hence, the high income family would have paid a smaller proportion of its income in tax than the family which was on the borderline of poverty.

There were three features of the social insurance contribution system which counteracted the progressivity of the income tax system in 1953-54. The first was that it had no lower earnings limit below which workers were exempt from paying social insurance whereas the income tax code exempted virtually all single persons earning less than two-thirds of average employee income and all married couples earning less than the average. The second reason was that social insurance contributions were levied at a flat-rate for all employees with incomes less than £600 a year and they were, therefore, regressive over the range of incomes on which they were levied. The third reason was that high income earners did not pay social insurance contributions because the exemption limit was set at around twice average employee income so the payroll tax rate for such persons was zero.

The adverse distributional consequences of the payroll tax were accentuated over the years since 1953-54 as the contributions were increased at a faster rate than average earnings in order to pay for additional benefits, such as contributory old age pensions, which were introduced since the 1950s. Income and payroll tax data for 1963-64 and for 1973-74 are presented in Tables 3.3 and 3.4 and illustrated in Figures 3.3 and 3.4. Given the average employee income figures, the poverty levels for 1963 and 1973 in Table 3.1 and the introduction of PAYE in 1960 it is apparent from the income and payroll tax data for 1963-64 and 1973-74 that there was a considerable increase in the burden of both taxes since the early 1950s. A single person earning four-fifths of the average employee income in 1953-54 would have had an income tax rate of around 3 per cent and a payroll tax rate of about the same amount whereas a similar employee in 1963-64 would have had an income tax rate of around 7 per cent and a payroll tax rate of about 4.5 per cent. In 1973-74 the income tax rate would have been over 18 per cent while the payroll tax rate would have been over 7 per cent. The effective payroll tax rates borne by workers earning less than the poverty level of income would have increased dramatically between 1953-54 and 1973-74. In 1953-54 a single person with earnings just on the poverty line of £87.36 a year would have had an effective payroll tax rate of nearly 9 per cent. In 1973-74 such a person would have had earnings of £476.84 per year and an effective payroll tax rate of over 20 per cent.

The combined effect of the two taxes in 1963-64 and 1973-74 are shown

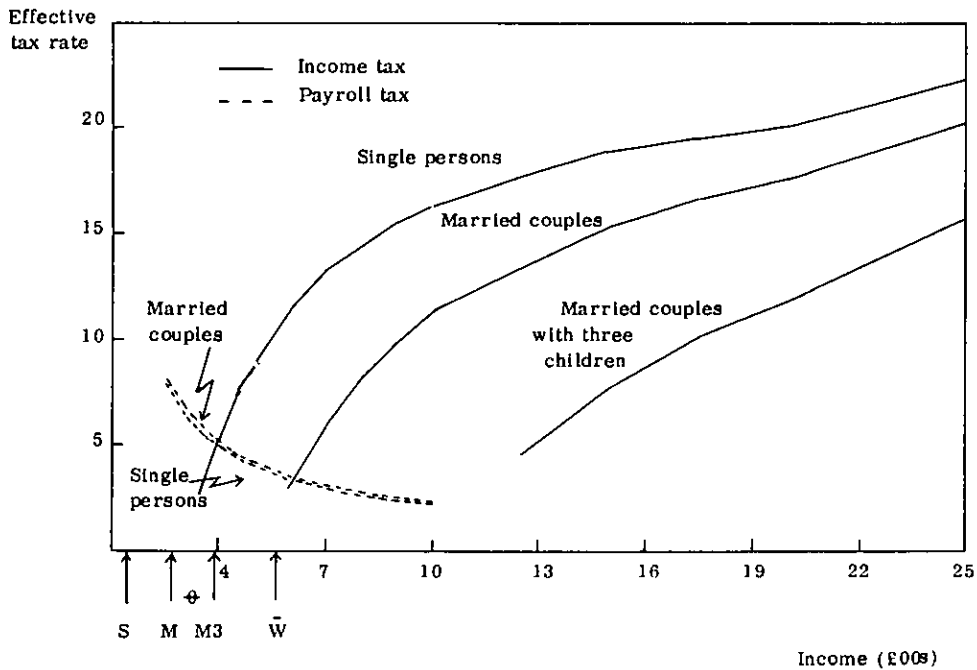


Table 3.3: Amount and effective rates of income and payroll tax on specimen incomes 1963-64

Adjusted income	Amount of income tax	Effective rate of income tax	Amount of payroll tax	Effective rate of payroll tax	Combined income and payroll tax	Combined direct tax rate
<i>Single persons</i>						
257	—	—	19.85	7.7	19.85	7.7
307	—	—	19.85	6.5	19.85	6.5
357	9.02	2.5	19.85	5.6	28.87	8.1
407	20.90	5.1	19.85	4.9	40.75	10.0
457	32.77	7.2	19.85	4.3	52.62	11.5
507	44.65	8.8	19.85	3.9	64.50	12.8
607	68.40	11.3	19.85	3.3	88.25	14.5
707	92.15	13.0	19.85	2.8	112.00	15.8
807	115.90	14.4	19.85	2.5	135.75	16.8
907	139.65	15.4	19.85	2.2	159.50	17.6
1,007	163.40	16.2	19.85	2.0	183.25	18.2
1,250	222.77	17.8	—	—	222.77	17.8
1,500	282.15	18.8	—	—	282.15	18.8
1,750	341.52	19.5	—	—	341.52	19.5
2,000	400.90	20.0	—	—	400.90	20.0
2,500	559.23	22.4	—	—	559.23	22.4
<i>Married couples, no children (One spouse working)</i>						
257	—	—	20.95	8.2	20.95	8.2
307	—	—	20.95	6.8	20.95	6.8
357	—	—	20.95	5.9	20.95	5.9
407	—	—	20.95	5.1	20.95	5.1
457	—	—	20.95	4.6	20.95	4.6
507	—	—	20.95	4.1	20.95	4.1
607	17.73	2.9	20.95	3.5	38.68	6.4
707	41.48	5.9	20.95	3.0	62.43	8.8
807	65.23	8.1	20.95	2.6	86.18	10.7
907	88.98	9.8	20.95	2.3	109.93	12.1
1,007	112.73	11.2	20.95	2.1	133.68	13.3
1,250	172.11	13.8	—	—	172.11	13.8
1,500	231.48	15.4	—	—	231.48	15.4
1,750	290.85	16.6	—	—	290.85	16.6
2,000	350.23	17.5	—	—	350.23	17.5
2,500	508.57	20.3	—	—	508.57	20.3
<i>Married couples, three children (One spouse working)</i>						
257	—	—	20.95	8.2	20.95	8.2
307	—	—	20.95	6.8	20.95	6.8
357	—	—	20.95	5.9	20.95	5.9
407	—	—	20.95	5.1	20.95	5.1
457	—	—	20.95	4.6	20.95	4.6
507	—	—	20.95	4.1	20.95	4.1
607	—	—	20.95	3.5	20.95	3.5
707	—	—	20.95	3.0	20.95	3.0
807	—	—	20.95	2.6	20.95	2.6
907	—	—	20.95	2.3	20.95	2.3
1,007	—	—	20.95	2.1	20.95	2.1
1,250	58.11	4.6	—	—	58.11	4.6
1,500	117.48	7.8	—	—	117.48	7.8
1,750	176.86	10.1	—	—	176.86	10.1
2,000	236.23	11.8	—	—	236.23	11.8
2,500	394.57	15.8	—	—	394.57	15.8

Source: Forty-First Annual Report of the Revenue Commissioners, Year Ended 31st March, 1964, Table 66.

Note: The income limit for social insurance contributions was £1,200 in 1963-64.

Figure 3.3: *Income and payroll tax rates for different family sizes, 1963-64*

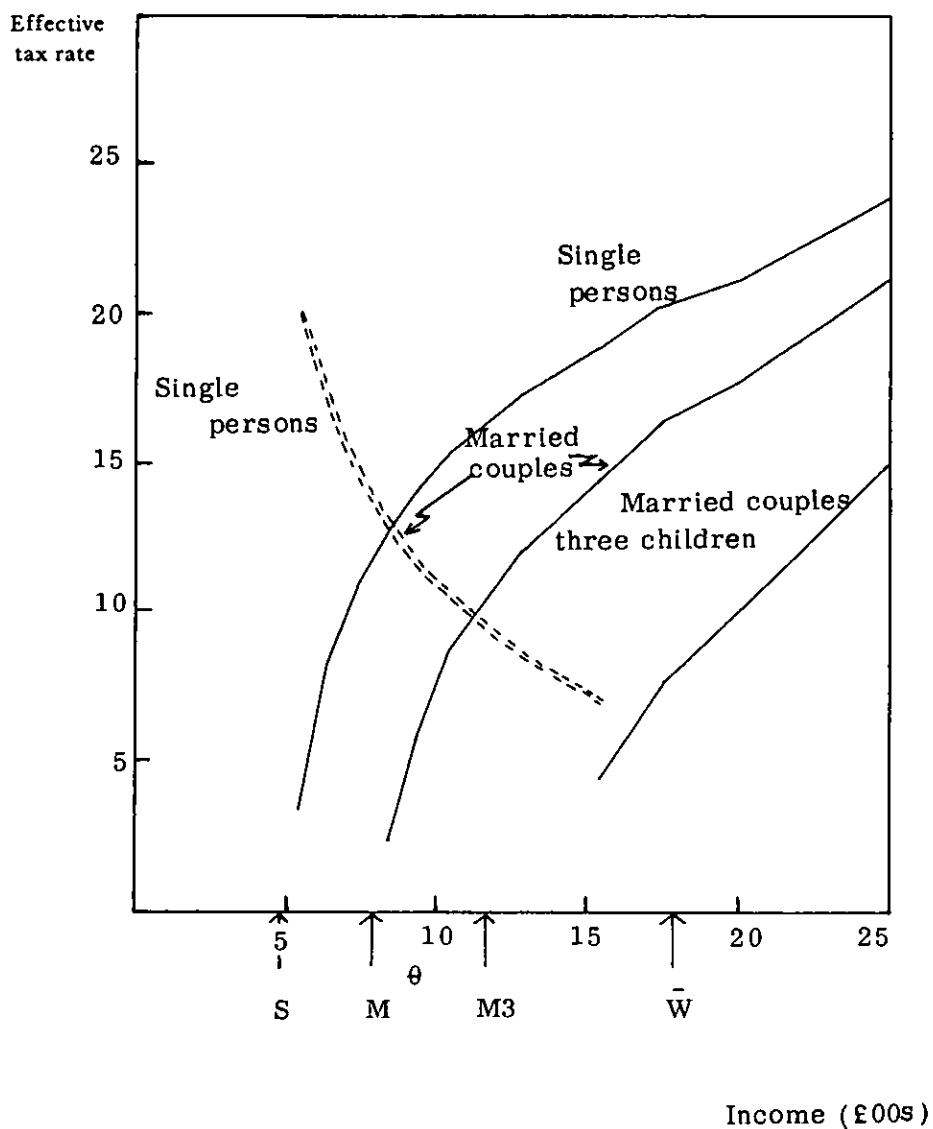
*Note:*  $\theta$  indicates the poverty line for single persons (S), married couples (M), and for married couples with three children (M3).  
 $\bar{W}$  indicates the average wage per employee.

Table 3.4: Amount and effective rates of income and payroll tax on specimen incomes, 1973-74

Adjusted income	Amount of income tax	Effective rate of income tax	Amount of payroll tax	Effective rate of payroll tax	Combined income and payroll tax	Combined direct tax rate
<i>Single persons</i>						
540	17.85	3.3	107.91	20.0	125.76	23.3
640	52.85	8.3	107.91	16.9	160.76	25.1
740	79.10	10.7	107.91	14.6	187.01	25.3
840	105.35	12.6	107.91	12.8	213.26	25.4
940	131.60	14.0	107.91	11.5	239.51	25.5
1,040	157.85	15.2	107.91	10.4	265.76	25.6
1,240	223.48	17.3	107.91	8.4	331.39	25.7
1,540	289.10	18.8	107.91	7.0	397.01	25.8
1,750	354.73	20.3	—	—	354.73	20.3
2,000	420.35	21.0	—	—	420.35	21.0
2,500	593.35	23.8	—	—	593.35	23.8
<i>Married couples, no children (One spouse working)</i>						
541	—	—	109.44	20.2	109.44	20.2
641	—	—	109.44	17.1	109.44	17.1
741	—	—	109.44	14.8	109.44	14.8
841	19.60	2.3	109.44	13.0	129.04	15.3
941	54.60	5.8	109.44	11.6	164.04	17.4
1,041	89.60	8.6	109.44	10.5	199.04	19.1
1,241	155.23	12.0	109.44	8.8	264.67	20.5
1,541	220.85	14.4	109.44	7.1	330.29	21.4
1,750	286.48	16.4	109.44	—	286.48	16.4
2,000	352.10	17.6	—	—	352.10	17.6
2,500	527.10	21.1	—	—	527.10	21.1
<i>Married couples, three children (One spouse working)</i>						
541	—	—	109.44	20.2	109.44	20.2
641	—	—	109.44	17.1	109.44	17.1
741	—	—	109.44	14.8	109.44	14.8
841	—	—	109.44	13.0	109.44	13.0
941	—	—	109.44	11.6	109.44	11.6
1,041	—	—	109.44	10.5	109.44	10.5
1,241	—	—	109.44	8.8	109.44	8.8
1,541	66.15	4.3	109.44	7.1	175.59	11.4
1,750	131.78	7.5	—	—	131.78	7.5
2,000	197.40	9.9	—	—	197.40	9.9
2,500	372.40	14.9	—	—	372.40	14.9

Source: *Fiftieth Annual Report of the Revenue Commissioners, Year Ended 31st March, 1973, Table 75.*

Note: The income limit for social insurance contributions was £1,600 in 1973-74.

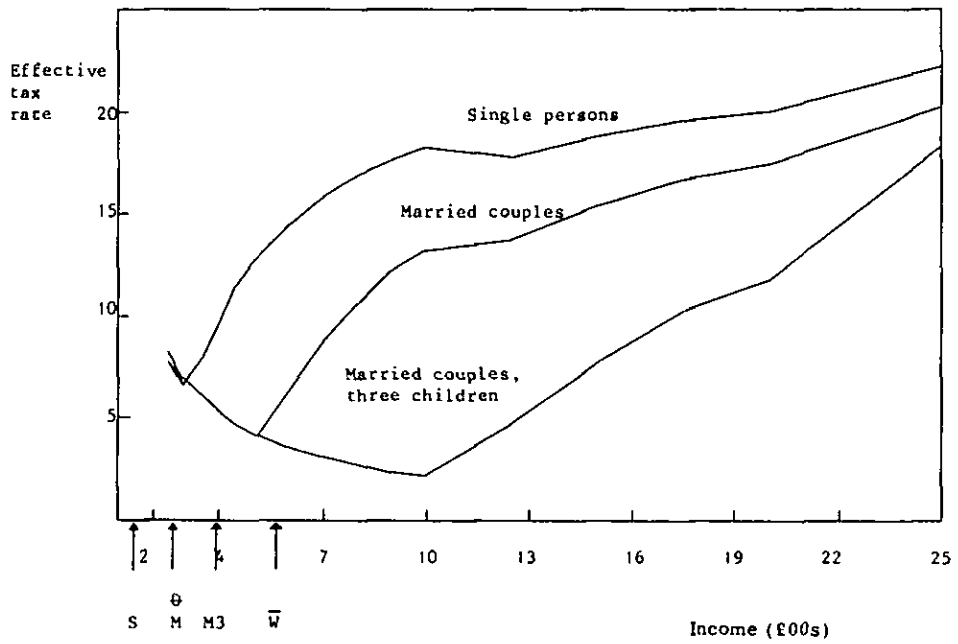
Figure 3.4: *Income and payroll tax rates for different household sizes, 1973-74*

*Note:*  $\theta$  indicates the poverty line for single persons (S), married couples (M) and for married couples with three children (M3).  
 $\bar{W}$  indicates the average wage per employee.

in Figures 3.5 and 3.6. The regressiveness of the payroll tax had increased by so much between 1953-54 and 1963-64 that it outweighed the progressivity of the income tax over some part of the income range. Thus, a married couple with three children living on £257 a year in 1963-64 would have paid a higher direct tax rate than a similar couple living on £1,500 a year. By 1973-74 when the effective payroll tax rate for low income earners had risen to over 20 per cent the regressive effects of the tax were so strong that they made the direct tax burden for single workers nearly a constant 25.0 per cent on incomes of £640-£1,540 a year. For married couples the direct tax burden was regressive up to £740, progressive up to £1,540, regressive up to £1,750 and progressive thereafter. For married couples with three children, the burden was regressive up to incomes of £1,241, progressive up to £1,541, regressive up to £1,750 and progressive up to £2,500. As average income per employee in 1973 was nearly £1,800 the majority of workers would have earned less than that and their average combined tax rates would have been significantly greater than for workers on high incomes. An extreme example from Figure 3.6 will bring out the disproportionate impact of direct taxes on low income earners. A married man with three children with an adjusted income of £540 a year would have had a direct tax rate of 20 per cent whereas the rate for someone in similar circumstances living on £2,000 a year would have been 10 per cent. Hence, a family with an income less than half the poverty level in 1973 had a combined tax rate which was double that of a family with an income twice the poverty standard.

A partial step towards alleviating the heavy burden of the payroll tax on low income earners was taken with the introduction of pay-related contributions in 1974 in addition to the flat-rate contribution. The flat-rate contribution continued to account for about 70 per cent of the total financing of the Social Insurance Fund and the effectiveness of the pay-related contribution in redistributing the burden of the tax was limited by the comparatively low earnings ceiling of £2,500 on which the contribution was levied. Pending the introduction of a fully pay-related contribution scheme reductions were made in the flat-rate contributions for lower-paid workers in January and April 1978 which eased their payroll tax burden somewhat. The overall regressivity of the method of financing by a combination of flat-rate and pay-related contributions was recognised by the Government and a major step towards remedying this by taking account of ability-to-pay was taken in 1979 when a fully pay-related social insurance (PRSI) contribution system was introduced under which a constant proportion of earnings up to a specified income ceiling is earmarked for social security purposes. This development eliminated regressivity from the payroll tax over a wide range of incomes as will be seen from Table 3.5 and Figure 3.7.

Figure 3.5: Combined income and payroll tax rates for different household sizes, 1963-64



Note:  $\theta$  indicates the poverty line for single persons (S), married couples (M) and for married couples with three children (M3).  
 $\bar{W}$  indicates the average wage per employee.

Figure 3.6: Combined income and payroll tax rates for different household sizes, 1973-74



Note:  $\theta$  indicates the poverty line for single persons (S), married couples (M) and for married couples with three children (M3).  $\bar{W}$  indicates the average wage per employee.

Table 3.5: Amount and effective rates of income and payroll tax on specimen incomes in 1980-81

Adjusted income	Amount of income tax	Effective rate of income tax	Amount of payroll tax	Effective rate of payroll tax	Combined income and payroll tax	Combined direct tax rate
<i>Single persons or married persons who elect for separate assessment</i>						
629	—	—	55.80	8.9	55.80	8.9
1,048	—	—	93.00	8.9	93.00	8.9
1,572	—	—	139.50	8.9	139.50	8.9
2,096	121.25	5.8	186.00	8.9	307.25	14.7
2,620	246.25	9.4	232.50	8.9	478.75	18.3
3,144	419.75	13.4	279.00	8.9	698.75	22.2
5,240	1,119.75	21.4	465.00	8.9	1,584.75	30.2
7,336	1,868.15	25.5	651.00	8.9	2,519.15	34.3
10,336	3,366.75	32.6	651.00	6.3	4,017.75	38.9
15,336	6,341.00	41.4	651.00	4.2	6,992.00	45.6
20,336	9,341.00	46.0	651.00	3.2	9,992.00	49.1
50,336	27,341.00	54.3	651.00	1.3	27,992.00	55.6
<i>Married couples without children who elect for joint assessment (One spouse working)</i>						
629	—	—	55.80	8.9	55.80	8.9
1,048	—	—	93.00	8.9	93.00	8.9
1,572	—	—	139.50	8.9	139.50	8.9
2,096	—	—	186.00	8.9	186.00	8.9
2,620	—	—	232.50	8.9	232.50	8.9
3,144	—	—	279.00	8.9	279.00	8.9
5,240	629.50	12.0	465.00	8.9	1,094.50	20.9
7,336	1,329.50	18.2	651.00	8.9	1,980.50	27.0
10,336	2,379.50	23.1	651.00	6.3	3,030.50	29.3
15,336	4,366.50	28.5	651.00	4.2	5,017.50	32.7
20,336	6,953.50	34.2	651.00	3.2	7,604.50	37.4
50,336	24,922.00	49.5	651.00	1.3	25,573.00	30.8
<i>Married couples without children who elect for joint assessment (Both spouses working)</i>						
657	—	—	111.60	17.0	111.60	17.0
1,096	—	—	186.00	17.0	186.00	17.0
1,643	—	—	279.00	17.0	279.00	17.0
2,191	—	—	372.00	17.0	372.00	17.0
2,739	—	—	465.00	17.0	465.00	17.0
3,287	—	—	558.00	17.0	558.00	17.0
5,478	492.50	9.0	930.00	17.0	1,422.50	26.0
7,670	1,189.50	15.6	1,302.00	17.0	2,491.50	32.5
10,670	2,239.50	21.0	1,302.00	12.2	3,541.50	33.2
15,670	4,186.50	26.8	1,302.00	8.3	5,488.50	35.0
20,670	6,733.50	32.6	1,302.00	6.3	8,035.50	38.9
50,670	24,682.00	48.7	1,302.00	2.6	25,984.00	51.3



Table 3.5: (Continued)

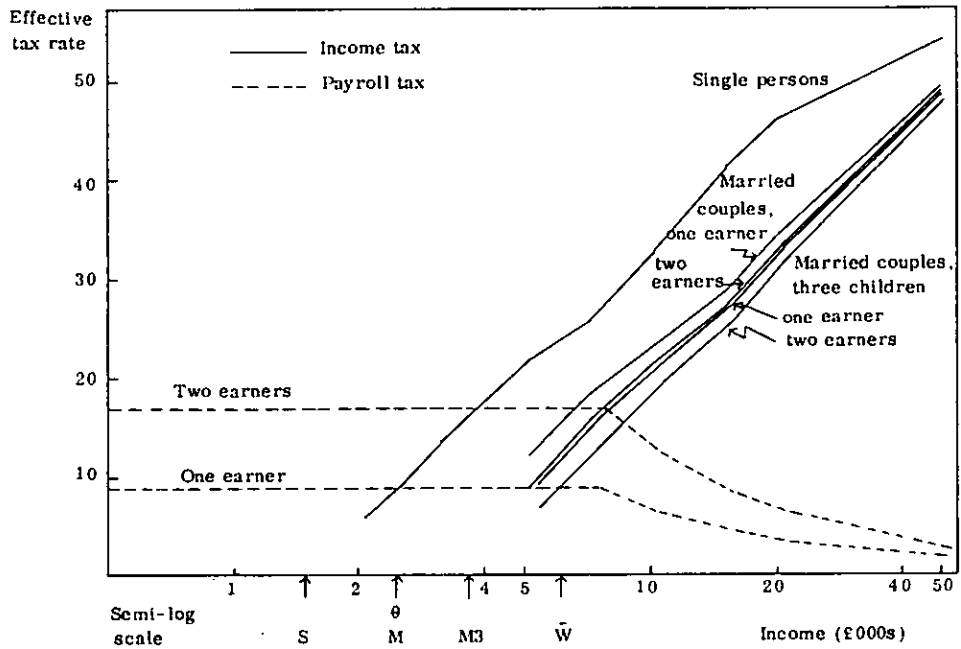
<i>Adjusted income</i>	<i>Amount of income tax</i>	<i>Effective rate of income tax</i>	<i>Amount of payroll tax</i>	<i>Effective rate of payroll tax</i>	<i>Combined income and payroll tax</i>	<i>Combined direct tax rate</i>
<i>Married couples entitled to the allowance for three children (One spouse working)</i>						
629	—	—	55.80	8.9	55.80	8.9
1,048	—	—	93.00	8.9	93.00	8.9
1,572	—	—	139.50	8.9	139.50	8.9
2,096	—	—	186.00	8.9	186.00	8.9
2,620	—	—	232.50	8.9	232.50	8.9
3,144	—	—	279.00	8.9	279.00	8.9
5,240	446.25	8.5	465.00	8.9	911.25	17.4
7,336	1,124.75	15.4	651.00	8.9	1,775.75	24.2
10,336	2,174.75	21.1	651.00	6.3	2,825.75	27.3
15,336	4,103.25	26.8	651.00	4.2	4,754.25	31.0
20,366	6,631.75	32.6	651.00	3.2	7,282.75	35.8
50,336	24,571.00	48.8	651.00	1.3	25,222.00	50.1
<i>Married couples entitled to the allowance for three children (Both spouses working)</i>						
657	—	—	111.60	17.0	111.60	17.0
1,096	—	—	186.00	17.0	186.00	17.0
1,643	—	—	279.00	17.0	279.00	17.0
2,191	—	—	372.00	17.0	372.00	17.0
2,739	—	—	465.00	17.0	465.00	17.0
3,287	—	—	558.00	17.0	558.00	17.0
5,478	346.25	6.3	930.00	17.0	1,276.25	23.3
7,670	984.75	12.9	1,302.00	17.0	2,286.25	29.8
10,670	2,034.75	19.1	1,302.00	12.2	3,336.25	31.3
15,670	3,923.25	25.1	1,302.00	8.3	5,225.25	33.3
20,670	6,411.75	31.1	1,302.00	6.3	7,713.75	37.3
50,670	24,331.00	48.0	1,302.00	2.6	25,633.00	50.6

Source: *Fifty-Eighth Annual Report of the Revenue Commissioners, Year Ended 31st December, 1980, Table 75.*

Note: The contribution ceiling in 1980-81 was £7,000.

Insured persons with adjusted incomes of up to £7,336 a year in 1980-81 would have had an effective payroll tax rate of 8.9 per cent of all incomes up to this level. Because of the retention of an income ceiling on which the contributions are paid the payroll tax rate would have fallen to 6.3 per cent for someone with adjusted income of £10,336 a year and to 1.3 per cent for someone with an income of £50,336 a year. While the regressivity of the payroll tax has been eliminated as far as the majority of insured workers are concerned the lack of an exemption limit for low earners means that payroll tax rates are highest in poverty and middle-income ranges where income tax rates are zero or less than the payroll tax rate.

Figure 3.7 shows the effect of income and payroll taxes on a family in which both husband and wife are working. Such a family would fare slightly better under the income tax code than a family with only one earner but its effective payroll tax rate would be double the rate for a one-earner family.

Figure 3.7: *Income and payroll tax rates for different household sizes, 1980-81*

Note:  $\theta$  indicates the poverty line for single persons (S), married couples (M) and for married couples with three children (M3).  $\bar{W}$  indicates the average wage per employee.

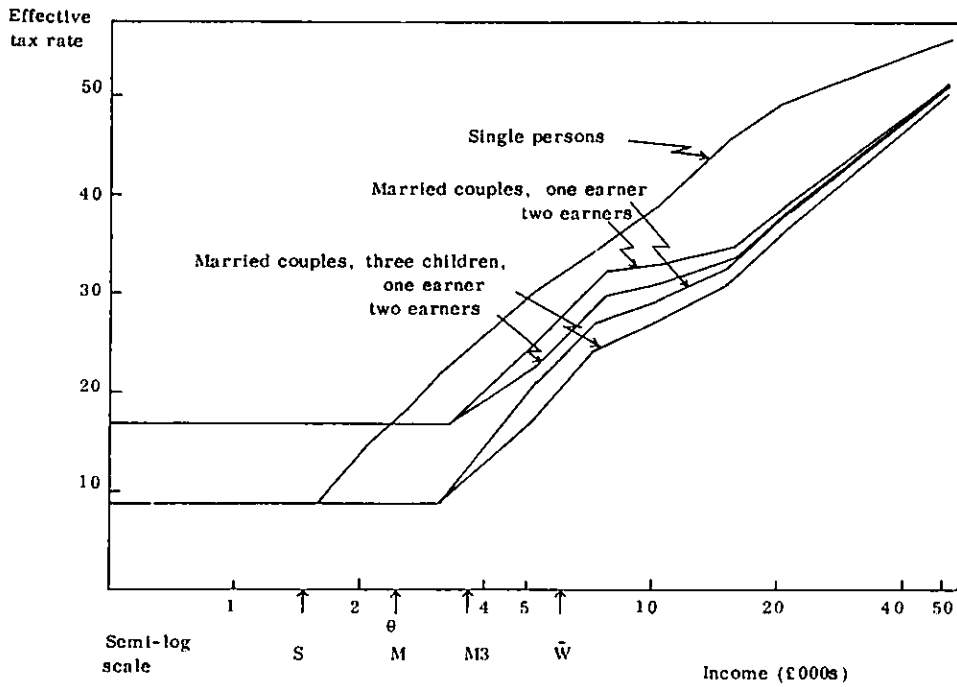
The combined effect of both taxes is shown in Figure 3.8. A comparison of this with Figure 3.6 for 1973-74 shows that the regressive aspects of the system which were so much in evidence before 1979 have now been virtually eliminated. The direct tax system in 1980-81 was proportional up to income tax exemption limits and progressive thereafter. The combined tax rates for two earner families would have been greater in all income ranges than those for one earner families because of the effect of the double payroll tax paid by two earner families.

The argument that very substantial numbers of workers on relatively low incomes were subjected to heavy payroll taxes while being exempted from income tax is based on inferences from the data on average incomes and poverty levels in Table 3.1 and effective income and payroll tax rates on specimen incomes in Tables 3.2 to 3.5. Some light can be shed on the *actual* numbers involved by using the Revenue Commissioners' data on the distribution of PAYE Incomes assessed under Schedule E in the tax year 1979-80 in conjunction with information in the *Report of the Department of Social Welfare 1979-80* on numbers insured at the standard contribution rate and payroll tax revenue received from employers and employees.

A reconciliation statement of the number assessed for PAYE and the number paying PRSI at the standard rate in 1979-80 is given in Table 3.6. It has been assumed for the purposes of this table that no social insurance contributions would have been paid for the average number of unemployed during the year, for those on invalidity pension on 31 December 1979, nor for disability benefit recipients who were ill for more than 30 weeks. The number of invalidity pensioners in December is taken as representative of the average number in receipt of invalidity pension throughout the year as there is unlikely to be much seasonal variation in the number of such pensioners. A similar point applies to recipients of disability benefit and it is further assumed that the data relating to the duration of all claims in 1973, published in the NESR Report referred to in the note to Table 3.6, can be applied to the Department of Social Welfare data on the number in receipt of disability benefit on 31 December 1979, i.e., that data relating to the flow of claims can be applied to the stock.

Table 3.6 indicates that there were approximately 730,000 incomes in 1979-80 on which full PRSI was payable and that there were about 718,000 workers insured for PRSI at the standard rate with the Department of Social Welfare. The agreement between these two figures is quite good coming as they do from separate sources and it is reasonable, therefore, to use the Revenue Commissioners' income distribution data for 1979-80 to derive effective payroll tax rates by income ranges. A check on the validity of this exercise is provided in Table 3.7 which relates an estimate of total social

Figure 3.8: Combined income and payroll tax rate for different household sizes, 1980-81



Note:  $\theta$  indicates the poverty line for single persons (S), married couples (M) and for married couples with three children (M3).  
 $\bar{W}$  indicates the average wage per employee.

Table 3.6: Reconciliation of numbers assessed for PAYE and standard rate PRSI contributors in 1979-80

<i>PAYE or PRSI category</i>	<i>Number</i>
Actual number of PAYE incomes assessed under Schedule E	740,254
Adjustment for late returns	<u>141,001</u>
Total number of PAYE incomes to be assessed	881,255
Less number of reduced rate contributors to PRSI	<u>151,090</u>
Number of PAYE incomes on which full PRSI is payable	<u>730,165</u>
Number insured for all benefits on 31 March 1979	820,000
Plus members of the defence forces	<u>14,947</u>
Total number insured for all benefits eventually	834,947
Less average number unemployed during 1979	88,227
Less estimated number in receipt of disability benefit on 31 December, 1979 whose employment may have been terminated	13,892
Less number in receipt of invalidity pension on 31 December 1980	<u>14,327</u>
Total number for whom PRSI is payable at standard rate	<u>718,501</u>

*Source: Fifty-Eighth Annual Report of the Revenue Commissioners, year ended 31st December 1980, Table 87, and Report of the Department of Social Welfare 1979-80, Tables 1, 4, 6, 13 and 25.*

*Note:* It is assumed that the actual number of PAYE incomes assessed under Schedule E in 1979-80 was 84 per cent of the total and that 20 per cent of those in receipt of disability benefit on 31 December 1979 had been sick for over 30 weeks. The first assumption is based on information supplied by the Revenue Commissioners and the second on information on the duration of all disability benefit claims published by the National Economic and Social Council in *Towards a Social Report*, Table 8.6. The figure for reduced rate contributors to PRSI is derived from *Report of the Department of Social Welfare 1979-80*, Table 1.

insurance revenue derived from Table 87 in the Revenue Commissioners' Report for 1980 to the actual revenue received by the Department of Social Welfare in respect of the year ended March 1980.<sup>14</sup> The correspondence between the estimated and actual social insurance revenue figures for 1979-80 is quite close and we would, therefore, expect the estimates of total payroll tax revenue by income class shown in Column 6 Table 3.8 to closely approximate the actual position for standard rate PRSI contributors.<sup>15</sup> For purposes of comparison effective rates of income and payroll taxes on specimen

14. I am grateful to the Department of Social Welfare for supplying me with information on social insurance revenue in respect of the tax year 1979-80 which includes all receipts up to the end of April 1983.

15. The estimate of payroll tax revenue shown in Table 3.7 differs from that in Table 3.8 because the latter includes the health, occupational injuries and redundancy contributions.

Table 3.7: Comparison of estimated and actual social insurance revenue, 1979-80

<i>PAYE or PRSI category</i>	
Income received by PAYE taxpayers earning up to £5,000	£1,339,961,600
Estimated income received by PAYE taxpayers earning £5,000-£5,500	<u>£208,488,600</u>
Total income received by those earning up to £5,500	<u>£1,548,450,200</u>
Number of PAYE incomes in excess of £5,500	189,770
Income assessable for PRSI (= £5,500 x 189,770)	£1,043,735,000
Total income assessable for PRSI at the standard rate	£2,592,185,200
Estimated social insurance revenue at the standard rate of 11.65%	£301,989,580
Average income assessable for PRSI	£3,502
Number of reduced rate contributors to PRSI	151,090
Total income assessable at the reduced rate	£529,117,180
Estimated social insurance revenue at the reduced rate of 3%	£15,873,515
Total estimated social insurance revenue	<u>£317,863,095</u>
Actual social insurance revenue received in respect of year ended March 1980	<u>£306,000,000</u>

*Source: Fifty-Eighth Report of the Revenue Commissioners, year ended 31st December 1980, Table 87; Report of the Department of Social Welfare, Table 1, and information supplied by the Department of Social Welfare.*

incomes for 1979-80 are presented in Table 3.9 from which it will be evident that the income tax was progressive for all incomes above the exemption levels whereas the payroll tax was proportional up to the earnings ceiling of £5,000 and regressive thereafter. Both the income tax and payroll tax rates paid by employees derived from the income distribution data in Table 3.8 are in close agreement with the hypothetical tax rates levied on the specimen incomes in Table 3.9. The relevant tax rate data from the two tables have been graphed in Figure 3.9. Since the hypothetical and estimated actual payroll tax rates by income class virtually coincide only the data for the hypothetical rates have been plotted. It is evident from Figure 3.9 that the actual income tax rate for each income class is very similar to what the weighted average income tax rate for different households would be. The actual and hypothetical data, therefore, essentially tell the same story about the size of the income and payroll tax burdens borne by each income class. However, the income distribution data fills out the picture by indicating the number of taxpayers carrying a particular burden and it confirms that substantial numbers of taxpayers with earnings less than the poverty level of £1,168 for a single person, £1,929 for a married couple and £2,883 for a

Table 3.8: Actual income tax and estimated payroll tax borne by each income class insurable at standard PRSI class rate in 1979-80

Range of total income	Number of cases	Money income (£000s)	Adjusted income (£000s)	Payroll tax estimates (£)			Income tax rate	Effective payroll tax rate on employees	Cumulative percent of:		
				Income tax (£000s)	Total	Attributable to employees			Cases	Income tax	Payroll tax on employees
0-1,000	83,569	40,086.4	41,798.0	101,399	5,271.4	3,475.4	0.2	8.3	11.3	0.0	1.6
1,000-1,200	18,461	20,343.2	21,211.8	75,789	2,675.1	1,763.7	0.4	8.3	13.8	0.0	2.3
1,200-1,500	29,193	39,472.4	41,157.8	1,294,219	5,190.6	3,422.2	3.1	8.3	17.7	0.2	3.9
1,500-2,000	49,582	86,819.3	90,526.3	5,967,944	11,416.7	7,527.0	6.6	8.3	24.4	1.1	7.2
2,000-2,500	51,147	115,389.8	120,316.8	11,171,785	15,173.8	10,004.1	9.3	8.3	31.3	2.8	11.7
2,500-3,000	57,466	158,324.4	165,084.7	20,137,065	20,819.7	13,726.4	12.2	8.3	39.1	5.9	17.8
3,000-3,500	62,419	202,967.3	211,633.7	30,569,868	26,690.2	17,596.8	14.4	8.2	47.5	10.6	25.7
3,500-4,000	58,950	220,959.9	230,384.2	36,183,109	29,054.9	19,155.9	15.7	8.3	55.5	16.1	34.3
4,000-4,500	53,078	225,481.9	235,109.7	39,591,474	29,650.9	19,548.8	16.8	8.3	62.7	22.2	43.0
4,500-5,000	48,489	230,127.0	239,953.1	42,056,954	30,261.7	19,951.5	17.5	8.3	69.2	28.6	51.9
5,000-6,000	76,261	416,977.2	434,398.1	81,498,701	53,652.2*	35,372.4	18.8	8.1	79.5	41.1	67.7
6,000-7,000	51,259	331,988.8	344,026.6	71,152,967	37,073.1	24,442.3	20.7	7.1	86.4	52.0	78.6
7,000-8,000	36,234	270,552.6	279,061.9	63,238,107	26,206.2	17,277.7	22.7	6.2	91.3	61.7	86.3
8,000-9,000	27,788	192,812.2	198,163.8	49,062,064	16,481.4	10,866.2	24.8	5.5	94.4	69.2	91.2
9,000-10,000	14,288	135,293.3	138,648.7	37,609,720	10,333.8	6,813.1	27.1	4.9	96.3	74.9	94.2
10,000-12,500	16,794	185,415.6	189,359.6	58,743,381	12,146.3	8,008.1	31.0	4.2	98.6	83.9	97.8
12,500-15,000	5,824	78,921.8	80,289.5	28,724,194	4,212.2	2,772.1	35.8	3.5	99.4	88.3	99.1
15,000-17,500	2,103	33,787.6	34,281.5	13,499,877	1,521.0	1,002.8	39.4	2.9	99.7	90.4	99.5
17,500-20,000	912	16,991.9	17,206.1	7,301,714	659.6	434.9	42.4	2.5	99.8	91.5	99.7
Over 20,000	1,437	100,400.1	100,737.6	55,770,650	1,039.3	685.2	55.4	0.7	100.0	100.0	100.0
Total	740,254	3,103,102.8	3,213,349.5	653,750,981	339,530.1	223,851.6	20.3	7.0	-	-	-

Source: Fifty-Eighth Annual Report of the Revenue Commissioners, year ended 31st December 1980, Table 87.

\*It is assumed that half of the cases in the range have an average income of £5,200 and that the other half have an average income of £5,736.

EFFECTIVE DIRECT TAX RATES

Table 3.9: Amount and effective rates of income and payroll tax on specimen incomes, 1979-80

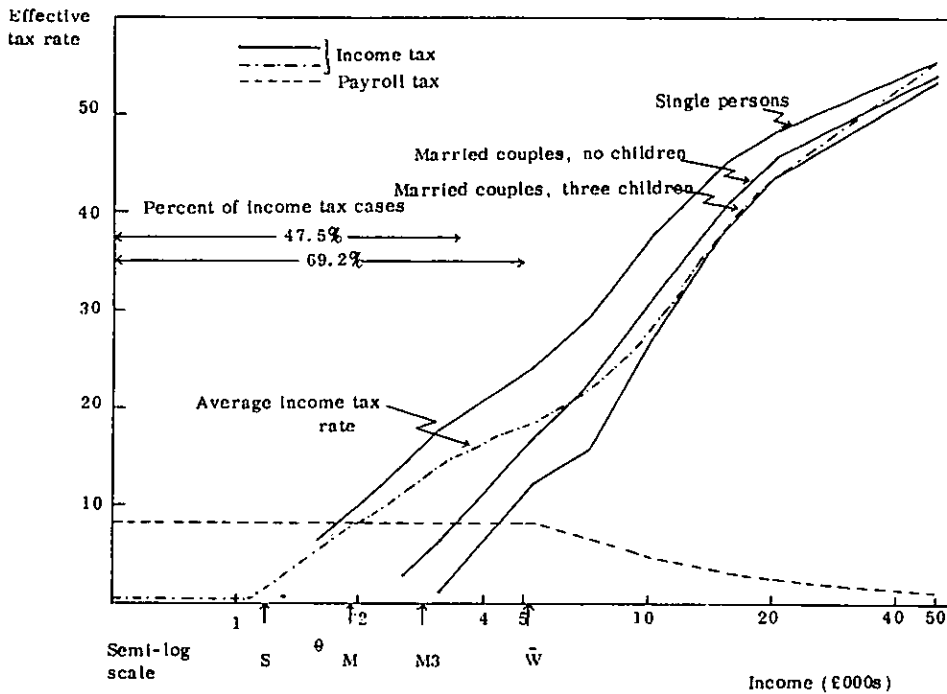
Adjusted income	Amount of income tax	Effective rate of income tax	Amount of payroll tax	Effective rate of payroll tax	Combined income and payroll tax	Combined direct tax rate
<i>Single persons</i>						
626	—	—	52.20	8.3	52.20	8.3
1,043	—	—	87.00	8.3	87.00	8.3
1,564	96.25	6.2	130.50	8.3	226.75	14.4
2,085	221.25	10.6	174.00	8.3	395.25	18.9
2,607	374.75	14.4	217.50	8.3	592.25	22.7
3,128	549.75	17.6	261.00	8.3	810.75	25.9
5,213	1,249.75	24.0	435.00	8.3	1,684.75	32.3
7,235	2,142.50	29.6	478.50	6.6	2,621.00	36.2
10,235	3,871.00	37.9	478.50	4.8	4,349.50	42.6
15,235	6,871.00	45.1	478.50	3.0	7,349.50	48.2
20,235	9,871.00	48.8	478.50	2.4	10,349.50	51.2
50,235	27,871.00	55.5	478.50	0.9	28,349.50	56.4
<i>Married couples, no children (one spouse working)</i>						
626	—	—	52.20	8.3	52.20	8.3
1,043	—	—	87.00	8.3	87.00	8.3
1,564	—	—	130.50	8.3	130.50	8.3
2,085	—	—	174.00	8.3	174.00	8.3
2,607	67.50	2.6	217.50	8.3	285.00	10.9
3,128	192.50	6.2	261.00	8.3	453.50	14.5
5,213	859.50	16.5	435.00	8.3	1,294.50	24.8
7,235	1,626.50	22.5	478.50	6.6	2,105.00	29.1
10,235	3,202.00	31.3	478.50	4.8	3,680.50	36.0
15,235	6,202.00	40.7	478.50	3.1	6,680.50	43.8
20,235	9,202.00	45.5	478.50	2.4	9,680.50	47.8
50,235	27,202.00	54.2	478.50	0.9	27,680.50	55.1
<i>Married couples, three children (one spouse working)</i>						
626	—	—	52.20	8.3	52.20	8.3
1,043	—	—	87.00	8.3	87.00	8.3
1,564	—	—	130.50	8.3	130.50	8.3
2,085	—	—	174.00	8.3	174.00	8.3
2,607	—	—	217.50	8.3	217.50	8.3
3,128	29.00	0.9	261.00	8.3	290.00	9.3
5,213	630.60	12.1	435.00	8.3	1,065.60	20.4
7,235	1,332.20	18.4	478.50	6.6	1,810.70	25.0
10,235	2,809.60	27.5	478.50	4.8	3,288.10	32.1
15,235	5,809.60	38.2	478.50	3.1	6,288.10	41.3
20,235	8,809.60	43.6	478.50	2.4	9,288.10	45.9
50,235	26,809.60	53.4	478.50	0.9	27,288.10	54.3

Source: *Fifty-Seventh Annual Report of the Revenue Commissioners, Year Ended 31st December, 1979, Table 74.*

Note: The contribution ceiling in 1979-80 was £5,500



Figure 3.9: Hypothetical income and payroll tax rates for different household sizes and actual average income tax rates, 1979-80



Note:  $\theta$  indicates the poverty line for single persons (S), for married couples (M), and for married couples with three children (M3).

$\bar{W}$  indicates the average wage per employee.

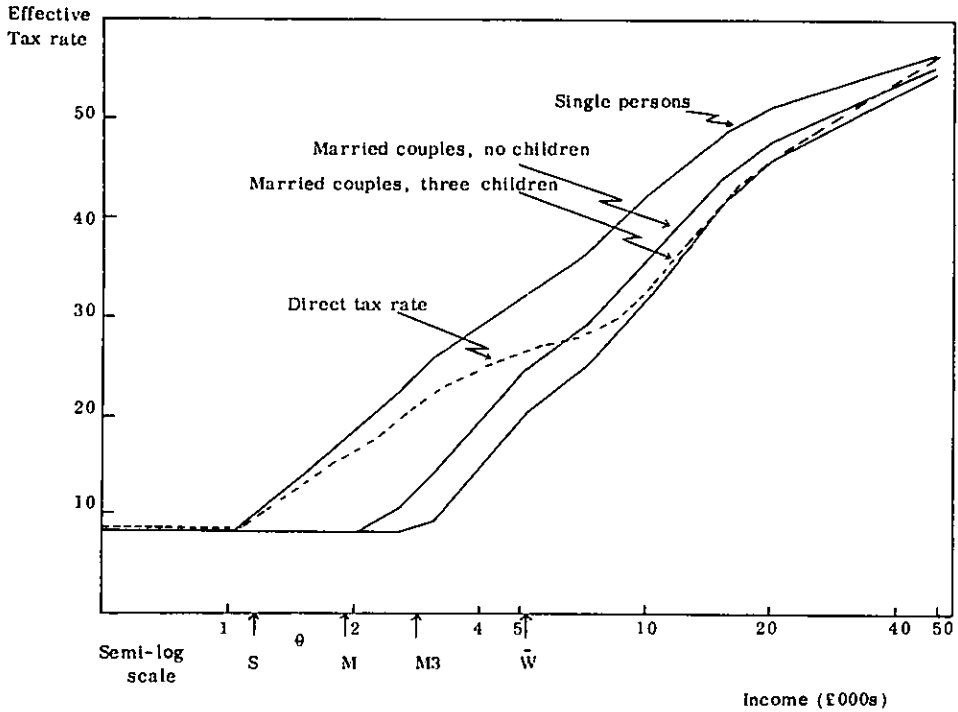
married couple with three children were exempt from income tax but subject to an effective payroll tax rate of more than 8 per cent. Over 83,000 taxpayers or 11.3 per cent of the total, for example, who earned less than £1,000 a year were virtually exempt from income tax but bore payroll tax at a rate of 8.3 per cent. It appears from the Revenue Commissioners' data on the number of single and married taxpayers in each income class (not shown in Table 3.8) and the income tax exemption limits that 69,483 single or widowed taxpayers and 44,401 married taxpayers with incomes of less than £1,000 or £2,500 respectively, would have paid no income tax in 1979-80 but would have suffered a payroll tax of over 8 per cent. Thus, 15.4 per cent of taxpayers were below the poverty line but still subject to payroll taxation. In addition, nearly a quarter of all taxpayers had effective payroll tax rates which were greater than their income tax rates. The progressive features of the income tax code were counteracted for these taxpayers by the proportionality of the payroll tax. The difference in the effects of the two taxes on low and high income earners is brought out when we consider that 6 per cent of income tax revenue and 18 per cent of payroll tax revenue was provided by the bottom 40 per cent of taxpayers whereas the top 4 per cent of taxpayers provided a quarter of income tax revenue and only 6 per cent of payroll tax revenue (see Table 3.8). The data for the combined actual and hypothetical income and payroll tax rates for 1979-80 are graphed in Figure 3.10 which shows that the combined tax rate for different household sizes was proportional up to the income tax exemption limits and progressive thereafter. The actual direct tax rate level is closer to the hypothetical level for single persons at lower incomes and to the hypothetical curves for married couples at higher incomes because there are far more single persons on low incomes than married persons.

While the changeover to a fully pay-related social insurance contribution system in April 1979 lightened the burden of payroll taxation on low income earners the retention of an earnings ceiling on which social insurance contributions are paid and the lack of graduation in the contribution rate or exemption limits for those on the poverty line mean that workers who are exempted from one form of direct taxation because of their poverty are subjected to another form of direct taxation because of the lack of integration of the two forms of direct taxation. On the basis of the evidence available it is clear that the payroll tax still hits the poor the hardest while virtually sparing the rich.

### *3.3 Reform of Social Insurance Financing*

There are a number of ways in which the payroll tax could be modified to reduce or eliminate the excessive burden which it places on the poor. The

Figure 3.10: Combined actual and hypothetical income and payroll tax rates for different household sizes, 1979-80



Note:  $\theta$  indicates the poverty line for single persons (S), for married couples (M) and for married couples with three children (M3).  
 $\bar{W}$  indicates the average wage per employee.

main options for reform have been listed in a Report of the Commission on Taxation (1982, p. 307) which recommends that social insurance contributions should be replaced by a social security tax of about 5 per cent on all forms of income. The Commission notes that this would not raise as much revenue as the existing method of financing and it suggests that the short-fall should be made up by an increase in indirect taxes. The Commission's proposal would substantially reduce the burden of the tax on the poor but it would not bring any change in the relative burdens of rich and poor. One way in which an element of progressivity could be introduced into the tax would be to abolish the upper earnings limit on which social insurance contributions are paid and to exempt all those who are below the income tax exemption limit except for a token payment of one per cent to preserve entitlement to insurance benefits. It would have been possible to raise the same social insurance revenue from such a scheme as was raised in 1979-80 while reducing the standard rate contribution from 11.65 to 10 per cent as will be seen from Table 3.10.

A proposal was made in the Fine Gael-Labour Programme for Government to supplement low take-home incomes by reducing PRSI on gross incomes below £120 per week. While no details of how this is to be done are given in the Programme for Government it appears from the Labour Party election programme, *Where Labour Stands*, and the Fine Gael policy document, *Jobs in the 80s*, that it would involve abolition of the income ceiling for contributions and payment of the reduced rate of PRSI applicable to public servants by workers earning less than £120 per week. An income of £120 per week in 1982 was equivalent to around £87 a week or £4,500 a

Table 3.10: *Estimate of revenue from PRSI at standard rate where lower earnings are partially exempt and upper earnings limit is abolished, 1979-80*

<i>PAYE or PRSI category</i>	<i>£</i>
Income of PAYE taxpayers insured at standard PRSI rate	3,103,102,762
Less income earned by single or widowed taxpayers earning up to £1,000 or married taxpayers earning up to £2,500	95,913,022
Income assessable at standard PRSI rate	3,007,189,740
Yield from PRSI at 1% on low incomes	959,130
Yield from PRSI at 10% on all other incomes	301,030,450
Total yield from PRSI	301,989,580

Source: *Fifty-Eighth Annual Report of the Revenue Commissioners, year ended 31st December 1980*, Table 87 and own calculations.

year in 1979-80. The revenue which would have been yielded in 1979-80 if the proposals in the Programme for Government had been in operation is shown in Table 3.11. There would have been a shortfall in revenue of around £36.5 million in 1979-80 under the coalition government proposals. About one-third of this shortfall could have been financed by the revenue from the taxation of short-term social welfare benefits as proposed in the Fine Gael policy document but the remainder would have had to be financed by additional taxation.<sup>16</sup> In view of these results it would be preferable that any reform of the arrangements for financing social insurance should concentrate on relieving low income earners as proposed above, rather than including a substantial portion of middle income taxpayers, as in the *Programme for Government Proposals*.

Table 3.11: *Estimate of revenue from PRSI in 1979-80 under Programme for Government Proposals*

Income of PAYE taxpayers earning up to £4,500	1,109,834,697
Income of PAYE taxpayers earning over £4,500	1,993,268,065
Total	3,103,102,762
Yield from PRSI at public service rate of 3%	33,295,041
Yield from PRSI at standard rate of 11.65%	232,215,730
Total yield from PRSI under Government proposal	265,510,771

16. The Minister for Finance estimated that the taxation of short-term social welfare benefits would have yielded £13 million in 1980-81. See Hughes (1982, p. 65) for details.

## Chapter 4

### *DETERMINANTS OF OLD AGE AND OTHER SOCIAL WELFARE BENEFITS*

#### 4.1 *Introduction*

Our main interest in previous chapters has been in the cost side of the social insurance system. In this and the next chapter we will consider the benefit side of the system and we will focus on the old age contributory and retirement pension schemes in particular as they have been relatively neglected by economists in the past unlike other components of the social insurance system such as the unemployment and disability benefit schemes.<sup>17</sup> An analysis of some economic aspects of the State contributory pension schemes is overdue as they now account for a larger proportion of social insurance expenditure, 28.5 per cent, than any of the other insurance programme categories used in presenting the expenditure data shown in Table 1.5.

Our primary interest is in the way in which different contributors fare when the cost and benefits sides of the two pension schemes are taken into account and the results of the tax incidence analysis in Chapter 2 enable us to consider how employees benefit from the total pension contributions which are paid by or on behalf of them and from the pension contributions which are attributable to them. There are three main questions which we wish to consider:

1. What proportion of the total cost of the contributory pension received by different persons retiring now and in the future is paid for by social insurance contributions?
2. What value for money, or rate of return, will different categories of contributors receive for the *total* pension contributions which are paid by employers and employees?
3. What rate of return will accrue to different categories of employees for the pension contributions which are attributable to them in view of the payroll tax incidence analysis in Chapter 2?

In answering these questions, it might be argued that the only benefit which should be taken into account is the difference between the contributory and

17. Studies of the unemployment insurance programme are contained in the symposium on unemployment and the labour market in Ireland published in *The Economic and Social Review*, January 1983. The disability insurance programme has been studied by Hughes (1982a).

non-contributory pension. This implies that the insurance and assistance pension schemes are substitutes. While there may be some overlap in the categories of the retired population which could qualify for either scheme it is likely to be small as the insurance scheme is designed to provide support during retirement for persons with means while the assistance scheme caters for those without means.

A key assumption in calculations of the rate of return on pension contributions is that there is a predictable relation between pension benefits and earnings. Unfortunately there appears to be no official policy statement on how pension benefits are determined in Ireland and a search of the relevant literature on social policy failed to unearth an unofficial account of how social welfare benefit levels are decided on.<sup>18</sup>

It is necessary, therefore, for us to find out if there is a relation between the level of cash benefits and the level of average earnings before and after tax.<sup>19</sup> There are many reasons why such a relation might exist. Peacock and Wiseman (1961, p. 144), for example, have argued that increases in living standards of the non-productive members of the population are linked via a demonstration effect with increases in the living standards of productive members of the population, while Bosanquet (1983, p. 138) has pointed out that an explicit link to earnings is necessary if some of the returns from investment in human capital are to accrue to those who helped to finance such investment. In addition pressure groups representing the clients of the social insurance system argue strongly for indexation of the benefits and the Government has been willing to give commitments to the trade unions to increase social welfare benefits at least in line with the cost of living as part of agreements between employers, trade unions and government on wages during recent years as the National Council for the Aged (1984, Ch.5) has pointed out. As the benefits paid by different social welfare programmes are interrelated the relationship between benefits and earnings will be investigated by examining the benefits paid under the most important of the two dozen or so social insurance and social assistance schemes presently in operation. It will be seen from Tables 1.4 and 1.5 in Chapter 1 that, in terms of expenditure, the most important insurance schemes are the unemployment, disability, old age contributory and retirement pension schemes while the most important assistance schemes are the unemployment and old age non-contributory pension schemes. In order to keep the analysis within manageable limits

18. Sources consulted were Farley (1974), Kaim-Caudle (1964, 1967, 1973), Coughlan (1966), Quinn (1967), Ó Cinnéide (1972), Kennedy (1975), McCashin (1975-76, 1981, 1982), NES (1977), Fitzgerald (1978, 1980), Curry (1980), the Council for Social Welfare (1982), Cook (1983) and the *Reports of the Department of Social Welfare, 1947-49 to 1976-80*.

19. Blackwell (1981, p. 24) has noted that "in the period between 1966 and 1979 there was, essentially, no change . . . , in the ratio of Social Welfare Benefits to average industrial earnings".

attention will be confined to the benefits received by a single person, a married couple, and a married couple with two children. In the latter cases the husband is assumed to be the only earner.

#### 4.2 *Unemployment and Pension Benefits, Prices and Earnings*

If there is a relation between benefits and earnings it should be most in evidence at times when cash benefits are increased, and the analysis which follows relates the level of benefits to the level of earnings at, or just before, the time when benefits are increased rather than at a particular time each year.

While the question which is being investigated is whether there is a relation between benefit and earnings levels it is possible that changes in benefits may be related to some other variable such as prices if it is government policy merely to maintain the purchasing power of benefits rather than to allow social welfare recipients to share in the growth in earnings which has occurred as the productivity of labour has increased. Both possibilities are allowed for in Tables 4.1 and 4.2, and Figures 4.1 and 4.2. The tables show the cumulative percentage increase since 1952 and 1961, respectively, in the unemployment and disability and contributory pension benefit scale rates and in average pre-tax weekly earnings for a single male worker in the transportable goods sector and the charts relate the cumulative percentage increase in flat-rate benefits for a single person to the cumulative percentage increases in average male industrial earnings and in the consumer price index.

Columns 1 to 3 in Table 4.1 show the long-run relationship between flat-rate unemployment benefit and average earnings for a male worker since the unification of the social insurance system in 1952. If benefits keep pace with earnings in the long run, the ratio of benefits to earnings (shown in Column 3) will equal 1. It is evident from Column 3 that in the first 10 years of the period under review the relationship between unemployment benefits and earnings, on the few occasions when the benefit was increased, was tenuous. Since then, however, the ratio has fluctuated around 1 and the near constancy of this ratio over such a long period suggests that unemployment benefit is kept in line with average industrial earnings in the long run. The nature of the long-run relationship between unemployment benefit and earnings is brought out very clearly in Figure 4.1 from which it will be seen that on all dates on which the benefit was increased, except April 1982, the two series virtually coincide. Further evidence of the existence of a long-run relationship between unemployment benefit and earnings is given by the behaviour of the consumer price series in Figure 4.1. Up to the mid-sixties the benefit and price series grew at about the same rate so that the real value of the benefit was maintained. Since then, however, the two series have



Table 4.1: *Percentage increases in the unemployment (UB) and disability benefit (DB) scale rates and in average pre-tax earnings of male workers in Transportable Goods Industries, 1952-82*

Date of increase in benefits	Cumulative percentage increase in:			Percentage increase over previous rate in:		
	UB and DB for a single worker (1)	Average pre-tax weekly earnings (2)	Col. (1) ÷ Col. (2) (3)	UB and DB for a single worker (4)	Average pre-tax weekly earnings (5)	Col. (4) ÷ Col. (5) (6)
Sept. 1956	25.0	22.1	1.13	25.0	22.1	1.1
Jan. 1961	35.4	55.5	0.64	8.3	27.3	0.3
Jan. 1963	56.2	83.0	0.68	15.7	17.7	0.9
Jan. 1964	77.1	91.3	0.84	13.3	4.5	3.0
Jan. 1966	118.7	119.7	0.99	23.5	14.9	1.6
Jan. 1968	139.6	154.4	0.90	9.5	15.8	0.6
Jan. 1969	170.8	183.3	0.93	13.0	11.4	1.1
Jan. 1970	212.5	229.1	0.93	15.4	16.2	1.0
Oct. 1970	275.0	279.3	0.98	20.0	15.3	1.3
Oct. 1971	312.5	331.3	0.94	10.0	13.7	0.7
Oct. 1972	362.5	394.9	0.92	12.1	14.7	0.8
July 1973	445.8	472.5	0.94	18.0	15.7	1.1
July 1974	545.8	576.0	0.95	18.3	18.1	1.0
April 1975	683.3	660.4	1.03	21.3	12.5	1.7
Oct. 1975	725.0	787.8	0.92	5.3	16.7	0.3
April 1976	808.3	847.1	0.95	10.1	6.7	1.5
April 1977	937.5	1026.4	0.91	14.2	18.9	0.8
Oct. 1977	987.5	1121.8	0.88	4.8	8.5	0.6
April 1978	1095.8	1161.7	0.94	9.9	3.3	3.0
April 1979	1237.5	1326.7	0.93	11.8	13.1	0.9
Oct. 1979	1320.8	1496.7	0.88	6.2	11.9	0.5
April 1980	1604.2	1596.5	1.00	19.9	6.3	3.2
April 1981	1945.8	1832.6	1.06	20.0	13.9	1.4
Oct. 1981	2008.3	2069.8	0.97	3.1	12.3	0.3
April 1982	2537.5	2090.9	1.21	25.1	1.0	25.1

Source: Reports of the Department of Social Welfare 1950-53 to 1979-80; Department of Social Welfare Summary of Social Insurance and Social Assistance Services 1981 and 1982; Irish Trade Journal and Statistical Bulletin 1954 to 1982.

Note: The cumulative percentage increase is calculated from July 1952 for UB and DB and from October 1951 for average weekly earnings of male workers in Transportable Goods Industries. Where the date of increase in benefit does not coincide with the date on which annual or quarterly earnings data are available earnings data from the annual or quarterly Census of Industrial Production preceding the date of increase in benefit is used.

Table 4.2: *Percentage increases in old age contributory pension (OACP) scale rates for a single adult and in average pre-tax earnings of male workers in Transportable Goods Industries, 1961-1982*

<i>Date of increase in benefit</i>	<i>Cumulative percentage increase in:</i>			<i>Percentage increase over previous rate in:</i>		
	<i>OACP for a single adult</i> (1)	<i>Average pre-tax weekly earnings</i> (2)	<i>Col. (1) ÷ Col. (2)</i> (3)	<i>OACP for a single adult</i> (4)	<i>Average pre-tax weekly earnings</i> (5)	<i>Col. (4) ÷ Col. (5)</i> (6)
Jan. 1963	12.5	17.7	0.71	12.5	17.7	0.7
Jan. 1964	25.0	23.0	1.09	11.1	4.4	2.5
Jan. 1966	50.0	41.3	1.21	20.0	15.0	1.3
Jan. 1968	62.5	63.6	0.98	8.3	15.8	0.5
Jan. 1969	81.3	81.4	1.00	11.5	10.9	1.1
Jan. 1970	106.3	116.9	0.91	13.8	19.6	0.7
Oct. 1970	150.0	144.0	1.04	21.2	12.5	1.7
Oct. 1971	175.0	177.4	0.99	10.0	13.7	0.7
Oct. 1972	210.0	218.3	0.96	12.7	14.7	0.9
July 1973	260.0	268.2	0.97	16.1	15.7	1.0
July 1974	325.0	329.8	0.99	18.1	16.7	1.1
April 1975	425.0	382.9	1.11	23.5	12.4	1.9
Oct. 1975	452.5	463.7	0.98	5.2	16.7	0.3
April 1976	507.5	500.1	1.01	10.0	6.5	1.5
Oct. 1976	537.5	560.7	0.96	4.9	10.1	0.5
April 1977	595.0	613.2	0.97	9.0	7.9	1.1
Oct. 1977	630.0	675.5	0.93	5.0	8.7	0.6
April 1978	702.5	703.8	1.00	9.9	3.7	2.7
April 1979	830.0	817.6	1.02	15.9	14.2	1.1
Oct. 1979	880.0	926.9	0.95	5.4	11.9	0.5
April 1980	1125.0	991.1	1.14	25.0	6.3	4.0
April 1981	1432.5	1142.9	1.25	25.1	13.9	1.8
Oct. 1981	1510.0	1295.5	1.17	5.1	12.3	0.4
April 1982	1912.5	1309.1	1.46	25.0	1.0	25.0

Source: As for Table 4.1.

Figure 4.1: *Cumulative percentage increases since 1952 in single person's unemployment and disability benefit (UB), average male industrial earnings before tax (E), and the consumer price index (CPI)*

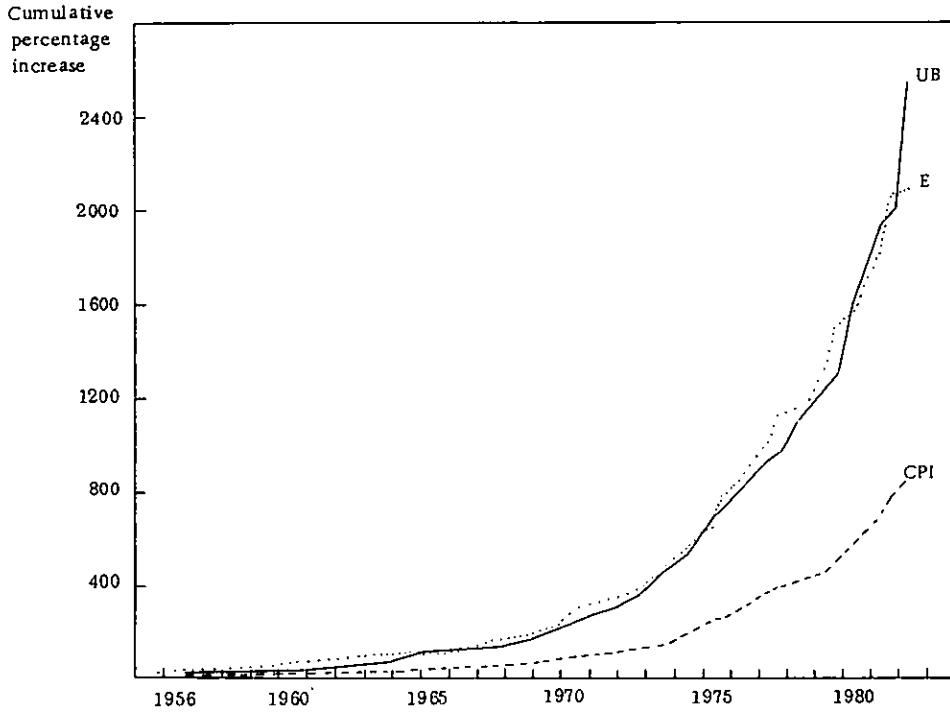
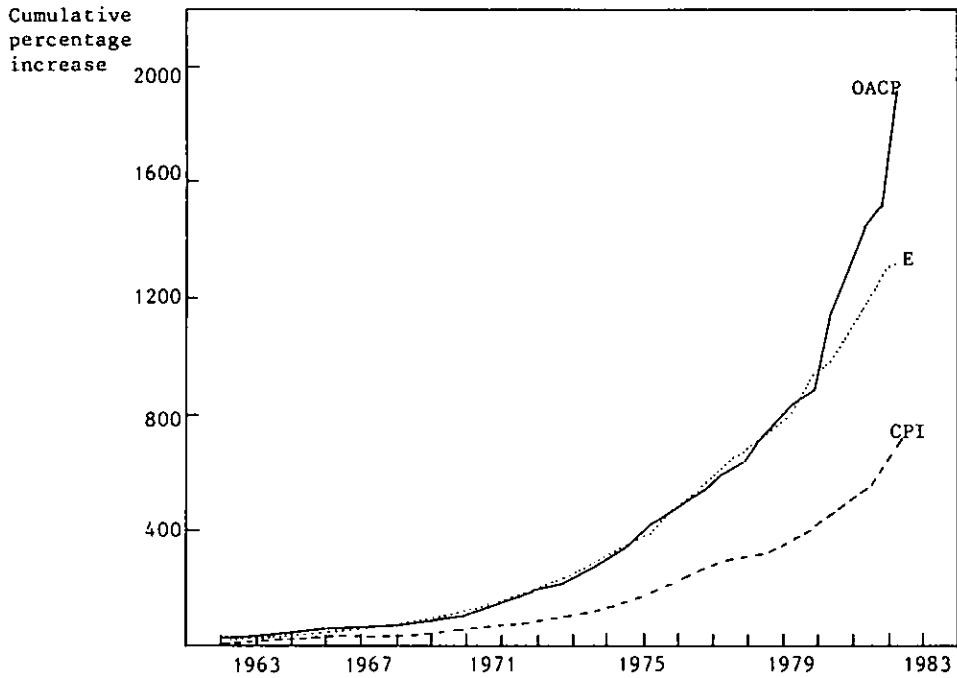


Figure 4.2: *Cumulative percentage increases since 1961 in single adult's old age contributory pension (OACP), average male industrial earnings before tax (E), and the consumer price index (CPI)*



diverged and the real value of the benefit has increased by nearly two and three-quarter times between 1952 and 1982. The long-run behaviour of the contributory pension series when considered in relation to the earnings and price series has been almost identical with the long-run behaviour of the unemployment series and it indicates that there are underlying forces which maintain a constant relationship between social insurance benefits and average industrial earnings over time.

The short-run relationship between unemployment benefit and earnings is shown in Columns 4 to 6. The percentage increases in unemployment benefit and weekly earnings over the previous levels are shown in Columns 4 and 5. If the percentage increase in benefit since the last uprating was the same as the increase in earnings the ratios in Column 6 would be equal to 1. As will be seen, these ratios have behaved in a very erratic fashion and have ranged from 0.3 to 25.1. Thus, in some years unemployment benefit for a single man was raised by only one-third of the increase in average industrial earnings whereas in others it was raised by considerably more than the increase in earnings and in 1982 it was raised by 25 times more than the increase in earnings. It is evident, however, that the uprating in 1982 was exceptional and that the usual pattern is for the ratios to fluctuate between 0.3 and 3.0. Erratic as the fluctuations in the ratios are there appears to be a pattern in them which could be related to the electoral cycle. Thus, in the upratings preceding a general election unemployment benefit is often increased by considerably more than the increase in earnings and this is clawed back in subsequent upratings over the next two or three years. For example, the Fianna Fáil government in the September 1956 uprating which preceded the general election of March 1957 increased unemployment benefit by 10 per cent more than earnings whereas in the subsequent uprating in January 1961 benefit was increased by only one-third of earnings. Similarly, the Coalition Government raised unemployment benefit by 50 per cent more than earnings in the April 1976 uprating which preceded the general election of 1977 and this was clawed back in subsequent upratings in April and October 1977. It would need a detailed analysis of expectations regarding elections to shed more light on the possibility of electoral considerations influencing the behaviour of the ratios in Column 6 and this cannot be done here as it would divert us from the main purpose of this chapter. However, there is another question concerning the effect of political considerations on the ratios in Column 6 which has a bearing on the level of unemployment and other benefits in the long run. Does the political party or parties forming the Government affect the level of benefits? This is a question which we can try to answer and it will be returned to later in this chapter.

### 4.3 *Unemployment, Sickness, and Retirement Benefits and Earnings Before and After Tax*

Our analysis of the relationship between unemployment and contributory pension benefits, earnings, and prices suggests that these benefits do keep pace with earnings. As our main interest is in rates of return on social insurance pension contributions, it is necessary to formalise our analysis and extend it to social assistance schemes to see if there is a common approach to the determination of insurance and assistance benefits. The hypothesis we wish to test is that there is a relation between benefits and pre-tax earnings. The relationship between benefits and post-tax earnings is also important for policy purposes and the analysis which follows will be carried out using earnings before and after tax. The basic data on which the analysis are based are given in Appendix Tables A.2 to A.6.

Following Barr (1981) our method of summarising the relation between the four benefit categories for the three groups we have chosen to deal with (single adult, married couple, family of four) is to use regression analysis to bring out the relationship, if any, between benefits and earnings. The level of benefits,  $B$ , as a proportion of the level of earnings,  $E$ , at any time is given by:

$$R = B/E \quad (4.1)$$

The simplest way to obtain an estimate of  $R$  from time series data on benefits and earnings is to estimate a regression of the form:

$$B_t = \alpha E_t \quad (4.2)$$

The coefficient  $\alpha$  is a weighted mean estimate of  $R$  in Equation (4.1) for the period under review. We are not implying in Equation (4.2) that causality runs from earnings to benefits as the causal relationship could just as easily run the other way, i.e., increases in social welfare benefits could influence earnings by forcing employers to bid up the price of labour to make it worthwhile for workers to take jobs.

In Column 6 of Tables 4.1 and 4.2 we showed the percentage change in benefits as a proportion of the percentage change in earnings. This ratio is in fact the elasticity of benefits with respect to earnings and it can be formally written as:

$$\gamma = \frac{E}{B} \frac{dB}{dE} = \frac{d \log B}{d \log E} \quad (4.3)$$

The easiest way to estimate the elasticity,  $\gamma$ , is by integrating Equation (4.3) and estimating the resulting log-linear equation:

$$\text{Log } B_t = \beta + \gamma \text{Log } E_t \quad (4.4)$$

where  $\gamma$  is an estimate of the weighted mean value of the percentage change in benefit as a proportion of the percentage change in earnings for the period under review.

Estimates of  $R$  and  $\gamma$  for pre- and post-tax earnings given by Equations (4.2) and (4.4) for the four insurance and assistance schemes and three household sizes are shown in Table 4.3 for the period 1952-81.<sup>20</sup> The results indicate that on average a single person would have received around 20 per cent of average industrial earnings before tax during periods of sickness and unemployment and during retirement, a married couple would have received a quarter to a third of average earnings and a family of four would have got around 40 per cent of average earnings. The equivalence scales implicit in these figures will be commented on later but it is worth noting at this stage that they suggest a family of four can live on only double the benefit income of a single person. The official view taken in setting social welfare benefit levels would appear to be that there are significant economies of scale in consumption by families and it would be of interest to compare the official estimate of what they are with research results based on actual family budgets. The pre-tax estimates of  $R$  for each insurance or assistance scheme for each household size are sufficiently close to warrant the conclusion that a common framework underpins the determination of social welfare benefits in the long run. There are significant differences between the estimates of  $R$  for the insurance and assistance benefits for each household size. In general, insurance benefits replace about 20 per cent more of average earnings than assistance payments.

Differences in decision makers approach to insurance and assistance payments also emerge in the pre-tax estimates of the elasticity of various benefits to average earnings. None of the elasticities for the various insurance benefits are significantly different from 1 whereas all of the elasticities for assistance payments are. In the long run, therefore, insurance benefits have risen by the same proportion as average industrial earnings for all household categories. Assistance payments, on the other hand, have increased faster than earnings and this is particularly evident in the case of the non-contributory old-age pension which increased proportionately more for families and married couples than for single persons. The unemployment assistance payments for all household sizes rose by 9 per cent more than average industrial earnings

20. The period 1952-81 is used because it gives a more accurate indication of the long-run relationship between benefits and earnings than the period 1952-82. Regression equations were estimated for the period 1952-82 (see Table A.7) and a comparison of goodness-of-fit for the two regression periods is given in Table A.7 from which it is clear that the results for the period excluding 1982 are as good or better than those of the period including 1982. None of the conclusions reported in the text would, however, be changed if the period used for the regression analysis had been 1952-82 rather than 1952-81.

Table 4.3: Ratios and elasticities of social welfare benefits with respect to pre- and post-tax average industrial earnings, 1952-81

Benefit	Pre-tax average earnings		Post-tax average earnings	
	Benefits as a per cent of pre-tax average earnings	Elasticity of benefits with respect to pre-tax average earnings	Benefits as a per cent of post-tax average earnings	Elasticity of benefits with respect to post-tax average earnings
<b>Single person</b>				
Unemployment and disability benefit	18.4 (88.6)	1.01 (87.0)	25.7 (70.8)	1.10 (83.9)
Unemployment assistance	15.1 (80.3)	1.09 (51.9)	21.1 (63.1)	1.20 (46.8)
Old age (contributory pension)	21.8 (51.0)	1.03 (68.9)	30.3 (43.5)	1.13 (76.4)
Old age (non-contributory pension)	18.5 (53.8)	1.05 (59.8)	25.8 (45.8)	1.16 (56.5)
<b>Married couple</b>				
Unemployment and disability benefit	30.5 (88.3)	1.01 (71.5)	39.1 (71.3)	1.10 (54.5)
Unemployment assistance	26.1 (80.2)	1.08 (44.1)	39.5 (64.7)	1.20 (37.0)
Old age (contributory) pension	35.7 (51.4)	0.99 (58.4)	45.8 (44.8)	1.09 (59.0)
Old age (non-contributory) pension	27.9 (33.1)	1.15 (18.2)	36.1 (30.0)	1.17 (17.1)
<b>Family of four</b>				
Unemployment and disability benefit	40.7 (97.8)	1.01 (102.0)	50.3 (69.6)	1.11 (100.0)
Unemployment assistance	35.1 (89.3)	1.09 (58.8)	43.4 (64.3)	1.20 (64.1)
Old age (contributory) pension	46.4 (52.0)	1.02 (50.6)	57.4 (41.4)	1.14 (58.4)
Old age (non-contributory) pension	36.9 (40.4)	1.23 (47.4)	45.6 (32.0)	1.37 (48.6)

Note: (i) t-values in parentheses.

(ii) The number of observations used in estimating the regression coefficients differs for each benefit because of differences in commencement dates and in the dates on which the various benefits were increased. For unemployment and disability benefit  $n = 25$ ; for unemployment assistance  $n = 30$ ; for old age (contributory) pension  $n = 26$  for a single person and a married couple and 22 for a family of four and for old age (non-contributory) pension  $n = 32$  for a single person, 13 for a married couple and 23 for a family of four. Differences in  $n$  for the latter benefits for different household sizes are due to non-payment of allowances for children until November 1964 and of allowances for an adult dependant of an old age (non-contributory) pension recipient until July 1974.



during the period 1952-81. It will be recalled that the pre-tax estimates of  $R$  in Table 4.3 are mean values and they should therefore be interpreted in the light of the elasticity estimates as rising somewhat over the years. Thus, for a single person the proportion of pre-tax earnings replaced by unemployment assistance would have been about 14 per cent at the beginning of the period and 16 per cent at the end.

The conclusion which emerges from the estimates of  $R$  and  $\gamma$  for pre-tax earnings is that changes in insurance benefits for the elderly, the sick and the unemployed matched changes in average industrial earnings whereas changes in assistance payments outstripped changes in average earnings.<sup>21</sup> Successive governments, therefore, appear to have responded to underlying forces which necessitate the maintenance of a fairly constant relation between social insurance benefits and average industrial earnings over time. The strength of this relationship can be gauged from Table A.8 from which it will be seen that at least 95 per cent of the variance in the level of unemployment and disability, and contributory pension benefits can be explained by variations in the level of industrial earnings. The underlying relationship between insurance, and to a lesser extent assistance, benefits has been obscured by the failure of policy makers to formulate an explicit policy concerning the indexation of social welfare benefits. The implicit indexation to gross earnings which was adhered to over the years was accompanied by departures in the short run which led many commentators to conclude that there was no rational explanation for the level of social welfare benefits in Ireland. Thus, Curry (1980, p. 53), for example, argued that:

It can be stated with certainty, . . . , that benefits have not been officially related to wage levels nor have increases been index-related. . . . In other words, increases have been, in the main, decided arbitrarily. It cannot be said that increases in payment have been consistently related to any specific index or indexes.

The first sentence in this statement is correct, as Ireland is now the only EEC country, apart from Greece, which does not officially index pensions to earnings or prices, but the remainder is incorrect as we have demonstrated that there is a consistent relationship between benefits and earnings.<sup>22</sup>

21. An aspect of the pre-tax estimates of  $R$  reported in Table 4.3 which is worth noting is that they show what answers governments have given in practice to questions about the definition of poverty in our society. These estimates set lower bounds to the poverty line for different household sizes since eligibility for pay-related benefits, rent and income tax rebates is not taken into account in our analysis.

22. There appears to be general agreement with Curry's view on the arbitrary nature of social welfare payments among commentators on social policy in Ireland. McCashin (1981, p. 33), for example, notes that "there is no official 'poverty line' in Irish social legislation or in constitutional or government documentation and, therefore, there is no real scientific basis for the level of payments in the social security services", while Fitzgerald (1980, p. 34) argues that "the form and value of the benefits

The post-tax estimates of  $R$  and  $\gamma$  should be significantly higher than the pre-tax estimates because of the failure of tax-free allowances, for example, to keep pace with inflation in the post-war period, the steady increase in average tax rates and the introduction of tax exemption for persons on low incomes. The post-tax estimates in Table 4.3 show that this is indeed the case. The post-tax proportion of earnings which was replaced by insurance and assistance payments was higher than the pre-tax proportion by 40 per cent for single persons, 28 per cent for married couples and 24 per cent for families of four. The position of welfare recipients is, therefore, not quite as bleak as it looks from the usual comparison of benefits with earnings before tax. The post-tax replacement ratios were considerably higher than the pre-tax ratios throughout the period 1952-81. The elasticities of benefits with respect to post-tax earnings are significantly greater than 1 for all household sizes indicating that increases in insurance and assistance payments have been larger than increases in post-tax earnings. The elasticities for insurance payments are smaller than those for the corresponding assistance payments so there was a significant narrowing of the gap between the two types of payments over the period we are dealing with.

It appears from the pre- and post-tax results in Table 4.3 that changes in the tax system have seldom been taken into account when increases in social

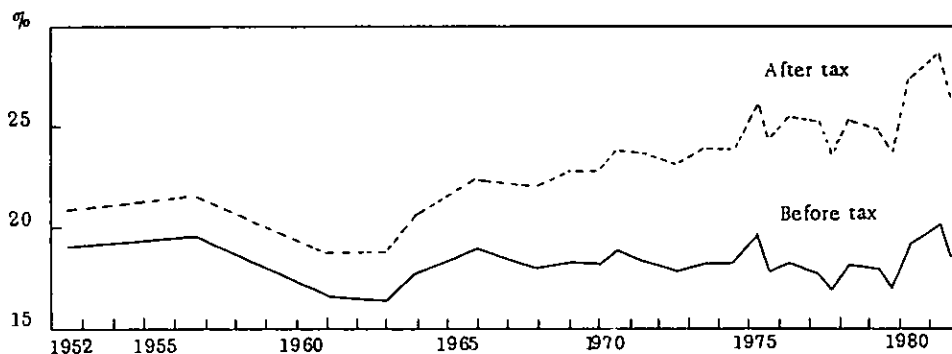
... are not based on an attempt at scientific assessment of family needs, as were, for example, the Beveridge scales in the UK". However, there is some evidence that the benefit scales for the old and the unemployed at least were influenced by scientific assessments of subsistence needs.

The sixth report of the National Nutrition Survey (Department of Health, 1950, p. 23) established that "the intake of calories by certain unemployed groups included some values that might be regarded as unsatisfactory". It is evident from the survey data on average expenditure per diet-head weekly on food that the Unemployment Benefit and Assistance payments to families whose head was unemployed were significantly less than the cost of food and that the old age non-contributory pension benefit, in households in which we assume all the adults were pensioners, exceeded the cost of food by around 20 per cent in Dublin and in small towns and by 13 per cent in large towns. When the Minister for Social Welfare, Mr Norton, proposed increases in benefit and assistance payments to the old and the unemployed in the Social Welfare (Insurance) (No. 2) Bill 1950 the opposition spokesman, Dr. Ryan, noted (Dáil Éireann, *Parliamentary Debates*, Vol. 124, Col. 1110) that old age pensioners "were living according to a reasonable standard of comfort" whereas the long-term unemployed were not, according to the National Nutrition Survey and he accepted that the subsistence level of benefits proposed in the Bill would provide enough to meet a decent standard for the groups concerned.

The reform of the social welfare system which took place in 1952 is believed by some commentators ((Whyte, 1971, p. 126), (Kaim-Caudle, 1973, p. 174), (Daly, 1981, pp. 178-182) and Hughes (1980)) to have been strongly influenced by the Beveridge Report (1942) as implemented in the British National Insurance Act, 1946. For a discussion of the Irish Government's reaction to the Beveridge Report at the time it was published see Bew and Patterson (1982, pp. 29-34). The equivalence scales used in the Irish unemployment and disability benefit schemes have closely approximated those proposed by Beveridge and used in the United Kingdom since 1946, as Hughes (1980) notes, and they may, therefore, be based on a scientific assessment of the relative needs of different family members.

No attempt, however, appears to have been made to use the food requirements data from the National Nutrition Survey to derive a minimum expenditure standard to cover total consumption and the payments provided were generally regarded, at least up to the end of the 1960s, as being too low to prevent poverty (see Kaim-Caudle (1964, 1967 and 1969)). The faster rate of increase in pension benefits relative to unemployment benefits since 1977 may be due to the discovery that, in a survey undertaken in 1976 for the National Prices Commission (1977, p. 54), three-quarters of those aged 65 and over in a central city area in Dublin had a nutritionally inadequate diet.

Figure 4.3: *Single person's unemployment benefit as a proportion of average male industrial earnings before and after tax, 1952-81*



welfare benefits were being considered and this has led to an unintended growth in benefits relative to disposable income. The extent to which a single male's average earnings before and after tax were replaced by flat-rate unemployment benefit during the years 1952 to 1981 is graphed in Figure 4.3. Before the introduction of the PAYE system in the early 1960s the after tax replacement ratio moved in parallel with the before tax ratio. Since then, however, the two series have diverged considerably and the gap between them has increased from about 9 per cent to 43 per cent of the pre-tax series. The pattern of development of the pre- and post-tax replacement ratios for the benefit categories and household sizes referred to in Table 4.3 is similar to that for the unemployment benefit series in Figure 4.3. Since social welfare benefits cannot continue indefinitely to increase faster than earnings after tax consideration should be given to linking future increases in benefits to earnings after tax rather than, as is presently the case, to earnings before tax. This would ensure that unintended work disincentive effects would not arise when benefits are changed and it could mean that social welfare benefits would not have to be assessed for taxation.<sup>23</sup>

This is an important consideration as successive governments have been unable to solve the administrative problems involved in integrating these benefits into the PAYE tax system. Linking social welfare benefits to post-tax earnings would solve part of the problem posed by non-taxation of short-

23. Evidence concerning the disincentive effects of unemployment and disability benefit is provided in papers by O'Mahony (1983), Hughes and Walsh (1983) and Hughes (1982).

term benefits.<sup>24</sup> In addition to disregarding the impact of taxation, the indexation formula implicitly adopted in Ireland has not allowed for demographic and other changes which have reduced the number of social insurance contributors per recipient of insurance benefit from 8.2 in 1953 to 3.1 in 1981. The social insurance contribution rates were raised over the years, as will be recalled from Chapter 1, to pay for the increase in the cost of benefit per insured worker rather than the cost being shared by reductions in benefit recipients replacement ratios and increases in contribution rates. Replacement ratios for recipients of social insurance benefits should be reviewed from time to time and changes made, if appropriate, in order to share the burden of increased costs, due to changes in the ratio of contributors to recipients, among the working and non-working insured population (see Wilson and Wilson (1982, Ch. 5) for further discussion of indexation issues).

#### 4.4 *Implicit Equivalence Scales*

There is a further piece of information which can be gleaned from Table 4.3 which will be useful in the rate of return analysis in the next chapter. It concerns the equivalence scale implicit in the payments for dependants of welfare recipients and can be derived by expressing the pre-tax estimates of R for a married couple and a married couple with two children as a proportion of the estimate for a single person. The implicit scales for the four welfare programmes we are concerned with are given in Table 4.4 together with the

Table 4.4: *Equivalence scales implicit in payments to dependants of welfare recipients*

<i>Benefit</i>	<i>Household size</i>		
	<i>Single person</i>	<i>Married couple</i>	<i>Family of four</i>
Unemployment and disability benefit	1.00	1.66	2.21
Unemployment assistance	1.00	1.73	2.32
Old age (contributory) pension	1.00	1.64	2.13
Old age (non-contributory) pension	1.00	1.51	1.99
Beveridge scale	1.00	1.69	2.24

24. This advantage of the proposed indexation formula was originally pointed out by McCarthy (see *Irish Times* report, 14 December 1982, entitled "Size of Public Capital Programme Criticised"). The current treatment of short-term social welfare benefits in the income tax code is discussed in Hughes (1982a). The principle that benefits should be adjusted to take account of statutory deductions from gross pay has already been accepted in connection with the maternity allowance scheme by the Minister for Social Welfare (see Dail Eireann, *Parliamentary Debates*, 13 December 1983, Col. 2829).

scale implicit in the subsistence budgets given in the Beveridge Report.<sup>25</sup> The scales for dependants of persons who are insured against unemployment, sickness, and retirement are virtually the same and there is a close resemblance between them and the Beveridge scale. This resemblance suggests that the Irish scales which were adopted in 1953 when the social insurance system was being unified were influenced by the Beveridge Report (1942). Official equivalence scales based on Irish consumption patterns have not yet been constructed but consideration should be given to doing so in view of the changes in consumption patterns in the last thirty years or so.

It will be seen that a dependant adult gets around two-thirds of the single person's benefit while the first and second children receive about one-third. The scale for dependants of persons on unemployment assistance is higher than that for dependants of persons on unemployment and disability benefit while that for dependants of non-contributory old age pensioners is lower. Attention has frequently been drawn to the anomalies in the treatment of dependants in the social welfare system and there appears to be no convincing reason why the equivalence scales for dependants should not be the same for all social welfare programmes.

#### 4.5 *Political Influence on Social Welfare Payments*

It was noted earlier that short-run changes in benefit levels appear to be influenced by electoral considerations. A related, but separate, question is whether benefit and assistance levels are affected by the political party or parties forming the government. The specific hypothesis we wish to test is whether benefit levels have risen more under Coalition Governments than under Fianna Fáil Governments because of the strong commitment of the Labour Party to increases in social welfare benefits. This hypothesis can be tested by running a regression of the form:

$$B_t = \alpha E_t + \delta D_t \quad (4.5)$$

where  $B_t$  stands for the relevant insurance or assistance benefit as before,  $E_t$  stands for the average industrial earnings before tax, and  $D_t$  is a dummy variable which takes the value 1 when a Coalition Government is in power and 0 when a Fianna Fáil Government is in office.<sup>26</sup> The regression results

25. The Beveridge scale is used because it may have influenced the scales which were adopted in Ireland when the social insurance system was unified in 1952.

26. The dates, according to Chubb (1974, Table 6.1) and the Dáil Debates since 1977, on which there was a change of government during our data period were June 1951, Fianna Fáil, June 1954, Coalition, March 1957, Fianna Fáil, October 1961, Fianna Fáil, April 1965, Fianna Fáil, July 1969, Fianna Fáil, March 1973, Coalition, July 1977, Fianna Fáil, June 1981, Coalition, March 1982, Fianna Fáil, December 1982, Coalition. The change in social welfare payments which took place in October 1977 was ascribed to the Coalition Government of 1973-77 as provision was made for this increase in the Coalition's January 1977 Budget.

are presented in Table 4.5 from which it will be seen that, with the exception of the single person's old age (non-contributory) pension, none of the dummy variable coefficients are significantly different from zero. In the case of the single person's non-contributory pension it appears that the pension was lower on average by 88 pence during periods of Coalition Government, i.e., by about 12 per cent of the mean value of the pension. The conclusion which can be clearly drawn from Table 4.5 is that the level of social welfare payments during the period 1952-81 were not affected by the political party

Table 4.5: *Regression results for effect of political influence on social welfare payments, 1952-1981*

<i>Benefit</i>	<i>Independent variables</i>	
	<i>E</i>	<i>D</i>
<i>Single person</i>		
Unemployment and disability benefit	0.186 (73.17)	-0.262 (0.99)
Unemployment assistance	0.154 (65.95)	-0.419 (1.70)
Old age (contributory) pension	0.224 (43.08)	-1.030 (1.88)
Old age (non-contributory) pension	0.191 (46.89)	-0.880* (2.15)
<i>Married couple</i>		
Unemployment and disability benefit	0.307 (73.54)	-0.501 (1.16)
Unemployment assistance	0.266 (66.36)	-0.765 (1.81)
Old age (contributory) pension	0.368 (43.93)	-1.787 (2.02)
Old age (non-contributory) pension	0.289 (27.85)	-1.711 (1.51)
<i>Family of four</i>		
Unemployment and disability benefit	0.410 (81.21)	-0.590 (1.13)
Unemployment assistance	0.357 (73.41)	-0.895 (1.74)
Old age (contributory) pension	0.477 (44.28)	-2.151 (1.89)
Old age (non-contributory) pension	0.381 (33.98)	-1.998 (1.69)

Note: t-values in parentheses.

\* significant at .05 level.

or parties in government. Hence, the long-term trend in the benefit-earnings relationship was not displaced upwards or downwards by differences in the ideological complexion of the governments which held office since 1952. This conclusion supports Gould's (1982, p. 128) view, based on his analysis of the growth of public expenditure in the post-war period, that there are no ideological differences between the three main political parties and that "there is little to distinguish inter-party governments from Fianna Fáil". He argues that changes in public expenditure in Ireland are best understood in terms of the Incrementalist theory proposed by Wildavsky (1974) whereby only small changes in expenditure programmes are made from year to year. The force of inertia appears to press very strongly on social welfare policy in Ireland and there has rarely been an official appraisal of the welfare programmes which we inherited from the British Administration.<sup>27</sup>

27. Since this was written the Minister for Social Welfare has announced the establishment of a Commission on Social Welfare to undertake a general review of the social welfare codes.

## Chapter 5

### *DEVELOPMENT OF STATE PENSION SCHEMES AND RATES OF RETURN ON SOCIAL INSURANCE PENSION CONTRIBUTIONS*

#### *5.1 Introduction*

The results of the analysis in the previous chapter of the relationship between social insurance pension benefits and average industrial earnings suggest that when the Irish pay-as-you-go social insurance system is mature it will provide an implicit rate of return on pension contributions approximately equal to the sum of the rates of growth of real earnings and population (see Samuelson (1958) and Aaron (1966) for a discussion of the factors which lead to this result in mature pay-as-you-go social insurance systems).<sup>28</sup> The expected implicit rate of return for various cohorts of the population, however, will differ from this in an immature system because of differences in eligibility conditions and the rate of return for individuals within cohorts will vary, as Creedy (1982) points out, because benefits are only tenuously related to contributions while they are related to family circumstances and contributions are not. Since the Irish contributory pension scheme only began in 1961 it will not attain maturity until early in the next century and our objective in this section, therefore, will be to examine differences in the returns accruing to representative individuals retiring in 1982 and 2006 and to compare their returns with what might have been earned on equivalent investments in other assets. It is necessary to present some information on the development of State pension schemes in Ireland in order to understand how differences in rates of return can arise.

#### *5.2 State Pensions in Ireland*

There are three State schemes under which income maintenance payments can be made to retired employees in Ireland. The first of these, the old age non-contributory pension scheme, was introduced in January 1909 in accordance with the provisions of the British Parliament's Old-Age Pensions Act, 1908. which entitled British subjects aged 70 and over, who had resided in the United Kingdom for at least 20 years before the passage of the Act with means of less than £31.50 per year, to a weekly pension of 5/- (25p) per

28. A mature pay-as-you-go social insurance system is one in which all pension beneficiaries have paid contributions throughout their working lives to support the system under which they will draw benefits.



week. The lack of official registration of births in Ireland prior to 1865 combined with the generosity of the Irish Local Government Board's administration of the pension scheme led to the extraordinary situation of more people claiming the old-age pension than returned themselves as aged 70 and over in the census of 1911. The startling excess of persons receiving old-age pensions in Ireland relative to the rest of the United Kingdom was noticed soon after the scheme commenced (see Humphreys (1910-11)) and a special inquiry into the matter was ordered. While no report on the results of the inquiry appears to have been published the Chief Secretary for Ireland at the time noted that administrative changes requiring proof of age other than by personal recall led to "a complete revision of pension lists" (Birrell, 1937, p. 210) and hence to the cessation of unjustified claims for old-age pension on the scale experienced when the Act was first introduced. Following the administrative changes referred to there were only minor changes in the provisions of the Act until the Ryland Adkins Committee (HMSO, 1919) recommended an increase in the maximum pension to 10/- (50p) per week and a revision of the standard of means. Farley (1964, pp. 19-20) has noted that:

Evidence tendered to this Committee by a Government representative laid down that the general principle of the Old Age Pension Acts was "not to provide entire maintenance but to supplement such provision as might otherwise be available to the point necessary to secure decent subsistence".

The Irish Government took over responsibility for the old-age pensions scheme in 1922 when Ireland gained its independence from Britain and operated it within the broad framework of the British Pension Acts passed from 1908 to 1920. It reduced the pension by 1/- (5p) per week in 1924 because of the country's serious economic difficulties and revised the scale of means. The pension was restored to its former maximum rate of 10/- (50p) per week in 1928 and it remained at this level until 1948 when it was increased to 17/6 (87.5p) by incorporating the cash supplements which had been introduced during and after the war and adjusting for price changes which had occurred since the last uprating. The maximum non-contributory old-age pension was increased in October, 1951 to £1.00 per week and to £1.075 in July, 1952. The increases which have taken place since then are shown in Table A.5.

Britain introduced a contributory old-age pension scheme in 1925 but no effort was made to introduce a similar scheme in Ireland until the first Coalition Government's proposals for a contributory retirement pension scheme which were set out in a White Paper issued in 1949 (see Department

of Social Welfare, 1949). The contributory pension proposals were part of the Government's plan for unifying and extending the social security system. This plan appears to have been strongly influenced by the proposals set out in the Beveridge Report (1942) and embodied in the British National Insurance Act, 1946 and by the principles concerning social insurance adopted by the International Labour Conference at Philadelphia in 1944. Unlike the Beveridge Report, however, the 1949 White Paper does not provide a detailed account of the philosophy underlying the proposals or of the costs and benefits of revising and extending existing schemes and introducing new schemes. It does, however, give some broad indications of the objectives of the proposals and of their costs and benefits which are relevant to the development of the State's contributory old-age pension and retirement pension schemes. The White Paper argued that financial, moral and psychological considerations pointed in the direction of a predominantly contributory social security scheme but that the shortage of cash resources in the agricultural sector, which at that time accounted for around 40 per cent of the labour force, and the difficulty of collecting contributions from the self-employed ruled out the extension of compulsory social insurance in Ireland to the self-employed. It proposed that there would, therefore, be a single class of employees who would be insured for all benefits without income limit but that consideration would be given to the question of excluding civil servants, teachers, guards, the defence forces, and certain employees of local authorities having regard to the existing occupational schemes applying to these groups of employees.<sup>29</sup> Flat-rate benefits for flat-rate contributions were proposed for all of the contingencies to be covered by the Government's plan on the grounds that this would be most equitable and would leave room for voluntary provision by private saving. The benefit levels were to be identical for unemployment, sickness, widowhood and old-age and were justified broadly by reference to the cost of living but no details were given of how these levels were determined nor of the criterion by which they were to be periodically reviewed. The contributory retirement pension, it was proposed, would be paid at age 65 for men and 60 for women whereas the age for receipt of non-contributory old-age pension was 70 for both sexes. No explanation was given for having a lower retirement age for women but it may have been influenced by a similar recommendation in the Beveridge Report which was adopted by the British government. The age reductions relative to the non-contributory scheme were justified as in keeping with modern practice and a recommen-

29. It was subsequently revealed in the Dáil (see Dáil Éireann, *Parliamentary Debates*, Vol. 130, col. 633) that the Ministers for Social Welfare and Finance in the Inter-Party Government had agreed that established civil servants and officers of local authorities would be excluded from the terms of the 1950 Social Welfare Bills which embodied many of the proposals made in the White Paper.

dation of the International Labour Conference already referred to. The compulsory retirement provision for receipt of benefit would, it was believed, create job openings for young people. The contribution conditions proposed for receipt of the pension were (i) at least 156 contributions would suffice for vesting of the pension but contributions must have started 10 years before retirement age and (ii) for full pension a yearly average of at least 50 contributions must have been paid or credited during insurance life-time, i.e., from age of entry into insurance until retirement age. Persons entering insurance less than 10 years before retirement would be entitled to a refund of their pension contributions and persons with a lower average than 50 contributions would receive a lower rate of pension. Dependants' allowances would be payable in full whether the pensioner was entitled to maximum or reduced personal rate of pension. The method used to fix the basic contributions for males and females to the proposed scheme was to calculate the amounts which would provide actuarially for the benefits to be received by entrants into the scheme at age 16. The cost of blanketing-in "all those who were unable, because of an advanced age of entry, to make an adequate contribution to their benefits" (Department of Social Welfare, 1949, par. 116) was to be borne by the Exchequer from year-to-year as it arose. The only details which were given in the White Paper on the cost of retirement pensions referred to the first year of operation when it was estimated that they would cost £2.1 million or 23.9 per cent of the total cost of all the insurance benefits to be provided. When the retirement pension proposals were being debated in the Dáil following the introduction of the Social Welfare (Insurance) (No. 2) Bill, 1950, the opposition accused the Minister for Social Welfare, Mr Norton, of refusing to publish the actuary's estimates of the cost of retirement pensions for the 20 year period for which the calculation had been done. The Minister, in reply to a Parliamentary Question, (see Dáil Éireann, *Parliamentary Debates*, Vol. 124, cols. 386-7), published estimates for the 1st, 5th, 10th, and 20th year of operation of the scheme which indicated that in the 20th year of operation retirement pensions would cost £6.75 million or 45.6 per cent of the total cost of all benefits. The proposals which the Government had made concerning social security in the 1949 White Paper were embodied in the Social Welfare (Insurance) (No. 2) Bill, 1950, which was given its Second Reading on 2 March 1951. The retirement pension provisions of the Bill were identical to the proposals put forward in the White Paper. The Government's proposals concerning the unification and extension of the social security system were strongly criticised on religious, social, and economic grounds both inside and outside the Dáil.<sup>30</sup>

30. The criticisms which were levelled at the bill and the political and religious background to the parliamentary debate on the bill are discussed by Whyte (1971, pp. 179-183).

The opposition party, Fianna Fáil, was particularly opposed to the provision that the retirement age should be 65 for men and 60 for women as it believed that the cost of providing for retirement at these ages would place too great a burden on those who would have to pay for the scheme. It also argued that it would be undesirable for the State to adopt the proposed retirement ages as these would then become the norm in private industry.

The estimated cost of administering the unified social security system was thought by one opposition deputy to be too high at 12½ per cent of the total cost of the scheme (see Dáil Éireann, *Parliamentary Debates*, Vol. 124, col. 138) but the Minister for Social Welfare pointed out (*ibid*, col. 624) that administration costs for private insurance companies in 1948 varied from 26 to 29 per cent of premiums as against an estimated 12½ per cent for the State scheme.

The Government's Bill was approved on Second Stage by 71 votes to 67 on 11 April 1951 but it lapsed when the Government was dissolved the following month in the wake of the controversy over the Mother and Child scheme. When Fianna Fáil returned to office it brought in its own Bill, the Social Welfare (Insurance) Bill, 1951 to unify and extend the social security system. The provisions in this Bill were substantially the same as those in the Bill introduced by the inter-party government except that the Fianna Fáil Government's Bill did not make any provision for retirement pensions or for a number of other benefits (e.g., death benefit) which had been proposed in the inter-party Government's Bill. The Minister for Social Welfare, Dr Ryan, told the Dáil that he had substituted as an alternative to retirement pensions at age 65 a relaxation of the qualifying conditions for unemployment benefit which would enable workers aged 65 and over to draw unemployment benefit continuously until pension age, provided the worker was available for and genuinely seeking work. The Minister indicated that if workers were prepared to pay for a contributory old-age pension scheme he would consider introducing such a scheme. No steps, however, were taken to introduce a contributory old-age pension scheme for almost a decade until provision was made in the Social Welfare (Amendment) Bill, 1960 for a compulsory contributory old-age pension scheme for existing ordinary rate contributors to the Social Insurance Fund. Employees such as civil servants, teachers, guards, members of the defence forces and certain employees of local authorities who were compulsorily insurable only for widows' and orphans' pensions were excluded from the provisions of the Bill.

The qualifying age for old-age pension was set at 70 for both sexes and the contribution conditions for receipt of maximum pension were:

- (a) that the claimant had entered insurance before attaining the age of 60,

- (b) that not less than 156 employment contributions had been paid since entry into insurance, and
- (c) that an average of 48 contributions had been paid or credited in each contribution year since entry into insurance.

These contribution conditions were slightly less rigorous than those proposed for retirement pensions in the abortive Social Welfare (Insurance) Bill, 1950 but the pension age proposed was significantly higher than in the latter Bill. Provision was made in the Bill for blanketing-in employees who were already past pension age or who were within some years of pension age and therefore not in a position to accumulate enough contributions to qualify. It was estimated that as a consequence of these provisions 36,000 persons with 13,000 adult dependants would qualify for the contributory old-age pension. The basic rate of pension for a person who satisfied all of the contribution conditions was set at 40/- (£2.00) per week with an adult dependant's allowance of 27/6 (£1.75) which was increased by 1/- (5p) when the Bill came into operation in January 1961. Payments for child dependants were not introduced until November 1964. The Bill gave power to the Minister for Social Welfare to provide by Regulations for payment of a partial pension where the contribution conditions were not fully satisfied and provision was made under Statutory Instrument No. 274 of 1960 for the payment of a reduced rate of contributory old-age pension where the yearly average of 48 contributions paid or credited was not attained but the average was 24 contributions or more. No pension was paid if the yearly average was less than 24. The minimum yearly average of contributions paid or credited each year needed to qualify for a pension was reduced to 20 in 1973. The qualifying age for old-age pensions has been reduced over the years to its present level of 66.

The provision which had been made when contributory old-age pensions were introduced for extending the period for which unemployment benefit would be paid to insured persons over 65, combined with the policy of the Department of Social Welfare of seldom referring disability benefit claims from those over 65 for a second medical opinion (see Hughes, 1982a, p. 10), resulted in more than half of all insured men and women aged between 65 and 69 receiving either unemployment benefit or disability benefit according to Kaim-Caudle's (1969, p. 105) estimates. The unnecessary costs which were imposed on older workers claiming unemployment and disability benefits (e.g., by having to sign on each week or to attend for regular medical examination) and on the State's administrative machinery appear to have been a major factor underlying the introduction of a contributory retirement pension scheme in the Social Welfare Bill, 1970 nearly two decades after the first inter-party government's abortive retirement pension plan. The retire-

ment age was set at 65 for both sexes and the contribution conditions required to qualify for the maximum pension were that the claimant:

- (a) must have become insured before reaching age 65,
- (b) must have at least 156 contributions paid, and
- (c) must have a yearly average of at least 48 contributions paid or credited since entering insurance.

Persons entering insurance less than 10 years before retirement would be entitled to a refund of their pension contributions and persons with averages of 24 to 48 contributions would receive reduced rates of pension. Dependants' allowances would be payable in full whether the pensioner was entitled to maximum or reduced personal rate of pension. The provisions in the Social Welfare Bill, 1970 for retirement pensions were welcomed by all parties in the Dáil and were passed into law without any vote being taken.

Despite requests from opposition spokesmen during the Dáil Debates on the various Bills which introduced the State's pension schemes for details of the total cost of the schemes over a 20 or 30 year period and of the actuarial contributions needed to finance the schemes no information appears to have been published apart from that issued by the Minister for Social Welfare in the first inter-party Government in reply to a Parliamentary Question on 21 February 1951.

Tables 5.1 and 5.2 show the number of persons and their qualified dependants who received retirement, contributory and non-contributory old age pensions on 31 March in each year since 1952. Information on the sex and marital status of persons receiving contributory State pensions is, unfortunately, not available. The total number of pensioners and adult dependants has increased by two-thirds from 160,304 in 1952 to 270,549 in 1980. Non-contributory pensioners and their dependants accounted for 75 per cent of the total number of recipients when contributory pensions were first paid in 1961 but the proportion declined to 53.2 per cent in 1980 as the number of workers who had accumulated sufficient contributions to qualify for a retirement or contributory pension increased. The number of pensioners as a proportion of the total number of persons of pension age is shown in Table 5.3 from which it is evident that there was a steady increase in the number and percentage of the elderly covered by the State contributory and non-contributory pension schemes. The number of people receiving State pensions continued to increase up to 1979 but the proportion of those over pension age receiving a State pension fell back to around three quarters of the total because of the decline in the pension age to 66 for both the contributory and non-contributory schemes and the increased provision of occupational pensions. Many people aged 65-69 would

Table 5.1: Number of persons and qualified dependants in receipt of contributory and non-contributory old-age pensions on 31 March, 1952-1980

Year	Contributory			Non-contributory			Dependants per 1,000 pensioners			
	Pensioners	Adults	Children	Pensioners	Adults	Children	Contributory	Children	Non-contributory	Children
1952	—	—	—	160,304	—	—	—	—	—	—
1953	—	—	—	164,696	—	—	—	—	—	—
1954	—	—	—	167,012	—	—	—	—	—	—
1955	—	—	—	166,088	—	—	—	—	—	—
1956	—	—	—	165,270	—	—	—	—	—	—
1957	—	—	—	165,522	—	—	—	—	—	—
1958	—	—	—	163,999	—	—	—	—	—	—
1959	—	—	—	161,428	—	—	—	—	—	—
1960	—	—	—	160,383	—	—	—	—	—	—
1961	29,124	11,738	—	124,548	—	—	403	—	—	—
1962	34,802	13,327	—	118,185	—	—	383	—	—	—
1963	36,458	13,842	—	115,873	—	—	380	—	—	—
1964	37,923	14,499	—	114,547	—	—	382	—	—	—
1965	39,576	15,111	1,295	112,155	—	—	382	33	—	—
1966	40,556	15,451	1,336	112,621	—	2,197	381	33	—	19
1967	41,953	15,905	1,398	111,976	—	2,461	379	33	—	22
1968	43,058	16,254	1,390	112,230	—	2,421	377	32	—	22
1969	44,137	16,628	1,424	113,075	153	2,654	377	32	1	23
1970	45,481	17,133	1,368	112,921	647	2,435	377	30	6	22
1971	46,549	17,633	1,792	113,570	1,237	3,160	379	38	11	28
1972	47,491	17,899	1,572	109,991	1,687	3,179	377	33	15	29
1973	48,371	18,272	1,690	106,511	1,692	3,185	378	35	16	30
1974	49,683	15,726	1,939	111,613	2,122	4,025	316	39	19	36
1975	52,931	15,246	1,942	124,228	12,960	4,673	288	37	104	38
1976	54,857	15,022	2,374	128,956	12,936	4,941	274	43	100	38
1977	56,356	14,271	2,590	131,019	13,164	4,501	253	46	101	34
1978	60,270	15,439	3,256	135,189	13,027	4,831	256	54	96	36
1979	62,239	16,330	3,636	133,300	12,666	4,784	262	58	95	36
1980	63,931	19,037	3,183	131,663	12,372	4,095	298	50	94	31

Sources: Reports of the Department of Social Welfare, 1950-53 to 1979-80.

- Notes:
- (i) The qualifying age for contributory and non-contributory pensions was reduced from 70 to 69 in 1973, to 68 in 1974, to 67 in 1975 and to 66 in 1977. Allowances for qualified children of old-age pensioners were introduced in 1964 and allowances for prescribed relatives of old-age (non-contributory) pensioners were introduced in 1969. Payments to non-contributory old-age pensioners of an adult dependant's allowance where the beneficiary's spouse was not a pensioner were introduced in 1974.
  - (ii) The data for non-contributory pensions refer to old-age and blind (non-contributory) pensions.

Table 5.2: *Number of persons and qualified dependants in receipt of retirement pensions on 31 March 1971-1980*

Year	Pensioners	Dependants		Dependants per 1,000 pensioners	
		Adults	Children	Adults	Children
1971	3,518	1,937	644	551	183
1972	4,538	2,592	749	571	165
1973	12,960	6,809	2,138	525	165
1974	17,126	9,100	2,826	531	165
1975	20,237	10,050	3,375	497	167
1976	22,875	10,601	3,720	463	163
1977	26,374	11,611	3,839	440	146
1978	28,475	12,054	3,958	423	139
1979	29,876	12,287	3,792	411	127
1980	31,058	12,488	3,621	402	117

Source: *Reports of Department of Social Welfare 1967-71 to 1979-80.*

Note: Prescribed relatives are included in the figures for adult dependants.

Table 5.3: *Pensioners and adult dependants as a percentage of those of pension age, 1952-1979*

Year	Number of pensioners and adult dependants	Number of persons of pension age	Pensioners and dependants/ persons of pension age
1952	160,304	208,843	76.8
1961	165,410	211,575	78.2
1966	168,628	208,781	80.8
1971	184,444	218,068	84.6
1979	266,698	361,375	73.8

Sources: As for Tables 5.1 and 5.2 and *Census of Population of Ireland, 1979* Vol. II, Table 1A.

Note: For the purposes of this table pension age has been taken as 70 up to and including 1971 and 65 thereafter.

not receive a non-contributory pension because their income from work would be in excess of the limit allowed under the means test. The number of child dependants per 1,000 pensioners is very small and attention will, therefore, be confined to implicit rates of return for single men and women and for married couples.

### 5.3 Rates of Return on Social Insurance Pension Contributions

The rates of return for pensioners retiring now will differ considerably from those for persons retiring after a working lifetime of contributions to



the system so we will compare the benefits accruing to those who retired in 1982 with those accruing to persons retiring in 2006, i.e., 45 years after the contributory pension scheme started. The abolition of the income limit in 1974 for social insurance coverage drew non-manual workers into the contributory pension scheme for the first time. The contribution conditions were relaxed in 1974 to enable persons aged 56-60 to qualify for a full contributory pension provided they had not less than 156 contribution weeks paid since entry into insurance and a yearly average of at least 48 contribution weeks. The abolition of the income limit in 1974, therefore, bestowed considerable financial advantage on older people with above average incomes as they were able to qualify for a full contributory old-age pension in return for just five years social insurance contributions. The benefits which non-manual contributors who entered the system in 1974 got relative to manual workers who had been contributing since contributory old-age pensions were introduced in 1961 can be examined in the context of a tax-benefit model which incorporates the main features of the current contributory old-age pension scheme.

The accumulated value of the pension element in the social insurance contribution for an insured worker who retires in December 1982 at age 66 is:

$$T = \sum_k^m s_k (1+i)^{m-k} \quad (5.1)$$

where  $T$  = accumulated value of social insurance payments towards contributory old-age pension at compound interest at retirement,  
 $k$  = year in which insurance contribution is paid,  
 $m$  = last year in which insurance contribution is due,  
 $s_k$  = value of total social insurance pension contribution paid in year  $k$ ,  
 $i$  = real rate of interest.

We assume that the annual contributions and pension benefits are paid at the beginning of each year and that the contribution consists of the pension element in the employer and employee social insurance contribution. The interest rate which should be used in this calculation is the rate which could have been obtained by insured workers if they had invested the amounts paid as social insurance contributions in different types of assets. The range of assets in which investments could have been made is large because of the free movement of capital between Ireland and Britain which was possible up to the establishment of the European Monetary System in 1979. Attention will be confined, therefore, to investment opportunities on the Irish capital market. Nominal average rates of return (compounded) on a variety of

Table 5.4: *Compounded growth rate per annum over the period 1961-1982 of £1 invested on 1 January 1961 (with dividends re-invested)*

Type of asset	Growth rate (%)	Type of asset	Growth rate (%)
<i>Equities</i>		<i>Cash Deposits</i>	
Cement Roadstone Ord.	17.37	Associated Banks (small deposits)	5.12
Bank of Ireland Stock	13.82	Associated Banks (large deposits)	6.35
<i>Gilts</i>		Building Societies (net)	5.82
Long dated	5.49	Building Societies (gross)	8.94
Short dated	7.98		
6% Exchequer 1980/85	6.04		

Source: Goodbody and Wilkinson (1982).

financial assets during the period 1961-1982 are shown in Table 5.4. The figures taken in conjunction with the 9.64 per cent per annum increase in the Consumer Price Index recorded over the same period indicate that equities were the only assets, of those represented in the table, which would have yielded positive rates of return. In addition, it is evident that a single interest rate would not be representative of the range of rates of return which could have been earned so our calculations will utilise a range of interest rates varying from 1 to 8 per cent.

The pension elements in the employer and employee weekly social insurance contributions are shown in Table 5.5 and the annual contributions for males and females for contributory and retirement pensions are given in Table 5.6. The figures for 1979 and subsequent years are based on average annual earnings in Transportable Goods Industries.

The present value of the benefit stream beginning at age 65 when retirement pension is payable is given by:

$$B = \sum_{n=65}^d \frac{b_n P_n}{(1+i)^{n-65}} \quad (5.2)$$

where  $B$  = present value of benefit stream at age 65,  
 $d$  = expected age of death,  
 $P_n$  = probability of someone aged 65 surviving to age  $n$ ,  
 $i$  = real rate of interest,  
 $b_n$  = pension benefit payable at age  $n$ .

It has been shown that the weekly pension benefit paid in any year is a fairly constant proportion of average weekly industrial earnings for a given family

Table 5.5: *Contributory and retirement pension element in weekly social insurance contributions, 1961-1982*  
(£ or %)

Date payment commenced	Contributory old-age pension			Retirement pension		
	Employee	Employer	Total	Employee	Employer	Total
2 January 1961	0.056	0.056	0.112	—	—	—
7 January 1963	0.065	0.065	0.13	—	—	—
7 January 1964	0.073	0.073	0.146	—	—	—
3 January 1966	0.092	0.092	0.184	—	—	—
1 January 1968	0.102	0.102	0.204	—	—	—
6 January 1969	0.119	0.119	0.238	—	—	—
5 January 1970	0.152	0.152	0.304	—	—	—
5 October 1970	0.17	0.17	0.34	0.015	0.075	0.09
4 October 1971	0.19	0.19	0.38	0.01	0.085	0.095
2 October 1972	0.22	0.23	0.45	0.02	0.105	0.125
2 July 1973	0.255	0.335	0.59	0.025	0.12	0.145
1 July 1974	0.315	0.465	0.78	0.045	0.14	0.185
7 April 1975	0.39	0.624	1.014	0.07	0.191	0.261
5 April 1976	0.475	0.795	1.27	0.115	0.28	0.395
4 April 1977	0.515	0.87	1.385	0.13	0.32	0.45
3 April 1978	0.60	1.045	1.645	0.175	0.24	0.415
6 April 1979	0.63%	1.70%	2.33%	0.31%	0.85%	1.16%
6 April 1980	0.67%	1.90%	2.57%	0.35%	0.97%	1.32%
6 April 1981	0.72%	2.10%	2.82%	0.35%	1.01%	1.36%
6 April 1982	1.06%	2.39%	3.45%	0.48%	1.09%	1.57%

Source: Department of Social Welfare, Statistics Unit.

size. The annual pension benefit at age  $n$  can therefore be expressed as a function of average annual industrial earnings at age 65:

$$b_n = kE_{65}(1+r)^{n-65} \quad (5.3)$$

where  $r$  = real rate of growth of average industrial earnings. Equation (5.2) can now be written as:

$$B = kE_{65} \sum_{n=65}^d \frac{(1+r)^{n-65}}{(1+i)^{n-65}} \cdot P_n \quad (5.4)$$

Male/female life expectancy at age 65 based on data for the 1978-80 period supplied by the Central Statistics Office is approximately 12 years for males and 15 years for females. We will assume therefore that age of death for males is 77 and 80 for females. The probabilities of surviving from age 65 to age  $n$  ( $P_n$  in Equation (5.4)) for single men and women are derived from the Life Table for 1978-80. The survival probabilities for a married couple are

Table 5.6: Annual contributions for contributory and retirement pensions, 1961-1982 (£)

Year	Contributory old-age pension			Retirement pension			Total pension contribution		
	Employee	Employer	Total	Employee	Employer	Total	Employee	Employer	Total
1961	2.925	2.925	5.85	—	—	—	2.925	2.925	5.85
1962	2.925	2.925	5.85	—	—	—	2.925	2.925	5.85
1963	3.36	3.36	6.72	—	—	—	3.36	3.36	6.72
1964	3.79	3.79	7.58	—	—	—	3.79	3.79	7.58
1965	3.79	3.79	7.58	—	—	—	3.79	3.79	7.58
1966	4.76	4.77	9.53	—	—	—	4.76	4.77	9.53
1967	4.76	4.77	9.53	—	—	—	4.76	4.77	9.53
1968	5.31	5.31	10.62	—	—	—	5.31	5.31	10.62
1969	6.17	6.17	12.34	—	—	—	6.17	6.17	12.34
1970	8.14	8.14	16.28	0.19	0.975	1.165	8.33	9.115	17.445
1971	9.10	9.10	18.20	0.715	4.03	4.745	9.815	13.13	22.945
1972	10.27	10.40	20.67	0.65	4.68	5.33	10.92	15.08	26.00
1973	12.35	14.69	27.04	1.17	5.85	7.02	13.52	20.54	34.06
1974	14.82	20.80	35.62	1.82	6.76	8.58	16.64	27.56	44.20
1975	19.30	30.38	49.68	3.315	9.27	12.585	22.615	39.65	62.265
1976	23.60	39.12	62.72	5.395	13.40	18.795	28.995	52.52	81.515
1977	26.26	44.26	70.52	6.565	16.12	22.685	32.825	60.38	93.205
1978	30.09	52.06	82.15	8.515	13.52	22.035	38.605	65.58	104.185
1979M	31.60	77.83	109.43	13.99	35.24	49.23	45.59	113.07	158.66
F	21.34	50.12	71.46	8.94	21.39	30.33	30.28	71.51	101.79
1980M	38.97	109.24	148.21	20.08	55.50	75.58	59.05	164.74	223.79
F	22.90	64.19	87.09	11.80	32.62	44.42	34.70	96.81	131.51
1981M	48.46	140.42	188.88	23.97	68.50	92.47	72.43	208.92	281.35
F	28.61	82.89	111.50	14.15	40.44	54.59	42.76	123.33	166.09
1982M	71.99	171.12	243.11	33.04	79.01	112.05	105.03	250.13	355.16
F	43.09	102.43	145.52	19.78	47.29	67.07	62.87	149.72	212.59

Note: (i) M = male, F = female.

(ii) Average weekly earnings for the calculations for 1979-82 are as follows:

Male - 1979 £96.90; 1980 £113.55; 1981 £131.73; 1982 £142.00.

Female - 1979 £55.10; 1980 £66.73; 1981 £77.76; 1982 £85.00.

The earnings figures for 1979-81 are taken from *Irish Statistical Bulletin*, September 1982 and those for 1982 are an ICTU estimate for males and own estimate for females.

compounded probabilities derived as the product of the survival probabilities for both sexes. Real rather than nominal rates of interest and earnings growth will be used in the benefit calculations as these are somewhat more predictable than nominal rates. Census of Industrial Production data on average wages in Transportable Goods Industries over the period 1926-77 and Census of Distribution data on average salaries, wages and commission in the services sector for the period 1933-71 together with information for the same periods from the Consumer Price Index indicate that real earnings growth averaged 1.8 per cent per year in manufacturing industry and 0.9 per cent per year in services. This suggests that a range of real earnings growth rates going from 1 to 3 per cent should be used in the benefit calculations.

There are two main sets of comparisons of rates of return on pension contributions which we wish to make. The first is designed to show how those who contributed to the pension fund since its introduction in 1961 have fared relative to those who were blanketed-in when the income limit was abolished in 1974. The calculations will be done for single men and women and for a married couple without children who would have entered insurance on 1 January 1961 or 1974 and retired at age 65 on 31 December 1982 to receive the pension rates in force on that date. The second comparison is concerned with the rates of return accruing to contributors with different income levels and ages who entered insurance in 1961, and will make pay-related contributions over their working lifetimes and qualify for flat-rate benefit on retirement.

The tax-benefit ratios for persons who entered the contributory pension scheme in 1961 and 1974 and retired in 1982 are shown in Table 5.7. The largest ratio is 15.08 for a single male who started paying pension contributions in 1961 at age 44, whose earnings grew at 1 per cent per annum and whose contributions were assumed to have been invested to earn 8 per cent over the period 1961-82. Contributions to the pension fund on his behalf would, therefore, have paid for only 15 per cent of the present value of the pension due on retirement. Everyone else listed in Table 5.7 would have paid less than this. Consequently, anyone who retired in 1982 or in earlier years who satisfied the contribution conditions for an old-age contributory pension would have got far more out of the scheme than he or she put into it. This is one of the great attractions of a pay-as-you-go pension scheme with blanketing-in for those whose remaining working years are less than those for school leavers entering the labour force. The first generation participating in the system makes a large gain, with the greatest gain going to the oldest workers, while the gains to subsequent generations decrease until the system reaches the steady state described by Samuelson (1958) with no gains or losses to any except the last generation provided certain conditions relating

Table 5.7: *Estimated average social insurance tax-benefit ratios under various assumptions for persons retiring in 1982 (per cent)*

<i>Year of entry age of entry, and interest rate</i>	<i>1% growth rate in earnings</i>			<i>2% growth rate in earnings</i>			<i>3% growth rate in earnings</i>		
	<i>Single male</i>	<i>Single female</i>	<i>Married couple</i>	<i>Single male</i>	<i>Single female</i>	<i>Married couple</i>	<i>Single male</i>	<i>Single female</i>	<i>Married couple</i>
<i>1961, age 44</i>									
1%	6.98	4.12	4.41	6.55	3.81	3.88	6.14	3.52	3.40
3%	8.70	5.38	6.18	8.18	4.99	5.49	7.68	4.62	4.86
5%	10.85	6.99	8.53	10.21	6.51	7.64	9.62	6.05	6.83
8%	15.08	10.33	13.49	14.27	9.66	12.23	13.48	9.03	11.05
<i>1974, age 57</i>									
1%	6.13	3.45	3.87	5.75	3.19	3.41	5.39	2.95	2.99
3%	7.43	4.35	5.28	6.98	4.03	4.69	6.56	3.73	4.15
5%	8.96	5.42	7.04	8.43	5.05	6.31	7.95	4.69	5.64
8%	11.72	7.44	10.48	11.09	6.96	9.50	10.47	6.50	8.58

Source: Author's calculations as described in the text.

to the sizes of the working and retired populations are fulfilled.

The estimated tax-benefit ratios in Table 5.7 show that those who entered the contributory pension scheme in 1974 when the income ceiling governing eligibility was abolished paid significantly less for the same benefit than those who had entered the system thirteen years earlier in 1961. The workers blanketed-in in 1974 would have been in the upper quartile in the earnings distribution and their pension benefits would, therefore, have been mainly financed by contributions from younger insured persons lower down the earnings distribution. The social insurance contribution rate needed to pay for pension benefits after the abolition of the income eligibility criterion is higher than it would have been if eligibility had been confined to lower and middle income workers for whom the social insurance system was initially designed. This increase in the social insurance tax burden on the less well off may be an example of the political pressure exerted by older people to broaden the tax base and to increase the tax rate which Browning (1975) argues is inherent in a pay-as-you-go social insurance system where taxes and transfers are decided under majority voting.<sup>31</sup>

Single females retiring in 1982 got a better buy for their social insurance contributions than single males mainly because of their longer life expectancy at retirement but also because of the lower cost of the female pension contribution since pay-related contributions were introduced in 1979. Married couples got a better buy than single males although the value of the dependant's benefit which they received, was offset to a considerable extent by their lower joint probability of survival.

As expected the tax-benefit ratios in Table 5.7 are inversely related to the earnings growth rate and positively related to the interest rate. The former relationship occurs because the present value of the benefit stream increases with the rate of growth of earnings while the cost of the pension contribution is largely unrelated to earnings growth over the period considered. The latter relationship occurs because an increase in the interest rate reduces the present value of the pension benefit and increases its cost.

The return which accrues to insured persons who make pension contributions for a working lifetime of 45 years will be considerably lower than the return received by persons entering the pension scheme towards the end of a working lifetime and we would like to know whether lifetime contributors are getting good value for their pension contributions and how rates of return differ between contributors by sex, marital status, age of entry

31. An investigation of the forces leading to the blanketing-in of the high income workers in 1974 is outside the scope of this paper but it is interesting to note that the 1971 Census recorded 937,938 persons aged 45 or over versus 841,431 aged 20-44. The extension of the State pension scheme in 1974 could therefore have been a response to the wishes of a majority who stood to benefit from the change.

into the pension scheme and income level. The income dimension did not figure prominently in the calculations for Table 5.7 because pension contributions were not related to income until PRSI was introduced in 1979. Since then, however, the cost of retirement pensions has varied directly with income up to the ceiling level and account has to be taken of this feature of the payment structure in evaluating the cost of pensions for persons in different circumstances. The formula given in Equation (5.1) to work out the accumulated value of pension contributions up to 1982 can be modified to take earnings related contributions into account over the period 1983-2006 as follows:

$$T = \alpha E_j \sum_k^m (1+r)^{k-c} (1+i)^{m-k} \quad (5.5)$$

where  $\alpha$  = social insurance pension contribution rate  
 $E_j$  = annual earnings of  $j$ th contributor  
 $c$  = year of entry into state pension scheme

and the other symbols are as previously designated. It is assumed for the purposes of the rate of return calculations that there will be no change in the total pension contribution rate after 1982 nor in the implicit indexation of pension benefits to changes in average industrial earnings which was established in the previous chapter. The earnings levels used in the calculations were half the industrial average, the industrial average and one and a half times the industrial average for males and females in 1982, viz., £3,692, £7,384, and £11,076 for males and £2,210, £4,420 and £6,630 for females.

As expected, the ratios for those retiring in 2006 on the average industrial wage shown in Table 5.8 are much greater than for those retiring in 1983 shown in Table 5.7. This indicates that the very large windfall gains made by the first generation of retirees will diminish for each succeeding generation as the system approaches maturity and the value of contributions paid approaches the economic cost of the benefits received. The variations in the tax-benefit ratios in Table 5.8 follow a similar pattern to that observed in Table 5.7. The additional dimension explored in Table 5.8 relates to differences in the level of earnings and it will be seen that the tax-benefit ratios increase as the earnings level increases. Persons on higher incomes, therefore, will pay more than persons on low incomes towards the cost of their retirement pensions. There should, therefore, be a redistribution of income from high to low income earners within the framework of the social insurance pension scheme as the effects of the pay-related social insurance contribution schemes introduced in 1979 work themselves out.

The data in Table 5.8 indicate that, if there is no change in the pension scheme over the next 37 years and if the real interest rate does not approach



Table 5.8: *Estimated social insurance tax-benefit ratios under various assumptions for persons retiring in 2006 (per cent)*

Year of entry, age of entry, and interest rate	Half average industrial wage			Average industrial wage			One and a half times average industrial wage		
	Single male	Single female	Married couple	Single male	Single female	Married couple	Single male	Single female	Married couple
<i>Earnings growth rate is 1%</i>									
1961, age 20									
1%	20.36	10.37	12.87	38.32	18.83	24.22	56.26	27.30	35.56
3%	31.83	17.10	22.61	58.53	30.04	41.58	85.24	42.98	60.55
5%	50.84	28.82	39.96	90.93	48.71	71.47	131.02	68.61	102.98
8%	106.63	65.66	95.34	181.27	103.88	162.08	255.92	142.09	228.83
<i>Earnings growth is 2%</i>									
1%	16.63	8.30	9.86	31.45	15.19	18.64	46.28	22.08	27.42
3%	19.87	13.54	13.34	47.59	24.01	31.95	49.47	34.47	46.64
5%	40.65	22.62	30.41	73.24	38.61	54.79	105.83	54.61	79.16
8%	84.26	50.90	72.21	144.40	81.34	123.75	204.55	111.78	175.29
<i>Earnings growth rate is 3%</i>									
1%	13.67	6.67	7.58	25.99	12.31	14.41	38.30	17.95	21.23
3%	20.91	10.78	13.22	38.95	19.28	24.62	56.98	27.78	36.01
5%	32.73	17.84	23.22	59.39	30.75	42.13	86.05	43.66	61.03
8%	66.84	39.65	54.78	115.49	64.01	94.65	164.14	88.38	134.52

*Source:* Author's calculations as described in the text.

*Note:* The average industrial wages used for these calculations were the average industrial wage for males and the average industrial wage for females. The latter is approximately 60 per cent of the former.

the upper end of the scale used in the table, most contributors will pay less into the pension scheme than they get out of it. This can arise for three reasons:

1. Contributors are not charged the full actuarial cost of the contributory pension scheme because part of the cost is met out of general taxation. If the State contributory pension scheme had been financed in 1982 in the same way as the social insurance scheme as a whole it appears from Table 1.5 that over a quarter of the cost would have been paid for by the State out of general revenue.
2. The rate of growth of earnings is greater than the interest rate. This was probably the case during the 1960s and 1970s in Ireland but on the whole, as Tullock (1983, p. 117) notes, interest rates are more likely to be higher than earnings growth rates.
3. Liberal benefits may be voted for by one generation which have to be paid for by a succeeding generation. Part of the current crisis in social security in the United States is attributed by Tullock (1983) and Rosen (1982) to this factor but no research has yet been done on the importance of this factor in the Irish case.

It is evident from Table 5.8 that the tax-benefit ratios are strongly dependent on the interest rate used to accumulate the value of pension contributions and to discount the value of pension benefits, so it is difficult to say which set of ratios is likely to reflect the true position of pension contributors in the long period with which we are dealing. A more useful way to deal with the question of what value for money different contributors can expect to get in the future is to consider the interest rates which equalise the discounted present values of the social insurance pension cost and benefit streams, i.e., the internal rate of return for representative contributors. The relevant rates are given in Table 5.9 for the total pension contribution and in Table 5.10 for the contributions attributable to employees alone.

All retirees in 2006 are expected to receive positive real rates of return on total pension contributions. These rates should range from a low of 3.7 per cent for a single male earning one and a half times the average industrial wage whose earnings are expected to grow at one per cent per annum to a high of 11.28 per cent for a married man whose earnings are half the industrial average and whose earnings growth rate is assumed to be three per cent per annum.

The rates of return accruing on the contributions attributable to employees alone are shown in Table 5.10 and they are higher, as one would expect, than the returns accruing on the total pension contributions. Employees earning half the average industrial wage get a return approximately 1.0 to 1.5

per cent higher on the contributions attributable to them than on the total contribution while for employees earning one and a half times the average industrial wage the differences between the two rates of return range from 1.2 to 2 per cent.

It will be recalled that the earnings growth rate in industry over the last half century or so was around 2 per cent per annum, so if it is the same as this over the period to 2020 the average internal rate of return for the cohort retiring in 2006 should be around 8.5 per cent on the total pension contribution and 10.5 per cent on the portion attributable to employees alone.<sup>32</sup> These rates are likely to be far in excess of what the average investor could expect to earn over the same period given the behaviour of interest rates in the past, as shown in Table 5.4. The contributory State pension scheme therefore promises to give excellent value for money for the foreseeable future if the structure of the scheme remains unchanged, and there is no reason for existing contributors to feel that they could do better if they were able to invest their social insurance pension contributions elsewhere.

The size of the internal rates of return for the average contributor does, however, raise a question as to whether the current relationships between contributions, benefits and earnings are the right ones. The direct cost of the scheme to the average contributor does not, as we have seen, cover the full cost and it is difficult to see why the community as a whole should pay the amount outstanding on a pension scheme from which only those in insured employment benefit. Looking at the matter from the benefit side it can be

Table 5.9: *Approximate real rates of return on total social insurance contributions for persons with different earnings retiring in 2006*  
(per cent)

<i>Earnings growth rate</i>	<i>Half average industrial wage</i>			<i>Average industrial wage</i>			<i>One and a half times average industrial wage</i>		
	<i>Single male</i>	<i>Single female</i>	<i>Married couple</i>	<i>Single male</i>	<i>Single female</i>	<i>Married couple</i>	<i>Single male</i>	<i>Single female</i>	<i>Married couple</i>
1%	7.71	9.42	9.50	5.37	7.81	7.40	3.70	6.54	5.82
2%	8.61	10.30	10.40	6.32	8.72	8.32	4.64	7.45	6.77
3%	9.48	11.16	11.28	7.23	9.62	9.26	5.57	8.39	7.71

*Source:* Author's calculations as described in the text.

*Note:* These rates were derived by an iterative procedure and they are approximate rather than exact.

32. This rate is over two and a quarter times the rate which Leimer and Petri (1981) calculated for a cohort of workers entering the American labour market in 1960 who were assumed to experience an earnings growth rate of 1.75 per cent during their working lifetime.

Table 5.10: *Approximate real rates of return on social insurance contributions attributable to employees with different earnings retiring in 2006 (per cent)*

Earnings growth rate	Half average industrial wage			Average industrial wage			One and a half times average industrial wage		
	Single male	Single female	Married couple	Single male	Single female	Married couple	Single male	Single female	Married couple
1%	9.31	10.40	11.03	7.25	8.94	9.20	5.70	7.83	7.75
2%	10.18	11.25	11.90	8.18	9.83	10.11	6.55	8.63	8.65
3%	11.06	12.10	12.76	9.11	10.72	11.03	7.51	9.55	9.59

Source: Author's calculations as described in the text.

Note: These rates were derived by an iterative procedure and they are approximate rather than exact.

argued that the current relationship between pension benefits and earnings is too generous and that sustaining it at that level in the future will impose a considerable increase in the payroll tax burden on future generations. We will consider this further in the next section.

Internal rates of return are strongly dependent on individual circumstances. Low income earners have much higher rates of return than high income earners as a consequence of the pay-related contribution system introduced in 1979 and the flat-rate benefit system used since the introduction of contributory old-age pensions. If the present Minister for Social Welfare, Mr Desmond, proceeds with his intention to introduce a national income-related pension scheme (see Dáil Éireann, *Parliamentary Debates*, 19 April 1983, col. 1248 and 18 May 1984, cols. 1441-1442) the redistributive effect of the existing arrangements will be blunted and there will be a considerable increase in the social insurance contribution levied on the average worker. The Green Paper (Department of Social Welfare, 1976, par. 220) on the national income related pension scheme which was put up for discussion in the middle of the 1970s estimated that the pension contribution rate necessary to finance pay-related pension benefits would virtually double in a pay-as-you-go system in which a constant contribution rate is levied over a 30-year period.

Married men get the best deal from the contributory pension scheme because their contributions are not dependent on marital status whereas their benefits are. Single women do almost as well as married men because their earnings, and hence their contributions, are lower on average than males and the period over which they draw benefits is longer. Single men

have lower rates of return than either single women or married men. The justification for a higher rate of return for a married man is that a married couple has a lower standard of living than a single person on the same income level. Their savings would, therefore, be lower than the savings of a single person and a dependant's allowance, which raises the internal rate of return, is justified to equalise living standards of single and married men in retirement.

The relationships between the internal rates of return expected to accrue to persons who entered the contributory pension scheme at age 20 in 1961 appear to accord with the generally shared view that the poor should benefit more than the rich and that families should benefit more than single people. Thus, in a flat-rate benefit system which is financed by pay-related contributions the regressive aspects of the payroll tax described in Chapter 3 will be more than offset by the uniform pensions paid to contributors at the end of their working lifetime. Nevertheless, the regressive aspects of the payroll tax should be removed as workers on low incomes have a very much stronger preference for current income than for income which is deferred to the end of the life-cycle.

We have shown in Chapter 3 that this would necessitate an increase in the contributions paid by workers whose income is above the earnings ceiling. Our rate of return analysis suggests that most insured workers, and not just those with incomes in excess of the earnings ceiling, should be asked for a much larger contribution to the State pension scheme than they presently make because they get far better value for their pension contributions than they would by depositing their money with a bank or building society or investing it in equities or government bonds. The increased PRSI rates could be partially offset by the reduction in taxation which would be possible if general revenue financing of the contributory pension schemes were discontinued. In addition to considering increases in the pension contribution the government should ensure that if the contributory pension scheme is extended to cover other groups in the future, such as the self-employed, as has been suggested in recent years, it should not be on terms which are inequitable to those who have been contributing to the scheme throughout their working lives. The abolition of the income limit in 1974 led to higher rates of return for better off workers who thereby became eligible for contributory pensions than for those who were already covered, as we have seen. A similar outcome should be avoided in the future by arranging that any groups which join the scheme should make a similar contribution towards the cost of their State pension as those who have been contributing to the scheme since its inception.

Our analysis of the benefits which insured workers retiring in 2006 can

expect to receive for their social insurance pension contribution has, of necessity, been conducted in terms of representative individuals who entered the scheme in 1961 and we have not dealt with the anomalies which can arise in the treatment of persons in similar circumstances from the application of the rules governing average contributions. It can be inferred from these rules (described earlier in this chapter) and the data in Tables 5.9 and 5.10 that late entrants to the labour force, such as university graduates, can expect to get a higher rate of return on their pension contributions than those workers who had to leave the educational system at an early stage because of their parents' poor economic circumstances. In addition it is possible for workers employed in some public service jobs to take advantage of early retirement to qualify for a full contributory old age pension with a minimum of ten years' employment in the private sector. There is no published information on occupation and age of entry into the social insurance pension schemes which would enable us to say how many insured workers fall into these categories but research in other countries suggests that the number may not be insignificant.

The implications of maintaining the structure of the contributory pension scheme as it is now into the next century may not be as favourable for insured workers as a whole as they appear for representative individuals due to the aggregate cost of the scheme. This question will be dealt with in the following section.

#### *5.4 Contributory State Pension Cost Projections for 1986 and 1991*

In their analysis of the implications of demographic change for the social welfare services Courtney and McCashin (1983) estimate, using a low incidence of need assumption, that despite an expected decline in the old dependency ratio the number of contributory and retirement pensioners and their dependants will increase by 15.3 per cent between 1981 and 1986 and by 37.6 per cent between 1981 and 1991 if there is no change in the contributory pension age.<sup>33</sup> If the age for receipt of the contributory pension is reduced to 65 they expect the percentage increase in numbers to be 26.1 per cent by 1986 and 51.1 per cent by 1991. These projections can be combined with different assumptions about earnings growth rates and dependency ratios to estimate the costs of contributory and retirement pensions over the next decade, the costs of reducing the contributory pension age to 65, and the sensitivity of the cost estimates to variations in the dependency ratios.

The data in Tables 5.1 and 5.2 show that the percentage of contributory

33. Forecasts of a decline in the old dependency ratio are given in Blackwell and McGregor (1982) for the period up to 1991 and in Geary and Kelly (1982) for the period up to 2001.

and retirement pensioners who were married or had adult dependants in the period 1971-80 ranged from 40.9 per cent in 1973 to 31.0 per cent in 1978 while the percentage with child dependants was 4.5 in 1972 and 8.1 in 1978. The reasons for these variations are not known but they may have something to do with the reductions in pension age which took place between 1973 and 1977.<sup>34</sup> Courtney and McCashin assume that the trends in adult and child dependency established in the years 1977-81 will continue in the future and they estimate that the percentage of contributory and retirement pensioners with adult dependants in 1986 and 1991 will be 35.1 and 37.9 while the percentage with child dependants will be 6.1 in both years. Their estimates of the adult dependency figures may be a little low because once the effect of the reductions in pension age on adult dependency have worked through, the adult dependency percentages which existed before 1973 may reappear due to the much higher percentage of those aged 65 and over who are married than for those aged 70 and over.<sup>35</sup> In addition, the percentage of pensioners with child dependants may be higher than they estimate if there is no change in the percentage of married pensioners with children which obtained over the period 1977-81, when it was approximately 25, and the proportion of married pensioners increases for the reason men-

34. The reduction in the pension age would have qualified some of those for whom a dependant's allowance would previously have been paid to a contributory or retirement pensioner for a non-contributory pension in their own right. Hence, the dependency ratio for contributory and retirement pensioners would have declined after 1973 while there would have been no change due to the age factor in the dependency ratio for non-contributory pensioners. Allowing for legislative changes in 1974 which affected the number of adult dependants of non-contributory pensioners the dependency data in Tables 5.1 and 5.2 are consistent with this hypothesis.

35. Ideally we would like to be able to analyse how the dependency pattern discussed in the text changed as a consequence of the reduction in pension age and to project what the pattern might be in 1986 and 1991. Age and conjugal condition data by single year of age cross-classified by age of marriage partners is not available for this purpose. The following table, however, shows how the dependency pattern observed over the years 1974-1977 could have occurred and how it might revert to the pattern observed before the pension age was reduced.

Husband's age	Wife's age						Married	Single or widowed	Total	Adult dependants	Dependency ratio
	70+	69	68	67	66	Less than 66					
70+	9	3	3	3	3	14	35	65	100	35	.35
69	9	4	4	4	4	23	48	52	100	64	.32
68	9	9	4	4	4	20	50	50	100	96	.32
67	3	3	3	4	4	34	51	49	100	131	.33
66	2	2	2	3	4	40	53	47	100	182	.36

The table was derived by assuming that the proportions married at each year of age were as shown in Census of Population 1971, Vol. II, Table 9 and that the relationship between husband and wife's ages conformed to the pattern described by Walsh (1972, Table 5) for the year 1957. It has also been assumed that as the pension age is reduced all of the wives of those aged 69 and 70+ qualify for a non-contributory old-age pension with the exception of 6 of the 9 wives aged 70+ whose husbands are also aged 70+; these 6 are assumed to remain eligible for an adult dependant's benefit. Furthermore, half of the wives of those aged 68, 67, and 66 are assumed to qualify for an old-age non-contributory pension in their own right when the pension age is reduced. Given these assumptions it will be seen that the adult dependency ratio for pension purposes falls from .35 when pension age is 70 to .32 at pension ages 69 and 68 and that it then rises to .33 at pension age 67 and to .36 at age 66.

tioned in the last sentence. In view of these points it has been assumed that there will be 36.9 adult dependants for each hundred pensioners in 1986, 40 per hundred in 1991 and 9.2 and 10.0 child dependants per hundred pensioners in 1986 and 1991, respectively. The estimated cost of contributory and retirement pensions in 1981 (assuming an adult dependency ratio of 34 and a child dependency ratio of 8.5), 1986 and 1991 can be derived from the following identity:

$$C_t = (1 + r)^n (B_0^s \cdot P_t^s + B_0^m \cdot P_t^m) \quad (5.6)$$

where  $C_t$  = cost of contributory and retirement pensions in year  $t$

$r$  = earnings growth rate

$n$  = number of years between base year and year  $t$

$B_0^s$  = single person pension benefit in base year

$P_t^s$  = number of single or widowed pensioners in year  $t$

$B_0^m$  = married person's pension benefit plus child allowance in base year

$P_t^m$  = number of married pensioners at year  $t$ .

The actual cost of contributory and retirement pensions in 1981 when there were 100,162 recipients was £197.6 million according to Table 3.29 in the NES (1983) report on *Economic and Social Policy 1982*. The estimated cost using the assumptions specified above about the adult and child dependency ratios and the actual rates of payment for a pensioner under 80, an adult dependant under 66, and for a child dependant, is almost identical. Our assumptions about the dependency ratios which obtained in 1981 must, therefore, be reasonably accurate. If there is no growth in earnings in the decade 1981-91, no reduction in the contributory pension age and no change in the dependency ratios assumed by Courtney and McCashin the cost of contributory and retirement pensions in 1986 will increase by £30.2 million to £227.7 million in 1986 and by £74.3 million to £271.8 million in 1991 purely on demographic grounds.<sup>36</sup> If real earnings grow at 2 per cent per annum, or only slightly more than the growth rate of 1.7 per cent in manufacturing over the last half century, and the long-term relationship between contributory pension benefits and gross average industrial earnings remains unchanged the additional cost would be £26.1 million in 1986 and £65.5 million in 1991 while the total costs would be £253.8 million in 1986 and £337.3 million in 1991. Hence the additional

36. Part of these increased costs might be offset by savings of £9.7 million in 1986 and £25.3 million in 1991 on old-age non-contributory pensions due to expected reductions in the number of these pensioners. These figures are derived from information given in Tables 1, 2, A5 and A8 in Courtney and McCashin (1983).



costs due to real earnings growth and maintenance of the long-term pension benefit/earnings ratio is estimated to be only slightly less than cost increases which will occur because of ageing of the population. If the contributory pension age is reduced to 65 the additional cost in 1986 would be £21.3 million in 1986 and £26.6 million in 1991. A reduction of one year in the contributory pension age would therefore increase the cost of pensions by around 10 per cent a year. An increase in the adult dependency ratio from 35.1 in 1986 to 36.9 and from 37.9 in 1991 to 40 combined with an increase in the child dependency ratio from 6.1 in both years to 9.2 in 1986 and 10.0 in 1991 would only add around £1 million to pension costs in both years. Contributory and retirement pensioner costs do not, therefore, appear to be very sensitive to differences in assumptions about dependency ratios.

If the three changes described above occur in conjunction with the demographic changes projected by Courtney and McCashin we estimate that contributory and retirement pension costs in 1986 will be £276.4 million in 1986 and £364.7 million in 1991. This would mean that flat-rate contributory and retirement pension costs would rise by nearly 85 per cent in real terms over the next decade. This would be well in excess of the growth rate which could be expected in Gross Domestic Product. The increased cost of these pensions will have to be met by increasing the proportion of the wage bill which is taken to pay for contributory State pensions. In 1981 this proportion was 3.2 per cent (= £197.5 million ÷ £6,155 million, where the latter figure is taken from the May 1983 ESRI *Quarterly Economic Commentary*) but it will have to increase to 4.1 per cent by 1986 and to 4.9 per cent by 1991 if the assumptions made above are proven to be correct.

In view of the low level of social security taxes in Ireland relative to other EEC countries, cost increases of this magnitude would not impose an unsustainable burden on the working population. However, the appearance of resistance to PRSI increases in recent years indicates the importance of letting workers know what value they are getting for their money and of preparing the way for any future increases in contribution rates by explaining why they are necessary.

Finally, our results suggest that if the proposed national income related pension plan is proceeded with it may be quite expensive to finance. All of the relevant costs of such a scheme should be made explicit so that workers can decide if what they are being offered is worth what it will cost. There are lessons to be learned in this connection from recent experience in the United Kingdom where a State earnings-related pension scheme was introduced in the mid-1970s with very little attempt by the government to measure the future costs of the pension commitments implied by the new scheme and where it now appears likely that the future burden on the

working population will be widely regarded as too high because "the new state pension scheme will ultimately cost around twice as much as the scheme which preceded it" as Hemming (1984, p. 134) has noted. There are alternatives to an earnings related pension scheme which may have more desirable effects on poverty and equity and these should be considered in the policy debate about the future form of state pension provision in Ireland. For example, the basic flat-rate pension could be raised from its 1983 level of around one-quarter of average male gross industrial earnings to a third at considerably less cost than an earnings related scheme and with a far greater impact on poverty, if we can rely on the British experience. This would be a modest target to aim for as many countries now accept that their policy goal should be to replace around two-thirds of earnings to maintain pre-retirement living standards as Haanes-Olsen (1978) has noted.

## Chapter 6

### *SUMMARY AND CONCLUSIONS*

Social insurance has expanded its coverage in Ireland from around 60 per cent of the labour force in 1952, when the separate programmes for unemployment, sickness and survivorship were unified, to over 80 per cent in 1980. This expansion was due to the increasing industrialisation of the Irish economy during the post-war period, to the demands of workers for protection against loss of income due to circumstances, such as old age, which were not covered in the pre-war period, and to successive governments' commitment to replacing social assistance services by social insurance. The financing of social insurance evolved from the flat-rate basis which had been used since its beginning, at the turn of the century, to a combined flat-rate and pay-related basis in the early 1970s and then to a fully pay-related basis in 1979. These changes were accompanied by a departure from the original sharing of the social insurance contribution equally among the Exchequer, employers and employees to the bulk of the contribution being paid by the employers.

If the cost of social insurance can be reallocated between insured workers, their employers and the community at large by legislative decree the effectiveness of the payroll tax as an instrument of economic policy would be considerably enhanced and it is important for this and other reasons to investigate where the incidence of the tax lies. This question was investigated in Chapter 2 where it was shown that differences of opinion about the incidence of the tax have persisted since its introduction in 1911. The opinions of social scientists in Ireland on the incidence of the Irish payroll tax were reviewed and the inconclusiveness of the few Irish studies which have touched on the incidence question was drawn attention to. It was noted that a number of empirical studies of payroll tax incidence in other countries suffer from the same defect and a brief discussion was given of the reasons which might account for this. A Phillips curve based model of payroll tax incidence which takes account of the shortcomings in previous studies has been used by Holmlund (1983) to estimate the incidence of the tax in Sweden during the post-war period using annual data and it was argued that it would be possible to use this model, with some modifications, to estimate the incidence of the Irish payroll tax for the manufacturing sector using quarterly data for the period 1953(1)-1980(4). The derivation of the tax incidence equation from labour demand and supply functions was

presented and a detailed discussion was given of the data which it was proposed to use to estimate the incidence equation.

Both OLS and 2SLS estimators were used and it was found that there was very little difference in the results for the preferred regression equations. The theoretical restrictions which were imposed on the estimating equation were upheld by the data and the fit of the preferred equation was found to be satisfactory. The coefficient of the employer payroll tax variable indicated that an increase of one per cent in the payroll tax is associated with a decrease of approximately one half of a per cent in the money wage rate while the coefficient of the employee tax variable indicated that a one per cent increase in the proportion of earnings which is taken in income or payroll tax would push up the nominal wage rate by one half of one per cent. Employers and employees are therefore able to partially shift their components of the payroll tax and the legal and effective incidence of this tax are not the same.

It was noted that employer organisations have argued that the effect of the payroll tax on job creation has become increasingly disadvantageous as the legal burden of the tax on employers has increased over the years and it was argued that our estimate of the proportion of the employer payroll tax which is shifted could be used to evaluate the effect of the tax on employment in manufacturing. It was shown that a reduction to 2 per cent in the employer's PRSI contribution in 1979 would have increased employment in the industrial sector by approximately 1,500 or by considerably less than the increase of 2,700 which the CII argues would occur in *labour intensive industries alone*. We conclude that the employers' argument about the magnitude of the effect of the payroll tax on employment cannot be accepted unless further evidence to support their case is forthcoming. Finally, we note that the employment elasticity of a payroll tax cut in Ireland appears to be very low and that it would seem to be far more costly to use payroll tax cuts as a method of job creation than the policy of direct grant aid which has been used so successfully in the past.

The results of the tax incidence analysis were used in the third chapter to provide an analysis of effective direct tax rates (i.e., income tax plus social insurance contribution paid by the employee plus that part of the employer social insurance contribution passed back to the employee) on specimen incomes in 1953/54, 1963/64, 1973/74 and 1980/81 and on actual incomes in 1979/80. It was shown that the progressivity of the income tax in the lower income ranges was offset by the payroll tax because of the absence of a lower earnings limit for social insurance contributions and the use of flat-rate rather than earnings related contributions until the mid-1970s. The adverse effects of the payroll tax on direct tax rates of those on lower incomes worsened over the years as the cost of

financing social insurance increased. In the last year in which flat-rate charges alone were used, 1973-74, direct tax rates were regressive for most taxpayers because of the considerable excess of the payroll tax rate over the income tax rate. Low income earners got some relief from the excessive burden of the payroll tax in the following year when the flat-rate contribution was supplemented by an earnings related contribution up to a specified income level. The regressive effect of the payroll tax was eliminated in 1979/80 when the combined flat-rate and pay-related social insurance contributions were abolished and replaced by a fully pay-related social insurance (PRSI) system. Direct tax rates became proportional over the lower income ranges and progressive thereafter according to the specimen income data for 1980/81. This was confirmed by the Revenue Commissioners actual income distribution data for 1979/80. In addition, the data showed that the payroll tax still imposed a considerable burden on low income taxpayers. One-sixth of all PAYE taxpayers were exempt from income tax in 1979/80 because they earned less than the tax exemption limit yet they had to bear a payroll tax rate of 8.3 per cent on their incomes because of the lack of a lower earnings limit for payment of the tax. The close correspondence between income tax exemption limits and poverty lines for different household sizes suggests that the payroll tax still hits the poor the hardest while virtually sparing the rich.

Proposals for reform of social insurance financing made by the Commission on Taxation and the coalition government of Fine Gael and Labour in their *Programme for Government* were analysed and it was shown that there would be revenue shortfalls under both of them. It was suggested that one way in which the burden of the payroll tax on the poor could be considerably lightened and an element of progressivity introduced into the tax would be to abolish the upper earnings limit and to exempt those who are already exempt from income tax except for a token payment to maintain entitlement to social insurance benefits. Costings of this suggestion indicated that it would have been possible to raise the same payroll tax revenue as was done in 1979/80 while reducing the standard rate contribution by over one and a half per cent.

Equity aspects of the benefit side of the social insurance scheme were considered in Chapters 4 and 5 in connection with the question of what value for money contributors to the State's compulsory pension schemes get. Before this question could be taken up an investigation had to be made of how the level of social welfare benefits is determined and how changes in the level are made over time. It was found in Chapter 4 that the level of social welfare benefits at the beginning of the 1950s may have been influenced by the findings of a national nutrition survey carried out during and after

the Second World War, the Beveridge Report, and guidelines laid down by the International Labour Conference held at Philadelphia in 1944. An analysis of the relationship between social welfare benefits, wages, and prices during the post-war period suggested that successive Irish Governments have implicitly adopted an indexation formula which links social welfare benefits to changes in average gross industrial earnings. This formula has two drawbacks. The first is that the benefit/net wage ratio has risen over time as direct tax rates have increased. The second is that the formula does not take account of demographic and other changes which reduce the number of social insurance contributors per beneficiary. The effects of these drawbacks are that (i) the disposable income of welfare beneficiaries has increased so much faster than that of insured workers that the benefits of increased national output are greater for those who have not been able to work than for those who have, (ii) work incentive problems arise for some members of the labour force because of the high proportion of income from work which is replaced by social insurance benefits and (iii) the burden of adjusting to increased costs is not shared in an equitable fashion between insurance contributors and beneficiaries. It was recommended that the authorities should consider indexing benefits to take home-pay to ensure that the benefits of increased prosperity are equitably distributed among all sectors of the insured population. An advantage of doing so, it was pointed out, would be that there might then be no need to tax short-term social welfare benefits to deal with the work disincentive effects of high replacement ratios. It was also suggested that when demographic or other changes occur which increase the cost of social insurance, consideration should be given to adjusting insurance benefits as well as the payroll tax to ensure that the burden is shared between the working and non-working members of the insured population rather than being borne by the working population alone.

The effects of different political parties on the level of social welfare benefits were investigated to see if political rather than economic forces might account for upward shifts in the level of benefits. It was concluded that the level of social welfare payments during the post-war period were not affected by the presence of a particular political party in government and that there is little ideological difference between the three main political parties as far as income maintenance policy is concerned.

The existence of a relationship between social insurance benefits and average industrial earnings permitted a rate of return analysis of total social insurance pension contributions and of the component attributable to employees alone to be made in Chapter 5 after the development of State pension schemes for employees had been outlined. A tax-benefit model encompassing the main features of the contributory old age and retirement

pension schemes was used to compare the cost of State pensions to people retiring in 1982 who had entered the scheme at its inception in 1961 with the cost to those who were blanketed-in when the income eligibility limit was abolished in 1974. It was found that all of those retiring in 1982 would benefit far more from the State pension than it cost them and that those who were blanketed-in would benefit considerably more than those who had contributed to the scheme from its beginning. It was noted that this is a standard result for the first generation to participate in a pay-as-you-go pension scheme and that the cost should rise for succeeding generations until benefits and costs would be equalised when the scheme attains maturity. As the Irish scheme will attain maturity in 2006 (i.e., 45 years after it began in 1961) an analysis of expected rates of return on the total pension contribution and on the component attributable to employees retiring in 2006 was carried out using different assumptions about the expected rate of interest, the rate of growth of earnings and ranking in the earnings distribution. It was discovered that all those who joined the State pension scheme in 1961 at age 20 and who will retire in 2006 at age 65 will have large positive real rates of return on the total pension contribution which will range from a low of around 4 per cent for a single man earning one and a half times the average industrial wage with an earnings growth rate of one per cent to a high of around 11 per cent for a married man whose earnings are half the industrial average and whose earnings growth rate is assumed to be three per cent per annum. The corresponding figures for the pension contributions attributable to employees are 6 per cent and 13 per cent, respectively. Given the low real rates of return on stocks and bonds in Ireland in the last two decades the average contributor to the State pension schemes would find it extremely difficult to get a rate of return approaching the yield on State pension contributions and it is concluded that if the structure of the scheme remains unchanged it will give very good value for money to insured workers retiring in 2006.

The size of the internal rate of return for the average insured worker retiring in 2006 does, however, raise questions about the cost of maintaining the current relationships between social insurance pension contributions, benefits and average industrial earnings in the future. The cost implications of maintaining the current relationships until 1991 are explored using projections of the number of pensioners made for the NESC by Courtney and McCashin (1983) and the effects on costs of variations in their dependency assumptions, in contributory pension age and in the rate of growth of earnings are also investigated. It is shown that if there is no growth in earnings in the decade 1981-91 demographic changes alone will add nearly £75 million to the contributory and retirement pension bill by 1991. If earnings grow by 2 per cent per annum, or slightly more than the long-term average, and

the existing relationship between pension benefits and gross industrial earnings is maintained, the additional cost in 1991 would be almost £66 million. If the contributory pension age is reduced to 65, as has been proposed, the additional cost in 1991 would be over £25 million or around 10 per cent of the contributory and retirement pension bill. Significant variations in the dependency ratios would add very little to the pension bill over the next decade. If earnings grow at 2 per cent per annum, the contributory pension age is reduced to 65, and dependency ratios increase as hypothesised in Chapter 5, flat-rate contributory and retirement pension costs would rise by nearly 85 per cent in real terms over the next decade. This cost increase would have to be met by a 50 per cent increase in the proportion of the wage bill which is used to finance State pensions in 1991. In view of the low level of social security taxes in Ireland relative to other EEC countries it is argued that cost increases of this magnitude would not impose an unsustainable burden on the working population. It is important, however, that workers and employers are prepared for such increases and it is argued that a very good case can be made on the basis of the value of the services which industry gets from the State's retirement income programmes.



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Table A.1: Basic data for payroll tax shifting model for Irish Transportable Goods Industries, 1953(1)-1980(4)

Year and quarter	E	H	HADJ	S	T	Q	URTGI	P <sub>q</sub>	P <sub>c</sub>	P <sub>m</sub>	N
1953 1	5.37	44.4	44.4	0.0206	0.0559	91.6	8.24	99.8	98.5	102.7	140.1
2	5.48	44.5	44.5	0.0202	0.0566	102.2	7.14	100.2	100.9	102.4	141.9
3	5.50	44.8	44.8	0.0202	0.0564	103.1	5.29	100.2	100.1	100.8	148.7
4	5.63	45.5	45.5	0.0196	0.0586	106.0	5.69	99.8	100.1	102.3	147.5
1954 1	5.47	43.8	43.8	0.0202	0.0567	96.3	7.34	99.1	99.4	101.5	152.2
2	5.46	43.3	43.3	0.0203	0.0513	106.0	6.80	98.3	99.5	101.9	154.5
3	5.58	44.8	44.8	0.0198	0.0520	106.5	5.46	97.5	101.1	103.8	154.8
4	5.69	45.2	45.2	0.0195	0.0528	104.1	5.50	96.9	100.5	103.2	156.5
1955 1	5.72	44.5	44.5	0.0194	0.0542	99.8	5.91	97.3	101.2	104.7	153.1
2	5.80	44.4	44.4	0.0191	0.0552	109.9	5.09	97.9	102.0	106.1	155.8
3	5.95	44.9	44.9	0.0186	0.0555	108.9	3.49	98.6	102.7	106.1	158.4
4	6.30	45.4	45.4	0.0176	0.0587	112.6	3.74	99.7	105.0	108.1	159.7
1956 1	6.19	44.5	44.5	0.0179	0.0582	106.1	5.42	100.5	105.5	106.1	154.2
2	6.27	44.3	44.3	0.0176	0.0590	108.8	6.16	102.5	107.5	108.1	154.8
3	6.28	44.9	44.9	0.0176	0.0590	101.2	5.30	103.9	107.8	108.7	153.9
4	6.35	45.0	45.0	0.0174	0.0614	105.8	6.36	104.4	107.5	110.7	153.9
1957 1	6.30	44.4	44.4	0.0209	0.0619	98.3	8.11	105.0	107.7	115.5	147.2
2	6.44	44.3	44.3	0.0204	0.0622	108.8	6.98	108.2	110.4	114.2	150.2
3	6.49	45.0	45.0	0.0203	0.0632	101.6	5.12	110.7	114.1	113.5	151.0
4	6.80	45.6	45.6	0.0193	0.0706	110.9	5.29	110.7	113.8	113.0	152.1
1958 1	6.73	44.6	44.6	0.0195	0.0698	103.2	6.92	111.4	115.4	111.4	148.5
2	6.80	44.5	44.5	0.0193	0.0706	110.8	6.55	112.6	116.6	108.2	150.9
3	6.85	45.1	45.1	0.0192	0.0715	102.7	5.17	112.6	116.9	108.1	151.7
4	6.99	45.4	45.4	0.0188	0.0758	109.3	5.66	112.6	116.9	108.3	152.5
1959 1	6.88	44.6	44.6	0.0191	0.0618	104.0	6.68	104.8	117.7	108.5	150.2
2	7.13	45.1	45.1	0.0185	0.0729	123.0	5.68	104.0	117.6	106.8	155.2
3	7.15	45.4	45.4	0.0184	0.0727	119.0	4.82	104.7	115.6	107.6	154.6
4	7.45	45.7	45.7	0.0177	0.0792	123.0	4.73	105.9	114.9	108.7	155.6
1960 1	7.35	44.4	44.4	0.0179	0.0776	119.0	5.73	113.3	115.4	108.5	156.8
2	7.60	44.9	44.9	0.0173	0.0697	131.0	4.33	114.5	117.2	108.3	160.7
3	7.58	45.0	45.0	0.0174	0.0686	125.0	3.58	114.9	117.2	108.4	161.4
4	7.83	45.6	45.6	0.0168	0.0754	131.0	3.64	114.9	118.1	110.3	163.5
1961 1	7.70	44.7	44.7	0.0285	0.0831	130.0	4.22	115.3	118.9	109.5	163.3
2	7.92	44.9	44.9	0.0277	0.0783	144.0	3.71	115.9	120.3	109.7	167.2
3	7.97	44.6	44.6	0.0275	0.0791	136.0	3.27	116.7	120.5	111.6	168.2
4	8.47	43.8	43.8	0.0259	0.0886	143.0	3.45	117.6	121.1	111.8	169.0
1962 1	8.57	43.8	43.8	0.0256	0.0898	138.0	4.84	118.9	123.3	109.7	170.2
2	8.84	43.9	43.9	0.0248	0.0950	152.0	4.26	120.8	126.5	110.9	172.1
3	9.00	44.5	44.7	0.0244	0.0978	141.0	3.41	121.5	125.9	110.0	174.1
4	9.20	44.7	45.0	0.0238	0.1000	154.0	3.74	121.8	125.6	110.2	176.4
1963 1	8.91	43.6	43.6	0.0288	0.0999	142.0	4.92	121.9	127.7	111.6	175.1
2	9.27	44.3	44.5	0.0277	0.1046	155.0	4.14	122.1	127.4	111.8	176.5
3	9.33	44.6	44.9	0.0275	0.1061	153.0	3.33	122.5	127.3	112.7	179.8
4	9.51	44.8	45.2	0.0270	0.1083	164.0	3.70	123.2	131.2	113.1	181.3
1964 1	9.99	44.0	44.0	0.0290	0.1181	154.0	4.75	125.0	131.9	111.5	178.5
2	10.62	44.6	44.9	0.0273	0.1252	170.0	3.80	128.1	137.1	111.9	181.7
3	10.50	44.2	44.3	0.0277	0.1238	165.0	3.27	129.2	138.8	112.3	183.7
4	10.61	44.3	44.5	0.0274	0.1244	171.0	3.74	130.2	140.3	112.6	183.2



Table A.1: *Continued*

<i>Year and quarter</i>	<i>E</i>	<i>H</i>	<i>HADJ</i>	<i>S</i>	<i>T</i>	<i>Q</i>	<i>URTGI</i>	$P_q$	$P_c$	$P_m$	<i>N</i>	
1965	1	10.45	43.5	43.5	0.0278	0.1234	165.0	4.92	130.3	141.8	112.9	182.3
	2	10.82	44.0	44.0	0.0268	0.1266	179.0	4.15	132.3	144.3	114.1	184.0
	3	10.83	44.0	44.0	0.0276	0.1265	171.0	3.51	133.5	144.8	113.9	184.5
	4	11.04	44.2	44.3	0.0263	0.1286	182.0	4.01	133.9	144.8	113.9	184.0
1966	1	10.91	43.4	43.4	0.0331	0.1338	168.0	5.13	134.7	144.9	114.1	182.6
	2	11.63	43.8	43.8	0.0311	0.1513	176.0	4.80	137.1	147.6	115.1	183.8
	3	12.14	44.2	44.3	0.0298	0.1557	186.0	3.74	139.4	150.0	113.6	187.9
	4	12.34	44.2	44.3	0.0296	0.1588	191.0	4.42	140.5	150.4	114.3	187.5
1967	1	12.26	43.3	43.4	0.0298	0.1574	184.0	6.03	140.7	150.6	113.4	185.4
	2	12.48	43.5	43.5	0.0369	0.1595	205.0	5.02	143.2	153.2	113.2	187.7
	3	12.66	43.8	43.8	0.0363	0.1603	194.0	4.71	143.5	153.3	112.6	188.9
	4	13.04	44.0	44.0	0.0353	0.1633	203.0	5.10	144.4	154.3	113.0	189.0
1968	1	13.02	43.1	43.1	0.0414	0.1697	195.0	5.89	146.4	157.5	120.5	188.8
	2	13.72	43.8	43.8	0.0393	0.1735	226.0	4.66	148.6	160.0	122.5	193.9
	3	13.97	43.8	43.8	0.0386	0.1754	222.0	4.34	149.8	160.3	125.0	196.1
	4	14.45	43.9	43.9	0.0373	0.1785	230.0	4.63	152.6	162.7	123.2	198.2
1969	1	14.68	43.3	44.2	0.0445	0.1860	204.0	5.88	156.2	168.1	127.3	200.1
	2	15.37	43.7	44.8	0.0425	0.1822	250.0	4.52	158.6	171.0	127.5	204.7
	3	15.75	43.2	44.0	0.0414	0.1841	238.0	4.11	161.0	173.8	130.3	207.3
	4	16.10	43.0	43.7	0.0405	0.1857	244.0	4.90	163.6	175.1	131.3	208.3
1970	1	16.21	42.5	43.5	0.0465	0.1919	221.0	5.82	165.5	178.0	136.3	205.0
	2	17.31	42.7	43.8	0.0435	0.1826	251.0	5.94	167.5	185.3	138.5	207.7
	3	18.33	43.0	44.2	0.0411	0.1871	247.0	5.20	169.6	188.4	139.1	210.3
	4	19.12	42.9	44.1	0.0466	0.1972	256.0	5.19	170.4	192.6	140.6	209.3
1971	1	19.37	41.7	42.6	0.0462	0.2096	234.0	6.54	173.0	195.7	145.1	207.2
	2	20.43	42.4	43.6	0.0438	0.2115	263.0	5.55	176.1	201.1	147.7	208.1
	3	21.08	42.6	43.9	0.0424	0.2130	251.0	5.63	178.2	205.0	148.3	207.0
	4	21.70	42.6	43.9	0.0458	0.2253	263.0	6.95	180.2	209.2	148.5	206.1
1972	1	22.45	42.2	43.3	0.0443	0.2267	239.0	7.41	183.8	213.9	148.0	204.0
	2	23.18	42.6	43.9	0.0429	0.2123	269.0	6.93	186.1	217.2	148.5	207.6
	3	24.08	42.6	43.9	0.0413	0.2143	265.0	6.40	190.5	223.2	154.9	209.3
	4	25.27	42.7	44.1	0.0487	0.2240	282.0	6.18	197.6	226.5	157.4	209.9
1973	1	26.03	42.3	43.5	0.0473	0.2251	274.1	6.55	203.9	235.4	168.0	212.3
	2	28.37	42.8	44.2	0.0434	0.2270	304.3	5.41	211.1	242.6	175.1	217.0
	3	29.56	42.6	43.9	0.0577	0.2334	289.6	5.34	222.1	248.3	184.7	217.9
	4	30.69	42.9	44.4	0.0555	0.2346	299.4	5.41	226.2	255.1	196.1	220.1
1974	1	30.84	41.9	42.9	0.0553	0.2348	289.0	6.04	240.3	267.2	230.7	220.7
	2	33.89	42.2	43.3	0.0620	0.2266	311.2	5.99	252.1	282.0	248.8	222.6
	3	35.01	41.8	42.7	0.0721	0.2336	290.8	6.69	264.0	292.7	265.6	220.8
	4	36.71	41.4	42.1	0.0697	0.2354	294.6	9.51	280.2	306.2	280.7	218.3
1975	1	39.42	40.8	41.2	0.0663	0.2405	264.5	12.49	318.8	330.8	286.7	211.7
	2	43.75	41.6	42.4	0.0818	0.2510	286.9	12.46	329.4	350.9	294.1	208.2
	3	45.89	41.6	42.4	0.0790	0.2576	272.8	12.39	326.7	348.2	299.5	205.0
	4	48.30	41.8	42.7	0.0760	0.2644	285.6	12.52	332.9	357.8	309.1	205.0
1976	1	48.77	41.1	41.7	0.0755	0.2657	280.6	12.23	346.7	384.0	316.5	202.3
	2	51.18	41.7	42.6	0.0957	0.2767	312.3	11.45	364.6	407.9	332.2	206.0
	3	53.87	42.5	43.7	0.0919	0.2820	302.2	11.01	380.0	413.9	367.2	208.0
	4	58.34	42.8	44.2	0.0864	0.2907	313.9	11.23	398.6	431.5	377.1	210.3

Table A.1: Continued

Year and quarter	E	H	HADJ	S	T	Q	URTGI	P <sub>q</sub>	P <sub>c</sub>	P <sub>m</sub>	N
1977 1	58.15	42.2	43.3	0.0866	0.2903	301.3	11.74	420.9	447.9	395.8	210.5
2	61.88	42.8	44.2	0.0894	0.2723	341.3	10.78	437.3	464.8	408.9	213.5
3	63.47	42.9	44.3	0.0877	0.2746	321.0	10.04	446.4	469.7	414.1	214.8
4	65.56	42.5	43.7	0.0855	0.2773	344.6	9.76	449.8	478.0	416.9	215.0
1978 1	66.34	42.4	43.6	0.0847	0.2783	336.3	10.47	461.2	484.8	418.5	215.1
2	71.57	42.9	44.3	0.0933	0.2732	376.8	9.03	474.4	493.3	429.7	219.2
3	72.57	42.4	43.6	0.0923	0.2744	344.7	8.61	485.1	508.4	436.1	220.9
4	74.89	42.8	44.2	0.0900	0.2769	371.0	8.56	491.4	515.9	442.7	222.9
1979 1	76.13	42.5	43.7	0.0889	0.2783	357.9	8.53	515.0	537.4	451.4	223.5
2	79.86	42.7	44.0	0.0875	0.2735	401.5	7.61	532.6	554.5	473.4	228.6
3	84.48	42.5	43.7	0.0875	0.2815	374.6	7.33	542.0	577.4	508.2	230.2
4	87.60	42.2	43.3	0.0875	0.2841	391.6	7.55	549.6	598.3	513.5	232.2
1980 1	91.39	41.4	42.1	0.0875	0.2888	375.3	7.97	572.8	620.7	546.0	229.0
2	96.50	41.8	42.7	0.0980	0.2973	411.9	8.75	590.8	666.6	572.7	228.7
3	96.31	41.3	41.9	0.0980	0.2971	360.1	10.05	598.6	686.3	579.3	225.7
4	104.64	41.5	42.2	0.0980	0.3048	364.7	11.22	610.3	707.3	610.5	222.9

- Sources:
- E = average earnings of industrial workers per week in Transportable Goods Industries; Quarterly production inquiry, *Irish Statistical Bulletin* 1953(3)-1981(3).
  - H = average hours worked per week by industrial workers in Transportable Goods Industries; Quarterly production inquiry, *Irish Statistical Bulletin*, 1953(3)-1981(3).
  - HADJ = H if  $H < SH$  or  $H + 3/2(H-SH)$  if  $H > SH$  where SH = standard hours of work for a semi-skilled bacon factory worker in Dublin up to 1970. A 40-hour week is taken as the norm thereafter; *Statistics of Wages, Earnings and Hours of Work*, 1956, 1959, 1962, 1964, 1967 and 1970.
  - S = employer payroll tax rate. Weighted average of standard social insurance contribution paid by employers for male and female employees divided by average weekly earnings of industrial workers in Transportable Goods Industries. The weights used are the numbers of males and females employed in these industries in the third quarter of each year; *Report of the Department of Social Welfare*, 1954-58, 1959-62, 1963-66, 1967-71, 1972-75, 1976-78, and 1978-80 and Census of Industrial Production, *Irish Statistical Bulletin*, 1956(2)-1981(2).
  - T = average employee direct tax rate. This is weighted average of the standard social insurance contributions paid by male and female employees plus the average income tax rate paid by employees in receipt of the average industrial wage. The weights used are the same as for the previous variable. *Report of the Department of Social Welfare*, 1954-58 to 1978-80 and *Annual Report of the Revenue Commissioners* 1954 to 1981.
  - Q = quarterly index of industrial production in Transportable Goods Industries Base 1953 = 100; Quarterly production inquiry, *Irish Statistical Bulletin*, 1955(2)-1980(3).
  - URTGI = weighted average unemployment rate in Transportable Goods Industries. The unemployment rates in each industry group on the last month of each quarter are weighted by the number of insured persons in each industry group. Monthly analysis of the Live Register classified by Industrial Group, *Irish Statistical Bulletin*, 1953(1)-1981(1).
  - P<sub>q</sub> = quarterly index of wholesale prices of output of industry. Base 1953 = 100. Up to 1975 the figures are averages of monthly figures; *Irish Statistical Bulletin*, 1956(3)-1981(3).
  - P<sub>c</sub> = quarterly index of consumer prices. Base 1953 = 100; *Statistical Abstract* 1958-1979, *Irish Statistical Bulletin* 1982(3).
  - P<sub>m</sub> = quarterly index of import prices. Base 1953 = 100; *Irish Statistical Bulletin* 1956(1)-1981(1).
  - N = number of persons engaged in Transportable Goods Industries (thousands). The figures for the first, second and fourth quarters of 1953 have been adjusted to take account of revisions published in the *Irish Trade Journal and Statistical Bulletin* 1955(3); *Irish Statistical Bulletin* 1953(3)-1981(3).

Table A.2: *Weekly rates of unemployment and disability benefit for a single adult, a married couple, and a family of four, 1952-82*

<i>Date of increase in benefit</i>	<i>Single adult</i>	<i>Married couple</i>	<i>Married + 2 children</i>
July 1952	1.20	1.80	2.50
Sept. 1956	1.50	2.25	3.05
Jan. 1961	1.625	2.625	3.625
Jan. 1963	1.875	3.125	4.425
Jan. 1964	2.125	3.625	4.925
Jan. 1966	2.625	4.625	5.925
Jan. 1968	2.875	5.125	6.425
Jan. 1969	3.25	5.875	7.425
Jan. 1970	3.75	6.875	8.425
Oct. 1970	4.50	7.65	9.45
Oct. 1971	4.95	8.40	10.20
Oct. 1972	5.55	9.30	12.00
July 1973	6.55	10.80	14.50
July 1974	7.75	12.80	17.20
April 1975	9.40	15.50	20.80
Oct. 1975	9.90	16.35	21.95
April 1976	10.90	18.00	24.20
April 1977	12.45	20.55	27.65
Oct. 1977	13.05	21.55	29.05
April 1978	14.35	23.70	32.00
April 1979	16.05	26.50	35.80
Oct. 1979	17.05	28.10	38.00
April 1980	20.45	33.70	45.60
April 1981	24.55	40.45	53.45
Oct. 1981	25.30	41.70	55.10
April 1982	31.65	52.15	68.05

*Sources: Reports of the Department of Social Welfare, 1950-53 to 1981-82.*

Table A.3: *Weekly rate of unemployment assistance (urban areas) for a single adult, a married couple and a family of four, 1952-1982*

<i>Date of increase in benefit</i>	<i>Single adult</i>	<i>Married couple</i>	<i>Married + 2 children</i>
Jun. 1952	0.90	1.40	1.90
May 1957	0.95	1.50	2.05
Aug. 1959	0.95	1.63	2.175
Aug. 1960	1.00	1.725	2.375
Aug. 1961	1.075	1.875	2.625
Aug. 1962	1.20	2.125	3.125
Nov. 1963	1.325	2.375	3.375
Aug. 1964	1.45	2.625	3.625
Aug. 1965	1.70	3.125	4.125
Nov. 1966	1.95	3.625	4.625
Aug. 1967	2.20	4.125	5.125
July 1968	2.575	4.875	6.125
July 1969	3.075	5.875	7.125
July 1970	3.60	6.40	7.90
Aug. 1971	3.95	7.05	8.55
Aug. 1972	4.35	7.75	10.05
July 1973	5.35	9.25	12.55
July 1974	6.35	10.95	14.85
April 1975	7.70	13.25	17.95
Oct. 1975	8.10	13.95	18.95
April 1976	8.90	15.35	20.85
Oct. 1976	8.90	15.35	20.85
April 1977	10.20	17.60	23.90
Oct. 1977	10.70	18.45	25.05
April 1978	11.75	20.30	27.60
April 1979	13.15	22.75	30.95
Oct. 1979	14.15	24.35	33.15
April 1980	17.00	29.25	39.85
April 1981	20.40	35.10	46.70
Oct. 1981	21.00	36.15	48.05
April 1982	26.25	45.20	60.70

Sources: As for Table A.2.

Table A.4: *Weekly rates of old age contributory pension for a single adult, a married couple, and a family of four (basic rate for pensioner under 80 with adult dependant under pension age) 1952-1982*

<i>Date of increase in benefit</i>	<i>Single adult</i>	<i>Married couple</i>	<i>Married + 2 children</i>
Jan. 1961	2.00	3.425	—
Aug. 1961	2.00	3.50	—
Jan. 1963	2.25	4.00	—
Jan. 1964	2.50	4.375	—
Nov. 1964	2.50	4.375	5.675
Jan. 1966	3.00	5.375	6.675
Jan. 1968	3.25	5.875	7.175
Jan. 1969	3.625	6.625	8.175
Jan. 1970	4.125	7.625	9.175
Oct. 1970	5.00	8.50	10.30
Oct. 1971	5.50	9.35	11.15
Oct. 1972	6.20	10.35	13.05
July 1973	7.20	11.85	15.55
July 1974	8.50	14.00	18.40
April 1975	10.50	17.15	22.45
Oct. 1975	11.05	18.05	23.65
April 1976	12.15	19.85	26.05
Oct. 1976	12.75	20.85	27.35
April 1977	13.90	22.75	29.85
Oct. 1977	14.60	23.90	31.40
April 1978	16.05	26.30	34.60
April 1979	18.60	30.50	40.10
Oct. 1979	19.60	32.10	42.30
April 1980	24.50	40.15	52.95
April 1981	30.65	50.20	64.20
Oct. 1981	32.20	52.75	67.45
April 1982	40.25	65.95	83.45

Source: As for Table A.2.

Table A.5: *Weekly rates of old age non-contributory pension for a single adult, a married couple and a family of four (basic rate for pensioner under 80) 1952-1982*

<i>Date of increase in benefit</i>	<i>Single adult</i>	<i>Married couple</i>	<i>Married + 2 children</i>
July 1952	1.075	—	—
July 1955	1.20	—	—
May 1957	1.25	—	—
Aug. 1959	1.375	—	—
Aug. 1960	1.425	—	—
Aug. 1961	1.50	—	—
Aug. 1962	1.625	—	—
Nov. 1963	1.75	—	—
Aug. 1964	1.875	—	—
Nov. 1964	1.875	—	2.875
Aug. 1965	2.375	—	3.375
Nov. 1966	2.625	—	3.625
Aug. 1967	2.875	—	3.875
Aug. 1968	3.25	—	4.50
Aug. 1969	3.75	—	5.00
Aug. 1970	4.25	—	5.75
Aug. 1971	4.65	—	6.15
Aug. 1972	5.15	—	7.45
July 1973	6.15	—	9.45
July 1974	7.30	10.95	14.85
April 1975	8.85	13.25	17.95
Oct. 1975	9.30	13.95	18.95
April 1976	10.25	15.35	20.85
Oct. 1976	10.75	16.10	21.90
April 1977	11.75	17.60	23.90
Oct. 1977	12.35	18.50	25.10
April 1978	13.60	20.35	27.65
April 1979	15.80	23.65	32.15
Oct. 1979	16.80	25.25	34.35
April 1980	21.00	31.55	42.95
April 1981	26.25	39.45	51.95
Oct. 1981	27.55	41.40	54.50
April 1982	34.45	51.75	65.75

Sources: As for Table A.2.

Table A.6: *Pre- and post-tax male average industrial earnings (£) on CIP Survey data preceding date of increase in social welfare benefits, 1951-81*

Date of CIP Survey	Pre-tax	Post-tax earnings for a:		
		Single man	Married man	Married man with 2 children
Oct. 1951	6.29	5.73	6.17	6.17
Oct. 1954	7.32	6.72	7.20	7.20
Oct. 1955	7.68	6.99	7.56	7.56
Oct. 1956	8.08	7.30	7.94	7.94
Oct. 1958	8.78	7.83	8.55	8.64
Oct. 1959	9.11	8.16	8.86	8.97
Oct. 1960	9.78	8.64	9.62	9.62
Oct. 1961	10.51	9.26	10.23	10.28
Oct. 1962	11.51	10.01	10.98	11.28
Oct. 1963	12.03	10.38	11.35	11.76
Oct. 1964	13.31	11.33	12.30	13.01
Oct. 1965	13.82	11.70	12.68	13.51
Oct. 1966	15.31	12.57	13.64	14.94
Oct. 1967	16.00	13.05	14.13	15.61
Oct. 1968	17.82	14.32	15.39	17.31
Sept. 1969	20.70	16.46	17.63	19.55
June 1970	22.80	18.11	19.29	21.21
Sept. 1970	23.86	18.89	20.07	21.99
June 1971	26.54	20.48	21.66	23.57
Sept. 1971	27.13	20.91	22.09	24.01
June 1972	29.88	23.08	24.40	26.58
Sept. 1972	31.13	24.00	25.32	27.50
June 1973	36.01	27.44	28.75	30.94
June 1974	42.52	32.52	34.24	36.24
Mar. 1975	47.83	35.97	37.99	40.17
Sept. 1975	55.84	40.63	43.18	46.44
Mar. 1976	59.57	42.92	45.47	48.88
Sept. 1976	65.79	46.53	49.41	52.97
Mar. 1977	70.85	49.64	52.52	56.08
Sept. 1977	76.85	55.35	58.28	61.51
Mar. 1978	79.36	56.99	59.91	63.14
Mar. 1979	89.74	64.53	70.35	73.58
Sept. 1979	100.43	71.66	79.16	82.10
Mar. 1980	106.71	75.20	83.01	85.95
Mar. 1981	121.56	85.66	93.17	95.79
Sept. 1981	136.48	95.70	103.20	105.83

*Basic Sources:* Pre-tax data: *Irish Statistical Bulletin* 1954 to 1982. Post-tax data: own calculations using data relating to the income tax and social insurance systems given in *Annual Reports of the Revenue Commissioners* 1955 to 1981, the *Report of the Department of Social Welfare* 1950-53 to 1979-80 and the Department of Social Welfare's *Summary of Social Insurance and Social Assistance Services*, 1981 and 1982.

*Note:* (i) Social Welfare Allowances for ordinary rate contributors during fiscal years 1951/52 to 1978/79 when they were abolished were as follows:  
1951/52 £1, 1956/57 £2, 1961/62 £7, 1963/64 £8, 1965/66 £9, 1966/67 £10, 1968/69 £11, 1969/70 £13, 1970/71 £16, 1971/72 £19, 1972/73 £22, 1973/74 £27, 1974/75 £34, 1976/77 £47, 1977/78 £64.

This information was supplied by the Revenue Commissioners as it is not published in any of the sources listed above.

(ii) The earnings data up to the second quarter of 1969 refer to males aged 18 and over and to adult males thereafter. It is assumed in the calculations for col. 5 that one child is under 11 and the other is over 11.

Table A.7: Ratios and elasticities of social welfare benefits with respect to pre- and post-tax average industrial earnings, 1952-1982

Benefit	Pre-tax average earnings	
	Benefits as a percent of pre-tax average earnings	Elasticity of benefits with respect to pre-tax average earnings
<i>Single person</i>		
Unemployment and disability benefit	19.2 (49.9)	1.02 (71.8)
Unemployment assistance	15.8 (50.5)	1.10 (53.3)
Old age (contributory) pension	22.9 (34.9)	1.05 (54.6)
Old age (non-contributory) pension	19.6 (37.6)	1.06 (56.4)
<i>Married couple</i>		
Unemployment and disability benefit	31.7 (50.3)	1.02 (64.7)
Unemployment assistance	27.2 (50.9)	1.09 (45.9)
Old age (contributory) pension	37.7 (35.1)	1.01 (47.8)
Old age (non-contributory) pension	29.5 (23.9)	1.23 (16.9)
<i>Family of four</i>		
Unemployment and disability benefit	42.0 (56.5)	1.02 (83.7)
Unemployment assistance	36.6 (52.8)	1.09 (59.9)
Old age (contributory) pension	48.6 (35.6)	1.05 (42.0)
Old age (non-contributory) pension	38.6 (33.3)	1.24 (48.4)

Sources: As for Table 1.

Note: (i) t-values in parentheses.

(ii) The number of observations used in estimating the regression coefficients differs for each benefit because of differences in commencement dates and in the dates on which the various benefits were increased. For unemployment and disability benefit  $n = 26$ , for unemployment assistance  $n = 31$ , for old age (contributory) pension  $n = 27$  for a single person and a married couple and 23 and for a family of four, and for old age (non-contributory) pension  $n = 33$ , for a single person, 14 for a married couple and 24 for a family of four. Differences in  $n$  for the latter benefits for different household sizes are due to non-payment of allowances for children until November 1964 and of allowances for an adult dependant of an old age (non-contributory) pension recipient until July 1974.



Table A.8: Comparison of  $R^2$  regression equations including and excluding data for 1982

<i>Benefit</i>	<i>Replacement ratio equations</i>		<i>Elasticity equations</i>	
	<i>Including 1982</i>	<i>Excluding 1982</i>	<i>Including 1982</i>	<i>Excluding 1982</i>
<i>Single person</i>				
Unemployment and disability benefit	.976	.992	.995	.997
Unemployment assistance	.975	.990	.990	.990
Old age (contributory) pension	.951	.976	.992	.995
Old age (non-contributory) pension	.957	.978	.990	.992
<i>Married couple</i>				
Unemployment and disability benefit	.976	.992	.994	.996
Unemployment assistance	.975	.990	.986	.986
Old age (contributory) pension	.951	.976	.989	.993
Old age (non-contributory) pension	.885	.930	.959	.968
<i>Family of four</i>				
Unemployment and disability benefit	.981	.994	.997	.998
Unemployment assistance	.977	.992	.992	.992
Old age (contributory) pension	.952	.976	.988	.992
Old age (non-contributory) pension	.951	.966	.991	.991

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