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Compensation - A Cross Section
Analysis for Irish Manufacturing
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INTER-INDUSTRY DIFFERENCES IN MALE PERCENTAGE UNEMPLOYMENT COMPENSATION — A CROSS SECTION ANALYSIS FOR IRISH MANUFACTURING INDUSTRY*

by

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Introduction

It is widely accepted that unemployment rates vary substantially amongst industrial sectors in Ireland. However, it does not appear to be equally recognised that there are substantial inter-industry differences in the percentage of net earnings which an unemployed person receives from Unemployment and Pay-Related Benefits. These differences are accentuated by the non-uniformity of the dependency structure of the labour force in different industries. This paper, therefore, comprises two parts. Part 1 is methodological and consists of an attempt to compute, under fairly restrictive assumptions, for each of 36 manufacturing industries, the proportion of net earnings obtained from unemployment compensation. This is done for persons of differing dependency status. These proportions are then weighted by the dependency distribution of the unemployed in each industry in order to obtain a representative percentage compensation figure for each of the 36 industries. Some space is devoted to an examination of these results. In Part 2 an attempt is made to explore the hypothesis that levels of unemployment compensation may be an important factor in explaining the extent and duration of registered unemployment.

PART I

Definitional Questions

At the time of writing the latest date for which Quarterly Industrial (Q.I.I.) earnings' figures are available is for a week in September 1975. An industrial analysis of the Live Register is available for mid-September of the same year. Though the two sources refer to dates which differ by perhaps 1-2 weeks, it is not anticipated that any well-defined bias will

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arise from ignoring this fact. Thus, for the purposes of this study, the two sets of data are taken as comparable from the point of view of time. However, comparability problems arise on other grounds. Thus, although the Quarterly Industrial Enquiry distinguishes 47 industries, it has only been found possible to distinguish 36 comparable industries in the Industrial Analysis of the Live Register. The analysis which follows is restricted to these 36 industries, some of which are composed of several Q.I.I. industries aggregated together in order to ensure comparability with the L.R. figures. Thus, for instance, the three Q.I.I. classifications, Distilling, Malting and Brewing, are amalgamated in order to be comparable with the Malting, Brewing and Distilling sections of the L.R. A full cross-classification of the industries used is to be found in Table 1. The study has been confined to male unemployment, owing to the complications surrounding taxation of married women's income, and their restricted eligibility for unemployment benefits.

Calculation of Percentage Compensation

For each of the 36 industries the computation procedure was as follows: Net after tax earnings are defined as: weekly male adult earnings less (income tax and employee social insurance contributions + employee pay related social insurance contribution). This is calculated for each of the following types of employee:

- (a) Single Man
- (b) Married Man+No children
- (c) Married Man+2 children
- (d) Married Man+4 children

In the case of aggregated industries, an average earnings' figure was arrived at by taking a weighted average of earnings in the constituent industries, the weights being the employment levels in the individual industries to be aggregated. The end result is a set of four after-tax net earnings figures, one for each case of (a), (b), (c), (d), for each of the 36 industries. The basic data may be found in Appendix A. Since the focus of this paper is basically exploratory, the only forms of unemployment compensation considered here are Unemployment Benefit and Pay Related Benefit. It is implicitly assumed that those who become unemployed automatically qualify for compensation from these sources.

Unemployment Benefit (U.B.)

Unemployment Benefit is payable to those satisfying a stamp contribution condition. It consists of a flat rate weekly payment plus a further allowance for each dependent adult or child. For those with

TABLE 1: CROSS-CLASSIFICATION OF QUARTERLY INDUSTRIAL ENQUIRY, LIVE REGISTER AND CENSUS OF POPULATION INDUSTRY AND OCCUPATION (1971)
CENSUS OF POPULATION

	Quarterly Industrial Enquiry	Live Register	Industry	Occupation
1.	Bacon Factories	Bacon Curing	Meat Products	Meat Cutters, Canners and Preservers
2.	Creamery Butter and Other Edible Milk Products	Creameries and Butter Blending Factories	Milk Products	Milk Processors and Makers of Dairy Produce
3.	Bread, Biscuit and Flour Confectionery	Bread, Biscuit and Flour Confectionery	Bread, Biscuit and Flour Confectionery	Bakers, Pastrycooks and Biscuit Makers
4.	Manufacture and Refining of Sugar	Sugar Manufacture	Sugar	Makers of sugar and chocolate confectionery
5.	Cocoa, Chocolate and Sugar Confectionery	Sugar and Chocolate confectionery, jams, etc.	Cocoa, Chocolate and Sugar Confectionery	jams and jellies
6.	Margarine, Compound Cooking Fats, etc.	Margarine	Other Food Products	Other makers of food
7.	Jams, Jellies, Preserves, Canned Products, etc.	Canning and Bottling Foodstuffs	Jams, Jellies, Fruit and Vegetables	Makers of Sugar and Chocolate Confectionery, jams and jellies
8.	Grain Milling and Animal Feeding Stuffs	Grain and Flour Milling	Grain Milling	Millers
9.	Miscellaneous Food (inc. Fish)	Other Food Making Industries	Other Food Products	Other Makers of Food
10.	Distilling, Malting, Brewing	Malting, Brewing and Distilling	Beverages	Makers of Beverages
11.	Aerated and Mineral Waters	Aerated Waters, Ciders, etc.	Beverages	Makers of Beverages
12.	Tobacco	Tobacco Manufacturers	Tobacco Products	Makers of Tobacco Products
13.	Woollen and Worsted (exc. clothing)	Woollen Manufacturers	Woollen and Worsted	Spinners, Doublers, Winders, Reelers, Weavers, Bleachers, Dyers and Finishers
14.	Hosiery	Hosiery and Other Knitted Goods, Lace, Embroidery and Needwork	Hosiery and Knitted Goods	Knitters, Knitting and Hosiery Machine Operators
15.	Jute, Canvas, Rayon, Nylon, etc.	Other textile manufacturers inc. jute and hemp	Other textile and textile made-up goods	Spinners, Doublers, Winders, Reelers, Weavers, Bleachers, Dyers and Finishers
16.	Linen and cotton	Linen, Silk, etc. manufacturers, carpets, carpeting and rugs	Linen, Cotton and Poplin	Spinners, Doublers, Winders, Reelers, Weavers, Bleachers, Dyers and Finishers
17.	Boot and Shoe (Wholesale Factories)	Boots and Shoes (factories)	Footwear (factory)	Boot and Shoe Makers (Factory)
18.	Clothing (Wholesale Factories, Women's and Girls)	Press and Blouse Making, Underclothing (not hosiery)	Outer Clothing	Tailors, Cutters, Sewers, Embroiderers
19.	Clothing (wholesale Factories, Shirtmaking)	Shirt and Collar Making	Underclothing, Shirts, Pyjamas, etc.	Machinists
20.	Clothing (Wholesale Factories, Miscellaneous)	Other Clothing Manufacturers	Other Clothing	As 18, 19 plus Knitters, Knitting and Hosiery Machine Operatives
21.	Furniture, Fixtures, Brushes, Brooms	Furniture and Upholstering, Brushes and Brooms	Furniture	Carpenters, Joiners and Cabinet Makers
22.	Wood and Cork (ex. furniture)	Sawmilling and Joinery Works, Box Making and Coopering, Other Woodworking Industries	Sawmills and Joinery Works and Other Wood Manufacturers	Sawyers and Woodworking Machinists
23.	Leather, Tanning, Dressing of Leather	Skinnering, tanning and leather manufacture	Leather and Leather Substitute Products	Other Leather and Leather Substitute Workers
24.	Ship and Boat Building and Repairing	Construction and Repair of Ships and Boats	Ships and Boats	Fitters, Mechanics, Sheet Metal Workers, Metal and Metal Plate Workers
25.	Manufacture of Railroad Equipment	Construction and Repair of Railway Vehicles	Omni-buses, Railway Locomotives and Rolling Stock	Vehicle Builders and Assemblers
26.	Mechanically Propelled Road and Land Vehicles	Construction and repair of motor vehicles, cycles and aircraft, and carriages, coaches, etc.	Other Vehicles	Workers in Metal Manufacture
27.	Metal Trades (ex. Machinery and Vehicles)	General Metal Founding, Sheet Metal Working, Holloware and Tin Plate	Basic Metal Industries and Metal Founding, Metal Founding	Fitters, Mechanics, Sheet Metal, Structural Metal and Metal Plate Workers
28.	Manufacture, etc. of non-electrical machinery	Engineering, inc. locomotives and tractors, Agricultural Machinery, Implements	Other Machinery and Appliances	Radio, Television Mechanics, Other Electrical Gas and Chemical Workers
29.	Manufacture of electrical machinery, etc.	Scientific Instrs. Electrical Apparatus and Install.	Electrical Machinery and Appliances	Gas and Chemical Workers, Workers in Plastics
30.	Fertilisers	Fertilisers	Fertilisers	Glass and Ceramics Workers
31.	Soap Detergents and Candles	Soap Candles, Tallow and Glycerine	Other Chemical Products	Compositors, Linotype, Monotype, Printing Press Operators, Printers, Other Paper Printing Workers
32.	Oils, Paints, Inks, Polishes, Chemicals and Drugs	Other Chemicals and Drugs inc. paints, matches, etc.	Pharmaceutical Preparation Drugs and Medicines	Makers of Paper and Paper Products
33.	Glass and Glassware, Pottery, etc.	Pottery and Glass	Glass and Glassware, Pottery and China	
34.	Structural Clay Products, asbestos goods, etc. and cement	Bricks, Tiles Artificial Building Materials and Cement	Cement, Plaster and Lime, Concrete Products	
35.	Printing, publishing and allied trades	Printing, inc. newspapers, bookbinding and publishing	Printing and Publishing	
36.	Paper and Paper Products	Other printing, inc. photography, etc. Paper and Paper Board Making, Stationery, etc.	Paper and Paper Products	

less than the required number of insurance stamps, benefit may be paid at a reduced rate. In fact, the great bulk of male claimants qualify for payment at the full rate. Since the payments are fixed in absolute amounts, the lower paid worker tends to benefit more in terms of percentage compensation from this source.

Pay Related Benefit (P.R.B.)

Pay Related Benefit is generally payable to those qualifying for unemployment benefit. Pay-related benefit is payable as a percentage of the claimant's gross earnings between £14 and £50 a week in the income tax year preceding the calendar year in which PRB is claimed. Thus, for those claiming PRB in September 1975 the relevant tax year is April '73-March '74. Owing to the exclusion of the first £14 of gross earnings in calculating PRB entitlements, the more highly paid worker tends to fare better in terms of percentage compensation from this source. The percentage of gross earnings payable as PRB varies inversely with the duration of unemployment, the rates being as follows:

For the first 147 days	40%
For the next 78 days	30%
For the next 78 days	25%
For the next 78 days	20%

For the purpose of this paper, PRB has been calculated at the full rate of 40% as there is no breakdown of the duration of unemployment by industrial sector.

Thus, for each class of worker (a), (b), (c), (d), in each industry a figure can be calculated for unemployment compensation from Unemployment and Pay Related Benefit. This figure is then expressed, for each case, as a percentage of the after-tax net earnings of that case. These are the percentage compensation figures. The results of this exercise may be found in Table 2 whilst the basic data are presented in Appendix A. These figures must be treated with some caution. For some individuals who are not eligible for UB or PRB at the full rates, they may overstate compensation. Conversely, for other individuals the figures may be understated owing to the fact that it has not been possible to include redundancy payments and income tax rebates in the analysis.

Industrial Compensation Coefficients

To compute an overall compensation coefficient for each of the thirty-six sectors it is necessary to weight the coefficients derived in Part I by the dependency distribution of the unemployed in the sector to

which they relate. Unfortunately such figures are not available on an industrial classification. In order to bypass this problem of data availability, a series of weights has been constructed as follows.

It is essential that those who become unemployed in any industry will have on average the same number of dependants as those employed in that industry. However, a breakdown of industrial employment by dependency is not available even for Census of Population years. What is available for 1971 is a series distinguishing the numbers who are unmarried in each occupational group. The difficulty then arises of reconciling the occupational classification of the Census of Population with the industrial classification of the Quarterly Industrial Enquiry. This has been attempted in Table 1. Thus a series can be derived for the percentage single in each of the 36 industries with which this paper is concerned. (It is implicitly assumed that single people have no dependants.) The remaining percentage in each industry was then divided into those married without children, those married with 1, 2 or 3 children, and those married with four or more children. The allocation was in accordance with the dependency distribution of male U.B. claimants in January 1975. The net result is a four element vector for each industry showing the derived dependency breakdown of the unemployed in that industry. This vector is then used to weight the compensation coefficients calculated in Part I, and thus produce an Industrial Compensation Coefficient for each sector. This gives a "typical" figure for compensation in each of the 36 industries corrected for differences in dependency distribution.¹

1. The operation may be summarised algebraically as follows:

$$X_i = \begin{bmatrix} X_{a1} \\ X_{b1} \\ X_{c1} \\ X_{d1} \end{bmatrix} \quad i=1 \dots 36$$

is a column vector showing for each type of worker, (a), (b), (c), (d), in industry (i), the percentage of his take home pay which he will receive from UB and PRB if unemployed.

$$Y_i = \begin{bmatrix} Y_{a1} \\ Y_{b1} \\ Y_{c1} \\ Y_{d1} \end{bmatrix} \quad i=1 \dots 36$$

is a column vector showing the dependency breakdown, as distinguished above, for industry (i). The Industrial Compensation Coefficient for industry (i) is then:

$$X_i Y_i = ICC_i$$

TABLE 2: PERCENTAGE COMPENSATION COEFFICIENTS %

Industry (Q.I.I.)	Single Man	Married Man No children	Married Man + 2 Children	Married Man + 4 Children	Industrial Compensation Coefficient
1. Bacon Factories	44	56	64	70	55
2. Creamery Butter + Other Edible Milk Products	42	53	61	67	52
3. Bread Biscuit + Flour Confectionery	46	57	64	70	57
4. Manufacture + Refining of Sugar	43	53	59	64	54
5. Cocoa, Chocolate + Sugar Confectionery	48	58	65	70	59
6. Margarine, Compound Cooking Fats	45	56	63	69	53
7. Jams, Jellies, Preserves, Canned Products, etc.	45	57	65	71	58
8. Grain Milling + Animal Feeding Stuffs	48	59	68	74	60
9. Miscellaneous Food (inc. Fish)	51	66	77	84	62
10. Distilling, Malting, Brewing	46	55	61	65	55
11. Aerated + Mineral Waters	49	61	69	75	62
12. Tobacco	43	52	58	62	53
13. Woollen + Worsted (ex clothing)	46	58	67	73	56
14. Hosiery	49	62	71	77	59
15. Jute, Canvas, Rayon, Nylon, etc.	51	64	74	80	62
16. Linen and cotton	49	63	73	80	61
17. Boot + Shoe (Wholesale factories)	50	64	74	80	63
18. Clothing (Wholesale Factories Women + Girls)	49	65	76	83	62
19. Clothing (Wholesale Factories Shirtmaking)	49	66	77	84	63
20. Clothing (Wholesale Factories Miscellaneous)	53	72	83	92	68
21. Furniture, Fixtures, Brushes, Brooms	52	69	80	87	67
22. Wood + Cork (ex. furniture)	47	60	69	76	58
23. Fellmongery, Tanning, Dressing of Leather	47	60	69	75	60
24. Ship and Boat Building + Repairing	45	57	64	70	55
25. Manufacture of Railroad Equipment	45	57	65	72	56
26. Mech. Propelled Road and Land Vehicles	47	59	67	73	59
27. Metal Trades (ex Machinery + Vehicles)	50	62	71	77	62
28. Manufacture, etc. of non-electrical machinery	52	67	77	84	65
29. Manufacture of electrical machinery, etc.	48	60	69	75	58
30. Fertilisers	49	59	65	68	60
31. Soap, Detergents and Candles	46	56	63	68	56
32. Oils, Paints, Inks, Polishes	47	58	66	72	58
33. Chemicals + Drugs	47	58	66	72	58
34. Glass + Glassware, Pottery, etc.	43	53	60	65	50
35. Structural Clay Products, Asbestos Goods, etc. - Cement	48	59	66	72	55
36. Printing, Publishing + Allied Trades	47	58	64	68	57
37. Paper and Paper Products	46	57	64	69	57

Computed Compensation Coefficients

Table 2 presents, for each of the four typical male workers in each industry, the percentage of take-home pay which they would receive from UB and PRB if unemployed. It also presents the industrial compensation coefficient for each industry. As one moves to the right across the table, i.e., as the number of dependants increases, the compensation coefficient increases in line with it. For any of the stereotypes chosen there are wide variations in the percentage compensation received, depending on the industry in which the individual was last employed. Thus an unemployed man with two dependant children who had been employed in the Tobacco industry (12) would receive 58% (£32.90) of his take-home pay (£56.29) while unemployed, whilst a man with a similar number of children last employed in the Clothing (Wholesale Factories, Miscellaneous) industry (20) would receive 83% (£25.64) of his take-home pay (£30.74). The lower paid worker appears to fare better in getting a higher percentage compensation and in suffering a smaller absolute fall in his disposable income. The inter-industrial differences in percentage compensation are not uniform for each class of worker as the following table shows:

TABLE 3: RANGE OF COMPENSATION COEFFICIENTS %

Single Man	42% - 53%
Married Man+No Children	52% - 72%
Married+2 Children	58% - 83%
Married+4 Children	62% - 92%

A further complication is that two similar people earning equal amounts whilst employed in September 1975 in different industries may qualify for quite different compensation. This arises owing to the fact that PRB is calculated on the basis of gross income in the income tax year preceding the calendar year in which PRB is claimed. Since earnings do not tend to develop uniformly over time in different industries, the PRB reference figure will tend to differ for industries where earnings in September 1975 were quite similar. For instance, in industries (33) and (35) gross earnings in September 1975 were £64.52 and £64.23 respectively, yet the compensation coefficients were as follows:

TABLE 4

	Industry No.	
	(33)	(35)
Single Man	43%	47%
Married Man+No Children	53%	58%
Married+2 Children	60%	64%
Married+4 Children	65%	68%

In percentage terms these differences may appear small, but when translated into cash, they could mean a difference of up to £2 per week in unemployment compensation. The reason for the difference is easily detected in the differences in weekly earnings in tax year 73/74, which were £39.78 and £44.53 respectively.

Average Compensation

As Table 3 shows, the percentage compensation for any given type of individual can vary widely across industries—for a married man with four children it can vary between 92% in Clothing (Wholesale Factories, Miscellaneous) and 62% in Tobacco. It is interesting therefore to weight these percentages by the actual numbers unemployed in order to get a figure for average compensation. Since data are not available on the actual dependency distribution of the unemployed in each industry, an alternative approach has been adapted. Assume that all the unemployed are single, then, given the industrial distribution of the unemployed, it is possible to compute a hypothetical average percentage compensation figure. A similar procedure can be applied to the other unemployment categories of married man and no children, married+2 children, and married+4 children.

The results are as follows:

TABLE 5: AVERAGE PERCENTAGE COMPENSATION FROM U.B. AND P.R.B.

Single Man	47%
Married Man+No Children	60%
Married+2 Children	65%
Married+4 Children	74%

With the exception of the "Single Man" category, the average figures tend to come towards the lower ends of the ranges presented in Table 3. It would appear therefore that, given the industrial breakdown of the live register, compensation for the unemployed is on average less generous than the figures in Tables 2 and 3 might suggest.

It must be stressed that all of the tabulations presented here refer only to the 36 industries considered in the analysis. In September 1975 these accounted for 89% of registered manufacturing male unemployment. The findings therefore are likely to be fairly representative of the experience of males unemployed in manufacturing industry. Income data on other sectors of the economy are too sparse to permit any extension of the results within this framework.

Unemployment Compensation from Other Sources

The foregoing analysis is incomplete in that it does not treat sources of compensation other than U.B. and P.R.B. The most important neglected sources would appear to be Income Tax Rebates and Redundancy Payments. Both are difficult to treat in the framework adapted here owing to the paucity of available data. However, some qualitative points may be noted.

Income Tax Rebates

The tax rebate which an unemployed worker will receive depends on (a) the point in the income tax year at which he becomes unemployed, (b) his weekly tax free allowance. His weekly tax rebate is equivalent to his weekly allowance multiplied by his average tax rate. Since the average tax rate for the workers considered in this study ranged between 26% and 38.5% of taxable pay, it is possible to specify an interval for each class of worker within which his income tax rebate will lie.

TABLE 6: MAXIMUM AND MINIMUM WEEKLY INCOME TAX REBATES (September 1975)

Single Man	£2.67 - £3.95
Married Man+No Children	£6.67 - £9.88
Married+2 Children	£8.67 - £15.55

The variations in the size of rebate amongst classes of worker in the above table may be illusory as the following example shows. Consider the following. A man who was earning £50 a week becomes unemployed at the end of June 1975. If single he was entitled to a tax rebate of £2.68 a week *for the rest of the tax year*. If married, his weekly rebate while larger at £6.67 only lasts till *the beginning of October 1975*. The rebate shrinks to *three weeks at £10.67 a week* if the worker is married with four children. The reasons for the varying experiences of the different classes of worker are simple. The amount refunded in tax rebates during unemployment cannot exceed the total amount of income tax paid by the person in that tax year. The larger the number of dependants, the less tax is paid, and consequently the smaller the total refund. However, the rebate is paid over a smaller number of weeks as the number of dependants gets larger since the weekly tax free allowance is based on the number of dependants. However, it is only to be expected that anomalies may occur in what was not specifically designed as an income maintenance scheme.

The results of this example are sensitive to the date at which unemployment occurs but the basic conclusion is clear. As a form of

income maintenance, income tax rebates are of uneven incidence. The difficulty of including such payments in the compensation coefficients of the foregoing section is also evident given that no information is available about flows onto the live register.

Redundancy Payments

Redundancy Payments consist of a lump sum payment and a number of weekly payments. Both are calculated on the basis of formulae which take age and years of service into account. In a forthcoming paper, Walsh and Whelan² present data on the number of weeks payments made to each member of a sample of workers who became redundant in 1972. If only those males who were employed in manufacturing industry are considered, the average number of payments was eight. The sample included twenty-five male workers from the Tobacco sector who had an average entitlement of 31 weeks payments, and four male workers from the Chemicals and Fertilisers sector with an entitlement of 19 weeks each. The sample from manufacturing industry comprised 725 workers, and if the above 29 cases are excluded the average figure of eight weeks is quite representative. Variation does, however, occur between industries, but this is related to average length of service rather than average earnings. There is no guarantee therefore that the distribution of payments found in the 1972 sample is typical of the entitlement of those made redundant in earlier or later years. Even if this problem could be solved, an equally grave one remains. Not everybody who experiences unemployment qualifies for redundancy payments. It would appear from the Walsh and Whelan work that the preparation of entrants to the Live Register who do qualify could be as high as 1 in 4, or as low as 1 in 15. It would appear from the foregoing that for those who qualify redundancy payments are likely to have a significant effect on percentage compensation in the early weeks of unemployment, but an effect which may peter out quite rapidly. Their effect on unemployment compensation may therefore be short term.

The focus of this paper, however, is on factors which produce systematic inter-industry differences in male percentage unemployment compensation. Income tax rebates do not therefore qualify for inclusion since their incidence is uniform percentagewise across industries for the range of earnings used in this paper. Nor do weekly redundancy payments, since they effectively amount to 100% compensation for each week's qualification regardless of the industry in which the worker was employed.

2. Walsh B. and Whelan B., "A Study of Redundancies in Ireland 1972" (mimeo) E.S.R.I., Dublin 1975.

PART II

Unemployment and Income Maintenance

Part I of this paper has documented the existence of systematic inter-industry differences in male percentage unemployment compensation. In what follows an attempt is made to relate these differences to variations in the extent of unemployment across industries.

Recent empirical research in the United States³, United Kingdom⁴ and Ireland⁵ has provided tentative evidence that high (and rising) levels of unemployment compensation may have undesirable effects on the level of registered unemployment. Most existing work has been on time series data. Evidence exists in all three countries of a rise in the extent of registered unemployment following on the introduction of a pay related supplement to flat rate unemployment benefit. It has not been possible to explain this increase in registered unemployment exclusively on the basis of GNP movements, or in terms of a trend rate of growth of unemployment.

The empirical findings have led to certain hypotheses about the causal sequence involved. The existence of high levels of percentage compensation implies a high marginal tax rate on earnings when employment is resumed. If benefits whilst unemployed amount to 70% of take home pay, the rewards from returning to work before benefits are exhausted are correspondingly small and consequently uninviting. This effect would then manifest itself in an increased average duration of registered unemployment. This has been documented by Walsh⁶ in the Irish case. Feldstein⁷ concurs, but has also postulated an alternative sequence. He draws attention to the fact that in the United States many workers who become unemployed are subsequently rehired by their previous employer. It would appear that high levels of percentage compensation reduce the incentive to employers to smooth out seasonal fluctuations in their demand for labour, whilst at the same time reducing the reluctance of employees to accept temporary layoffs especially if a tacit understanding of future re-employment exists. In contrast to the Walsh explanation, the effect in this case would be, not on the average

3. Feldstein M.: "Unemployment Compensation: Adverse Incentives and Distributional Anomalies." Harvard Discussion Paper 317, Sept. 1973.

4. MacKay D. I. and Reid G. L.: "Redundancy, Unemployment and Manpower Policy." *Economic Journal*, Dec. 1972.

5. Walsh B. M.: "Unemployment Compensation and the Rate of Unemployment: The Irish Experience." Paper read to Conference on Unemployment Compensation and Unemployment Rates, Vancouver, Canada, Sept. 1976.

6. Walsh, *op. cit.*

7. Feldstein M.: "Temporary Layoffs in the Theory of Unemployment." Harvard Discussion Paper 419, June 1975.

duration of unemployment, but on the number of spells of unemployment in any given time period. U.S. unemployment data lend support to the hypothesis. These macroeconomic explanations have microeconomic implications for the behaviour of economic agents. Under either hypothesis the effects would likely be most marked in those industries where percentage unemployment compensation is high. The expected finding under the Walsh hypothesis would be that there would be a positive correlation between the level of percentage compensation in a sector and the average duration of unemployment in that sector. The Feldstein hypothesis would suggest that percentage compensation would correlate with the average number of periods of registered unemployment in a year. Both hypotheses imply an upward shift in the supply curve of labour to an industry, the extent of the shift being positively correlated with the level of percentage compensation. However, movements of the supply curve alone will not explain changes in the level of employment (and thereby unemployment). Account must also be taken of the industry's demand for labour. A model must, therefore, be specified which takes into account both supply and demand aspects of the labour market. Ignoring for the present the constraints imposed by the limited data available, one approach might perhaps be as follows.

Both hypotheses would suggest that the higher the level of percentage compensation in an industry, the larger will be the number of persons registered as U.B. claimants in that industry. However, the actual number of claimants in an industry is a poor measure of unemployment since it is sensitive to the scale of employment in that industry. There is a vast difference between 500 UB claimants in an industry currently employing 5,000 people, and the same number of claimants in an industry where employment amounts to 10,000. Unemployment must therefore enter the model as a rate. If the male labour force in industry i is defined as those males employed in industry i (N_i) plus those males previously employed in that industry and now registered as U.B. claimants (UB_i), then the male unemployment rate for that industry (U_i) may be defined as

$$U_i = \frac{UB_i}{N_i + UB_i} \quad i=1 \dots 36$$

In terms of the Feldstein-Walsh hypotheses the unemployment rate in industry i (U_i) would be positively correlated with the level of percentage compensation in that industry as measured by its industrial compensation coefficient (ICC_i). However, under this test it is not possible to distinguish whether the effect comes through longer average duration

of unemployment or through more frequent spells of unemployment. If sufficiently disaggregated data were available, it would be possible to test both these hypotheses by investigating the strength of the correlation between (a) average duration of male unemployment in industry i and ICC_i and (b) average number of periods of unemployment experienced by males in industry i and ICC_i . However, published data do not permit such direct testing.

An alternative approach which makes fewer demands on published unemployment statistics might also be explored. It appears unlikely that the ranking of the industrial compensation coefficients presented in Table 2 is constant over time since the PRB component will be affected by developments in earnings. The following single equation model might therefore be specified. As compensation coefficients change over time, an induced change in industrial unemployment rates would be expected if the hypotheses noted above are correct, and labour supply curves shift upwards when percentage compensation rises. In itself, however, this cannot be a complete explanation of changes in male unemployment, since such changes are influenced by the demand for labour in individual industries. Appropriate regressors must be included to account for this. Thus the percentage change in the male unemployment rate in industry i ($U_i\%$) over the year to September 1975 is hypothesised to be a function of the change in percentage compensation, the percentage change in that industry's output as measured by the Q.I.I. volume index ($\Delta Q_i\%$), and the percentage change in average hours worked by adult males in that industry ($\Delta H_i\%$), all changes being taken over the same time horizon. The model to be estimated is, therefore, of the form:

$$\Delta U_i\% = f(\Delta ICC_i, \Delta Q_i\%, \Delta H_i\%) \quad i=1 \dots 36$$

The Feldstein-Walsh hypotheses would suggest a positive coefficient on the compensation variable. Production theory would indicate a negative coefficient on the change in output. On *a priori* grounds it is difficult to be definite about the expected sign of the coefficient on the change in hours worked. However, if firms react to changes in the demand for their product by varying not only the size of their labour force, but also the intensity at which they use it, a negative coefficient would be expected on hours worked. Thus, firms would react to a downturn in demand by letting some workers go and by introducing shortened working time for those who remained. Conversely, when an increase in demand occurs.

This approach might avoid a problem which besets the simple correlation tests set out above. This problem arises from the fact that

the compensation coefficients computed in Part I vary inversely with average earnings. Thus a significant positive correlation under test (a) above, i.e. between the average duration of male unemployment in an industry and the industrial compensation coefficient in that industry might be interpreted in either of two ways. It could be taken as evidence of undesirable side effects of unemployment compensation or alternatively as evidence that it is those in low paid industries who have been most affected by rising unemployment. Nor does it take account of differing elasticities of demand for labour between industries. It is hoped to correct for this in the regression approach by taking account of changes in the demand for labour, through output and hours worked variables.

However, neither the regression nor the correlation analyses set out above can be carried out at present owing to data limitations. The Industrial Analysis of Live Register, as currently published, does not distinguish between claimants for unemployment benefit and applicants for unemployment assistance on an industrial basis. Nor are published data on duration of continuous registration, or on the employment experience of those on the Live Register available classified by industry. This appears to rule out any direct test of the hypotheses outlined above on cross section data at the present time. It is hoped, however, to obtain suitable data in order that more concrete results may be presented at some stage in the future.

APPENDIX A: GROSS PAY, NET PAY AND UNEMPLOYMENT COMPENSATION
SEPT. '75

Industry (Q.I.I.)	Sept. '75		Single Man		Married Man		Married + 2 children		Married + 4 children	
	Gross Pay	Net Pay	UB+PRB	Net Pay	UB+PRB	Net Pay	UB+PRB	Net Pay	UB+PRB	
	1. Bacon Factories	54.87	39.81	17.60	42.37	23.70	45.50	29.00	47.80	33.40
2. Creamery Butter + Other Edible Milk Products	57.25	41.27	17.20	43.83	23.30	47.23	28.60	49.57	33.00	
3. Bread Biscuit + Flour Confectionery	56.87	41.04	18.72	43.60	24.82	46.98	30.12	49.28	34.52	
4. Manufacture + Refining of Sugar	67.80	47.76	20.56	50.32	26.66	53.72	31.96	57.13	36.36	
5. Cocoa, Chocolate + Sugar Confectionery	60.94	43.54	20.86	46.10	26.96	49.50	32.26	52.30	36.66	
6. Margarine, Compound Cooking Fats	58.16	41.83	18.78	44.39	24.88	47.79	30.18	50.24	34.58	
7. Jams, Jellies, Preserves, Canned Products, etc.	55.25	40.04	18.21	42.60	24.31	45.78	29.61	48.09	34.01	
8. Grain Milling + Animal Feeding Stuffs	52.27	38.21	18.15	40.77	24.25	43.58	29.55	45.88	33.95	
9. Miscellaneous Food (inc. Fish)	42.20	32.02	16.38	33.83	22.48	36.13	27.78	38.43	32.18	
10. Distilling, Malting, Brewing	75.57	52.54	24.27	55.10	30.37	58.50	35.67	61.91	40.07	
11. Aerated + Mineral Waters	51.84	37.95	18.51	40.50	24.61	43.26	29.91	45.56	34.31	
12. Tobacco	71.98	50.33	21.50	52.89	27.60	56.29	32.90	59.70	37.30	
13. Woollen + Worsted (ex clothing)	50.83	37.33	17.03	39.88	23.13	42.51	28.43	44.81	32.83	
14. Hosiery	48.80	36.08	17.71	38.63	23.81	41.01	29.11	43.31	33.51	
15. Jute, Canvas, Rayon, Nylon, etc.	47.28	35.14	18.04	37.59	24.14	39.89	29.44	42.19	33.84	
16. Linen and cotton	45.97	34.34	16.99	36.62	23.09	38.92	28.39	41.22	32.79	
17. Boot + Shoe (Wholesale Factories)	45.11	33.81	16.77	35.98	22.87	38.28	28.17	40.58	32.57	
18. Clothing (Wholesale Fac- tories, Women + Girls)	41.64	31.67	15.58	33.41	21.68	35.71	26.98	38.01	31.38	
19. Clothing (Wholesale Fac- tories, Shirtmaking)	39.65	30.22	14.90	31.94	21.00	34.24	26.30	36.54	30.70	
20. Clothing (Wholesale Fac- tories, Miscellaneous)	34.92	26.72	14.24	28.44	20.34	30.74	25.64	32.75	30.04	
21. Furniture, Fixtures, Brushes, Brooms	38.64	29.47	15.39	31.19	21.49	33.49	26.79	35.79	31.19	
22. Wood + Cork (ex. furniture)	48.21	35.71	16.68	38.27	22.78	40.57	28.08	42.88	32.48	
23. Fellmongery, Tanning, Dressing of Leather	49.72	36.64	17.29	39.20	23.39	41.69	28.69	43.99	33.09	
24. Ship and Boat Building + Repairing	57.19	41.24	18.66	43.79	24.76	47.20	30.06	49.52	34.46	
25. Manufacture of Railroad Equipment	52.66	38.45	17.23	41.01	23.33	43.87	28.63	46.17	33.03	
26. Mech. Propelled Road and Land Vehicles	53.74	39.12	18.53	41.67	24.63	44.67	28.93	46.97	34.33	
27. Metal Trades (ex. Machinery + Vehicles)	50.56	37.16	18.48	39.72	24.58	42.31	29.88	44.61	34.28	
28. Manufacture, etc. of non- electrical machinery	43.51	32.82	17.21	34.80	23.31	37.10	28.61	39.40	33.01	
29. Manufacture of electrical machinery, etc.	50.66	37.22	17.91	39.78	24.01	42.39	29.31	44.69	33.71	
30. Fertilisers	70.13	49.20	24.30	51.75	30.40	55.15	35.70	58.56	40.01	
31. Soap, Detergents and Candles	62.35	44.41	20.30	46.97	26.40	50.37	31.70	53.34	36.10	
32. Oils, Paints, Inks, Polishes, Chemicals + Drugs	53.84	39.18	18.26	41.73	24.36	44.74	29.66	47.04	34.06	
33. Glass + Glassware, Pottery, etc.	64.52	45.75	19.71	48.30	25.81	51.70	31.11	54.95	35.51	
34. Structural Clay Products, Asbestos Goods, etc. -Cement	57.05	41.15	19.72	43.71	25.82	47.11	31.12	49.42	35.52	
35. Printing, Publishing + Allied Trades	64.28	45.60	21.61	48.15	27.71	51.56	33.01	54.77	37.41	
36. Paper and Paper Products	59.59	42.71	19.52	45.27	25.62	48.67	30.92	51.30	35.32	

