DISCUSSION PAPER NO. 116

Equity Aspects of the Unemployment Insurance Program in Canada

by

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* A preliminary draft of this paper was presented at the annual meeting of the Canadian Economics Association, London, Ontario, May 28-30, 1978.

June 1978

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ABSTRACT

Is unemployment insurance truly an insurance program? Should the program be judged by principles of private insurance or would it be more desirable to redesign contributions and benefits so that unemployment insurance redistributes more income to lower-income classes?

It is argued in this paper that the failure of contribution rates to reflect actuarial cost ratios does not necessarily refute the insurance features of the program. Uniform rates of contributions and benefits, for example, are the rule in private group insurance. Moreover, uniform rates of contributions and benefits (up to a certain point, at least) do conform to the notion of third-party liability in that the level of unemployment is not entirely beyond the control of society.

The results of this paper show that, even if unemployment insurance is evaluated by strictly applying private insurance principles, there is nothing inequitable about the present structure of uniform rates of benefits and contributions.

In particular, there is no significant cross-subsidization between employees with different family characteristics. Cross-subsidies from employees with higher family incomes to employees with lower family incomes, on the other hand, are fairly significant and outweigh other types of cross-subsidization.

However, the paper points out a major deficiency of the unemployment insurance program; it offers all employees the same degree of income protection regardless of the extent of potential hardship resulting from unemployment. This problem calls not for a preferential treatment of certain employee groups, such as those with dependents, but simply for a more flexible ceiling on insurable earnings in order to reflect more realistically the amount of protection required under different circumstances. The paper also raises certain doubts about the desirability, on equity and hardship considerations, of raising the minimum number of qualifying weeks.

Résumé

L'assurance-chômage est-elle vraiment un régime d'assurance ? Devrait-on la juger selon les critères des régimes d'assurance privés ou serait-il plus souhaitable d'en remanier les contributions et prestations de façon qu'elle redistribue plus d'argent aux gens dont le revenu est faible ?

L'auteur du présent document soutient que, même si les taux des cotisations ne reflètent pas les ratios de coûts actuariels, cela ne veut pas nécessairement dire qu'il ne s'agit pas d'un régime d'assurance. Ainsi, des taux uniformes de contributions et de prestations sont de règle dans les régimes privés d'assurance collective. Et même plus, ils sont conformes, jusqu'à un certain point du moins, au concept de responsabilité civile, du fait que le niveau de chomâge n'échappe pas entièrement au contrôle de la société.

Ce document montre que, même si on évalue l'assurance-chômage en appliquant rigoureusement les principes de l'assurance privée, on ne trouve en rien inéquitable la structure actuelle des taux uniformes de prestations et de cotisations.

Il n'y a, par exemple, aucun subventionnement indirect important entre employés aux caractéristiques familiales différentes. D'autre part, le subventionnement indirect des employés dont le revenu familial est faible par ceux dont le revenu familial est élevé est assez considérable et excède toutes les autres formes de subventionnement indirect.

Toutefois, l'auteur signale une faiblesse importante du régime d'assurance-chômage. Il offre à tous les employés la même protection du revenu peu importe le degré de privation pouvant découler du chômage. Le correctif ne consiste pas en un traitement préférentiel de certains groupes d'employés, par exemple ceux qui ont des personnes à charge, mais simplement en un plafond plus flexible des gains assurables, afin de refléter d'une façon plus réaliste le degré de protection nécessaire dans diverses circonstances. En outre, l'auteur doute, dans une certaine mesure, qu'il soit souhaitable, pour des raisons d'équité et de privation économique, d'accroître le nombre minimal de semaines de référence.

ACKNOWLEDGEMENTS

The author wishes to express his appreciation to H. E. L. Waslander and R. A. Jenness (Economic Council of Canada), to B. McCoy (Policy Research and Long Range Planning -- Health and Welfare), to J. L. B. Larose, M. Y. Bédard and T. Ford (Policy Planning -- Employment and Immigration), to Professor R. W. Boadway (Queen's University), to Professor H. Grubel (Simon Fraser University), and to T. Caplan (Social Policy -- Finance) for their helpful comments. He would also like to express thanks to Mrs. G. Oja and her staff (Consumer, Income and Expenditure -- Statistics Canada) for their assistance in accessing and analysing the Statistics Canada micro-data file for 1975 incomes of individuals, and to J. Laperrière for his programming assistance. Many thanks to R. Lyle for his editorial assistance and to Mrs. M. Rowe for her patience in typing the various drafts. The author remains responsible for any errors, omissions or shortcomings of the paper.

1. Introduction

Unemployment insurance is a subject of considerable controversy. Some people view the program as a welfare scheme and would like it to become more redistributive towards the lower income classes. Others emphasize its insurance aspect. According to the latter group, singularity of purpose -- in this case, insuring against temporary loss of earnings as a result of loss of employment -- is seen as a condition for effectiveness of the program. Cluttering up the insurance scheme with income maintenance objectives can only mean that "(a) no objective is likely to be attained very effectively, and (b) over time changes are made, often inadvertently, which lose sight of the major objective of the program" (Bird, 1976, 188).

In this paper, a compromise between these two views is adopted. The basic characteristic of unemployment insurance is held here to be social insurance rather than poverty relief. As a result, the private insurance model can be applied to evaluate the equity aspects of the program. This does not necessarily imply, however, that employees should be charged according to their actuarial cost ratio. Uniform treatment of all employees, at least up to a point, can be justified according to group insurance principles and third party liability aspects. Furthermore, it is submitted that deviations from the private insurance model become less disputable if they favour the lower income groups.

The following section deals with the characteristics of social insurance programs and examines the extent to which private insurance equity principles are applicable to unemployment insurance. In sections 3 and 4, the private insurance model is used as an analytical model for estimating the direction and size of the cross-subsidies between different population groups under the present unemployment insurance program. In section 5, the results are analyzed with respect to a number of employee characteristics. The analysis focuses on the following four policy questions:

(a) Is the present system of uniform rates of contributions desirable or should premiums vary according to the average unemployment experience of each employee group, as defined by age, sex, occupation?

(b) Should the same ceiling on insurable earnings, and therefore on contributions and benefits, apply to all employees?

(c) Should unemployment insurance protect individual incomes or family incomes?

(d) Are the present qualifying conditions reasonable, or should they be increased with more emphasis being placed on social assistance as a means of providing income protection to unemployed persons who are in need but do not qualify for unemployment insurance benefits.

An answer to these policy questions is given in the concluding section. It should be pointed out that the analysis

relates only to the equity and hardship aspects of unemployment insurance and that conclusions may need to be altered considerably when the economic impact or abuses of the program are taken into consideration.

2. The Character of Unemployment Insurance

In broad terms, the objective of unemployment insurance is to provide temporary income replacement to unemployed workers while they look for new jobs, and to assist their return to stable and rewarding employment (Labour Canada, 1970).

The basic character of the unemployment insurance program is similar to that of any private insurance, such as fire insurance or automobile insurance. By paying unemployment insurance contributions, individuals become entitled to certain benefits upon becoming unemployed in much the same way that they collect a private insurance indemnity in the event of a fire or automobile accident.

Insurance is a pooling of risks. It requires that there exists an involuntary contingency that leads to a financial loss. Insurance claims are then paid upon the occurrence of the contingency as a matter of right. Unemployment more or less meets these criteria. The insured contingency is loss of earnings as a result of termination of employment.

Private individual insurance attempts to maximize individual equity: each insured person is charged a premium that reflects

the financial risk of the population with characteristics similar to that of the particular individual.[1] In the case of automobile insurance, for example, a young driver is charged higher premiums because statistics have shown that younger drivers have a higher frequency of accidents. Differentiation of premiums is necessitated by competition. Firms have to charge low-risk individuals lower premiums, otherwise they will lose low-risk customers to their competitors. However, differentiation of premiums becomes impractical after a certain point or even illegal (e.g., differentiation of premiums by race). The application of the individual equity principle, therefore, is a matter of degree and, even under private individual insurance, there can be significant cross-subsidization between different population groups.

In the case of private group insurance, usually provided through the employer, all employees are treated the same. The principle of individual equity is sacrificed in favour of providing uniform coverage for all employees at terms that are more attractive to the average employee than under individual arrangements.

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1 Private automobile insurance premiums, for example, are calculated as follows. The overall average premium is set equal to the expected level of payments over the course of the year. Individual premiums are then differentiated by certain characteristics (such as age, sex, type of car, accident record over the previous 3-5 years), so that each group, as defined by these characteristics, contributes enough to cover its expected costs.

Unemployment insurance, by treating uniformly the entire population, moves even further away from the private insurance model than group insurance does. One of the rationales in favour of uniform treatment is to make unemployment insurance accessible to low-wage earners who tend to be high risks and who would have to be charged prohibitive premiums under a private insurance scheme.

Uniform unemployment insurance premiums can also be justified, up to a certain point, from the standpoint of third party liability. The level of unemployment is not entirely beyond the control of society. Public policy may inflict losses on particular individuals, and it can be argued that these losses should be borne by society as a whole. This argument underlies, in part, the current practice of uniform treatment of all employees as well as the direct contribution of government funds to the plan.

In this paper, the private individual insurance model is used to evaluate the equity aspects of unemployment insurance. The analysis presented here helps in identifying the types of cross-subsidies that result from uniform rates of contributions and benefits by comparison to a system where contributions are differentiated by risk class -- as is done in private individual insurance. This particular analytical approach should not be interpreted as an endorsement of the applicability of private insurance principles to unemployment insurance. Variations from the private individual insurance model do not necessarily deny the insurance character of unemployment insurance and may be considered desirable if they favour the low income population.

3. Application of the Private Insurance Model

Unemployment insurance is financed through employee and employer contributions, as well as federal general government revenue.[2] With respect to employer's contributions, the most common assumption made in the literature is that they are ultimately reflected in lower wages and, therefore, are borne by the employee despite the fact that they are collected from the employer. Hence, in the evaluation of the findings, it is assumed that all contributions are borne by the employee. Federal government revenue in general has a more progressive incidence than unemployment insurance premiums mainly because it is collected from all income classes without an income ceiling. However, in the evaluation of the findings, it is assumed that the incidence of government revenue is the same as that of employee contributions. As a result, the distributional incidence of unemployment insurance is judged in this paper to be somehow less progressive than it probably is.

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2 Employees and employers contribute towards the cost of the unemployment insurance scheme. Employers pay seven-fifths of the premium of each of their employees. The rate of contributions is adjusted annually in line with the average rate of unemployment during the preceding eight years.

Contributions provide for part of the cost of unemployment insurance. They cover the cost of special benefits (i.e., sickness, maternity and retirement), administrative expenses and the cost of regular benefits up to 25 weeks and to a predetermined level of unemployment. Extended regular benefits payable to individuals with long labour force attachment and benefits to all individuals who are unemployed as a result of high national or regional unemployment (as well as the full cost of benefits to self-employed fishermen) are financed out of general government revenue.

If the private individual insurance model is applied to unemployment insurance, then each group of employees (defined by age, sex, occupation and other characteristics) should be contributing to the scheme according to their actuarial cost ratios. The cost ratio is defined here as the ratio of the average unemployment insurance benefits received by a group of employees to their average insurable earnings[3] during the course of a year. The cost ratio indicates the rate of premiums that should have been applied to the particular group of employees in order to meet their own costs. A higher than average cost ratio indicates that this group of employees does not pay its full cost. For example, if the cost ratio of employees aged 25 or under is twice as high as the average cost ratio (i.e., the relative cost ratio is 2), then this group is paying half of the rate of premiums that would have been required to cover their own costs. Alternatively, this indicates that the average employee within this group receives a subsidy equal to his average insurable earnings times the difference between his cost ratio and the average cost ratio.

The Unemployment Insurance Commission in its Comprehensive Review of the Unemployment Insurance Program in Canada, published in February 1977, used a similar

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3 Insurable earnings are equal to actual earnings up to a ceiling ($185 per week in 1975). The ceiling is updated annually according to an index of average wages defined in the Act. Premiums and benefits are calculated as a certain fraction of insurable earnings.

concept of cost ratio to identify the extent of cross-subsidization between various employee groups.[4] The present study extends the analysis of the Comprehensive Review by bringing family income into the picture and introducing an indicator of the degree of hardship of unemployment. A different source of data and method of estimating cost ratios is employed adding a new perspective to the problem.

Before estimating cost ratios, it should be pointed out that the results may vary to some extent from year-to-year depending on the overall rate of unemployment and other factors. However, relative cost ratios (i.e., cost ratios divided by the overall cost ratio) are more stable. This at least seems to be the case in comparisons of relative cost ratios as estimated in this paper, which is based on 1975 data, and in a previous draft which was based on 1973 data.

4. Empirical Estimation

The empirical results are based on a cross-sectional analysis of the Statistics Canada Survey of Consumer Finances

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4 Cost ratios were estimated on the basis of claim experience of employees drawn from a sample of 10 per cent of Unemployment Insurance Commission files for the years 1973 and 1974 and special questions added to Statistics Canada's regular Labour Force Survey of March, 1975.

micro-data file for 1975 incomes.[5] The Survey was conducted in April 1976. Information was collected from a sample of approximately 35,000 households about incomes received in 1975, weeks of work, weeks of unemployment, age, sex, education, etc.[6] The sample selected for this study includes individuals who worked for some time at least in 1975 and who had weekly earnings in excess of $50.[7]

Two types of cost ratios are estimated: (a) an "actual" cost ratio; and (b) an "expected cost ratio.

Actual cost ratios are estimated by dividing benefits in the current year over insurable earnings during the preceding 52 weeks. This is the way cost ratios were estimated in the Comprehensive Review. In this paper, since the data extend only over one year, cost ratios are estimated by

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5 All calculations on these data base were done by the author. Results refer to individual employees. Whenever reference is made to a family concept (e.g., family income, relation to head of the family, etc.) the census definition of family is used. A census family, sometimes also referred to as "immediate family", consists of either a husband and wife (with or without children who have never married, living together in the same dwelling. Unmarried children, regardless of their age, living with their parent(s) are considered a part of the family, i.e., a census family includes adult children as long as they are not married, separated or divorced. Adopted children, step-children and guardianship children under 21 are counted as own children. A person not in family is an individual who is living with unrelated individuals (as a lodger, employee or partner) or living with relatives but not in husband-wife or parent-unmarried child (including guardianship child) relationship (see Statistics Canada, 1975-b).

6 For a detailed description of concepts and methodology see Statistics Canada, 1975-a).

7 Employees with weekly earnings less than 20 per cent , the maximum insurable earnings, are not covered by unemployment insurance. The $50 limit on weekly wages is introduced to exclude those employees who most likely are not covered by unemployment insurance. Weekly wages are not directly reported in the Survey but are calculated by dividing annual earnings by weeks of work.

dividing benefits over insurable earnings within the same year. This way of calculating actual cost ratios is not accurate with respect to single individuals, but is fairly accurate when averaged within demographic groups. The results of this paper are almost identical to that of the Comprehensive Review with respect to age and region.

Expected cost ratios are estimated by regressing individual actual cost ratios against age, sex, occupation, and other characteristics[8]:

(1) Cost Ratio = F(Occupation, Age, Education, Relationship to Head of Census Family, Sex, Region, Area, Weekly Wage Rate, Family Income Less Own Wages)

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8 If all the interaction effects among the explanatory variables are taken into account in the regression model, the estimated coefficients reproduce exactly the means of a complete cross-tabulation of the cost ratios (Kmenta, 1971, 418-419). The regression approach allows, though, a more selective inclusion of interaction terms. The reason, therefore, for adopting the regression technique over cross-tabulations in estimating expected cost ratios is mainly technical convenience. A complete cross-classification of actual cost ratios by all the characteristics that are identified here to have an effect on the expected cost ratio would have required 51,840 cells. No attempt was made to include interaction terms in the regression model, but it was simply assumed that all independent variables are additive. The only exception was made with respect to "relationship to head of census family" and "sex".

The cross-tabulation of actual and expected cost ratios by various characteristics gave similar results, with the notable exception of cross-tabulations by weeks of work and family income class. The cause for this deviation is that weeks of work and family income are not included among the independent variables of the expected cost ratio regression model, for reasons that are discussed below.

Before analysing the regression results, certain comments are appropriate with respect to the estimation procedure of expected cost ratios. The cost ratio regression was first estimated from the total sample by applying ordinary least squares (Table 1). The model suggested by Tobin (1958), may be more suitable because the dependent variable is limited to positive values and most observed values of the dependent variable are zero. Unfortunately, Tobin's model or similar limited dependent variable models are not feasible in the case of very large numbers of observations. A step-linear model, such as the one employed here, is fairly flexible however, and, as long as not too many estimated values fall outside the permissible range, it should not cause much concern. (Kapsalis, 1975, 71-81; Morgan et al., 1974, 375).

The cost ratio regression gave a very low R-squared statistic, which means that the model requires further analysis. Hence, the cost ratio was redefined as the product of the probability of becoming a UI beneficiary times the cost ratio if the employee receives benefits. Two additional regression models were estimated, therefore: (a) using as a dependent

variable the probability of receiving UI benefits;[9] and (b) using as a dependent variable the cost ratio, estimated from the sample of employees who received UI benefits.

Regression model (a) gave very satisfactory results as indicated by the F-statistic and the partial F-statistics for the various groups of independent variables (Table 2). The low R-squared statistic (.10) is, in fact, quite satisfactory given the fact that the regression is estimated from micro-data (31,788 observations) and that the dependent variable is a binary one (Morgan, 1974, 379).

Regression model (b) did not give satisfactory results (Table 3). This indicates that the variance of expected cost ratios in the entire population (as estimated in Table 1) mainly reflects differences in the probability of becoming a UI beneficiary, rather than differences in the duration of benefits.

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9 The dependent variable in the probability regression model is a dummy that takes the value (1) if the employee received unemployment insurance benefits and (0) otherwise.

Table 1

Cost Ratio: Regression Results

	Occupation	Age	Education	Characterist	Region	Area	Wage Rate	Family Incom Less Own Wag
Dependent Variable: Cost Ratio Constant = .2023	Manag: * Scien:-.0163 Clerc:-.0140 Farmg: .0479 Minin: .0436 Proce: .0469 Cnstr: .0986 Trans: .0237	0-19: * 20-24: .1130 25-34: .1165 35-44: .0672 45-54: .0566 55+ .0767	Eleme: * Secon:-.0532 Posts:-.0800	Male, Head : * Femal, Head :-.0124 Wife : .1890 Other: .1156	Atlan: * Quebe:-.0504 Ontar:-.0782 Prair:-.1637 B.Col:-.0532	Metro: * Non-M: .0410	0-100: * 100-200:-.0983 200 Plus :-.1214	0-6000: * 6000-12000:-.0829 12000 Plus:-.1451
Partial F Statistic								
	6.9**	10.0**	13.9**	51.9**	33.0**	16.2**	34.5**	46.3**
Increamental R-Squared (Adjusted)								
	-	-	-	-	-	-	-	-

R-Squared (Adjusted)	.02
F-Regression	27.64
Standard Error	.82
Number of Observations	31,788
Average Value of Dependent Variable	.093

Notes
* Reference categories reflected in the constant term.
** Significant at the .01 level.
- Increamental R-squared very low.

Table 2

Probability of Receiving Unemployment Insurance Benefits: Regression Results

	Occupation	Age	Education	Characterist	Region	Area	Wage Rate	Family Incom Less Own Wag
Dependent Variable: U.I. Benefs Probability Constant = .2113	Manag: * Scien:-.0026 Clerc: .0205 Farmg: .0683 Minin: .0993 Proce: .1030 Cnstr: .2009 Trans: .0736	0-19: * 20-24: .1110 25-34: .0669 35-44: .0134 45-54: .0062 55+ .0081	Eleme: * Secon:-.0658 Posts:-.0981	Male, Head : * Femal, Head :-.0147 Wife : .1166 Other: .0370	Atlan: * Quebe:-.0512 Ontar:-.0827 Prair:-.1543 B.Col:-.0164	Metro: * Non-M: .0419	0-100: * 100-200:-.0012 200 Plus :-.0466	0-6000: * 6000-12000:-.0554 12000 Plus:-.0890
Partial F Statistic								
	92.3**	69.2**	103.2**	110.2**	169.2**	84.6**	42.3**	92.3*
Increamental R-Squared (Adjusted)								
	.018	.010	.006	.009	.019	.002	.002	.005

R-Squared (Adjusted)	.10
F-Regression	131.52
Standard Error	.36
Number of Observations	31,788

Average Value of Dependent Variable .155

Notes

* Reference categories reflected in the constant term.

** Significant at the .01 level.

Table 3

Cost Ratio: Regression Results Estimated from Sample of Employees Who Received U.I. Benefits

	Occupation	Age	Education	Characterist	Region	Area	Wage Rate	Family Incom Less Own Wag
Dependent Variable: Cost Ratio Constant = .6285	Manag: * Scien: .0334 Clerc:-.0288 Farmg: .3139 Minin: .1091 Proce: .0298 Cnstr: .0900 Trans: .0693	0-19: * 20-24: .1859 25-34: .3325 35-44: .2457 45-54: .2247 55+ .4250	Eleme: * Secon:-.0189 Posts:-.0342	Male, Head : * Femal, Head :-.0382 Wife : .5883 Other: .4649	Atlan: * Quebe: .0055 Ontar:-.0085 Prair:-.2985 B.Col:-.0909	Metro: * Non-M: .1165	0-100: * 100-200:-.4404 200 Plus :-.5102	0-6000: * 6000-12000:-.3286 12000 Plus:-.4601
Partial F Statistic								
	1.63	2.75	.29	18.7**	3.0	4.1	27.2**	16.5**
Increamental R-Squared (Adjusted)								
	-	-	-	-	-	-	-	-

R-Squared (Adjusted)	.03
F-Regression	8.00
Standard Error	1.85
Number of Observations	5,679
Average Value of Dependent Variable	.600

Notes
* Reference categories reflected in constant term.
** Significant at the .01 level.
- Increamental R-squared very low.

5. Analysis of the Results

The strongest explanatory properties are found in the regression model using as a dependent variable the probability of receiving UI benefits. The expected probability varies considerably among different employee characteristics. One way of ordering the statistical significance of the various independent variables is by the size of the incremental R-squared (i.e., the increase in R-squared resulting from the inclusion of a variable when all other variables have already been included). Starting with the variable that has the highest incremental R-squared, the independent variables are ordered as follows: region, occupation, age, family characteristic, education, family income less own wages, area and wage rate.

The relative actual and expected cost ratios, and the relative probabilities of receiving unemployment insurance benefits are analysed in terms of a number of characteristics[10]. Relative family incomes are brought into the picture, as well as an indicator of the degree of hardship. The latter is estimated by dividing earnings lost because of unemployment by total family income.[11] It is an indicator of the extent of relative financial hardship to the family of the unemployed in the absence of unemployment insurance.

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10 The relative cost ratio is estimated by dividing individual cost ratios by the average cost ratio. Similarly for the relative probability concept and the relative family income.

11 Hardship Indicator = [Weeks of Unemployment x Weekly Wage Rate]/[Total Family Income + (Weeks of Unemployment x Weekly Wage Rate) - Unemployment Insurance Benefits].

(a) Relative Cost Ratios According to Family Characteristics

The results are analysed, first, by family characteristic. As shown in Table 4, wives have the highest relative cost ratio and probability of becoming UI recipients. According to individual equity considerations, discussed in section 2, wives should be charged higher premium rates or they should receive lower benefits. If cost ratios are examined on a family basis, however, the extent of cross-subsidization among employees with different family characteristics is greatly reduced. In particular, since husbands have a much lower than average cost ratio it turns out that families with working wives, as a group, are not under-contributing towards the cost of unemployment insurance but rather over-contributing.

While the extent of cross-subsidization between employees with different family characteristics is rather limited, especially if viewed on a family basis, there are other important differences. As is shown in Table 4, the degree of hardship among unemployed secondary family earners is considerably lower. Also, there is an indication that work disincentive effects are more pronounced among secondary family earners. This is shown in the results of regression 2 (Table 2). Second family earners have a higher expected probability of receiving UI benefits, even after removal of much of the effect of other attributes such as occupation, age, or wage

Table 4

Tabulations by Family Characteristic

Family Characteristic of Employee	Actual Relative Cost Ratio	Expected Relative Cost Ratio	Expected Relative U.I.B. Probablt	Relative Unemp-loyment Rate	Hardship Among Unemp-loyed	Relative Average Family Income	Per cent of Emp-loyees
Single Person	.74	.75	.92	1.11	.33	.49	13.8
Couple - 1 Earner	1.48	1.31	1.10	.90	.31	.76	5.1
Couple - 2 Earners, Hus.	.62	.37	.82	.75	.21	1.02	8.3
Couple - 2 Earners, Wife	1.10	1.88	1.33	.95	.15	1.03	7.8
Couple - 2 Earn., Averag	.81	.96	1.02				
Couple with Child 1 Earner	.84	1.20	1.15	.79	.29	.84	13.4
Couple with Child 2+ Earners, Hus	.62	.45	.82	.67	.20	1.18	20.9
Couple with Child 2+ Earners, Wife	2.02	1.87	1.25	1.23	.15	1.19	13.6
Couple with Child 2+ Earners, Oth	.96	.75	.86	1.48	.11	1.42	11.9
Couple with Child 2+ Earn., Aver.	.96	.79	.92				
Single Parent	1.07	1.07	.94	1.47	.24	.75	5.3
All	1.00	1.00	1.00	1.00	.22	1.00	100.0

rate. In the case of wives, sex discrimination could be a cause of higher incidence of unemployment. However, this hypothesis is rejected since female heads of families have a lower than average probability of receiving UI benefits.

(b) Relative Cost Ratios According to Weeks of Work

The actual relative cost ratio is higher the fewer weeks of work within a given year (Table 5). This result is not surprising since individuals who work fewer weeks of work, other things being equal, will be unemployed for a longer period. Similarly, their insurable earnings will be lower than of those employees who worked more weeks. On account of both the longer duration of unemployment and shorter contributory period, employees with fewer weeks of work would have a higher cost ratio.

It is rather questionable, however, whether the above type of information conveys any interesting information with respect to relative "risk" and, therefore, relative premiums -- if the private insurance principles were strictly applied. From the insurance point of view, what matters is not cost ratios after the insured contingency has occurred but cost ratios expected or predicted on the basis of pre-existing information. In the case of data covering one year only (or even two) the only type of pre-existing information is age, education, occupation, and other characteristics related to the particular year. It is for this reason that weeks of work are not included among the independent variables in the expected cost ratio and probability regression models.On the basis of this

information it is found in this paper that the expected cost ratios do not differ significantly by weeks of work.

The above result does not necessarily disprove the suspicion that individuals with short weeks of work are higher risks. It may well be that, other things being equal, an individual with a bad unemployment record over a length of time has a relatively higher expected cost ratio.[12] If this type of information was available and had been introduced in the regression model it may have shown a higher expected cost ratio for those employees with fewer weeks of work in any given year.

What the results of Table 5 indicate is simply that individuals with less weeks of work in a particular year are not significantly different from the rest of the employees with respect to those demographic characteristics that were examined and found to affect expected cost ratios (or, to the extent that they are different, high "risk" and low "risk" individuals appear together in such a way that on the average expected cost ratios are fairly uniform with respect to weeks of work).

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12 This type of effect cannot be estimated from data covering one-year period, such as the ones used in this study, but it requires longitudinal data.

Table 5

Tabulations by Number of Weeks Worked

Weeks of Work	Actual Relative Cost Ratio*	Expected Relative Cost Ratio	Expected Relative U.I.B. Probablt	Relative Unemp-loyment Rate	Hardship Among Unemp-loyed	Relative Average Family Income	Per cent of Emp-loyees
1-7	8.59	1.37	1.06	3.04	.37	.88	3.3
8-11	3.76	1.01	.97	3.20	.33	.96	3.6
12-15	3.64	1.23	1.12	3.84	.33	.89	2.9
16-19	3.12	1.33	1.16	3.77	.32	.80	2.5
20-24	3.25	1.47	1.25	4.43	.30	.84	3.2
25-29	2.42	1.33	1.20	3.50	.26	.85	3.9
30-39	1.64	1.37	1.27	2.94	.21	.85	6.3
40-49	.59	1.30	1.26	1.35	.10	.92	8.4
50 or more	.07	.84	.91	.00	.02	1.06	66.0
All	1.00	1.00	1.00	1.00	.22	1.00	100.0

(c) Relative Cost Ratios According to Family Income Class

Differences in cost ratios or in the probabilities of receiving UI benefits among employees with different family characteristics or weeks of work are rather limited compared with differences among employees in different income classes (Tables 6 and 7). The relative cost ratio and the relative probability of receiving UI benefits are higher the lower the family income of the employee. This relation holds among all employees, whether husband or wife, irrespective of the number of weeks of work. It is clear from these results that the present system of uniform rates of benefits and contributions favours the low income families.

It is rather interesting to point out that, although both the actual and the expected relative cost ratio estimates indicate that unemployment insurance has a progressive incidence, the degree of progressivity appears somehow smaller according to the expected relative cost ratio. The difference in results can be explained with the following example. Suppose that all employees have the same probability of becoming unemployed. Those exployees who actually experience unemployment in a particular year, though, would have a positive actual cost ratio and a lower income. This would tend to make low income earners appear to face a higher risk than the rest of the employees. This relation, however, simply reflects the effect of unemployment on income rather than the reverse. As was argued above, what matters from the insurance point of view, is cost ratios

Table 6

Estimated Relative Probability of Receiving Unemployment Insurance Benefits by Family Income and Family Characteristic

Family Income (Dollars)	Persons not in Family	Couples with one Earner	Couples with Two Earners			Couples with Childrn One Earner	Couples with Children -- Two or More Earners				Single Parents	All Earners
			Husband	Wife	Average		Husband	Wife	Other	Average		
Less than 6,000	1.07	1.54	1.19	1.73	1.40	1.54	1.46	2.05	1.48	1.59	1.20	1.23
6,000 - 12,000	.98	1.34	1.31	1.75	1.48	1.52	1.46	1.89	1.26	1.52	1.08	1.30
12,000 - 18,000	.65	.99	1.05	1.51	1.23	1.08	1.13	1.49	.99	1.19	.89	1.12
18,000 - 24,000	.43	.66	.64	1.21	.86	.82	.74	1.18	.84	.85	.67	.87
24,000 or more	.39	.49	.16	.78	.40	.53	.35	.88	.76	.51	.49	.60
All Earners	.92	1.10	.82	1.33	1.02	1.15	.82	1.25	.86	.92	.94	1.00

Table 7

Estimated Relative Probability of Receiving Unemployment Insurance Benefits by Family Income and Weeks of Work

Family Income (Dollars)	Weeks of Work in 1975									All Earners
	1-7	8-11	12-15	16-19	20-24	25-29	30-39	40-49	50-52	
Less than 6,000	1.34	1.27	1.19	1.14	1.42	1.26	1.27	1.25	1.15	1.23
6,000 - 12,000	1.34	1.41	1.52	1.48	1.55	1.44	1.49	1.43	1.20	1.30
12,000 - 18,000	1.05	.97	1.15	1.29	1.33	1.32	1.38	1.41	1.05	1.12
18,000 - 24,000	.80	.78	.87	1.03	.95	1.00	1.07	1.12	.83	.87
24,000 or more	.69	.55	.73	.68	.78	.78	.91	.89	.53	.60
All Earners	1.06	.97	1.12	1.16	1.25	1.20	1.27	1.26	.91	1.00

expected or predicted on the basis of pre-existing information. Since actual annual incomes are not known at the beginning of the year, they cannot be taken into account in estimating expected cost ratios. It is for this reason that family income is not included among the independent variables of the regression models. Again, if longitudinal data could be utilized, it is possible that the two cost ratios would show more similar results regarding progressivity of incidence.

Relative cost ratios and relative probabilities of receiving UI benefits were finally analysed by other personal characteristics such as age, sex, region, weekly wage rates, industry, etc.[13] In almost all cases higher cost ratios and probabilities were associated with lower family incomes.[14]

6. Conclusions

The focal issue of this paper is the often-cited criticism that unemployment insurance is not truly an insurance program -- as we understand it in the private sector -- because there is no direct relation between unemployment risk, contributions and benefits.

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13 A selective number of tables are shown in the Appendix.

14 There are some notable exceptions. In the case of by-industry classification (table not shown) the construction industry appears with average earnings of 30 per cent higher than the average earnings and cost ratio 2.39 times the average ratio. In a situation like this, some argument could be made in favour of experience rating by industry or company.

The main conclusion of the paper is that even a strict application of the private individual insurance model to the evaluation of the unemployment insurance program shows no indication of any major inequity in the present design of the program.

A frequent criticism of the unemployment insurance program is that it provides benefits on an individual basis rather than a family basis. It has been suggested, for example, that the objective of unemployment insurance is not to maintain individual incomes but rather to prevent incomes from falling below some specified level in line with economic need (Cloutier, 1978, 47). Under these circumstances, it is more appropriate to restrict benefits to unemployed people whose family income falls below a certain level.

If unemployment insurance is viewed as an insurance scheme, however, there is nothing wrong with high-income employees receiving benefits so long as they have contributed towards the cost of these benefits. The analysis of the empirical results of the paper shows that cost ratios vary by family characteristic and are particularly high for wives. However, since husbands have a much lower than average cost ratio, it turns out that families with working wives are not under-contributing towards the cost of unemployment insurance but rather are over-contributing.

Although there is no major inequity in the uniform treatment of employees of different family characteristics, the findings here indicate that the program suffers from one major deficiency: it offers all employees the same degree of income protection regardless of the extent of potential hardship resulting from unemployment. In particular, the same ceiling on insurable earnings apply to all employees independent of family characteristic, place of residence, presence of other earners, etc. This problem calls not for a preferential treatment of certain employee groups, such as those with dependents, but simply for a more flexible ceiling on insurable earnings in order to reflect more realistically the amount of protection required under different circumstances. For example, the ceiling on maximum insurable earnings for single earners with dependents could be increased considerably relative to that of second family earners with no dependents.

The findings of this paper also relate to the controversial issue of the minimum number of qualifying weeks. A recent opinion poll showed that 60 per cent of Canadians felt that the minimum of eight qualifying weeks is too short and that eligibility based on 20 to 27 weeks would be more appropriate (Unemployment Insurance Commission, 1977, I-4). A policy decision with respect to the minimum number of qualifying weeks should take into account the economic impact and abuses of the program. However, on equity and hardship grounds, the above popular belief cannot be supported -- not at least on the basis

of data extending over one or two years only. Until longitudinal data become available, it cannot be concluded that employees with less weeks of work have a higher expected relative cost ratio. The results of this paper, however, do indicate that employees with fewer weeks of work would, in the absence of unemployment insurance, be subjected to higher financial hardship. This finding should be taken into account when a political decision is made with respect to the minimum number of qualifying weeks.

APPENDIX

SELECTED ADDITIONAL TABULATIONS

Table 8

Tabulations by Age of Employee

Age of Employee	Actual Relative Cost Ratio	Expected Relative Cost Ratio	Expected Relative U.I.B. Probablt	Relative Unemp-loyment Rate	Hardship Among Unemp-loyed	Relative Average Family Income	Per cent of Emp-lovees
0 - 19	.62	.46	.67	1.72	.17	1.08	8.7
20 - 24	1.32	1.36	1.40	1.45	.21	.90	16.4
25 - 34	1.15	1.26	1.11	.97	.22	.93	28.0
35 - 44	.78	.83	.86	.74	.22	1.08	19.3
45 - 54	.77	.67	.83	.69	.23	1.13	15.9
55 or more	1.16	1.00	.88	.75	.27	.94	11.7
All	1.00	1.00	1.00	1.00	.22	1.00	100.0

Table 9

Tabulations by Region

Region	Actual Relative Cost Ratio	Expected Relative Cost Ratio	Expected Relative U.I.B. Probablt	Relative Unemp-loyment Rate	Hardship Among Unemp-loyed	Relative Average Family Income	Per cent of Emp-lovees
Atlantic	2.15	2.19	1.70	1.68	.26	.83	8.1
Quebec	1.24	1.30	1.17	1.18	.23	.95	26.6
Ontario	.86	.85	.86	.86	.20	1.07	38.4
Prairie	.31	.19	.50	.52	.18	.97	16.1
Brit. Colub.	1.07	1.11	1.30	1.26	.23	1.05	10.8
All	1.00	1.00	1.00	1.00	.22	1.00	100.0

Table 10

Tabulations by Sex of Employee

Sex	Actual Relative Cost Ratio	Expected Relative Cost Ratio	Expected Relative U.I.B. Probablt	Relative Unemp-loyment Rate	Hardship Among Unemp-loyed	Relative Average Family Income	Per cent of Emp-loyees
Male	.85	.77	.96	.97	.24	1.01	63.9
Female	1.26	1.41	1.07	1.06	.18	.98	36.1
All	1.00	1.00	1.00	1.00	.22	1.00	100.0

Table 11

Tabulations by Weekly Wage Rate

Weekly Wage Rate	Actual Relative Cost Ratio	Expected Relative Cost Ratio	Expected Relative U.I.B. Probablt	Relative Unemp-loyment Rate	Hardship Among Unemp-loyed	Relative Average Family Income	Per cent of Emp-loyees
0 - 100	1.95	2.10	1.15	1.35	.17	.87	16.9
100 - 200	1.08	1.08	1.21	1.17	.21	.87	39.7
200 - 300	.52	.60	.82	.70	.23	1.00	26.3
300 or more	.60	.33	.64	.73	.30	1.42	17.0
All	1.00	1.00	1.00	1.00	.22	1.00	100.0

Table 12

Expected Relative Cost Ratio by Family Income and Family Characteristic

Family Income (Dollars)	Persons not in Family	Couples with one Earner	Couples with Two Earners			Couples with Childrn One Earner	Couples with Children -- Two or More Earners				Single Parents	All Earners
			Husband	Wife	Average		Husband	Wife	Other	Average		
Less than 6,000	1.07	2.43	1.62	3.28	2.27	2.25	2.02	3.84	2.65	2.48	1.72	1.56
6,000 - 12,000	.71	1.63	1.20	2.88	1.86	1.68	1.56	3.28	1.84	1.96	1.32	1.47
12,000 - 18,000	.46	1.01	.69	2.17	1.27	1.04	.98	2.38	1.10	1.29	1.02	1.23
18,000 - 24,000	.28	.66	.04	1.48	.60	.75	.32	1.65	.71	.65	.44	.78
24,000 or more	.33	.53	.00	.92	.35	.43	.00	1.12	.48	.30	.18	.30
All Earners	.75	1.31	.37	1.88	.96	1.20	.45	1.87	.75	.79	1.07	1.00

Table 13

Expected Relative Cost Ratio by Family Income and Weeks of Work

Family Income (Dollars)	Weeks of Work in 1975									All Earners
	1-7	8-11	12-15	16-19	20-24	25-29	30-39	40-49	50-52	
Less than 6,000	1.80	1.43	1.18	1.13	1.72	1.40	1.39	1.59	1.81	1.56
6,000 - 12,000	2.02	1.91	1.98	1.94	1.96	1.72	1.67	1.53	1.27	1.47
12,000 - 18,000	1.33	1.07	1.38	1.70	1.75	1.55	1.57	1.56	1.10	1.23
18,000 - 24,000	.89	.65	.89	1.20	.92	1.02	1.04	1.07	.71	.78
24,000 or more	.65	.21	.51	.38	.59	.58	.75	.65	.20	.30
All Earners	1.37	1.01	1.23	1.33	1.47	1.33	1.37	1.30	.84	1.00

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