

0

0

0

THE CANADIAN GOVERNMENT GEOGRAPHIC PUBLIC

SERVICE WAGE POLICY AND THE

LETTER CARRIER CASE (1972-73)

by

Bernard Brody, B.A., M.A.

Submitted to the Faculty of Graduate Studies and Research
in partial fulfillment of the requirements of the degree of

DOCTOR OF PHILOSOPHY

IN ECONOMICS

MCGILL UNIVERSITY

MONTREAL

THE CANADIAN GOVERNMENT GEOGRAPHIC PUBLIC
SERVICE WAGE POLICY AND THE LETTER CARRIER CASE (1972-73)

Bernard Brody,
ECONOMICS DEPARTMENT

DOCTOR OF PHILOSOPHY
MCGILL UNIVERSITY

A B S T R A C T

In the mid-1960's the Canadian government began proposing to public service bargaining agents the transformation of their existing, nationally uniform wages into a series of geographically differentiated rates based on alignment to the comparable local going wage. Official criteria for a wage zone system are; significant geographic variation in pay data for similar outside employees, limited area of recruitment and limited mobility. The policy objectives are; greater equity and reduction in the undesirable geographic variation of labour supply conditions to the public service. With emphasis on the second objective, the 1972 proposal to the Postal Letter Carriers is analyzed using a nine equation, least squares multiple regression model. The dependent variables are labour supply measures (recruitment, retention and quality) with the letter carrier local labour market wage rank, labour market conditions (unemployment, etc.) and Y-specific factors as explanatory variables.

Only one recruitment quality variable and the quit rate emerge as affected by changes in wage rank, but their effects are small. On the basis of the regression findings, the nature of wage structure formation, economic thought on wages and labour supply, the review of the empirical literature and current trends in geographic wage policy, considerable doubt is cast on the usefulness of the new government policy.

LA POLITIQUE GEOGRAPHIQUE DES SALAIRES
DE LA FONCTION PUBLIQUE DU GOUVERNEMENT CANADIEN
ET LE CAS DES FACTEURS POSTAUX (1972-73)

PH.D. (Economique)

Bernard Brody

Université McGill

Vers le milieu des années '60 le gouvernement du Canada commençait à proposer aux syndicats de la fonction publique, la transformation de leurs salaires nationaux en des séries de taux géographiquement distincts, résultat d'un alignement avec les salaires payés localement pour des emplois similaires. Les critères officiels pour l'application d'un tel système de zones sont; une variation géographique significative dans les salaires des employés comparables à l'extérieur, une aire de recrutement restreinte et une aire de mobilité limitée. Les buts de cette politique sont une plus grande équité, mais surtout une réduction dans la variation géographique de l'offre de travail au gouvernement-employeur.

Mettant l'accent sur ce dernier, la proposition de 1972 faite au groupe des facteurs postaux est analysée en se servant d'un modèle de régression multiple à neuf équations. Les variables dépendantes sont des indices de l'offre de travail (le recrutement, la rétention et la qualité) tandis que les variables explicatives sont le rang salarial du facteur dans la distribution locale des salaires, les conditions du marché (chômage, etc.) et les facteurs dits "Y-specific".

Il en ressort qu'un seul des cinq aspects de la qualité du recrutement et le taux de séparation volontaire sont significativement déterminés par des changements dans le rang salarial, mais les effets ne sont que marginaux.

Se fondant sur les résultats des régressions, la nature de la formation des structures salariales locales, la pensée économique de l'effet des salaires sur l'offre, la revue de la littérature empirique et enfin sur les tendances courantes en matière de politique de structure géographique des salaires, la nouvelle politique salariale du gouvernement s'avèrerait peu efficace.

PREFACE

I

The Canadian federal government is by far the largest single employer in the country with 283,000 departmental and agency employees in 1976. Four-fifths of these are paid according to a single wage scale for identical work regardless of geographic location. The pay of the remaining 57,000 is based on a variety of wage zone systems. Most of these geographically differentiated wage plans date from the beginning of the century.

In the mid-1960's a new official wage policy began to emerge founded on the fractionization of the nationally uniform wages of an additional 150,000 public servants. Such intra-occupational wage differentials are to be opened through alignment to going rates for similar outside jobs in respective labour markets.

Many wage fractionizing proposals were put to various occupational groups beginning in the late 1960's and continuing up to the present. Without exception, employees have rejected such propositions.

The issue is a substantial one not only because of the large number of workers potentially affected and the amounts of money involved,¹ but also

¹ The federal government's annual wage bill is in the order of seven billion dollars.

because there may be possible spillover effects on private sector and other employees' wages, inter-regional shifts in federal government expenditures, repercussions on regional rates of economic development and on the state of labour supply to the federal public service.

On the basis of official declarations by those in government responsible for wage policy formation it appears that the reason for the change relates mainly to problems of labour supply.

The present study focuses on one such proposal to a particular occupational group: the postal letter carriers to whom it was put in 1972. An effort is made here to obtain insights into the probable effects of the application of the proposed wage structure on the supply of letter carriers. The underlying analytical approach is that associated with the traditional competitive labour market model.

II

Chapter I outlines the specific proposal to the letter carriers and presents the union's reaction. Similar offers to other groups are briefly discussed and then the actual incidence of geographically differentiated wages in the federal public service is described. This is followed by a concise review of the literature on geographic wage policies of multi-market employers. The main preoccupation of such organizations in this matter seems to be on labour supply. For the public employer an additional concern emerges: the effects of its geographic wage policy on local

economic development and on unemployment. There are two schools of thought on the effects of "high" national wages in low income areas: one claiming adverse results while the other sees benefits. Among the added costs of a transformation from a single, national wage to a series of locally aligned rates frequently mentioned by writers are: increased complexity of wage surveys, wage administration and collective bargaining; the resistance of unions to such change; possible increase in the wage bill; and the uncertainties about the effect of wages on labour supply. The final section investigates the nature of the formation of local labour market wage structures and provides a classification of some of the factors contributing to wage pressures.

Chapter II reproduces and analyzes an official statement on the criteria for the selection of those groups for whom geographic differentials are deemed appropriate. Particular emphasis is then placed on the relevance of each of the four criteria enunciated for the letter carrier occupational group. It is concluded that the letter carriers may be considered to qualify on at least three of these. In section IV the stated objectives of the policy are identified and the first, greater equity, analyzed. In the end it appears that this objective may only be a means to another goal: the alteration of the geographic pattern of labour supply to this employer. Indeed, the most recent government pronouncements on the minimization of their wage costs in a collective bargaining context lead to the conclusion that equity is probably no longer a real objective of government wage policy. The second stated objective, the improvement of the supply of letter

carriers to the Post Office, is then examined in section V. It is this discussion that serves as background for the development of the individual operational variables that later constitute the analytical model. Section VI traces the evolution of economic thought on the relationship between wages and labour supply.

Chapter III begins with a brief methodological note on the data as it applies to the multiple regression analysis. This culminates in a statement of the general form of the equations. The description of each of the dependent variables is undertaken with suitable reference to their use in previous studies. Similar treatment is given to the independent variables. The chapter ends with section V where each of the equations is specified and hypotheses made on the signs of the coefficients.

At the outset of chapter IV there are technical notes on the interpretation of regression findings and the functional form of the equations. It is in section II that the tables of regression results are reported and analyzed. There is an abundant review of related empirical literature for each aspect of labour supply. This serves as a valuable complement in evaluating the new wage policy. The main finding from the econometrics is that after holding a number of other relevant variables constant, the wage can be considered as a determining factor of the labour supply objectives in only two of the eight equations. Using the estimated structural parameters in these two cases, predictions are made of the geographic pattern of letter carrier labour supply with locally aligned wages. The limited magnitude of the ensuing adjustment in supply leads

to the conclusion that such a transformation of the wage structure is not worthwhile, at least on the basis of this objective.

Section I of chapter V reports the results of a series of interviews with well-known, multi-market employers on the geographic wage policy question. Opinions, the underlying reasoning and the general trend are identified. Section II summarizes the entire thesis and draws conclusions on the basis of the various approaches presented. Taken together, these different sources of insights - the regression findings, the review of the literature and the theoretical and other bases - suggest that, rather than relying on a single factor, the wage, the government's objective of altering the labour supply situation is more likely to be advanced through a multi-dimensional approach. The many forces acting on labour supply should be examined and each city should be investigated for its particular labour supply problems and specific solutions.

III

Acknowledgments are due to Professor Sidney Ingerman, the thesis director whose contribution was a sustained interest in the subject and guidance as the research and writing evolved. Professor Lee Soderstrom gave time and effort to orient the research, particularly in the econometrics sections. Because of their personal interest in the issues, the interviewees - former Postmaster General Eric Kierans (also on the thesis jury), the many Post Office and Treasury Board officials, the private sector executives, the union officers and the letter carriers-all generously provided their attention and knowledge.

Funding early in the project came from the Canada Department of Labour - University Research Committee.

The greatest debt of gratitude is to my wife Léa whose prodding, inspiration, tenacity and personal sacrifice permitted the realization of this dissertation. Stéphanie and Marie-Hélène also paid through the usurpation of their due time of paternal presence.

For her efficient typing services Johanne Simard, the Université de Montréal, is thanked. Paul Forest of the Economics department, Université de Montréal, helped with the computer programs and data processing. Any errors or omissions are the responsibility of the author.

Bernard Brody

Montreal

June, 1978

TABLE OF CONTENTS

PREFACE ----- ii

LISTS OF TABLES ----- viii

LIST OF FIGURES ----- xii

Chapter

ONE THE NEW POLICY ----- 1

TWO THE NONNATIONAL WAGE POLICY: APPLICABILITY CRITERIA,
RATIONALE AND OBJECTIVES ----- 63

THREE THE METHOD AND THE MODEL ----- 135

FOUR ANALYSIS OF REGRESSION RESULTS ----- 240

FIVE CONCLUSIONS ----- 350

Appendices

I COMPUTER REGRESSION RESULTS ----- 368

II QUESTIONNAIRE ----- 380

III ALTERNATIVE POSTAL REGIONALIZATION PLANS ----- 383

IV REAL WAGE AND RELATIVE WAGE EFFECTS OF THE 1972 TREASURY
BOARD PROPOSAL ----- 388

V NUMBER OF LETTER CARRIERS PER SAMPLE CITY AND CITY CODE ----- 393

VI ALTERNATIVE ECONOMETRIC APPROACHES ----- 395

Bibliography ----- 426

LIST OF TABLES

Table		Page
I-1	Proposed Regional Wage Increases, 1972-75	5
I-2	The Incidence of Nonnational Wages, 1972	13
I-2A	The Incidence of Nonnational Wages, 1972: The Operational Category	14
II-1	Geographic Wage Dispersions, Letter Carrier Proxies	73
II-2	Geographic Wage Dispersions, Industrial Composite, Manufacturing, Truck Driver	74
II-3	Geographic Wage Dispersions, Outside Nurses and Firefighters.	78
II-4	Postal Separation Rates, 17 Cities, 1964-65	111
III-1	Geographic Distribution of the Letter Carrier Population and the Sample	142
III-2	Applications for a Letter Carrier Job Per Labour Force Member ($\frac{APP}{LFm}$)	151
III-3	Letter Carrier Eligible Lists (NEL)	154
III-4	Names Left when New Competition Called (NLS)	156
III-5	Proportion of Applicants Qualifying on Tests (Success Rate, SR)	158
III-6	Prime Age New Hires $\frac{NHPA}{NH}$	161
III-7	Letter Carrier Quit Rates (q)	165
III-8	The Incidence of Casual Sick Leave Taking (SL ¹)	180
III-9	The Postal Vote on the Collective Agreement (1973) (V)	183
III-10	Letter Carrier Wage Steps and Weights	196
III-11	Letter Carrier Wage Rank Ranges, 29 cities	207

LIST OF TABLES (continued)

III-12	Letter Carrier Wage Ranges: Three Series	208
III-13	The Unemployment Rate, Employment Growth and Total Employment (the Labour Force), 29 cities	218
IV-1	Regression Results: Applications ($\frac{APP}{LFm}$)	252
IV-2	The Extremes of the $\frac{APP}{LFm}$ Distribution	255
IV-3	Regression Results: Number of Eligible Lists (NEL)	257
IV-4	Regression Results: Names Too Short (NTS)	260
IV-5	The Extremes of the NTS Distribution	262
IV-6	Regression Results: Success Rate (S.R.)	264
IV-7	Expected Effects of Local Wage Alignment on Success Rates	266
IV-8	Summary of Effects of Locally Aligned Wages on <u>Weighted</u> Success Rates	269
IV-9	Regression Results: Prime Age New Hires ($\frac{NHIPA}{NH}$)	282
IV-10	Regression Results: The Quit Rate (q)	285
IV-11	Expected Effects of Local Wage Alignment on Letter Carrier Quit Rates	288
IV-12	Summary of Effects of Locally Aligned Wages on <u>Weighted</u> Quit Rates	291
IV-13	Quits by Length of Service	296
IV-14	Newly Hired Letter Carrier Quits	298
IV-15	"Comparable" Quit Rates	317-318
IV-16	Regression Results: Casual Sick Leave	320
IV-17	Regression Results: Vote	327

LIST OF TABLES (continued)

IV-18	Intercity "Cut Off" Levels	341
IV-19	Regression Results: The Cutoff Level	344
<u>APPENDIX VI</u> Alternative Econometric Methodologies		
VI-1	$\frac{APP}{LFm}$ equation	414
VI-2	NEL equations	415
VI-3	$\frac{T_2}{APP}$ equations	416
VI-4	$\frac{NHPA}{NH}$ equations	417
VI-5	q equation	418
VI-6	SL^1 equation	419
VI-7	$\frac{LC20-24}{LC}$ equation	420
VI-8	$\frac{LC25-49}{LC}$ equation	421
VI-9	$\frac{LC50p}{LC}$ equation	422
VI-10	$\frac{LCm}{LC}$ equation	423
VI-11	NTS equation	424
VI-12	V equation	425

LIST OF FIGURES

Figure		Page
II-1	The national letter carrier wage and local going wages.	96
II-2	The national wage and local wage distribution for a comparable occupation.	97
II-3	The "total" outside universe and the "good employer" universe.	99
III-1	Measures of labour quality.	170
III-2	Hill's relationship between quits and wage levels.	307

CHAPTER ONE

THE NEW POLICY

I

INTRODUCTION

In 1973 there were 11,121 postal letter carriers in Canada.¹ Regardless of location they were paid according to the following, four-step wage scale

Hiring rate	-	3.31
Step 2	-	3.38
Step 3	-	3.46
Step 4	-	3.54

Progression along these steps is annual and automatic.

In 1972, during negotiations for the renewal of the collective agreement their employer, the Government of Canada, (represented by the Treasury Board)² proposed the fractionizing of the single national wage.

¹ Personal communication, President of the Treasury Board, January 18, 1974.

² The Treasury Board is the legal employer of most classified federal public servants. The terms "government", "Treasury Board" and "employer" are used interchangeably. Occasionally the Post Office will be termed "employer" though this is not strictly speaking true.

It would be replaced by a series of differentiated, regional rates based on the respective outside prevailing wage levels for comparable workers.

The present dissertation describes the proposal, identifies the objectives and evaluates the likelihood (tests the hypothesis) that these objectives can actually be attained with the new geographic wage policy.

Section II of the present chapter begins with a description of the Treasury Board proposal to the letter carriers and then the union reaction. Attempts by the government to apply wage regionalization to other occupational groups with national rates (nurses, firefighters, correctional officers) are briefly outlined. The importance of the regional rate issue as viewed by the Public Service Arbitration Tribunal is demonstrated with particular reference to the federal firefighter case.

In Section III the actual extent of nonnational wages¹ among Canadian federal public servants is discussed.

Section IV is devoted to a brief review of the literature on the issue of the geographic wage policy of a multi-market employer. The discussion culminates in the specific area of public service wages and, more particularly, in postal wages.

Section V, which rounds out chapter I, surveys the factors influencing the formation of wage structures in a local labour market.

¹ "Nonnational wages" refers to any form of geographically differentiated rates: locality rates, zone rates, area rates, provincial rates or regional rates.

Appendix I-1 describes the role played by the Public Service Arbitration Tribunal in the determination of the geographic structure of wages in the federal public service.

II

THE PROPOSAL AND THE POLICY

The Treasury Board proposal for an agreement covering the period April 1, 1972 to April 1, 1975 was transmitted to the Council of Postal Unions¹ on May 3, 1972. The single, national wage would be broken up into a series of ten rates corresponding to geographic regions or pay zones.

Since absolute reductions in letter carrier wages in low wage areas could hardly be defended, the Treasury Board would open interregional wage gaps by granting differentiated increases as in table I-1.²

The Treasury Board and Post Office jointly prepared three alternative "regions" and costed these four plans against a single national wage increase of 6.13% per year.³

¹ The Council of Postal Unions was created after the Public Service Staff Relations Board refused to certify the Letter Carriers Union of Canada as bargaining agent for the letter carriers. The Board declared that only a council of both outside (letter carriers) and inside postal workers (clerks, mail handlers, etc., members of another union, the Canadian Union of Postal Workers, CUPW) would be deemed appropriate for collective bargaining purposes. Such a council was certified in January 1968 and was party to three collective agreements before interunion frictions, due mostly to genuine divergent interests, caused the dissolution of the Council in 1975. Since that date each union has its own bargaining certificate and negotiates its own agreement.

² The increases shown are for step 4 of P.O. 3. Letter carriers are classified P.O. 3 and over 80% are on the final step of their scale.

³ These plans are described in appendix III.

TABLE I-1
PROPOSED REGIONAL WAGE
INCREASES, 1972-1975

ZONE	TOTAL PERCENTAGE INCREASE FOR THREE YEARS	AVERAGE ANNUAL PERCENTAGE INCREASE
Atlantic	9.1%	3.0%
Quebec	10.3%	3.4%
Montreal	11.1%	3.7%
Ontario	17.0%	5.7%
Toronto	17.0%	5.7%
Manitoba	10.1%	3.4%
Saskatchewan	9.4%	3.1%
Alberta	11.3%	3.7%
British Columbia	16.6%	5.5%
Vancouver	16.6%	5.5%

Source: Council of Postal Unions Statement, Ottawa, May 12, 1972 (mimeo.).

In its reply to the Treasury Board the Council of Postal Unions promptly rejected the new geographic wage structure as discriminatory.

"Your wage proposal, aside from being impossibly low, would discriminate against postal workers, dependent on the geographic areas in which they do their postal work. Postal workers will not agree to allowing themselves to be victimized because they happen to process or deliver mail in this part of the country rather than that part of the country - or in this community rather than in some other community." ¹

In a summary of the Treasury Board offer to its membership the Council of Postal Unions negotiating committee described the wage zone plan in the following terms.

"Their offer would divide our wage rates into ten regions across Canada (perhaps later into 20, 30 or 50 regions). This change would divide us and weaken us all regardless of the region in which we work." ²

Following the rejection, the Treasury Board dropped the issue as a bargaining matter, but maintained its position that the national wage

¹ Council of Postal Unions, Statement of the Council of Postal Unions, Negotiating Committee to the Treasury Board Committee, May 11, 1972, (mimeo.), pp. 1, 2.

² The author's translation from the Council of Postal Unions', Bref Sommaire de l'Offre du Conseil du Trésor au Conseil des Unions des Postes en Date du 3 mai 1972 et la Suggestion en Date du 4 mai 1972, Ottawa, (mimeo.). (underlining in original). In appendix IV, below, an analysis is made of the effect of the proposed letter carrier increases on their real wages and on their wages relative to respective regional comparable rates.

structure was inappropriate for Council of Postal Unions members.

The Board's Chief of Staff Relations, Larry Ried, stated,

"We intend to bring regional rates up again at the next negotiations. It will be a major item." ¹

Indeed the proposal was consistent with a new geographic wage policy which began to emerge in the early 1960's.

"Mr. David Orlikow (Winnipeg North):
I should like to ask the President of the Treasury Board whether it is now government policy to shift wage payments from national to regional rates, not just in the Post Office but in the operational categories of employees and possibly later in the administrative [support] (sic.) categories?

Hon. C.W. Drury (President of the Treasury Board):
This is the direction in which the federal government in any event has been moving for some years. The proposal made to the postal workers is one small further step along this particular road. ²

The reorientation had its initial - and only - success in 1966 with the transformation of the single national wage scale for the Nursing group. ³

¹ Interview, Ottawa, May 26, 1972.

² House of Commons Debates, Hansard, Ottawa, May 30, 1972, p. 2672. A similar view regarding the existence of a new geographic wage policy is expressed by T.J. Wilkins, Director, Pay Research Bureau. See, "Wage and Benefit Determination in the Public Service of Canada", in, Collective Bargaining in the Public Service, the Institute of Public Administration of Canada, Toronto, 1973, p. 67.

³ There were some 2,000 nurses in the Federal Public Service in 1973 in six classes. The regionalization was made to apply only to class I, constituting approximately two-thirds of all nurses.

The uniform wage was changed into a series of eight regionally differentiated scales.¹ It is important to note that this conversion was imposed just one year prior to the introduction of collective bargaining into the federal public service.² At that time the government-employer still possessed unilateral power to determine wages and working conditions of Canada's public servants. Ever since, at each renegotiation, the nurses ask to be returned to the national wage. The Treasury Board consistently opposes such a request and the Arbitration Tribunal, determining unsettled issues, systematically refuses to alter the nurses' geographic wage structure.³

Since 1968 the Treasury Board has made repeated fractionizing proposals to federal Firefighters and Correctional Officers (prison guards), but these

¹ The number of wage regions was reduced to six in 1970. It was again cut to five regions in 1971. In the 1974 agreement the number of regions was raised to eight and these geographically differentiated wages now extended from one class (NU I) in previous arrangements to the first six classes of nurses.

² The Public Service Staff Relations Act, which granted staff unions considerable participation in bilateral wage determination, was adopted in March, 1967.

³ The Public Service Staff Relations Act provides that a bargaining agent choose between compulsory arbitration and conciliation/strike as ultimate dispute settlement mechanism. Of the eighty-five bargaining units in 1972 only twelve (including the Council of Postal Unions) chose the latter route. The Nursing group selected compulsory arbitration.

have been rejected by the unions.¹

The importance of the nonnational wage issue in recent Canadian federal public service wage bargaining will now be briefly illustrated through summary reference to two consecutive arbitral decisions involving federal firefighters.²

In 1974 the Arbitration Tribunal wrote:

"National vs. Regional Rates

The Tribunal has spent considerable time reviewing the position of the parties with respect to this issue. It is apparent that this issue is a problem for the Treasury Board, the Alliance and the employees affected by this Award. The Tribunal is of the opinion that the parties concerned should make special efforts to solve this issue which is common to many bargaining units under their jurisdiction. The Tribunal recommends, therefore, that during the period of the one-year agreement steps be taken by the parties to impact on this problem."³

And again one year later,

¹ These occupational groups are subject to compulsory arbitration.

² It would have been more pertinent to use the Treasury Board proposal to the postal employees and to examine their conciliation board report instead of an arbitral decision for the firefighters. However, the Treasury Board dropped the nonnational wage issue before the conciliation proceedings began and therefore the problem was not submitted for deliberation and appraisal by a third party.

³ The Public Service Arbitration Tribunal, Arbitral Award: The Firefighters Case, Ottawa, (mimeo.), June 19, 1974, p. 6.

"One of the main issues of dispute is the concept of Regional versus National rates. The Employer is opting for regional rates over the present national rates." ¹

The Tribunal's expressed recognition of the geographic wage structure as an important problem has unfortunately not been translated into any discussion of the relative merits of the opposing positions. It is the Tribunal's unfortunate practice to abstain from any discussion of the parties' positions on the issues placed before it. But in addition to this deficiency the Arbitration Tribunal's appraisal of the issues cannot even be traced through its decisions since it has always upheld the status quo in these cases. ²

The present section has enunciated the Treasury Board proposal to the letter carriers, described the union reaction, discussed the pervasive nature of the new wage policy and pointed out the importance of the issue as viewed by the Public Service Arbitration Tribunal.

In order to obtain some perspective on the dimensions of the Treasury Boards intentions, the focus now turns to the extent to which nonnational rates presently exist in the federal public service.

¹ Public Service Arbitration Tribunal, Arbitral Award: The Firefighters Case, Ottawa, (mimeo.), May 12, 1975, p. 8.

² These two dimensions of the Arbitration Tribunal's handling of the geographic wage issue in the Canadian federal public service are illustrated in appendix I-1 to this chapter.

III
THE INCIDENCE OF NONNATIONAL
WAGES IN THE FEDERAL PUBLIC SERVICE

While the government has announced its intention to break up the national rates of certain occupational groups, there already exist several groups on various wage zone systems.

Many of these structures were developed early in the present century and originally covered by what was known as the "Prevailing Rate Classes."¹ These were noncertified employees² made up of manual workers paid on the basis of locally going rates for similar skills. In the wake of the extensive 1967 reorganization of the classification system these employees were reclassified mainly into the General Labour and Trades and General Service groups of the Operational Category.³

¹ The description of the development of nonnational rates is beyond the scope of this dissertation. However, the author has traced this evolution since the turn of the present century in a forthcoming article.

² Noncertified employees did not need to qualify on civil service examinations, were not covered by the Civil Service Act, and held positions on a temporary basis (renewable, and many terms were renewed for decades).

³ The General Service group contains building, laundry, food, messenger services, etc.. The 1967 reclassification was recommended in The Preparatory Committee on Collective Bargaining in the Public Service, Report, Ottawa, July 1965, the ("Heeney Report") as a means of accommodating horizontal (cross-departmental) bargaining units.

Tables I-2 and I-2A show the groups on nonnational rates within each of the six broad occupational categories.

TABLE I-2

THE INCIDENCE OF

NONNATIONAL WAGES (NNW) 1972

CATEGORY	NUMBER ^{a.} OF GROUPS	NUMBER ^{b.} OF EMPLOYEES	NUMBERS ON		% ON NNW		NUMBER OF WAGE ZONES
			NNW GROUPS	EMPLOYEES	GROUPS	EMPLOYEES	
Executive	2	777	0	0	0	0	1
Scientific and professional	28	19,165	2	3400	7	18	
			-Education...	2000			8
			-Nursing.....	1400			5
Administrative and foreign service	13	32,651	0	0	0	0	1
Technical	12	21,433	4	1889	33	9	
			-Ships Officers....	1000			2
			-Education support.....	250			8
			-Ships Pilots.....	8			2
			-Hospital Technicians.	631			2
Administrative support	6	66,831	0	0	0	0	1
Operational	----- see table I-2A, next page.						

Source: a. Senate-House of Commons Joint Committee on Bill c-170, Minutes, No. 15, Ottawa, November 1, 1966, p. 726.

b. Public Service Commission, Annual Report, Ottawa, 1972, pp. 46, 47.

TABLE I-2A
THE INCIDENCE OF
NONNATIONAL WAGES (NNW), 1972
THE OPERATIONAL CATEGORY

GROUP	NUMBER OF ^{a.} EMPLOYEES	NUMBER OF WAGE ^{b.} ZONES
Correctional	2,118	1 ^{d.}
Firefighters	1,435	1
General labour and Trades	14,751	25
General Services	12,450	25
Heating and Stationary	2,597	1
Hospital Services	5,750	7
Lightkeepers	644	1
Postal Operations	32,156	1
Printing	1,319	9
Revenue Post Office	3,126	1
Ships Repairs ^{c.}	1,197	2
Ship Crews	<u>2,453</u>	2
Total:	80,396	

- Sources:
- a. The Pay Research Bureau, The Composition of The Public Service, 1970, ("Restricted distribution"), p. 9.
 - b. The geographic wage plan and the number of zones were taken directly from the relevant collective agreements in force in 1972-73.
 - c. In August 1976 this unit was broken into two separate bargaining units - Halifax and Esquimalt - each with its own agreement and its single wage region.
 - d. A single wage zone means a national rate.

Tables I-2 and I-2A show that nonnational wage are the exceptions save for the Operational Category.

All wages in the Executive, Administrative and Foreign Service and Administrative Support categories, representing twenty-one groups and 46% of all public servants are national in scope. It is to be noted, however, that the six groups of stenos, typists, clerks, secretaries, etc. in the Administrative Support category are candidates for nonnational wages.

"It is the intention of the government to extend the policy of regional pay differentials to other occupational groups where it is feasible and appropriate to do so...

These circumstances are typically found in groups in the operational category and administrative support, but exist in other categories as well." ¹

In the Scientific and Professional category only 7% of the groups (two out of twenty-eight) and 18% of the employees (3,400 out of 19,165) have multiple wage zones. The Educational group (primary and secondary teachers)² operate with eight zones while the NU I Nurses are paid according to five different scales.

The Technical category has a relatively high proportion of groups, 33%, on nonnational wages (four out of twelve) but representing a small

¹ Gaston Clermont, M.P., in the House of Commons, Hansard, Ottawa, October 4, 1971, p. 8423.

² University teachers are in a separate group on national rates.

amount of total employment, 9% (1,889 out of 21,433). The Ships Officers and Ships Pilots have two zones while the Education Support group is on the same eight-region plan as the teachers. The Hospital Technicians have two wage zones.

However, it is in the Operational category that the bulk of nonnational wage are found. Taking the public service as a whole, 46,828 of the 216,488 employees, 22%, were on nonnational wages in 1971, of which 41,470 or 89% are in the operational category.

As things now stand, 52% of all employees in this category are on nonnational wages, concentrated mainly in two groups, General Labour and Trades and General Services. The Postal Operations group is by far the largest in the category (more than twice the next in size) with 40% of the total. If the Treasury Board's intention to regionalize postal wages were realized, 73,626 or 92% of the entire category would be off national wages. If, in addition, the Treasury Board proposals to the Firefighters and Correctional Officers were upheld by the Arbitration Tribunal then 77,179 or 96% would be on nonnational wages. Of the three remaining groups, Heating and Stationary, Lightkeepers and Postal Revenue, the latter represent by far the greatest numbers (3,126 out of 6,367), and because of their special relationship with Postal Operations, nonnational wages could be extended to these employees relatively easily. In the end, virtually the entire Operational category would be off national rates. Extending this

scenario somewhat, if the Treasury Board should propose fractionizing to the groups in Administrative Support (it was seen that this is the government's intention), and it receives the Arbitration Tribunal's approval,¹ then 68% (147,227 of 216,488) of all public servants would be on a multiple wage zone system.

¹ All groups of this category have selected compulsory arbitration as ultimate dispute settlement mechanism.

IV

REVIEW OF THE LITERATURE

While the present study examines the geographic wage policy in the context of the Canadian federal public service, the dilemma of national versus nonnational wages is equally present for any employer (and union) with workers (members) in more than one labour market. Among those faced with similar decisions are the railroads, the airlines, the packinghouse firms, broadcasting networks, the telephone system and steel companies.¹ In the United States, the federal civil service and the automobile manufacturing firms are also affected.

In view of the practical importance of the determination of the appropriate geographic wage unit - and its relationship to wage policy formation - it is surprising that this matter has received comparatively little attention from academic and other researchers. While the issue has been recognized by some, no one has done an intensive study on the subject (e.g., making hypotheses and subjecting these to statistical testing).

¹ Several of these cases, and others are dealt with in chapter V, below.

Thus this section reports on what is available: the impressionistic or deductive assertions of the authors cited.

In his text, Wage and Salary Administration, David Belcher deals briefly with geographic wage policy in the specific context of wage surveys and the determination of "going wages".

"For the typical organization [the geographic wage area] is defined as the geographical district providing the market from which the majority of its employees are drawn... In most cases the labor market will be defined as the local community,..."¹

This is an assertion that the relevant outside wage for comparison purposes is, "in most cases" the "going rate" generally prevailing in the locality. This definition of the geographic dimension over which labour competition takes place is important for the present study.

Belcher recognizes the problem of "inappropriate" wage levels resulting from a national wage structure in the following terms.

"An additional set of problems is faced by organizations with numerous installations in different sections of the country. At first glance it would appear that a reasonable solution would be to adopt the level of the industry and apply it in all installations. This, however,

¹ David Belcher, Wage and Salary Administration, Prentice-Hall, Englewood Cliffs, 1962 (second edition).

might result in some areas in levels too low to attract and hold the desired labor force, and, in others, unnecessarily high levels. Many organizations, therefore, follow the practice of adjusting to community levels in the various areas where installations are located." ¹

This is the main argument used by the Treasury Board in the case under study. It is claimed that the uniform national rate results in geographic unevenness of an employer's ability to recruit and retain the quality of workers he desires. Belcher also mentions a disadvantage of locally oriented rates, the additional costs of multiple wage surveys, especially where there are only few employees in one location.

Joel Dean states that most national firms paid uniform rates in the past because of its "simplicity and apparent equity". ²

However,

"It flies in the face of great and persistent regional differences in local pay rates. In some areas pay rates will be below community rates, making it difficult to attract and hold a working force, in other areas rates will be above community levels, resulting in unnecessary expense." ³

¹ Ibid., p. 132.

² Joel Dean, "Geographical Wage Administration", in J. Doober and V. Marquis (eds.) A.M.A. Handbook of Wage and Salary Administration, A.M.A., Chicago, 1950, pp. 277 to 294.

³ Ibid., p. 278.

Clearly the concern is for the adequate supply of labour in high wage cities and the "unnecessarily" high wages where prevailing rates are relatively low. On the other hand Dean feels that local rates have disadvantages too.

"It is unreasonable to expect that a local manager will be equipped or will have the time to perform the specialized and highly skilled task of job pricing within his community. Moreover, if effective salary control and internal consistency within the company are wanted, it is hard to get while permitting local autonomy." ¹

Both Belcher and Dean give the impression that there is a "community rate" for each specific skill and that the individual employer must align to this level or suffer the discipline of the market.

After considering four other criteria for establishing inter-city differentials (cost-of-living, city size, location and region) Dean finally settles on an unsatisfying eclectic formula based essentially on city size and region. Dean implies that wage levels vary directly with city size. It will be shown below that this is not necessarily the case. City size itself is at best only a proxy for other factors which do directly affect city wage levels: industrial mix, relative conditions of labour supply, labour quality etc..²

¹ Ibid.

² Victor R. Fuchs found that most of the city size-wage differential reflects labour quality differences. See his, "Hourly Earnings Differentials by Region and Size of City", in Monthly Labor Review, January 1967, pp. 22-26.

In "How to set Fair Salaries at Branch locations"¹ Vitto Reggio considers both cost of living differences and prevailing wage differentials as criteria on which to set up an employer's multi-market wage structure. He discounts the former because "Cost-of-living factors do not reflect the other area conditions that affect salaries."² Reggio views wages as allocators of supply, and holds that meeting competition from other employers in the community should be the principal basis for setting wages.

He then proceeds to compute inter-city wage differentials (local means of rates) for a variety of "office occupations", concluding that "as salaries approached the beginning levels for professional positions, the area differentials tended to disappear."³ This implies that the higher the skill level the more extensive the spatial dimensions of the relevant labour market.

For Jerome Rosow, a member of the U.S. President's Panel on Federal Compensation (the Rockefeller Panel) and chairman of the President's Advisory Committee on Federal Pay, public service wage levels for skills comparable to those of the letter carrier should generally be based on prevailing

¹ Personnel Journal, August, 1971, pp. 626-629.

² Ibid., p. 627

³ Ibid.

rates for similar occupations in the relevant labour market. Rosow argues against the national wage and in favour of local or area alignment.

"The Clerical/Technical Service should be paid local or other geographic rates. This would be responsive to wide differences in salary scales throughout the nation. It would parallel blue-collar wage fixing theory - although the method may differ."

Once again there is concern that public service wages be aligned to outside rates in the relevant labour market. For the skills mentioned, the market is sub-national in scope. His reference to "blue-collar wage fixing theory" probably refers to the method of determining manual workers' wages in the federal public service through alignment to prevailing pay levels for similar occupations locally. In fact the same approach has been taken in Canada where the General Labour and Trades and General Services blue-collar groups have the largest number of wage zones, 22.²

¹ Jerome M. Rosow, "Public Sector Pay and Benefits", Public Administration Review, Chicago, September/October, 1976, p. 542.

² It should be noted however, that while the U.S. Government still uses truly locality rates, the Canadian Government, under pressure from the Public Service Alliance of Canada (the largest federal public service union with a 1973 membership of 133,500, including the General Labour and Trades and General Services groups), has drastically reduced the number of wage zones over the past decade and a half.

Wilbur R. Hanawalt, a management consultant, attempts to define the geographic dimension of the labour market for purposes of determining "going rates" which are then used to compute a multimarket firm's own wage levels.

"After considerable investigation and study we concluded that employees judge whether wages are fair by comparing them to rates paid in other plants which they consider employment possibilities - plants in their vicinity where they have submitted applications, or where neighbors or relatives work.

...in order to plan a wage schedule which will seem fair to employees, it is apparent that the survey should cover the wages paid by all employers who draw on the same labour market." ¹

Here both sides of the labour market are considered. On the supply side, workers' perceptions of equity are important while on the demand side, competition from other employers in the "same" labour market are to be accounted for.

"What is that labor market? It is the area from which present and potential employees come to work in our plant." ²

¹ Wilbur R. Hanawalt, "How Big is your Labor Area", The Management Review, August, 1953, p. 440.

² Ibid.

In essence, for unskilled and semi-skilled workers the relevant market is the local market and the firm should internalize the prevailing wage.¹

In 1962 the Canadian Royal Commission on Government Organization (the Glassco Commission) issued its report. In Volume I some attention is paid to the national/nonnational wage question in the federal public service. Because of its relevance to the present study and because of its probable influence on the evolution of the government's view, a rather lengthy excerpt is presented.

"Whether geographic differentials have a justifiable place in wage and salary policy for the federal public service is a much debated question. It is argued on the grounds of equity that equal pay for equal work means uniform rates for all employees in the same category, wherever located. In practical terms this tends to mean dollar equality at a level set by the dearest market. But it can also be argued that equal pay for equal work means giving like employees the same relative income status in the various communities in which they are located. ...

It is difficult to see how existing geographic differentials can safely be ignored by the largest employer in the country. To the extent that they continue to be ignored, the government finds itself paying more than it should in some areas and perhaps less in others than it should to remain competitive. To the extent, too, that the government, or any other

¹ Ibid., p. 441. "But for management and professional people the 'labor watershed' and the area of competition is regional in scope, taking in up to one-quarter of the entire country."

employer pays rates above the market it does a disservice to the local economy. In general, the levels of wages and salaries in an area reflects the relative productivity and the competitive position of that area in the economy as a whole. Arbitrary raising of costs, through bidding up the labour market in advance of real gains in productivity or real improvement in competitive position is likely to hamper rather than stimulate economic growth of the area. The conclusion is that the federal government should adhere to a policy of uniform rates only for categories of personnel for which the market is country-wide. For categories where markets are regional or local, government compensation policy should be guided accordingly."¹

Firstly, the issue is recognized as an important one. Secondly, two competing conceptions of "equity" are presented, with greater weight seemingly placed on local wage relativity rather than national wage equality for identical work for the same employer.² Thirdly, it is the geographic size of the market for a particular skill that determines the universe on which public service wages are to be computed. Fourthly, the uniform national wage means "overpaying" in low wage markets and "underpaying" in high wage markets. In the former cases there is "needless" expense of public funds and in the latter cases the quantity or quality of labour (or both) supply is insufficient.³ The implication is that in low wage

¹ The Royal Commission on Government Organization, Volume I, Management of the Public Service, Ottawa, The Queen's Printer, 1962, pp. 290-291.

² The "equity" question is taken up in chapter II below.

³ "...to remain competitive" is interpreted as relating to the government's ability to recruit and retain the quality of labour it seeks.

markets the labour supply is more than adequate and in the high wage markets it is inadequate. The verification of this purported relation between an inter-city wage differential pattern and a corresponding inter-city pattern of differences in labour supply is an important aspect of the present study.

The final point in the Glassco statement has not been mentioned by any other author previously cited here: the concern that arbitrarily set, high wages will cause economic stagnation and possible unemployment.¹ The authors conclude that national rates are only appropriate for occupational groups whose markets are national in scope. The break up of national rates is predicated in Glassco on the basis of deductive reasoning only. There is no empirical testing of the assertions constituting the bases of such a policy.²

This theme of "artificially high" national public service wages as a source and cause of economic retardation and unemployment in areas with generally low incomes has been taken up more recently in Living Together:

¹ For a theoretical discussion of the wage-productivity relationship see R.A. Leftwich, The Price System and Resource Allocation, Holt, Rinehart Winston, N.Y., (3rd ed.) 1966, pp. 256-269. The assertion that national wages "...tends to mean dollar equality at a level set by the dearest market" is tested later in this thesis.

² At least no testing is presented in, or suggested by the contents of the published report.

A Study of Regional Disparities, published by the Economic Council of Canada in 1977.¹

"...it is important to try and maintain a realistic relationship between wage levels and current productivity levels, so as not to discourage demand for labour."²

"...if the wages in a particular province are higher in relation to productivity than elsewhere, jobs can be shifted from that province into other provinces."³

"Paying a national rate makes economic sense if it is needed to obtain qualified people but, if it is not, the practice is likely to create unnecessary unemployment in lower-productivity provinces. [Federal wages] should be appropriately geared to the average level of productivity within a province."⁴

While the authors refer to the adverse effects of wage levels in excess of "the average level of productivity within a province", it should be noted that according to neoclassical economic theory both the market

¹ Economic Council of Canada, Living Together: A Study of Regional Disparities, Minister of Supply and Services, Canada, Ottawa, 1977, (see esp. pp. 227-229).

² Ibid., p. 227.

³ Ibid., p. 228.

⁴ Ibid., p. 229. This view expresses a paradoxical coexistence of the benefits of the national wage if "needed to obtain qualified people" and the unemployment-creating effect of such a national wage in lower productivity provinces.

clearing wage and an observed level in excess of that wage are each equal to the respective values of marginal products. Unemployment is the excess supply gap at the above-equilibrium wage as workers enter the market seeking such "high" wages. In addition, the latter levels may become generalized through competitive and institutional pressures. The Council's view, also recently expressed by others,¹ takes the average prevailing wage level to represent productivity levels in an area and "unaligned" wages (on the high side) are deemed to cause a reduction in employment opportunities and eventual outmigration of the highly skilled and most mobile workers.

On the other hand, the Atlantic Provinces' Economic Council feels that a decline in the wage rank of federal public servants in low wage regions will increase economic disparities by contracting local aggregate demand, reducing the quality of public services and by creating an incentive for outmigration of the most mobile and highly productive workers. Such losses would discourage investment in capital intensive and high productivity industries.²

¹ Robert Lacroix, "The Regions and Unemployment", in Options, University of Toronto Press, August 1977; Thomas Courchene, The Transfer System and Regional Disparities, (mimeo.), lecture at Carleton University, January 23, 1978. In addition to the federal government's national wage policy, these authors hold that regional economic disparities are also caused by the province-wide public service wage policies of provincial governments, large unions and large private employers as well as minimum wage laws and the unemployment insurance program.

² The Atlantic Provinces Economic Council, Newsletter, ("Regional pay rates: Postal workers latest to feel the federal bite") Fredericton, July, 1972.

The operation of the U.S. Post Office Department was the subject of a detailed examination in the mid-1960's and a massive, five-volume report was ultimately issued in June 1968.¹ The issue of national rates for postal employees is raised in the following terms.

"Perhaps no question of pay in the postal service is more at issue than that of regional or area differentials. Many postal officials advocate them; the national labor organizations have opposed them. Neither case is self-evident. Some nationwide employers vary wages from place to place - the telephone system, Railway Express, and United Parcel Service, for example. Others, such as the railroads, some manufacturing industries (auto, steel, aluminum) and the Civil Service (in principle at least) have a nationwide uniform wage."²

Equity and labour supply effects are the main criteria for choice of geographic structures (pp. 43-44). After considering four main aspects - improving the Post Office's competitiveness for labour, the leveling out of real wages, possible savings in the wage bill and the real cost of turnover - the Commission opts for retention of the nationally uniform wage policy:

"...the thrust of the evidence leads us to conclude that geographic wage differentials are not justified in the postal service, at least under present circumstances."³

Joel Seidman in "Collective Bargaining in the Postal Service" recognizes this wage issue in the following terms.

¹ Various contractors, Towards Postal Excellence, The Report of the President's Commission on Postal Organization, U.S. Government Printing Office, Washington D.C., 1968, Vols. I-V, ("The Kappel Report").

² Ibid., Annex, Volume I, "Personnel Administration and Labor Relations", p. 42

³ Ibid., p. 44.

"Another difficulty is that a standard national rate is set for each [occupation] with the result that in small towns in low income areas a postal job may be highly sought after, while similar jobs in metropolitan areas may attract only a marginal force or remain vacant." ¹

After showing that some starting postal salaries are low relative to those in similar employments in high wage regions, Seidman comments, "Among the results were difficulty in recruitment and a high turnover rate, for which undesirable hours, such as night work and split shifts, were also responsible" (p. 13). As with previous writers, there is a recognition of the existence of a pattern of wage differentials (postal workers well paid in low wage cities and poorly paid in high wage cities) with emphasis on the labour supply effects of these differing postal wage ranks in the respective local wage distributions. Again, there is an untested assertion (at least in the article) that the supply of letter carriers and postal clerks is best in cities where the postal wage ranks relatively high and poorest where it ranks low. Seidman does not explicitly recommend retention or abandonment of the existing national wage.

¹ In Industrial Relations, October 1969, p. 13. The initial difficulty "...is deciding the types of jobs with which a post office clerk or letter carrier should be compared." (p. 13). This question faces the present study too and is taken up later here. It is not clear whether Seidman means all "small towns" are low wage communities and "metropolitan areas" are all high wage cities. This is not necessarily so.

Finally, Sharon P. Smith has recently published several articles on wage determination in the U.S. Federal Public Service, and particularly in the Postal Service.¹ Her general approach is to evaluate the adequacy of the federal public service pay by comparing wages of government employees with "comparable" private sector workers. These latter are judged "comparable" on the sole basis of such personal characteristics as schooling, sex, race, marital status, health (a human capital approach) and also on city size and unionization. Occupation and geographic location are not accounted for and thus the question of nonnational rates is, unfortunately, not even raised. In the postal wages study she concludes that postal wages are superior to those of, "nonunionized private sector workers of similar socio-economic characteristics and at least comparable to unionized private sector workers" (p. 176). Because she uses national averages, the possible variations at the sub-aggregate level are missed entirely. Smith concludes with the general statement "...that there should be long queues awaiting postal employment" (p. 176). Again, conceivably there could be postal queues in some cities and possible labour shortages in others. She may not have been able to make such a sweeping statement had she actually verified the disaggregated, intercity pattern of differences in postal labour

¹ For example, "Are Postal Workers Over - or Underpaid?", Industrial Relations, May 1976, pp. 168-176; "Pay Differentials Between Federal Government and Private Sectors Workers", Industrial and Labor Relations Review, Jan. 1976, pp. 179-197. Her testing methods, in contrast to others, includes econometrics.

supply.

In concluding this brief review of the literature, mention is made of two additional sources explicitly recognizing the dilemma of a choice of geographic wage policy for a national employer.

Rees and Shultz present some data on the extent of "outside interference" (head office constraints on wage discretion by branch officers) in the Chicago labour market. Of a total sample of seventy-four local establishments, only eight had "no control" on wage policy, forty-three had "some control" and twenty-three had "wide latitude".¹ A tendency was detected showing that establishments with no local control on wages - i.e., with a "national wage policy" - were more highly concentrated in the fourth and fifth quintiles (64%) than establishments with some control (41%) or with wide latitude in wage policy (30%) (p. 39). Despite this positive association between centralized wage determination and high wage rank, there were still complaints that lack of local wage discretion was causing labour supply problems generally (p. 48).

Shirley W. Lerner, et al. also encountered the extra-labour market phenomenon in wage policy formation in their study of U.K. wage determination at the plant level.² This element is treated as another input in the

¹ Albert Rees and G.P. Shultz, Workers and Wages in an Urban Labor Market, University of Chicago Press, 1970, p. 37.

² Shirley W. Lerner, John R. Cable and S. Gupta, Workshop Wage Determination, Pergamon Press, Oxford, 1969, pp. 14-18.

process of wage setting at the local level.

This review of the literature on the problem of national versus nonnational wages for a multi-market employer has shown that relatively little work has been done on the subject.¹ However, those who have dealt with it stress the seriousness of the question. Considerations of equity (and local economic growth) bear on a solution, but labour supply effects and potential "savings" (in the wage bill) appear as pre-eminent factors influencing choice of policy.² Most striking is the evaluation of selection of national or nonnational wage structures on the basis of deductive reasoning alone. Conclusions are drawn and recommendations made without accounting for the real relationships between the existing pattern of wage differentials caused by a "national rate" and the actual respective local conditions of labour supply to any given employer.

An appeal to logico-theoretical considerations should be one aspect of problem-solving methodology. However, confidence in the predictions from such considerations can be increased or dissipated by an appeal to the evidence. In the present study an analysis of the theoretical issues is followed by an empirical test of the data.

¹ Further reference to the literature is documented in the next section.

² For the public employer there may be additional considerations such as the effects of its wage on economic conditions of the region. There are beyond the scope of the present study.

This section has shown that the determination of an employer's geographic wage policy is complex both conceptually and in practice. In the next section factors influencing local labour market wage structures are examined.

V

FACTORS INFLUENCING WAGE
STRUCTURES IN A LOCAL LABOUR MARKET

This section provides a framework with which to view wage determination in local labour markets. Since the question raised by the Treasury Board proposal concerns the relationship between a single employer's wage and the local market wage, it is necessary to examine the factors influencing wages paid in a local labour market.

This discussion is presented not as a theory of wage determination or an exhaustive list of relevant factors, but rather as an attempt to establish a classification of sources of wage pressures in a local labour market. It is expected that useful insights will be gained into the kinds of pressures affecting community wage structures.

In the case at hand the federal government has decided to abandon its national wage policy and has proposed alignment of public service pay to respective local going wages instead. While equity considerations are given as one reason for this change, it is demonstrated in sections IV and V of chapter II below, that the main objective is an altered (improved) intercity pattern of labour supply to the public service.

This wage/labour supply relationship is based on a view of markets which is most associated with the competitive labour market theory. In

that model, labour supply and the wage for a particular skill are uniquely related and the labour supply curve for an employer is perfectly elastic at a wage level set by the market. In economics the concept of a labour market is dominated by the interaction of supply and demand and the emergence of an equilibrium wage. The individual hiring unit has no enduring discretion in establishing wages since any short run deviation from the market wage engenders a disciplinary response as competitive forces create labour allocational problems.¹ Thus the government's new wage policy appears as a rational acquiescence to competitive forces driving public service wages towards the going rate in each local labour market.

There are three categories of wage determination forces: local labour supply and demand forces, nonlocal labour market forces and noneconomic or noncompetitive forces.² It is the variation in the mix of these forces that produces the variation in local labour market wage structures.

While local labour supply and demand forces are undoubtedly present in each market and constitute a pressure on wage determination in most

¹ In the competitive model, paying less than the market wage results in an insufficient labour supply and overpaying employees is a wasteful expenditure leading to bankruptcy.

² Economists' views of the effect of wages on labour supply are dealt with at length in section VI, chapter II, below.

markets, they alone, do not fix wages.¹ Indeed, for MacKay et al., the equilibrium wage resulting from the free interplay of these supply and demand forces (compelling employer adherence to the market wage) are to be viewed only as an aid in teaching.

"The concept of equilibrium is, however, best regarded as a pedagogical device useful in describing the forces which may operate in a labour market rather than as a description of a position which is never realized or even approached in practice."²

On the other hand Frank C. Pierson counsels that there is virtue in simplicity and that an analytical framework which is too realistic is inoperable.

"If in the interest of clarity a narrow framework is used, many important elements of the subject will doubtless be excluded; if in the interest of realism a broad framework is used, anything like definite conclusions will be put completely out of reach."³

¹ For a concise review of various wage theories see D.W. Belcher, Compensation Administration, Prentice Hall, Englewood, 1974, pp. 32-49.

² D.I. MacKay et al., Labour Markets Under Different..., op. cit., p. 142.

³ Frank C. Pierson, "An Evaluation of Wage Theory", in G.W. Taylor and F.C. Pierson (eds.) New Concepts in Wage Determination, McGraw Hill, N.Y. 1957, pp. 3-31.

Belton Fleisher emphasizes the difficulty of using the competitive model for wage determination analysis in real situations.

"Trying to judge when other things are in fact equal or have remained unchanged, so that economic theory in its simplest (usually competitive) form can be applied and tested, is one of the most difficult parts of empirical work in economics."¹

Besides competitive local supply and demand forces, account must also be taken of economic pressures originating outside the community which may enter the wage setting process either through the labour market or the product market. Some of these are discussed below.

The third category of forces determining local wage structure are those noncompetitive and noneconomic forces which make themselves felt in wage setting both from within and without the local labour market. In this study it is actual wages of a real employer which are examined and it is therefore necessary to recognize the existence of nonlocal and noncompetitive forces which bear on wages.

At this point four questions are relevant.

1. What do actual local labour market wage structures look like?²
2. Does an employer operating in real markets have any discretion

¹ Belton M. Fleisher, Labor Economics, Prentice Hall, Englewood Cliffs, 1970, p. 205.

² A wage structure is the relationship among wage rates for a defined group of workers with some rationale for such relative wages, (see Derek Robinson ed., Local Labour Markets and Wage Structures, Gower Press, London, 1970, p. 215).

in setting wages?

3. Is alignment to local wages a sufficient or even necessary condition for adequate labour supply?

4. To what kinds of factors should the researcher turn his attention is seeking an explanation of the formation of wage structure in local labour markets?

Question 1, is summarily dealt with immediately and the answer to question 2 (partially) and 4 follows that. Questions 2 (partially) and 3 are discussed in sections IV, V and VI of chapter II, below.

No lengthy discourse is necessary to provide the basic description of a typical local labour market wage structure. Even for a narrowly defined skill or occupation a range of wages, usually both extensive and persistent, is found.¹ This contrasts with the tendency toward a single

¹ For such specific wage data see H.M. Douty, "Some Aspects of Wage Statistics and Wage Theory", I.R.R.A. Proceedings, Chicago, 1958, pp. 197-211, 219-221. John E. Buckley, "Intraoccupational Wage Dispersion in Metropolitan Areas, 1967-68", Monthly Labor Review, September, 1969, pp. 24-29; Derek Robinson (ed.), Local Labour Markets and Wage Structures, Gower Press, London, 1970; or any issue of, Canada Department of Labour, Wage Rates, Salaries and Hours of Labour, annual (especially part III). For studies seeking to explain such findings see for example, Richard Lester, "A Range Theory of Wage Differentials", Industrial and Labor Relations Review, July 1952, pp. 483-500; Richard Lester, "Wage Diversity and its Theoretical Implications", Review of Economics and Statistics, May, 1946, pp. 152-159; John R. Dunlop, "The Task of Contemporary Wage Theory", John T. Dunlop (ed.), The Theory of Wage Determination, MacMillan, London, 1964.

wage predicted by the simple competitive model.¹

Two general criticisms are now directed at the basic competitive model which predicts labour supply problems for employers not adhering to the market wage. The competitive approach tends to compel the researcher to view wage determination as though markets were newly created, without custom or history.² Secondly, in such a paradigm, where institutions are largely ignored and where the utilities and decisions of the individual actors are deemed independent,³ wage levels and labour supply are uniquely interdependent.

These latter types of considerations lead the present discussion into the fourth question: what kinds of factors will help explain the variations

¹ The long run resistance of wages to converge to a market rate may be conceived as undermining the usefulness of the competitive labour market model to explain local labour market wage structures. Though some writers have come to this conclusion, the reader is asked to put off his evaluation until section VI, chapter II, below where more complete versions of the model are described.

² It is as though the effects of a change in wage rank were being predicted without the passage of time. Indeed, strictly speaking, the various points constituting a supply schedule relate to a single point in time.

³ Independence implies competition among employers for labour and competition among workers for jobs.

in wage structures found in local labour markets?

In most communities there exists a continuum of extra-local labour market influences on wage rates. At one extreme some wages may be determined almost exclusively by local labour supply and demand conditions. In other cases regional, national or international economic forces may exert influence on an establishment's wages.¹ In addition, whether local or extra-local, noneconomic forces also bear on wages.

Factors potentially affecting the wages found in any one establishment are discussed below under the five headings: employer preferences, internal labour markets, custom, collective bargaining and government intervention.^{2,3} The varying mix of these factors produces a wage structure in the establishment, the firm and the particular community which is unique in every case. It is in such a diverse range of intermarket wage distributions that the federal government expects certain results from its changes in wage ranks.

¹ See Clark Kerr, "Labor Markets: Their Character and Consequences", A.E.R. Proceedings, May 1950, pp. 278-291.

² These are generally viewed as the ceteris paribus conditions affecting the positions of supply and demand schedules rather than as additive to market forces. They are, in a sense, assumed away. However, it is analytically advantageous here to examine each type as exerting individually identifiable pressures on wages. (See an interesting exercise by George H. Hildebrand, "External Influences and the Determination of the Internal Wage Structure", in J.L. Meij (ed.) Internal Wage Structure, North Holland Pub. Co., Amsterdam, 1963, pp. 260-299).

³ The more recent, "traditional" extensions of the competitive labour market model consist of analyses based essentially on the "human capital" approach: information, mobility, heterogeneity of labour, etc., and are dealt with briefly in section VI of chapter II below. The older, "traditional" extensions are founded on monopoly and monopsony "imperfections".

Employer Preferences

This sub-section discusses the kinds of factors that lead to an unfettered employer's selection of wage rank in a local labour market.

Basically an employer's viable range of wage discretion is limited on the high side by his ability to pay¹ and on the low side by his ability to recruit and retain workers of a desired quality.² Within these extremes various factors lead different employers to pay different wages.³ Further, the location of the limits themselves are affected by particularities of each employer's context.⁴

¹ An establishment will not necessarily shut down if it incurs losses in the short run. Such a situation could even be tolerated in the long run if a corporate-wide profit policy is pursued.

² Hiring standards can be used to adjust labour supply. The minimum is reached when labour quality is so bad as to inhibit production. With relatively high rates of unemployment even low wage employers can usually obtain adequate labour supply of many classes of workers.

³ "To maximize profit, the employer should raise wages so long as the gain from improved labor quality and reduced turnover exceeds the addition to the wage bill. When marginal wage costs and benefits are exactly equal he has reached the economic wage." (Lloyd Reynolds, Labor Economics and Labor Relations, Englewood Cliffs, 1976, (6th edition), pp. 202-203.)

⁴ Lloyd Reynolds states that the minimum is determined by local factors (ability to recruit and retain) and the maximum by industry factors (profitability). When a firm cannot keep the maximum above the minimum it goes bankrupt. "Some Aspects of Labor Market Structure", Richard Lester and J. Shister, Insights into Labor Issues, MacMillan, N.Y., 1948, pp. 267-304 (p. 296).

Local establishments are variously open to direct extra local labour market influences in the determination of their material costs, wages and product prices depending on sources of inputs and location and structures of product markets. If establishments in widely separated communities purchase an important input in a common market then some common, extra local market influence becomes a factor in production costs, hence, potentially in wages. Likewise, distant plants sharing a common product market whether it be local, regional, national or international are also potentially subject to common outside pressure on wage policy.¹

These interestablishment connections and industry-wide price and wage fixing and anti-pirating schemes result in the elimination of the potentially destabilizing effects of competition.²

Wages may also vary along the viable range among local establishments using a single type of labour because the products are different or because of differences in age of plant, technical or organizational methods, managerial efficiency, supervisory attitudes, input materials and distance to resource and product markets. Firms may have different labour quality needs and also

¹ See R.A. Lester, *Insights... op. cit.*, p. 199.

² E.H. Phelps Brown, *The Economics of Labor*, Yale University Press, 1962, pp. 170-3; Reynolds in *Dunlop, op. cit.*, p. 204. High wage firms, which usually dominate an industry, favour industry-wide wage rates regardless of location.

different tolerances to recruitment and retention experience.¹

Perceived ability to pay, hence wage decisions, are influenced by expectations of input supply and costs, of product demand and prices and of competition. These vary among entrepreneurs.²

For many private sector employers, given various institutional and personal constraints, the conventional profit maximization (or even cost minimization) goal is replaced by profit satisficing (or cost satisficing), and productivity maximization by productivity satisficing.³ Firms require some degree of stability and therefore "organizational slack" may be the rule rather than the exception.⁴ If this is true of private employers,

¹ An automated production technique may require either higher or lower quality labour than a more manually oriented technique. A production process requiring little training can remain profitable with a higher quit rate than one which necessitates considerable, in-plant training. An employer may be high in the local range for pure prestige purposes or to ensure a good supply of high quality candidates.

² The cost impact of higher wages, and thus wage policy decisions, depends on the proportion of labour costs in total costs, the elasticity of demand for the product, the elasticity of supply of cooperating factors and the elasticity of substitution among factors. The last three of these can generally only be estimated subjectively. These Marshall-Freidman conditions are described in Milton Friedman, "Some Comments on the Significance of the Labor Union", in David McCord Wright (ed.) The Impact of the Union, Augustus Kelley, N.Y., 1966 (original edition, 1951), p. 207.

³ Herbert A. Simon "Theories of Decision Making in Economics", A.E.R., June 1959, pp. 253-283. See also, Anthony Downs, "Nonmarket Decision Making, A Theory of Bureaucracy", A.E.A. Proceedings, 1957, pp. 439-446.

⁴ Richard M. Cyert and James G. March, "The Goal Formation Process", in W.A. Hill and D. Egan, Readings in Organization Theory, Allyn and Bacon, Boston, 1966, (pp. 99-114), p. 107, 109.

satisficing must be even more relevant for governments whose social and political objectives may interfere with cost minimizing.¹ Such types of behavior are compatible with a national wage structure set at a level resulting in adequate labour supply in most localities.² Those establishments of a national employer which do present labour supply problems (because of particularly high prevailing local wages or any other reason) are then dealt with by a number of nonwage methods.³

This subsection has shown that there exists a wide range of potential variations in the goals and structures of employing units as well as a variety of degrees of intermarket links. Such a context should lead to a range of wages in a local labour market.

¹ Anthony Downs discusses the political objectives of governments in a framework postulating maximization of the probability of re-election (An Economic Theory of Democracy, McGraw-Hill, N.Y., 1957).

² Lloyd Reynolds states: "Most companies most of the time are not paying the bare minimum required to meet their employment objectives. There is considerable difference in the wages offered by different employers in the same market for the same type of skill." (Labor Economics and Labor Relations, op. cit., pp. 201-206).

³ Some of these methods are discussed in chapter V, below. If there are labour supply problems generally throughout the system then the response may be to raise the existing national wage or to discover and overcome other possible causes of unacceptable labour supply.

The Internal Labour Market

The existence of the internal labour market as a source of candidates to fill job vacancies can partially insulate an establishment from the direct effects of competitive local labour market forces.

"The internal labor market, governed by administrative rules, is to be distinguished from the external labor market of conventional economic theory where pricing, allocating and training decisions are controlled directly by economic variables. These two markets are inter-connected, however, and movement between them occurs at certain job classifications which constitute ports of entry to and exit from the internal labor market." ¹

Under conditions in which seniority, work rules, job rights and promotional expectations are important factors in labour allocation and where perceptions of equity are based on existing wage relations, outside local supply and demand forces may often be resisted. Most workers are

¹ Peter B. Doreinger and Michael J. Piore, Internal Labor Markets and Manpower Analysis, Heath and Co., Lexington, 1971, p. 2. For the origin of the "ports of entry" concept, see Clark Kerr, "The Balkanization of Labor Markets", Labor Mobility and Economic Opportunity, M.I.T. Press, Cambridge, Mass., 1954, pp. 92-110.

not actively "in the market" within the usual wage range because of the prohibitive cost of leaving present jobs: viz., loss of seniority privileges (wage level, pension rights, promotional opportunity, lay off protection), termination of social relations and the uncertainties of new employment.¹ Wage differentials or even changes in local wage rank do not necessarily result in reallocation of labour.²

In markets where many workers possess company-specific skills with high levels of nonvested fringe benefits and where internal labour markets are important sources of recruitment, labour supply will be relatively inelastic to a change in wage rank.³ On the other hand,

¹ Company-specific skills add to interfirm immobilities and industry-specific skills contribute to a reduction of interindustry movement.

² Walter Oi has also shown that firms will retain trained employees even if short run profit maximization counsels their release ("Labor as a Quasi-Fixed Factor", J.P.E. December 1962, pp. 538-55.)

³ The monopsonistic case is treated by Lloyd G. Reynolds, "The Impact of Collective Bargaining on the Wage Structure in the United States", John T. Dunlop, (ed.) The Theory of Wage Determination, MacMillan, London, 1964, p. 210; see also D.I. MacKay et al., Labour Markets Under Different Employment Conditions, Geo. Allen and Unwin, London, 1971, p. 94.

in markets characterized by transferability of skills, where many employers use such skills and, in addition, where fringe benefits are a small proportion of total net advantages, the allocation of labour is likely to be sensitive to changes (and differences) in relative wages.¹

Custom

Custom plays an important role in determining wage relationships. Existing wage differentials, whatever their source or geographic unit, are usually accepted as fair and equitable and efforts to change them often encounter resistance. As Dunlop puts it, each "wage contour", whether it be the locality or the industry, has its own history and custom.

"...[the] historical structure of wages has conditioned labour supply so that the relative rates among contours are regarded as proper."²

¹ For a description of such a "structureless market" see Lloyd H. Fisher, "The Harvest Labor Market in California", W.J.E., November, 1951, pp. 463-491.

² John T. Dunlop, "The Task of Contemporary Wage Theory", in John T. Dunlop (ed.), The Theory of Wage Determination, op. cit., p. 21.

Both individual (quits, morale, etc.) and collective (stoppages, etc.) reactions can be expected from those adversely affected by a change in relative wages.

On the place of custom in wage determination J.R. Hicks has written,

"It has never been the general rule that wage-rates have been determined simply and solely by supply and demand. ...Economic forces do affect wages, but only when they are strong enough to overcome these social forces (custom, equity)." ¹

Even when the original reasons for wage relationships (as rational as they may have been) have disappeared, customary differentials are generally seen as "fair".²

¹ J.R. Hicks, "The Economic Foundations of Wage Policy", E.J., December, 1955, p. 390.

² Ibid., p. 398.

In her book, Social Foundations of Wage Policy, Barbara Wooton emphasizes the uneven effect of custom in various contexts (eg. local labour markets).

"Existing wage differentials can be defended on historical, ethical or prestige grounds, and the degree of emphasis laid upon each of these considerations varies from one industry or service to another." ¹

Referring specifically to the effects of an attempt to rationalize a wage structure she continues,

"But it is significant that in the discussion of this type of case historical argument takes a large place." ²

At one point in their study of the U.K. engineering industry, Shirley Lerner et al. recognize the force of local custom in geographic wage policy choice.

"...systems of wage payments were further complicated by the firm's large number of different plants in different regions each having its own inherited traditions regarding rate setting..." ³

¹ Unwin Books, London, 1964, p. 138. Dorringer and Piore, op. cit., p. 85 express a similar view on the resistance to a change of differentials which have acquired ethical status.

² Ibid., p. 150. The recent Canadian Anti-Inflation, wage control legislation recognizes "historical relationships" as a wage criterion (Regulations Ottawa, 1975, article 44).

³ Shirley W. Lerner et al., Workshop Wage Determination, Pergamon Press, London, 1969, p. 69. For a similar viewpoint, see R.A. Lester, Company Wage Policies, Princeton U. Press, Princeton, 1948.

On the reaction to a marked change in local wage rank, Lloyd Reynolds has written.

"A wage which would be accepted if paid by a traditionally low wage firm may provoke a revolt if adopted suddenly by a high wage firm. Each firm thus has its own minimum wage which is related to its present and previous actual wage rates".¹

In the present study the change in geographic wage policy involves substantial changes in wage rank in some markets.²

Custom can thus be seen as an independent force in the formation of local wage structure.

Collective Bargaining

In the discussion to date on the particularities of the individual local labour market and the diverse sources of wage pressures, two interdependent

¹ Lloyd Reynolds, "Some Aspects of Labor Market Structure", in R.A. Lester and J. Shister, *Insights into Labor Issues*, op. cit., (pp. 261-302), p. 297.

² This is demonstrated in chapter III, below. Without entering into a discussion on the evaluation of the wage proposal at this early stage, it should be pointed out that letter carriers have always been on national rates and that collectively (through their union), they strongly oppose the change. These factors alone should suffice to differentiate the letter carriers from a possible newly created occupation, perhaps unorganized, to which such a proposal may be put.

institutions have been omitted: unionism and collective bargaining.¹

It was already seen that even without unions there are important reasons for some employers paying nonlocally determined wages.²

When a local union is part of a national organization the latter will often attempt to impose a national, company-wide or industry-wide rate.³

Such master agreements are the rule within single auto firms. One rationale for national rates is that all employees in the system should share in the benefits from system-wide productivity. This is part of the union equalitarian ideology of equal pay for equal work.⁴ By such a "standard rate" labour

¹ This subsection is not a theory of how collective bargaining affects wage structure, but rather a description of possible effects of a labour union on wage relationships in a local labour market.

² The Canadian federal civil service and the CBC are examples of national wages prior to the entry of unions.

³ In the mid-1960's there was a vociferous demand for international (Canada - U.S.A.) wage parity in the Auto and Agricultural Machinery industries. This was subsequently achieved.

⁴ For interesting insights into trade union wage policy see Albert Rees, The Economics of Trade Unions, U. of Chicago Press, Chicago, 1963, pp. 60-63; Lloyd G. Reynolds, "The Impact of Collective Bargaining...", John T. Dunlop (ed.) The Theory of Wage Determination, op. cit., pp. 294-321, esp. 204-219; Lloyd G. Reynolds, The Structure of Labor Markets, op. cit., pp. 169-176; Clark Kerr, "Wage Relationships - The Comparative Impact of Market and Power Forces", John T. Dunlop (ed.) Ibid., pp. 173-193, esp. 182-192. E.H. Phelps Brown, speaks of "the rate for the job", in The Economics of Labour, Yale U. Press, New Haven, 1962, p. 175-184. See also James S. Youtsler, Union Wage Theory, Twayne Pub., Iowa City. For an older but comprehensive study on union geographic wage policy, see R.A. Lester and E.A. Robie, Wages under National and Regional Collective Bargaining, Princeton U. Press, Princeton, 1946.

can be removed from competition. Within a local labour market or an industry, pressures for the standard rate emerge partly from two intraunion sources. Those receiving lower pay call on the union's equity philosophy based on equal pay, while in some cases those with higher wages may want equality in order to prevent erosion of their jobs in favour of lower cost labour. On the employer's side an industry-wide uniform wage may be advantageous in reducing competition (monopsonistic combination) and the possibility of "whipsawing". High wage and high productivity companies also usually find such arrangements beneficial.¹

Where a single union faces a multi-plant national employer the former will usually attempt to bargain uniform rates for individual jobs regardless of location.²

But even separate unions will attempt to obtain higher wages patterned along the lines achieved by other unions in the industry, the locality or

¹ To the extent that wages and firm size are positively correlated, large, dominant employers may be able to impose their wage levels on other employers through collusive action with the union. For a study relating wage levels to establishment size see Leonard W. Weiss, "Concentration and Labor Earnings", A.E.R., March 1966, pp. 96-117.

² See Reynolds and Lester in Insights, op. cit.. For an excellent study on the evolution of a national wage in the multi-employer, multi-plant Canadian Iron and Steel industry (and the subsequent re-introduction of interfirm differentials) see B.C. Williams, "Collective Bargaining and Wage Equalization in Canada's Iron and Steel Industry, 1939-1964", in Relations Industrielles (Laval), April 1971, pp. 308-344. In the U.S.A., in addition to Auto and Steel companies, Oil, Aircraft and Glass firms have national wages while there are region-wide rates in Pulp and Paper, Rubber Tires, Hosiery and Men's Suits industries. (Lester in Insights, op. cit., p. 199).

elsewhere. Such "orbits of coercive comparison" are strongest within industries or among interrelated industries (e.g., Auto to Steel to Rubber) and have been observed empirically.¹ Interfirm patterns (or uniformity) may be facilitated by the presence at the bargaining table, of an employers' association.²

When bargaining takes place on a regional or national level very little priority can be given to the particular supply and demand conditions in any single local labour market.³

Finally, and in a different way, a new national dimension has recently been added to local labour markets. Of the 355 agreements (covering 383,000 workers) on file with the Canada Department of Labour for 1975 containing cost-of-living clauses, 285 or 80% (covering 278,000, 71% workers) use the national consumer price index.⁴

¹ H.M. Levinson, Determining Forces in Collective Wage Bargaining, Wiley, N.Y., 1966; O. Eckstein and T.A. Wilson, "The Determinants of Money Wages in American Industry", Q.J.E., vol. 79, 1962, pp. 379-414.

² John T. Dunlop, "The Task of..." in Dunlop (ed.) op. cit., p. 19 et seq.

³ On the other hand, unions have been known to forego the "standard rate" in cases where economic hardship would be imposed on a firm or region (see B.C. Williams, op. cit., p. 327).

⁴ Figures compiled by author, data from Canada Department of Labour forms: TF8, 2/75-E and R.

Government

Direct government intervention may also affect the wage structure in a local labour market.

The legal minimum wage has different impacts on communities' wage structures depending on their industrial and occupational mixes. Where a locality has a concentration of low wage industries or occupations, other things equal, the minimum wage will normally cause a greater compression of differentials than in communities with high wage industries and occupations.

Governments also have the power to simply command wage structure changes. Thus in Quebec in 1966-67 a government decree transformed a series of hundreds of separate salary scales for teachers (one for each school commission) into a single, province-wide scale (there are isolation premiums).¹ In the early 1970's the Quebec government drastically reduced the wage differentials in the several wage zones for contract construction trades through decree.²

¹ This wage done through Bill 25. See unpublished Ph.D. dissertation, Paul Martel Roy, "L'Instauration d'une seule Echelle de Salaire Parmi les Enseignants du Secteur Public au Québec", McGill University, Montreal, 1974. In the previous system there were some 1500 autonomous school commissions each with its own wage scale.

² With Bill 290 (1968) some twenty decrees (each with its own wage scales) were reduced to three or four wage zones. In 1978 all geographic wage differentials in Quebec construction were eliminated. Also, the Quebec Collective Agreements Act permits the government to decree wages and working conditions over an entire industry in a given region through juridical extension of a single collective agreement. (See Jean Bernier, "L'extension des Conventions Collectives...", Relations Industrielles, janvier, 1969, pp. 141-166. In 1970 Bill 46 created a single, centralized bargaining table for all Quebec's hospital workers later giving rise to geographically uniform wage rates.

More indirectly, government affects wage structures through its public service wage policy¹ and also by programs influencing industrial location.

Section V has sought to develop a framework for the understanding of the formation of local wage structures. It attempted to discover at least a partial explanation for the simultaneous existence of a variety of wage rates for similar work within communities.

It was seen that an employer alone, or together with a union, will situate a wage within a viable range.² Direct and indirect influences on wages actually paid in a local labour market were seen to enter the wage determination process from economic (labour market, product market) and noneconomic sources at the local, regional, national or international levels.

Many of the factors uncovered in this section are expected to provide insights for the solution of problems encountered in subsequent chapters.

¹ Canadian provincial governments pay province-wide rates except for isolation premiums in remote locations.

² For a good summary of the advantages and disadvantages of various wage ranks, see Lloyd Reynolds, *Labor Economics...*, op. cit., pp. 197-203.

SUMMARY

This chapter began with a description of the Treasury Board proposal for regionalizing the national letter carrier wage. The union's reaction opposing the change was documented.

It was shown that the government's offer is part of an overall reorientation of its geographic wage policy. The extent of existing nonnational wages in the Canadian federal public service was then described. An analysis of the remaining steps needed to convert the entire operational category to nonnational wages and its further extension into the Administrative Support category confirms the pervasive nature of the government's new approach to its wage structure.

A review of the previous writings on an employer's geographic wage policy indicates that though this is seen as an important issue, little scientific research on it has been undertaken.

The final section of the chapter set up a framework for examining the kinds of forces contributing to the formation of wage structures in local labour markets. Several noncompetitive sources of wage pressures were identified. It was concluded that the complexities of real labour markets typically lead to an extensive range of wages paid even for a specific skill. In contrast to the passive, "wage taker" role ascribed to an employer in the competitive labour market theory, it would appear

that employers usually possess considerable discretion in wage setting. This discussion will be particularly useful when the overall evaluation of the new government wage policy is undertaken in chapter V below.

APPENDIX I-1
THE (CANADIAN) PUBLIC SERVICE
ARBITRATION TRIBUNAL
AND THE
NATIONAL WAGE ISSUE

In section II of chapter I reference was made to the potentially useful role of the Arbitration Tribunal on the issue of national-versus-nonnational wages. Though the Tribunal has held that the problem is a serious one, its own contribution to an understanding of the various aspects of the question is conspicuous by its absence.

The Tribunal's decisions contain absolutely no analysis or evaluation of the Treasury Board approach or of the unions' reaction. This, in spite of the Treasury Board practice of submitting substantial and reasoned argument supported by considerable empirical data. In their rebuttals the unions are usually equally thorough. This mutism is a serious anomaly in the arbitration process because it deprives the parties (or other bargaining agents, public or private, as well as private employers and independent researchers) of the studied views of this informed and objective body. Such views could be a vital ingredient in orienting the

parties' wage policy positions.¹

Another unfortunate Arbitration Tribunal practice is to be found in its actual decisions involving nonnational wages. Requests for changes in geographic wage structure have come from both employer and union, and have involved desired alterations in both directions: from national to nonnational and nonnational to national. For example, the Treasury Board has asked for the breakup of the national wage of, among others, the firefighters and correctional officers, while the nurses and the General Labour and Trades group² have asked the tribunal to transform their nonnational wages into geographically uniform rates.

In the face of these requests there has not been a single case in which the Arbitration Tribunal has acceded to such a proposal. In opting for the status quo the Tribunal has simply abdicated its responsibility to participate meaningfully in this particular aspect of the wage determination process. The argument may be made that, after due deliberation, the Tribunal

¹ "The government is... considering requiring arbitration tribunals to justify their awards...". The Government of Canada, Agenda for Cooperation, Ottawa, May 1977, p. 62. One year later (March 8, 1978), the government introduced an amendment to the Public Service Staff Relations Act [Bill C-28, arts. 65(5) (a), (b)]⁷ obliging the Arbitration Tribunal to justify wage awards on the basis of factors explicitly stipulated in the Act (art. 68) as well the written submissions of the parties.

² The General Labour and Trades group is made up of some 16,000 tradesmen and lesser skilled manual workers. In 1973 their wages were aligned to outside community levels in twenty-five wage zones and this was reduced to twenty-two in the ensuing agreement. In the early 1960's there were 300 zones which were combined into 150 wage areas just prior to 1967. In the initial collective agreement (1968) a system of thirty-six zones was established.

simply found the existing geographic wage structure in each case, whatever it happened to be, the most appropriate one. Such a conclusion would, however, require an act of considerable faith and an improbably high degree of coincidence.

Typical of the laconic treatment given the nonnational wage issue are the manners in which the Tribunal rendered its judgements in the 1974 and 1975 firefighters awards.

After setting out the details of the respective pay positions of the parties, it concludes:

"The Tribunal finds, effective April 1, 1974 the following (national) rates of pay will prevail..."¹

The brevity is all the more surprising since federal firefighters had engaged in their first (and illegal) strike just weeks earlier on the very issue of their general national wage level and on regional pay pressures.²

Just one year later the same tribunal³ had another opportunity to exert some influence on the question. After reproducing the details of the

¹ Public Service Arbitration Tribunal, Arbitral Award: The Firefighters Case, 1974, op. cit., p. 5.

² See House of Commons Debates, Hansard, April 9, 1974, pp. 1303-1317; also, for example, The Toronto Globe and Mail, April 27, 1974, p. 5; The Gazette, April 18, 1974.

³ The chairman was unchanged but there were different parties' nominees.

parties' briefs on wage matters, the Arbitration Tribunal rendered its decision in the following terse terms;

"The Tribunal finds that...national rates will continue."¹

In place of a potentially considerable accumulation of substantial arbitral jurisprudence on the regional rates question, the Arbitration Tribunal has left a vacuum.

¹ Public Service Arbitration Tribunal, Arbitral Award: The Firefighters Case, 1975, op. cit., p. 9.

CHAPTER TWO

THE NONNATIONAL WAGE POLICY: APPLICABILITY

CRITERIA, RATIONALE AND OBJECTIVES

I

INTRODUCTION

The specific Treasury Board proposal to the Council of Postal Unions in 1972 was described in chapter I. It was later noted that this projected change in geographic wage structure is not an isolated incident intended only for the Post Office, but rather part of a generalized re-orientation of the government's attitude towards its wage rank in labour markets. It is directed at many occupational groups.

In the present chapter this new policy is analyzed in detail. More particularly, the applicability of the proposed geographic wage policy to the letter carrier is investigated. This approach then provides the basis on which an analytical model is constructed and later tested using econometric techniques.

Section II contains an official Treasury Board statement on the principles underlying the new wage policy.

In section III the four criteria which the Treasury Board has identified as qualifying a group of federal public servants for nonnational wages are analyzed in detail. Their relevance to the letter carrier occupational group

is then assessed.

In section IV the new wage policy objectives are restated and the first of these, greater equity, is analyzed. The following section (V) is devoted to a detailed examination of the second objective, greater operational effectiveness. It is this analysis which produces the operational variables providing the basis for the multiple regression analysis of chapter IV.

The concluding section (VI) is a review of economic thought on the relationship between two main variables: wage levels and labour supply to an individual employer.

II
OFFICIAL STATEMENT OF
APPLICABILITY CRITERIA

There have been several debates in the House of Commons on the nonnational wage issue, usually in the context of a conflict involving public servants.

A typical and comprehensive formal government statement on the new wage policy came in October, 1971 during the course of an exchange concerning a dispute over the renewal of the collective agreement for the Nursing group.

"Gaston Clermont (Parliamentary Secretary to the President of the Treasury Board): It is the intention of this government to extend the policy of regional pay differentials to other occupational groups where it is feasible and appropriate to do so, that is, to those groups where the outside pay data indicate significant regional variations from the Canadian average, where the area of recruitment and mobility of employees is limited and where the population of a group is distributed in two or more regions.

These circumstances are typically found in groups in the operational category and administrative category, but exist in groups in other categories as well. Where the circumstances exist, it is considered more equitable and operationally more effective to establish rates of pay on a regional basis." ¹

¹ House of Commons Debates, Hansard, October 4, 1971, p. 8423. The identical statement can also be found in, Ibid., March 21, 1972, p. 1038 (stationary engineers); April 17, 1972, p. 1385 (estimates of Department of Regional Economic Expansion); May 30, 1972 (C.P.U.); August 24, 1972 (C.P.U.); March 25, 1974, p. 582 (nurses); October 21, 1974, p. 590 (General Labour and Trades).

This statement contains two main principles:

1. the enunciation of the criteria for identifying the occupational groups for which nonnational wages are considered appropriate, and
2. the goals or rationale for the new policy.

First the four criteria are analyzed for their relevance to the letter carrier. Then the two goals are discussed in an effort to obtain quantifiable operational measures suitable for later statistical testing.

The four eligibility criteria are:

1. the existence of a significant geographic variation of pay data for similar outside workers about their national mean wage,
2. a limited area of recruitment,
3. limited mobility of these federal public servants among wage zones,
4. a distribution of such employees in more than one projected wage zone.

The first two have economic content, the third concerns an administrative problem and the final criterion is definitional.

III
ANALYSIS OF LETTER CARRIER QUALIFICATION
UNDER THE FOUR CRITERIA

In this section the four criteria are discussed. If the government's policy is to be convincing, not only must these appear logical, but they must apply to the letter carriers. Both aspects are dealt with here.

1. Significant variation of local outside (nonfederal public service) pay data (wage rates) about their national mean.

The underlying rationale for this criterion is that the existence of substantial interregional wage differentials for a given occupation in the private sector¹ implies that there are separate markets, each with its own wage, determined by relatively autonomous conditions of supply and/or demand. The federal government desires to conform to this reality and pay differentiated rates each corresponding to the going rate prevailing in each identifiable market. When, for an occupation, there are no such inter-area wage differentials across the country this may indicate that

¹ While "private sector" in the term often used to denote nonfederal public service workers, the outside universe often contains provincial, municipal and parapublic employees as well.

there is only a single, national market with a single, national wage. Again, if such is the case, the government will conform to this reality and pay a nationally uniform wage.

There are several difficulties in interpreting and applying this criterion for operational purposes.

First, what measure is to be used to compute the variations? The familiar statistical measures of dispersion are the full range, the inter-quartile range, the mean deviation, the standard deviation, the relative dispersion and the coefficient of variation. Since the government is apparently most concerned with the extreme deviations, the full range would seem like a relevant measure with which to assess the significance of the variation of the "outside letter carrier wage" from the Canadian average. On the other hand, the relative dispersion is a more comprehensive measure accounting for the concentration of all observations, including the extremes.¹ To ensure that the outside comparable geographic wage structure is adequately assessed, both measures will be used.²

¹ The range is a weak measure because at the limit, all wage rates except two could be closely concentrated about the mean while the single extremes could be far on either side.

² The full range is computed by, $\frac{X \text{ max} - X \text{ min}}{X \text{ min}} \times 100$, where X max is the highest observation, and X min is the lowest observation. The relative dispersion (r.d.) is computed by, $\frac{\text{mean absolute deviation}}{\text{mean observation}} \times 100$.

The second problem is that there is no indication of the quantitative meaning of the qualifier, "significant". What is the critical value of the intermarket variation in wages that would warrant the breakup of the national letter carrier wage ?

A related problem is that of determining the meaning of the phrase (comparable) "outside pay data" in the policy statement. If the occupational group under study were federal carpenters, nurses or truck drivers the answer would be relatively simple.¹ There are carpenters, nurses and truck drivers in non federal public service employment. The government could obtain inter-community wage data on these occupations and compute their ranges and relative dispersions. The values thus calculated would then be compared to those of some standard reference (selection discussed below). If the wage dispersion of the outside counterpart of the federal public service group being studied (e.g., the carpenters) is the same order of magnitude as that of the standard group, then the dispersion may be qualified as "significant" and this federal public service group then becomes eligible for wage fractionization according to criterion number one.² However, since

¹ It would be only "relatively" simple compared to the case of letter carriers. The determination of the extent and composition of the outside universe of workers constituting "comparable" employees is complex and replete with the opportunity for the insertion of arbitrary standards and value judgements.

² Alternative means to determine "significant" dispersions are described below.

there are no letter carriers outside of the federal public service¹ this direct method cannot be applied.

One way to ascertain the geographic wage dispersion for "outside letter carrier" is to determine an occupation requiring comparable schooling, responsibility, experience and skill to that of the letter carrier function. This would be the alternative employment opportunities of letter carrier candidates or letter carrier quits. The variation in wages of this proxy group is then compared to the standard value for a test of "significant variation".

In the pre-collective bargaining period the Treasury Board based the letter carrier wage on an outside proxy (labelled # 1 in the present research) composed of the Meter Reader (weighted 60%) and the Delivery Truck Driver (weighted 40%). These occupations were considered to be typical of the alternative employment opportunities of letter carrier candidates and letter carrier quits.² This wage setting procedure is open

¹ Some researchers on the subject have decided that this factor alone is sufficient to disqualify such public servants from a nonnational wage structure.

² Interview, Harry Powell, pay research officer, Post Office, Ottawa, May 26, 1972.

to criticism since thousands of unskilled and semiskilled (and some skilled) jobs constitute the universe of potential alternative employments for the letter carrier. Each such job is made up of many specific characteristics, positive and negative, which lead some workers to include, and others to exclude them from their real set of possibilities.

Because of the apparent similarities of many aspects of their jobs, the meter reader seems like a good match as the letter carrier's comparable outside employment. However, the 1965 Commission of Inquiry into postal (and other) wages chaired by Judge J.C. Anderson has criticized the use of the Meter Reader as an outside match for the letter carrier on the basis of a comparison of respective physical and mental requirements and tasks.

"An examination of this material [comparative job requirements], while revealing some comparability, points up important elements of difference which makes the overall comparability between the Meter Reader and the Letter Carrier questionable."¹

In order to broaden the concept of the outside comparable employment a second composite proxy (# 3) was developed for purposes of the present study.² It is the equally weighted city means of the following occupational

¹ Second Interim Report, Ottawa, (mimeo.), August 19, 1965, p. 7 (see also p. 8 and "Attachment I"). In addition, the letter carrier job is characterized by a relatively high degree of job security, but with virtually no promotional opportunities. It is therefore excluded by risk-seekers or by highly ambitious workers.

² Several other proxies were constructed for wage level comparison purposes, see chapter III, below. The present objective is to get a comparable outside geographic wage dispersion.

titles: Meter Reader, Truck Driver, Junior Clerk and Bus Driver. These were selected on the basis of job content comparisons with the aid of formal job descriptions.¹

Despite these weaknesses, both proxies # 1 and # 3 will be retained. Table II-1 shows the intercity ranges and relative dispersions for proxies # 1 and # 3 for the 29 cities sample used in the present study.²

¹ Both the U.S. Dictionary of Occupational Titles (3rd edition, 1965) and the Canada Department of Labour definitions used in the Wage Rate Survey (Occupational Coding System), Economics and Research Branch, Ottawa, Mimeo., undated, C.1970, 15 pgs) were used.

² An explanation for the selection of the city level of analysis and the 29 specific cities is provided below.

TABLE II-1
GEOGRAPHIC WAGE DISPERSIONS
LETTER CARRIER PROXIES, 1972

Proxy	Range	Relative Dispersion
Proxy # 1	38.88%	8.42%
Proxy # 3	45.69%	9.21%

Source: 29 city sample, Canada Department of Labour, Wage Rates, Salaries and Hours of Labour, Ottawa, 1972.

It thus seems on the basis of the data in table II-1 that a range of about 40% and a relative dispersion in the order of $\pm 9\%$ would represent the geographic variations about the mean of letter carrier wages if letter carrier wages were linked to these proxies.

Now that a comparable outside wage variation has been computed it remains to be seen how these compare to some "standard value". Three such "standard" reference benchmark values are now derived.

In the first method some arbitrary minimum is selected and if the outside letter carrier dispersion falls on or beyond that value then letter carriers do qualify for fractionization on criterion one. A relative

dispersion of, say $\pm 5\%$ seems "smallish" and $\pm 10\%$ appears to become "substantial". The $\pm 9\%$ found in table II-1 means that the Treasury Board would consider letter carriers to have a "significant variation about the Canadian mean". The range of some 40% also just seems large enough. It is clear however that this method is hardly defensible because radically different benchmarks can be selected by others which are equally reasonable or unreasonable.

A second possible method is to compare the dispersions to some "average" of all occupations. Thus the Industrial Composite or Manufacturing wage can be used to provide the order of magnitude against the range of 40% and relative dispersion of $\pm 9\%$ can be set. These are shown in Table II-2.

TABLE II-2
GEOGRAPHIC WAGE DISPERSIONS
INDUSTRIAL COMPOSITE, MANUFACTURING, TRUCK DRIVER
1972

	Range	Relative Dispersion
Industrial Composite	99%	13.12%
Manufacturing	98%	17.66%
Truck Driver	61%	10.47%

Source: Computations for 29 city sample made from data taken from Statistics Canada, Employment and Average Weekly Wages, Ottawa, (72-002), 1972 for the Industrial Composite and Manufacturing. The Truck Driver wages are from Canada Department of Labour, Wage Rates, Salaries and Hours of Labour, Ottawa, 1972, tables 23 to 184.

The first two rows in table II-2 show that the range of observations (99%, 98%) is roughly twice that of the "outside letter carrier" (40%) and would indicate that the latter's "outside variation about the Canadian average" is "not significant". The relative dispersions of these benchmarks (13%, 18%) are also substantially superior to the 9% of the letter carrier proxy.

It is normal to expect that these standards would have relatively high dispersions since they include a very wide variety of occupations.

As another standard, the single occupation, Truck Driver classification range and relative dispersion were computed for the same 29 cities and are also shown in table II-2.¹ The range of 61% and the relative dispersion of $\pm 10.47\%$ are closer to the letter carrier proxy values (Table II-1) than the two more heterogeneous standards in Table II-2. The use of the Truck Driver benchmark could thus lead to the conclusion that the letter carrier may probably qualify for nonnational wage on the first criterion.

¹ The criticism of heterogeneity can also be levelled at this occupational group since, depending on the industry in which they work, truck drivers can be very well paid (beer, petroleum) or relatively poorly paid (city delivery for department store, food delivery). The U.S. Study on Postal Operations, Towards Postal Excellence (op. cit.) uses the Truck Driver wage as the outside proxy for their letter carrier. (Annex, Volume IV, pp. 5.47, 5.49, 5.200).

However, the use of the Truck Driver as the basis for computing the standard value is open to objection since it also appears in the composite outside proxies for the letter carrier wage itself. In an effort to mitigate this criticism the inter-city variations were also computed for the Urban Bus Driver¹ with the following results: range of observations, 72%, relative dispersion, 14.54%.² These figures tend to render the letter carrier proxy values (40% and 9% respectively) "non-significant".

The results of the use of this second method for testing the relative extent of the letter carrier (proxy) outside wage dispersion are inconclusive at best, and more likely tend to invalidate the Treasury Board position.

There is a third, more indirect method for arriving at a benchmark value of the dispersion which may qualify a federal public service occupational group for nonnational wages according to the Treasury Board criterion number one. This is the identification of the dispersion values of groups which have had national wages broken up or those to which such a proposal was put. This would at least reveal the order of magnitude the Treasury Board has decided is a "significant variation" about the national mean.

¹ It is true that the Bus Driver appears in Proxy # 3 as well, but with much less weight.

² There were data on only eighteen of the twenty-nine sample cities. It is not possible to say a priori whether the inclusion of the eleven other cities would increase or decrease the dispersion.

Only one group has actually had its wages broken up: the nurses. Besides the letter carriers, regionalization was also proposed to correctional officers (prison guards) and firefighters. While there are "outside" (provincial) correctional officers, their wages are province-wide. Since the present study is at the city level, this group cannot be used for comparison purposes. This leaves nurses and firefighters.

The nurses uniform wage was broken up in 1966, but the Canada Department of Labour did not publish wage data on nurses for most of the cities in this sample until 1974. Thus table II-3 shows the 1974 intercity dispersion of nurses wages on the assumption that it closely represents the 1966 dispersion. Fortunately there is a good series of municipal-level wage data for the outside firefighters and their 1972 dispersion data is also included in table II-3.

TABLE II-3
GEOGRAPHIC WAGE DISPERSIONS
OUTSIDE NURSES AND FIREFIGHTERS

	Range	Relative Dispersion
Nurses ^a	54.5%	10.10
Firefighters ^b	69.1%	10.81

Source: Canada Department of Labour, Wage Rates, Salaries and Hours of Labour, annual.

a. As at October 1, 1974 for 23 cities.

b. As at October 1, 1972, for 26 cities.

The range of observations for nurses and firefighters, 55% and 69%, compare somewhat more favourably with those of the two letter carrier proxies (46%, 39%, see table II-1) than those of the more general "outside" ranges resulting from the application of the second method for arriving at benchmark values (the 99% and 98% for the Industrial Composite and Manufacturing of table II-2) though the letter carrier proxy values are still markedly smaller. An even greater degree of comparability emerges for the relative dispersions. Those of table II-3 (10.10%, 10.81%) are both very much closer to those of table II-1 (9.2%, 8.42%) than those of table II-2 (13.12%, 17.66%).¹ On the basis of this limited analysis, the

¹ The range of observations and relative dispersion for firefighters for all seventy-eight cities for which data is available (1972) are 11.90% and 96% respectively and 12.04% and 69% for the twelve major metropolitan cities.

Treasury Board seems to have been rather consistent in its selection of occupational groups singled out for wage fractionization.

The preceding exercise was designed to discover whether occupations comparable to the letter carrier display a significant geographic variation in wages about their national mean. The results do not lend support to the Treasury Board position. However, as meticulous and disinterested as the researcher may be, it is not really possible to be categorical about this finding. There are obvious weak links in the procedure used here, and furthermore, no analytical design can be devised which is universally defensible.

The first problem is in the identification of occupations or composite proxies comparable enough to serve as "outside letter carrier". Two proxies were constructed but others can be equally justified. The second weak link is in the identification of the standard value. Three methods were selected here. The purely arbitrary choice of range and dispersion values carries no weight. The use of the industrial composite, manufacturing and truck driver computations have some merit, but other combinations of occupations or single occupations could just as easily be proposed. The third method is only a test of the consistency of the Treasury Board choices of federal public service and some degree of coherence was found.

The third weak link is in the determination of the closeness of the magnitude of the letter carrier proxy dispersion to the standard, benchmark

dispersion. How close must they be in order to be considered, similar? Again, no single, clearly defensible value can be advanced.

In spite of these debatable methodologies and inconclusive findings the analysis of the three other criteria continues.

2. Limited Area of Recruitment

The rationale for this criterion is that if recruitment is frequently made from outside the proposed wage zone then account would have to be taken of the wage levels prevailing in those areas. It is in fact an attempt to define the geographic space of the relevant labour market. The assessment of the applicability of this criterion to the letter carrier case would have been greatly facilitated if the data on letter carriers-by-residence-on-hire (or locality of previous employment) had been made available by government sources possessing such information. Unfortunately this was not forwarded. In view of this limitation, logical and other indirect means will be used.

One writer has put the problem in the following terms.

"But another town, 35 miles away...drains from the same labour area as our plant. We have included this latter town in our survey of going rates upon which wage and salary policy is based, since employers in this town do compete with our plant for employees." ¹

¹ Wilbur R. Hanawalt, "How Big is your Labor Area?", The Management Review, August, 1953, pp. 440-441.

As a general rule, other things equal, the lower the skill level the more geographically restricted the labour market.¹ Firms in Halifax will not usually advertise in Montreal or Toronto newspapers for semi-skilled or even skilled manual workers, but they will more likely engage in such a recruitment effort for auditors or engineers. Thus since letter carriers are recruited essentially among the unskilled, it may be expected that free market forces will tend to make the immediate locality the usual recruitment area.

"In general, the labour market for manual workers tends to be a local one."²

Labour economists, who have long been preoccupied with the concept of the labour market, also generally conclude on the basis of theory that the local labour market is the most relevant, especially for the skill levels like those of the letter carrier.³ While some interactions among markets

¹ For example, see, John B. Miner, Personnel and Industrial Relations, MacMillan, N.Y., 1969, pp. 250, 251, 253. David Lewin, "The Prevailing-Wage Principle and Public Wage Decisions", Public Personnel Management, November-December, 1974: "For unskilled, semi-skilled and skilled craft positions, knowledge of wage rates in the local labour market is usually sufficient for wage-setting purposes." (p. 476)

² John B. Miner, Ibid., p. 253.

³ See Lloyd Reynolds, The Structure of Labor Markets, Harper and Bros., N.Y., 1951 (pp. 41-42); D.I. MacKay et al, Labour Markets Under Different Employment Conditions, Allen and Unwin; J.F.B. Goodman, "The Definition and Analysis of Local Labour Markets", British Journal of Industrial Relations, July 1970, pp. 179-196; L.C. Hunter and G.L. Reid, Urban Worker Mobility, O.E.C.D., Paris, 1968; Clark Kerr, "The Balkanization of Labor Markets", Labor Mobility and Economic Opportunity, M.I.T., 1954, pp. 92-109.

do occur, these are only usually present with serious shortages or surpluses or when wage differentials go beyond some maximum tolerable level.

But in addition to the market forces determining the community as the spatial dimension of the labour market for letter carriers, there are several institutional parameters which reinforce, and ultimately impose, the community as the relevant area for letter carriers.

Firstly, the Public Service Employment Act recommends that a "locality preference" be used as a criterion in federal public service hiring.

"When an appointment is to be made to a local office, the Commission, in making the appointment from outside the Public Service shall, whenever it is in the best interests of the Public Service to do so, give preference in appointment to qualified candidates who reside in the area served by the local office over qualified candidates who do not so reside." ¹

Secondly, and decisively, the announcements of competitions for new letter carrier candidates bear the expression: "Open to residents of the city of _____." ² The city of work is thus clearly imposed as the area of recruitment for letter carriers.

Thus even though the Treasury Board has proposed regional rates, only community level rates are appropriate if the objective is to pay "the market wage", because the community and not the broad region is the relevant labour market in this case. This reasoning applies to the letter carriers but

¹ The Public Service Employment Act, (ch. 71, 14-15-16, Elizabeth II) Art. 19.

² Post Office form number 22-52-011 (2-73).

equally well to the firefighters and the correctional officers. Indeed such recognition of the community as the basis for computing the "comparable wage" is to be found in the very pronouncements of the President of the Treasury Board himself. While the specific proposals are based on broad regions and the issue is couched in terms of "regional rates", some of the reasoning reveals that the locality is in fact recognized as the more meaningful level for the establishment of wage zones.

Hon. C.W. Drury: (President of the Treasury Board):

"I think there is an inherent dislocation in setting wage rates between a national average and a regional rate and either the employee operating on the national average is going to find himself out of step in the community in which he lives and operates in economic terms, or he is going to be in step with the community in economic terms in which he lives and operates but different from other employees of the same employer operating elsewhere in Canada." ¹

And again,

"We have, as a general approach, an arrangement in the public service where by an employee who lives and works for a substantial part of his working career in a particular region or community is related in economic terms directly to the community rather than to others in public service living under quite different conditions, and this arrangement is likely to be more satisfactory to the employee." ²

¹ House of Commons, Miscellaneous Estimates Committee, Minutes, February 2, 1973, p. 9:13. (underlining added)

² Ibid..

Still again,

"The fact of the matter is that if the private sector, which is by far the largest employer in Canada, seeks to secure employees at a given wage rate you create local dislocations if, for the same work locally, the federal government employee gets either a higher or a lower rate." ¹

Thus whether viewed through the economic theory of labour markets, through the government's self-imposed legal constraints or even through the minister's own speeches the relevant labour market is not national but neither is it regional in scope. Following this line of thought, it is the local labour market which is applicable in determining the outside comparable wage for letter carriers.

This view is supported by former Postmaster General Eric Kierans.

"Even regional rates are too aggregative." ²

In 1962 the Glassco Commission declared that the wage zone should correspond to the relevant labour market.

"The conclusion is that the federal government should adhere to a policy of uniform rates only for categories of personnel for which the market is country-wide. For categories where markets are regional or local, government

¹ Ibid., p. 9:15 (underlining added).

² Interview, Montreal, June 29, 1972. Despite this statement on the logical extension of Treasury Board policy Mr. Kierans opposes fractionization on pragmatic grounds: "It would take a three-month strike to get this and its not worth it."

compensation policy should be guided accordingly."¹

There is another reason why the community, not the broad region, should be selected as the wage zone unit if national rates are to be broken up.

Under the Treasury Board proposal to the letter carriers, their Ontario wage would rise by 17.0% over three years making postal employees in all cities in that province the highest paid in the country. The increase offered to Quebec-less-Montreal letter carriers was only 10.3% over three years. But there are some low wage Ontario cities and some high wage Quebec cities.

For example, the industrial composite wage rate was \$5.74 and \$4.24 in Sept Iles and Chicoutimi (Quebec) respectively in 1972 while it was only \$3.61 and \$3.38 in Brantford and Cornwall (Ontario).

The foregoing analysis has shown that the relevant labour market for letter carriers is the local labour market and if a wage policy is to be based on the alignment to the going market wage, a regional rate is not appropriate for letter carriers.

3. Limited Mobility of Employees

The rationale for the immobility criterion is that where public servants are not frequently transferred among wage zones then fractionizing is practicable. If, on the other hand, there are numerous movements of employees

¹ The Glassco Report, op. cit. (Volume I, p. 291), (underlining added).

across zones, either in the form of lateral transfers or promotions, this would engender problems of repeated alteration in the employee's wage depending on the differences between old and new zone rates. Such a state would mean serious difficulties in wage administration and adverse reaction from those subject to wage decreases. Following this reasoning, national rates are appropriate for an occupational group whose work entails frequent interzone movements.

"If the category tended to be highly mobile, then that mobility justified national pay scales. On the other hand, if the category was likely to remain in the community for the bulk of his working life or for a long period of time, regional rates would be more fair to both the public servant and the community in which he served." ¹

What is the state of mobility among letter carriers? ²

Letter carriers do not transfer among cities since, as was pointed out above, they must be resident in the city in which they seek work. In addition, part of the formal job requirements is that the letter carrier be familiar with the "...street and business locations in the community to be served." ³

¹ Mark Rose, M.P., paraphrasing the President of the Treasury Board, House of Commons, Hansard, March 21, 1972, p. 1038. Note the confusion between the "community" as the basic geographic unit and the "regional" space of the wage zone.

² The Post Office declined to provide the actual information and so indirect means must be used to answer the question.

³ Post Office, Personnel Manual, Ottawa, (mimeo.), October 1968, "Selection Standards: Letter Carrier."

As far as possible intercommunity promotions are concerned, it is accepted by incumbents that the letter carrier function is a "dead end job".¹ There is a classification title, "Supervisory Letter Carrier", which carries a 6% wage premium, but the nonwage pecuniary and nonpecuniary disadvantages outweigh the value of the wage supplement.²

The reluctance to move can be further illustrated by the reaction of the Letter Carriers Union of Canada to the effect of the 1970 reduction in mail delivery service from six days to five. The union refused to allow the Post Office to transfer any member rendered surplus to another city. Instead, members preferred to change jobs within the city (mostly to inside functions) even when this meant a membership loss from the letter carriers union to the Canadian Union of Postal Workers.³

Thus, on the third criterion, the limited interzone mobility, the

¹ Interview, Bernard Lockman, Walk Assesment Supervisor, Post Office, Ottawa, March 15, 1972, and confirmed by interviews with numerous letter carriers.

² So strong is this net disincentive that Supervisory letter carriers are often recruited off the street rather than from among letter carriers.

³ Interview, B. Côté, Letter Carriers Union of Canada representative, Montreal, June 20, 1974. In Montreal alone 250 surplus letter carriers were given inside work following the reduction in outside delivery service. Such changes in union membership were made with maintenance of full seniority rights in the new bargaining unit.

letter carriers again qualify for nonnational wages, but at the local rather than regional level.

4. Distribution in more than one region

This is a self-evident criterion. If the employees whose national wage is being considered for fractionization are all concentrated in one region or community, there is no need to provide wage schedules elsewhere. Canadian Postal letter carriers work in 262 cities and towns from one end of the country to the other. Thus again, the letter carriers qualify as being an appropriate group for nonnational wages on the basis of Treasury Board criteria.

Taken as a logical set of conditions, each of the four criteria is necessary if a group is to have nonnational wages, but no single criterion or any combination other than all four is sufficient. It should be noted, however, that though an occupational group of federal public servants qualifies on all four criteria - as may be the case with the letter carrier¹ - this does not necessarily mean that they should be on local rates.

¹ It will be recalled that there does not seem to be a "significant variation" of "outside letter carrier" wages about their national mean.

SUMMARY

The main conclusions on the foregoing analysis are:

1. that the logical "labour market" is not the "region" as suggested by the Treasury Board, but the locality or immediate community,
2. that letter carriers may be considered to qualify on most conditions for nonnational wages.

In the next section the objectives of the new geographic wage policy are restated and the first, greater equity, analyzed.

IV

ANALYSIS OF POLICY OBJECTIVES:

GREATER EQUITY

This section examines the competing union and Treasury Board concepts of "equity" and the complexities of the issue.

The general policy statement on the greater appropriateness of the nonnational wage over national wages for specific groups of federal public servants stipulated the two objectives of the change:

"...it is considered more equitable..."
and it is "operationally more effective..."¹

The present section deals with the first of these: greater equity.

The dictionary definition of "equity" is:

"State or quality of being equal, or fair; fairness in dealing".²

In another economic context, that of Public Finance, Richard Musgrave defines equity as, "equal [tax] treatment of equals",³ which, when transferred to the present study means, equal wage treatment for equals.

¹ See complete quotation on p. 65, above.

² Webster's Collegiate Dictionary, Thomas Allen, Toronto, 1936 (5th ed.), p. 338.

³ Richard A. Musgrave, The Theory of Public Finance, MacGraw Hill, N.Y., 1959, pp. 160 and seq. (chapter 8).

In the case at hand, there are competing concepts of who the "equals" are. The letter carriers feel that their proper reference group consists of other workers carrying out identical functions for the same employer. For the Treasury Board the correct comparison group is those outside workers with similar tasks in the relevant labour market: the immediate community.

It was pointed out in section V, chapter I, above, that unions generally attempt to obtain a standard rate among competing employers within an industry. It is therefore even more comprehensible that they should reject wage differentials for identical work for a single employer.

In the context of the Postal letter carriers, besides the traditional principle of equality as equity, the union justifies the national wage by the very nature of the service supplied.¹ The production of postal services involves a generally integrated and highly interdependent work process. Mail can originate in any part of the country and be destined for any other part. The product market is national in scope. The process of service formation (collection, sorting and delivery of mail) means that it is hardly possible to identify the independent contribution of each geographic area to postal transmission and to apportion rewards proportionally.

¹ This view was expressed by Roger Decarie, president of the Letter Carriers Union of Canada in an interview, Ottawa, November 15, 1973.

Besides such an appeal to product market forces unions also have a more pragmatic purpose in seeking uniform wages for all members doing the same job.

In reply to the Treasury Board:

"Your wage [regionalization] proposition... would discriminate against postal workers dependent on the geographic areas in which they do their postal work." ¹

And to their members:

"This change [national to nonnational wages] would divide us and weaken us all regardless of the region in which we work." ²

The principle underlying these ethico-pragmatic concerns has been aptly expressed by E.H. Phelps Brown.

"These tactical considerations [taking labour out of competition] are reinforced by the thoughts that the strength of the unionist lies in solidarity, but differences of pay are divisive; and that two rates of pay for the same job cannot both be fair." ³

For the Treasury Board the breakup of the national rates is justified

¹ Council of Postal Unions Statement, Ottawa, (Mimeo.), May 11, 1972, p. 1.

² Council of Postal Unions, Bref Sommaire, op. cit.

³ E.H. Phelps Brown, The Economics of Labor, Yale University Press, New Haven, 1962, p. 175.

through an appeal to different equity concepts from those expressed above. This particular employer claims obligations concerning the equity of public service wages to taxpayers, private sector workers and outside employers. The Treasury Board feels that it should not overpay (however defined) its employees because such a practice is wasteful of public funds and thus a neglect of its role as fiduciary of the public treasury. In a typical statement, the President of the Treasury Board relates the idea as follows:

"I have endeavoured to explain to the House on earlier occasions that the government believes it is the government's duty to taxpayers to provide an efficient public service, that is, ...one that is not wasteful of the taxpayers resources...
.... Given the choice of trying to equate the pay of the public service to that of the private sector on a national level or on a regional level, the government must, for common sense reasons, use a regional basis." ¹

Equity in public service wage policy vis-a-vis private sector workers has been described by the government thusly;

"Paying national rates of pay in such circumstances [when the four eligibility criteria apply] would only serve to overpay [public] employees in some regions and to underpay [public] employees in other regions in relation to the rates of pay prevailing in those regions [for similar work]. Neither

¹ Hansard, Ottawa, March 25, 1974, p. 852. The original statement relating equity in public service wages to taxpayers can be found in, Arthur Young and Company, Report of Transmission (The Classification of the Civil Service of Canada), Toronto, 1919, p. 25. ("Fairness to the taxpaying public requires that the compensation should not materially exceed that paid for similar service by enlightened employers in the general industrial and commercial world. Any excess over such prevailing average is in the nature of a special subsidy with which no group should be favored.")

situation, from the employer's point of view, is desirable or viable." ²

The Treasury Board's view of equity in public service wages expresses the need to account for levels paid by other employers for similar duties.

"It is not desirable to create a general disparity between Public Service rates in lower-income areas and those paid by private industry and other levels of government. The provincial governments, on their part, are sensitive to Federal Public Service rates of pay which are in excess of their rates." ³

It is with respect to these three types of constraints - taxpayers, outside workers, other employers - that the Treasury Board defines equity for its own employees. The Board's interpretation of fairness in public service wages leads it to a nonnational structure in the letter carrier case. On the other hand, the union's definition of equitable public service wages leads it to a national wage structure.

Not only are there other concepts of wage equity ³ but there is no

¹ The Parliamentary Secretary to the President of the Treasury Board, Hansard, Ottawa, April 17, 1972, p. 1385.

² The President of the Treasury Board in a letter quoted in Hansard, Ottawa, October 21, 1974, p. 590.

³ For example, Sharon M. Smith considers U.S. postal workers "overpaid" when their wage exceeds the national average wage of outside workers having similar personal characteristics such as marital status, education, race, Spanish origin, veteran status etc. (see "Are Postal Workers Over- or Underpaid?", Industrial Relations, May 1976, pp. 168-176.).

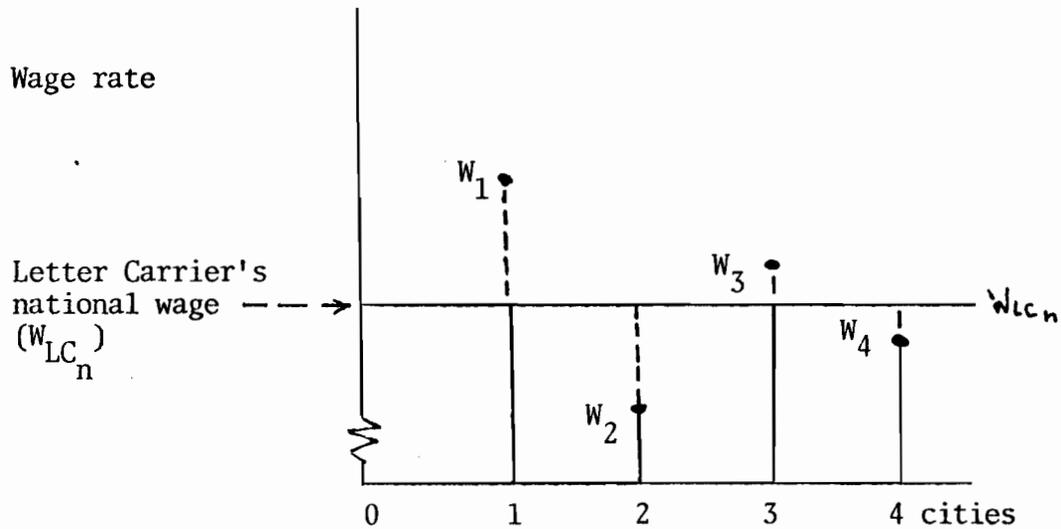
scientific, objective or universally acceptable formula with which to select the "correct" equity concept.

But even when employer and union agree on the geographic dimension of the relevant labour market, how are such expressions as "the going rate" or "market rate" - "what other employers pay" - translated into operational terms?

Setting aside the exceptional case of a uniform wage fixed at the national peak,¹ the image given by the Canadian Federal Government is as represented in figure II-1.

¹ The government has expressed the fear that the uniform national rate is set at the peak of local outside comparable wages. Hansard, Ottawa, March 21, 1972, p. 1038, see also Hansard, October 12, 1971, p. 8596. If this were the case there would only be "overpayment" of public servants. The location of the letter carrier national wage among Canadian community rates is determined in chapter IV.

FIGURE II-1
 THE NATIONAL LETTER CARRIER WAGE
 AND LOCAL GOING WAGES

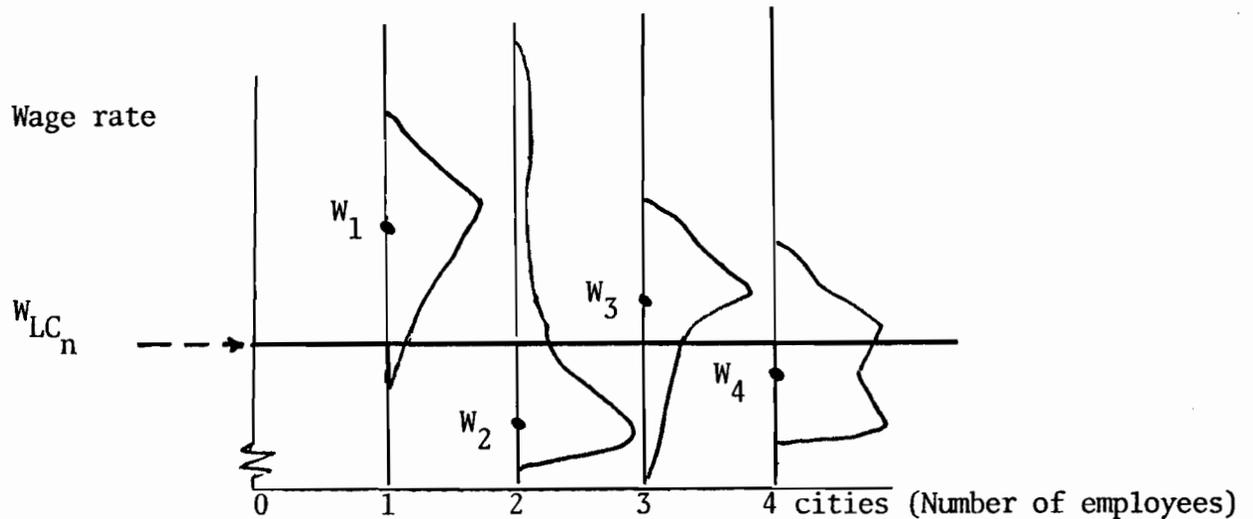


The rates W_1 , W_2 , W_3 and W_4 are the going or prevailing wages for comparable workers in markets 1 to 4. The letter carriers are overpaid in markets 2 and 4 ($W_{LC_n} > W_2, W_4$) and are underpaid in markets 1 and 3 ($W_{LC_n} < W_1, W_3$).

But the single points W_1 , W_2 , W_3 and W_4 are abstractions from reality. They are representative wages levels from distributions about them. Bringing the situation one step closer to reality produces a diagram similar to figure II-2.¹

¹ A distribution can only be drawn for a single occupation. It cannot be made for a composite proxy or the industrial composite.

FIGURE II-2
 THE NATIONAL WAGE
 AND LOCAL WAGE DISTRIBUTIONS FOR A COMPARABLE OCCUPATION



Here the hypothetical market wage frequency distributions are shown with various possible shapes about their means. Indeed, with the distributions as in figure II-2 there is considerable overlap among all markets for comparable workers. There are employers in low wage market 2 paying higher wages than the highest paying employer in high wage market 1. There are also some employers in high wage market 3 paying lower wages than the lowest paying employers in either of low wage markets 2 and 4.¹

¹ This reality is demonstrated by H.M. Douty, "Some Aspects of Wage Statistics and Wage Theory", I.R.R.A. annual meeting, Proceedings, Chicago, 1958, p. 196-212. See also, John E. Buckley, "Intra-occupational Wage Dispersion in Metropolitan areas, 1967-68", M.L.R., September 1969, pp. 24-29. Richard Lester has constructed a theory based on such dispersions. See Richard A. Lester, "Wage Diversity and its theoretical Implications", R.E.S., May 1946, pp. 152-159, and, "A Range Theory of Wage Differentials", Industrial and Labour Relations Review, July 1952, pp. 483-500. See also Robert L. Raimon, "The Indeterminateness of Wages of Semiskilled Workers", Industrial and Labor Relations Review, January 1953, pp. 180-194.

The earlier Treasury Board statement on "underpayment" and "overpayment" results from an abstraction of representative wages from a complex reality. On the identification of the prevailing rate, Lewin writes,

"...suppose that a government surveys the market in search of wage data for the position of custodian and discovers rates ranging from between \$2.50 and \$3.50 per hour and a median of \$3.00 per hour. Which of these is the prevailing rate? Obviously they all are, and perhaps the government can simply choose one of these rates for its own custodians." ¹

The wage comparison process involves even greater complexity. Even if a defensible representative outside wage is arrived at ² and some wage matching formula devised, ³ the problem of defining the appropriate outside universe of employers remains. ⁴

The Treasury Board has had a policy of including only "good employers" in its outside calculations. In order to qualify for this universe an

¹ David Lewin, "The Prevailing-Wage Principle and Public Wage Decisions", Public Personnel Management, November-December, 1974, p. 478.

² The most common are the mean, median, mode, but any other wage can be deemed "representative".

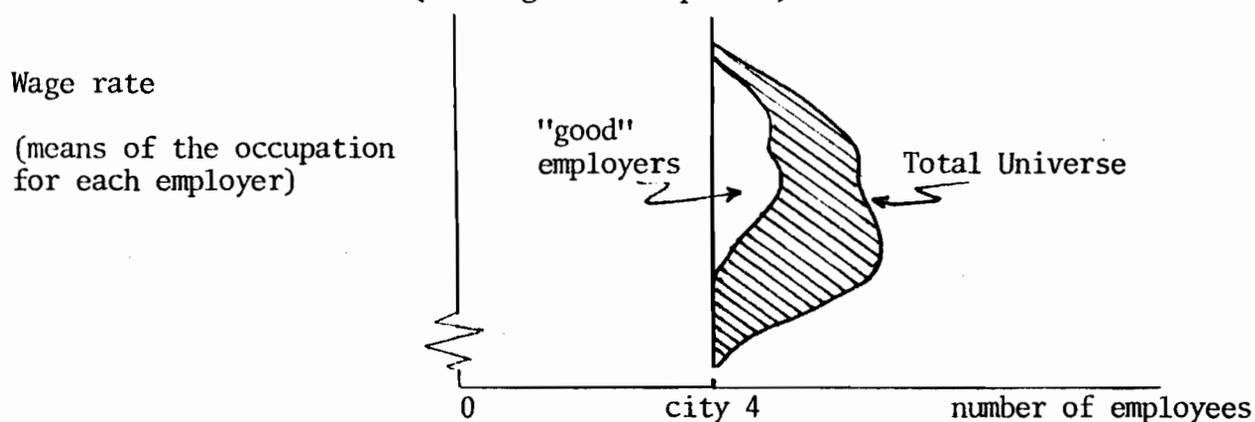
³ The simplest basic formula is a matching of means, but even this does not indicate how to adjust the remainder of the distributions. Many other alignments are possible. In the early years of collective bargaining the Treasury Board suggested a match of the public service maximum to the outside third quartile. (see, Treasury Board, Pay Determination: History and Techniques, Ottawa, Mimeo., C.1967, p. 20).

⁴ The problems of subjectivity and complexity of determining a "comparable" outside universe are described in The Report of the U.K. Royal Commission on the Civil Service (1953-55), ("The Priestly Report"), The Queen's Printer, London, 1955 (par. 136-153, esp. 148).

employer must have a personnel department, have a minimum number of employees, give a minimum number of weeks of paid annual vacation, participate in the costs of a pension plan and life insurance, and be of a minimum size.¹ A hypothetical relation between a total universe and a more restricted universe of "good employers" is shown in figure II-3.

FIGURE II-3

THE "TOTAL" OUTSIDE UNIVERSE
AND THE "GOOD EMPLOYER" UNIVERSE
(for a given occupation)



¹ Treasury Board, Pay Determination... op. cit. The dispute over the appropriate universe has been labelled "The Universe Controversy" in R. Giroux, Pay Determination in the Canadian Public Service, M.A. thesis (unpublished), University of Ottawa, 1969. A discussion of the "good employer" concept is also found in, The Priestly Report, op. cit.

The striped area in figure II-3 indicates the "non-good employers", excluded from the outside computations to be internalized into the federal public service. As is clear from these distributions, the "good employer" representative wage (regardless of its measure) is higher, and the range is considerably shorter.¹

In another context, a member of a conciliation board dealing with telephone operators has expressed the universe controversy thusly:

"Another exasperation to the union is the nature of the firms surveyed and the character of the work... Bell sampling goes heavy for banks, insurance companies and law firms. These, of course, have been bastions of non-unionism and low wages. They are notorious for rapid turnover and a relatively "social" atmosphere at work. Most of the women with whom Bell ties its operators are not tied to a communications mechanism with all its impersonal demands, minute after minute." ²

¹ There seems to be some discussion in U.S. academic writings that the total universe should be used. David Lewin, "The Prevailing-Wage Principle and Public Wage Decisions", Public Personnel Management, November-December, 1974, pp. 473-485; Sharon Smith, "Pay Differentials Between Federal Government and Private Sector Workers", I.L.R.R., pp. 179-197; Jerome M. Rosow, "Public Sector Pay and Benefits", Public Administration Review, September/October, 1976, pp. 538-543; James Freund, "Market and Union Influence on Municipal Employees Wages", I.L.R.R., April, 1974, pp. 391-404; Walter Fogel and David Lewin, "Wage Determination in the Public Sector", I.L.R.R., April, 1974, pp. 410-431. On the other hand, U.K. and Canadian writers seem to feel that the government should be compared to "good" employers. See G.K. Cowan, "Fair Comparison Criteria in Public Sector Bargaining", Monthly Labor Review, July, 1976, pp. 50-51; H.A. Clegg, "The Scope of Fair Comparisons", Journal of Industrial Economics, July, 1961, pp. 199-214.

² Douglas Fisher in, Conciliation Board Report, Bell Canada and Traffic Employees' Association, November 5, 1971, p. 15.

The lack of understanding of the complexity of the public / private wage comparison process is typified in a recent statement by a former federal minister of labour.

"Fair comparison provides a linkage of the public sector with the economic constraints operating in the private sector - constraints which limit the gains to be won through adversary collective bargaining, but constraints which do not otherwise operate in the public sector. Moreover, the linkage which transfers economic constraints to public sector bargaining through fair comparison will be perceived by the public as socially just. The principle is that public employees should receive total compensation equal to their counterparts among good employers outside the public sector, no more, no less."¹

The final phrase, "no more, no less" implies a precision or objectivity of the comparison method which is, to say the least, unrealistic. It is obvious that this is not a clear principle. There are considerable grounds for the insertion of value judgements and the results of the prevailing wage principle thus offer sufficient scope for disagreement. David Lewin has written,

"Consequently, private managers heuristically formulate their occupational wage structures by combining external and internal labor-market criteria as circumstances warrants: that is, they have learned that the microprocess of wage determination is an art (though perhaps partially a science) requiring the judicious exercise of managerial

¹ Comments by Hon. Martin O'Connell on a paper by Hugh Clegg ("Are Strikes in the Public Sector Inevitable?") in, Proceedings on the International Conference on Trends in Industrial and Labour Relations, Montreal, July 24-28, 1976, McGill University, 1977 (Francis Bairstow ed.) p. 65, (underlining added). It is to be noted that his outside universe reference is to "good employers".

discretion. To the extent that they have similar decisions to make, public managers should recognize that the prevailing-wage rule is a guide to wage setting, not a mechanistic substitute for informed managerial judgement." 1

There have been some recent pronouncements by those involved in federal public service wage policymaking which now cast doubt on whether equity is still a preoccupation of the Canadian Government. The following exchange took place while Hon. C. Drury was still president of the Treasury Board.

" Mr. Neilsen, M.P.: Why is the same [public service] pay not given for the same job wherever it is being performed in the country?

"Mr. Drury: I suppose the basis of rewards for work is that a man will get what he can and an employer will pay what he has to in order to get the work done." 2

This answer means that the government is seeking to minimize its labour costs: to pay only what it needs to.

Similar abandonment of the equity criteria is to be found in this statement.

"However, in bargaining, and bargaining in the name of this particular game [labour relations with federal public servants], the man who reaches his final position in the first day is then accused of inflexibility, delivering an ultimatum, and being rigid. In this process you are almost bound to lose." 3

1 David Lewin, op. cit., p. 481-2.

2 Hansard, (Miscellaneous Estimates Committee) February 2, 1973, p. 9:15.

3 Ibid., p. 9:9.

There is no room in these quotations either for equity in general or the "good employer" comparison in particular.

This pragmatic approach to the minimization of labour costs appears to indicate that equity, rather than being a bona fide objective of the new government geographic wage policy, is, instead only a means to another end. The approach seems to be that wages are to be kept only high enough to ensure an adequate supply of labour. If this is correct then the entire burden for justifying the new wage policy falls on the second objective, that of greater operational effectiveness.

The latest official government statement on wage policy confirms the demise of the "good employer" comparison and relegates the equity criterion to a following of private sector wage settlements.

"The approach that the government intends to pursue in compensating federal public servants is one of average comparability of total compensation with a representative sample of private sector employers. It will do so in a manner which ensures that federal public service compensation will continue to follow compensation in the private sector." ¹

The greater emphasis on nonwage compensation comparisons will increase the complexity of wage policy formation since such elements will have to be costed. ² Following the private sector, means that public employees will

¹ The Government of Canada, Agenda for Cooperation, (A Discussion Paper on Decontrol and Post-Control Issues), Ottawa, May, 1977, p. 60.

² The serious difficulties of translating nonwage benefits into monetary terms in the context of public-private wage comparisons are discussed in, François Delorme, La Rémunération Globale, Est-il Possible de la Mesurer?, Ministère du Travail du Québec, Mimco., November 1977. See also, Pay Research Bureau, Total Compensation: An Exploratory Study, Ottawa, (mimeo.), September, 1975.

be aligned with a lag in time.¹ The paper continues:

"One problem is how total compensation and comparability are to be determined. Obviously analytical methods must be devised which are objective and fair and perceived to be so by employees, their unions and employers. Factors include methods of job matching, relativities, within and between similar groups, individual performance, special conditions of work which may require premium pay, and the geographic aspect of labour markets."²

The relevant points in that quotation are that a formula is being sought to "solve" the wage determination problem through private sector comparability and that geographically differentiated wages are still government policy.

¹ In the late 1950's such a lagged policy was pursued ('Cyclical Review Policy' It created delays in wage increases which eventually led to the 1965 Postal Strike and had considerable influence on the introduction of collective bargaining in the federal public service.

² Agenda for Cooperation, Ibid.

Summary

This section has shown that one of the stated goals of the new wage policy was greater equity. It was demonstrated that equity in the federal public service has traditionally been based primarily on wage comparison with similar workers in outside employment. The process of wage matching - the prevailing wage principle - is very complex and many such wage rates can be justified as appropriate. This implies that it is difficult to defend either national wages or nonnational wages as clearly more equitable.

In the end, given the context of collective bargaining in the Canadian federal public service, considerable doubt was cast on the place of equity in current wage policy formation. It seems that equity is only a means of ensuring acceptable labour supply to the federal public service.¹

Finally, the government's latest wage policy approach is to follow the private sector in a more encompassing, therefore more complex comparison procedure.

In the next section the second goal - greater operational effectiveness - is analyzed.

¹ Paradoxically, it is clearly demonstrated in Appendix IV, below that the 1972 government wage proposal to letter carriers would result not only in declines in real wages, but also in wage ranks in all regions. A priori, such alterations in letter carrier wages can be viewed as both inequitable and counterproductive to the improvement of labour market experience.

V

ANALYSIS OF POLICY OBJECTIVES:
GREATER OPERATIONAL EFFECTIVENESS

Though the term "greater operational effectiveness" has been used repeatedly by those presenting the government's new geographic wage policy there has never been any recent official elaboration on its precise meaning. It was therefore necessary to go back and seek out available pronouncements on the objectives of the government's general (as opposed to geographic) wage policy.

In 1950 the Prime Minister, Louis St-Laurent, issued a statement on pay principles which contained the following:

"The government's policy on salaries in the Public Service has long been based on two main principles. First is that they should be sufficient to attract to, and retain in, the civil service the right type..."¹

Thus one of the main functions of public service wages is as an allocator of labour: to attract and retain good quality employees. Presumably then, the adequacy of any wage can be tested by examining the extent to which it achieves this goal, i.e., by looking at recruitment,

¹ This statement is reproduced in its entirety in The Civil Service Review, Ottawa, March, 1951, pp. 22-27. The second principle is the need to maintain wage and fringe benefit comparisons with good private employers.

quit and quality data.

This concern for labour supply was later reiterated by Prime Minister John Diefenbaker:

"For many years now it has been generally accepted that two main principles should guide the determination of salaries in the service. First, salaries must be enough to do the job, that is to attract enough of the right kind of men and women into the service and keep them in it; ...I think these principles should continue to guide us." ¹

Thus, in terms of its general wage policy, the objective is to ensure a good supply of labour. Attention now turns to the geographic aspect of wage policy.

In 1966, during hearings on the introduction of collective bargaining into the federal public service (Bill C-170) Civil Service Commissioner Sylvain Cloutier testified on the problems which eventually led to the regionalization of the nurses' uniform salary structure.

"Mr. Cloutier: The rationalization [for the break up of nurses' wages] is that in hospital work there has developed - again I come back to the first principles of internal relativity - over the years, in the private sector, a whole set of internal relativities which are extremely precious from the viewpoint of the employers for whom they work.

The bulk of the hospital employees in the hospital services are in the prevailing rate area on the outside,

¹ From a speech at the 1958 founding convention of the Civil Service Association of Canada, quoted in, *The Glassco Commission Report, op. cit.*, p. 409. The second principle repeated the "fairness" of comparability to private sector wages.

and the compression that was taking place in hospitals between the rates of the lower skilled jobs and the nursing orderlies and the nurses were, in effect, resulting in a situation where it was - I will not say impossible, I will say - extremely difficult to recruit and retain our [nursing] staff. In recognition of this problem, and forced by the compression of the prevailing rate arrangements, the commission, after consultations with the staff associations, recommended to the Treasury Board an arrangement which would permit some recognition of these local labour market differences." ¹

Here again the considerations were for labour supply: "it was extremely difficult to recruit and retain" nurses in high outside wage areas. Regionalization was expected to eliminate this problem. ²

In an interview for the present study ³ Mr. Cloutier confirmed that the variations in rank of the public service wage in the local distributions (caused by the rigidity of the nationally determined wage) were felt to be

¹ The Special Joint Committee of the Senate and House of Commons on Employer-Employee Relations in the Public Service of Canada, Proceedings, November 1, 1966, pp. 716-717. Though Mr. Cloutier refers to local market conditions, the nurses operate on a system of regional, not local wage differentials. It was noted earlier (above) that the "region" is not necessarily the relevant labour market.

² In fact there was a strike of federal public service nurses in Fall, 1973 because each of their individual regional rates had fallen behind the comparable outside salaries. Labour supply problems had not been alleviated either. See Hansard, October 22, 1973, pp. 7084, 7085, 7120-7121; also The Journal of the Professional Institute of the Public Service, Ottawa, November 1973, p. 30.

³ Mr. Cloutier was interviewed on November 20, 1973.

the cause of recruitment, retention and quality problems in some cities.¹ "Greater operational efficiency" thus refers to expected improvements in labour market experience in some cities where it is presently considered intolerable. This then is the goal of the new wage policy.

The former chief negotiator for the Treasury Board in the postal negotiations, Larry Ried, offers a similar evaluation of the need to fractionize national rates.

"The government policy in this matter [geographic wage policy] is that in general public service jobs are not sufficiently attractive in the large, high wage cities where we cannot compete on wages and so there are labour problems. On the other hand, we overpay in smaller, low wage cities and therefore have very good recruitment, quality and low turnover there."²

It is the constraint of the national wage that is seen as creating labour market experience problems in high wage cities.³ In low wage cities, public service wages are "too high" and this results in superior labour market experience.

¹ In this study one employer's recruitment, retention and labour quality experience is termed his "labour market experience". It is, essentially, the nature of labour supply to an employer. Operational measures of labour market experience are identified below.

² Interview, Ottawa, May 26, 1972.

³ The contention that large cities are high wage cities and that labour market experience is poorer than in smaller cities is tested below, in chapter IV.

The image that emerges from statements by federal public service wage policy makers is that there exists a series of inappropriate wage levels (either too high or too low) which are in turn responsible for substantial intermarket variations in labour market experience. This constitutes the basis of the econometric model tested in chapter IV, below.

These perceptions in the early 1970's were likely influenced by the Report of the Royal Commission on Working Conditions in the Post Office Department (the 'Montpetit Report'), 1966¹ and the Report of the Commission of Inquiry into the Increases in Rates of Pay for Civil Servants in Group D (the 'Anderson Report'), 1965². These reports followed a seven-week postal strike in 1965, the first in the federal public service in 40 years.

The Montpetit Report presents a table of postal separation rates between 1956-57 and 1965-66, and the rate in the final year, 7.3%, is judged acceptable: "[it] does not seem excessive or alarming".³ Nor is this rate considered high compared to the 11% for the whole Civil Service or for the 7.0% average for the Post Office over that period. It is to be noted that Montpetit's figures are gross separation rates rather than quit rates and that they cover inside postal workers as well as letter carriers.

Focusing in on the sub-aggregative levels, Montpetit notes;

¹ The Queen's Printer, Ottawa, October, 1966.

² Mimeo., Ottawa, (in 3 volumes), August 4, 1965; August 19, 1965, September 27, 1965. Letter carriers were in group D in the old classification structure.

³ The Montpetit Report, op. cit., p. 48.

"The problem however is acute in some regions as shown in this ...table." ¹

TABLE II-4
POSTAL SEPARATION RATES
17 CITIES, 1964-65

LOCATION	TOTAL STAFF	ANNUAL TURNOVER RATE APRIL 1964 TO MARCH 1965 (percent)
Quebec, P.Q.	565	3
Victoria, B.C.	284	7
Regina, Sask.	299	9
Ottawa, Ont.	922	9
Toronto, Ont.	3,771	9
Hamilton, Ont.	480	7
Burlington, Ont.	67	19
Downsview, Ont.	94	20
Don Mills, Ont.	88	15
St. Catharines, Ont.	108	11
Sarnia, Ont.	87	13
Sault-Ste-Marie, Ont.	79	15
Windsor, Ont.	284	8
Niagara Falls, Ont.	74	13
Oshawa, Ont.	99	28
Port Credit, Ont.	52	25
Oakville, Ont.	55	21

Source: The Montpetit Report, p. 49.

¹ The Montpetit Report, op. cit., p. 49.

The Commissioner then assesses the rates in table II-4

"These figures...show an abnormal rate of turnover in these cities... The reasons for this cannot be pinpointed definitely, but we suspect that employee turnover in the Post Office increases in those regions where [outside] wages are the highest and working conditions the best. The Department must examine this problem."¹

For present analytical purposes the important observation is that Montpetit suspects that differences in postal wage rank in each local distribution determine the differences in separation rates. He later emphasizes the importance of altering the pattern of postal separation rates, especially by reducing the high values.² Montpetit recommends that the Department adopt a program of exit interviewing, "...in order to find the real reason for...departures".³ He is thus not certain that low relative wages are responsible for the poorest retention performance. However, he then returns to the following assessment.

"But it is obvious that only wage increases and better working conditions will put an end to high turnover in these areas."⁴

¹ Ibid., p. 49. Note the incorrect use of "region" and "city" as synonyms. Note also the substantial intraregional (i.e., within Ontario) variation in separation rates: 7% in Hamilton to 28% in Oshawa.

² Ibid., pp. 40-50.

³ Ibid., p. 49.

⁴ Ibid., p. 50.

It is not clear whether his policy prescription is to raise the existing, national wage or if, "in these areas" refers to the establishment of higher wages only there: the creation of a system of nonnational wages. He feels that differences in working conditions may also be the cause of differences in labour supply experience.

While Montpetit's terms of reference were mainly nonwage working conditions, Anderson was given the precise mandate of examining wages. The latter's view of the national - nonnational wage structure and the effects on labour market experience is similar to that of Montpetit, but even more specific.

"The present policy of paying employees for each class in Group D a national uniform rate results in certain employees in regions or localities where the prevailing rate structure is lower than the national average being in receipt of wages above that prevailing for similar occupations.

On the other hand, in other regions or localities the prevailing rate structure leaves employees in Group D in receipt of rates of pay far behind the rates that are paid to employees outside the civil service who possess similar skills. In the localities where the prevailing rate is considerably higher than the national average, this results in dissatisfaction and the quality of the public service suffers and unusual problems of recruitment and retention are created." ¹

Anderson asserts a causal link between wage rank in the local distribution

¹ The Anderson Report, op. cit., p. 13 (Volume III).

and the uneven intercity pattern of labour market experience.

As with Montpetit, Anderson recognizes that nonwage factors may be partially responsible for high separation rates in certain cities, but his recommendation is more clearly for a fractionizing of the nationally uniform wage structure.

"It is not suggested that the high turnover of employees in the postal service in the cities indicated in the attached table is all due to rate disparity. There were undoubtedly other factors involved. However, if the table gives an extreme example of high turnover it at least served to illustrate the point that if recruitment and retention of civil servants with satisfactory qualifications is to be accomplished in high prevailing rate localities, some means must be found to equate their rates of pay with comparable employees outside the service."¹

It is extremely unfortunate that the assessment of the labour market experience pattern was made using a clearly unrepresentative sample of cities. It is even more serious that these two commissions, with all the financial and professional resources at their disposal, base their views and their recommendations on untested hypotheses and purely impressionistic evidence. There was absolutely no attempt to ascertain the intercity pattern of wage ranks. There was no effort made to relate these to the labour market experience pattern. Yet an appeal to the evidence is an elementary step in a meaningful procedure for examining the issue of

¹ Ibid., pp. 14,15. The table referred to contains ten of the seventeen cities shown in the Montpetit Report (reproduced here as Table II-4, above) with the highest separation rates. All are in Ontario.

national - versus - nonnational wages in the federal public service.

In the discussion to date there has been a conspicuous absence of any preoccupation with labour market experience effects of a fall in wage rank. The government policy of alignment to the local market wage will involve a rise in wage rank where the letter carrier national wage is now inferior to the local going wage. However, alignment also means a deterioration in wage rank in those markets where the letter carrier wage presently exceeds the outside comparable level.¹ In the former situation, intolerably poor labour market experience is expected to improve, but presumably a worsening of labour market experience should also be anticipated in the latter types of markets.² This possible symmetry is discussed later.

¹ This will not occur in the unlikely special case where a national rate is presently located at a level equal to that of the lowest local market rate.

² Ironically, the analysis of the 1972 Treasury Board wage proposal (see Appendix IV, below) clearly demonstrates that relative wages would fall in each of the nine regions!

Summary

This section set out to discover the meaning of the second objective of the wage policy change: greater operational effectiveness. It was demonstrated that the wage has traditionally been viewed in the federal public service as an instrument for allocating labour resources. Evidence was presented to show that the nurses' national wage was broken up because it was felt that there existed an intolerable geographic variation in labour market experience.

More specifically, in relation to postal workers and the nonnational wage question, it was shown that "greater operational effectiveness", the objective of fractionization, refers to conditions of labour supply. Further, two commissions of inquiry into postal pay and working conditions noted an extensive intercity pattern of one aspect of labour market experience and have ascribed the cause to an intercity variation in the wage rank of postal workers. It was pointed out that the assessment of the extent of both patterns, and their relationship, was founded on an impressionistic basis rather than on empirical testing.

Finally, a possible symmetry in changes in labour market experience was mentioned which may involve a worsening of postal recruitment, retention and labour quality as result of the new wage policy.

Before going on to chapters III and IV, where a rigorous and systematic

analysis of the relationship between the letter carrier wage rank and labour market experience patterns is undertaken, section VI now presents a review of economic thought concerning the effects of wages on labour supply.

VI
REVIEW OF ECONOMIC THOUGHT
ON WAGES AND LABOUR SUPPLY

It was seen in the preceding section that federal public service wage policy makers unanimously impute to the wage rank an important role in determining labour market experience. The purpose of the present section is to show how economists have viewed the relationship between wages on the one hand and labour market experience of an individual employer on the other. Should high wage employers expect better labour market experience than low wage employers? Should a change in wage rank be expected to produce a change in labour market experience?¹

Ever since the origins of the discipline, economists have pondered the question of the supply of resources, including labour. One of the earliest statements on the relationship between a single employer's wage, the market wage and labour allocation comes from Adam Smith.

"The whole of the advantages and disadvantages of the different employments of labour and stock must, in the same neighbourhood be either perfectly equal or continually tending to equality. If in the same

¹ An increase in wages need not imply an improvement in wage rank in the local wage distribution.

neighbourhood, there was any employment evidently either more or less advantageous than the rest, so many people would crowd into it in the one case, and so many would desert it in the other, that its advantages would soon return to the level of other employments." ¹

It is the net advantages, not only one constituent element, the wage offered by individual employers, which is driven toward equality in a local labour market. An employer must meet the market net advantages if he wishes to obtain any labour.² It is via labour supply that the market disciplines the deviant employer.

However, realizing that information and mobility are not perfect, Smith quickly adds:

"This at least would be the case in a society where things were left to follow their natural course, where there was perfect liberty, and where every man was perfectly free both to choose what occupation he thought proper, and to change it as often as he thought proper. Every man's interest would prompt him to seek the advantageous, and to shun the disadvantageous employment." ³

¹ Adam Smith, The Wealth of Nations, The Modern Library, New York, 1937, (original edition, 1776) p. 99.

² Smith felt that net nonwage advantages would offset wage differentials thus equalizing net advantages even if wages were unequal. Recent empirical research has shown that wages and net advantages are positively correlated even within homogeneous occupations (see p.124 below).

³ Ibid. On pages 118-143 he discusses mobility-and information-inhibiting factors.

Alfred Marshall more explicitly recognized the heterogeneity of labour (quality differences) and foresaw equalization of "efficiency wages".

"The tendency then of economic freedom and enterprise (or, in the more common phrase, of competition), to cause every one's earnings to find their own level, is a tendency to equality of efficiency-earnings in the same district." ¹

While there may be differences in nominal wages paid per unit time, remuneration is equalized when the "exertion of ability and efficiency required of the worker" is accounted for. This now means that an employer may possess some discretionary power. He can choose to lower his hiring standards and pay a lower than market wage without feeling pressures to conform. ²

For J.R. Hicks market pressures are definitely present on the labour supply side forcing employers sharing a common labour market towards a single economic compensation package.

"The movement of labour from place to place is

¹ Alfred Marshall, Principles of Economics, MacMillan, London, 1966 (8th edition: 1920), p. 456.

² As shall be shown below, later empirical research has indicated that higher wages are not fully offset by higher efficiency. See, for example, Lloyd Reynolds, The Structure of Labor Markets, Harper and Bros., N.Y., 1951, p. 234. Recent studies fail to find a systematic difference in labour quality among employers situated along the range of wages paid in a typical local labour market, except at the extremes (see chapter IV, below).

insufficient to iron out local differences in wages. But the movement does occur, and recent researches are indicating more and more clearly that differences in net economic advantages, chiefly wages, are the main causes of migration. The labour market is not a perfect market; the equalizing forces do not act quickly and easily, but nevertheless they do act."¹

The impression given by Hicks' version of the competitive market is that there is an equilibrium off in time, stationary, and waiting to be attained as labour mobility causes employers to adjust actual net economic advantages towards that value.² While Hicks sees short run wage differentials compatible with equilibrium, wages cannot deviate by much and there are definite adverse effects on the quality and quantity (higher quit rates) of labour supply to the deviant employer.³

Though Hicks admitted that payment of nonequilibrium wages was "rife" and the range "very considerable" (p. 62), these were nevertheless subject to market forces obliging them to conform in the long run. Because of this, the subject of a wage range in a local labour market was "supremely uninteresting and unimportant" (p. 63).

¹ J.R. Hicks, The Theory of Wages, MacMillan, London, 1966 (1st edition: 1932), p. 76.

² In a similar spirit, Rottenberg also views a static market equilibrium level of net advantages towards which individual rates are inexorably driven. Simon Rottenberg, "On Choice in Labor Markets", Industrial and Labor Relations Review, January, 1956, p. 199.

³ Hicks, op. cit., pp. 72-74.

In fact research has consistently shown that there are extensive and persistent wage ranges in the typical labour market, often even after quality and retention differences have been accounted for.¹ The question of the effects of an individual employer's wage in relation to the "going wage" on labour market experience must be faced here since it lies at the heart of the present study.

Turning to more recent writings, George Stigler, and later Albert Rees, incorporated into the competitive labour market model the costs of information acquisition.² Recognizing that information on job openings, wages and nonwage aspects of various employments is not freely or abundantly available, each worker (and indeed each employer) evaluates the direct expenditure and other (e.g., opportunity) costs against his own estimate of the expected increase in long run (at the limit, lifetime) earnings due to his actions in acquiring additional labour market information. Extended to all forms of choice of investment in human capital, this new dimension leaves considerable conceptual opportunity for an extensive range of wages from the supply side persisting into the long run.

Firms can also deviate from the "market wage" on the basis of a similar

¹ These are described in chapter IV, below.

² George J. Stigler, "Information in the Labor Market", J.P.E., (supp.) October, 1962, pp. 94-105; Albert Rees, "Information Networks in Labor Markets", A.E.R., May, 1966, pp. 559-566.

search and training cost/benefit calculus. Or employers may choose a lower (higher) wage and accept possible offsetting labour costs of poorer (better) recruitment, higher (lower) quit rates and/or lower (better) labour quality.¹

The wage/net advantages dichotomy can lead the empirical researcher into a tautological dilemma. It will be recalled that Rottenberg attempted to explain the classical competitive labour market approach to job choice in terms of net advantages and was accused by Lampman of circular reasoning.² Higher wage rank and lower wage rank are each compatible with adequate labour supply because net nonwage advantages remain essentially unknown. It becomes impossible, under these conditions to test the hypothesis, for example, that a low wage rank will produce poorer labour supply than a high wage rank or to predict anything.³

¹ Lloyd Reynolds provides an excellent discussion on employer wage-setting discretion in, Labor Economics and Labor Relations, Prentice-Hall, Englewood Cliffs, 1976, (6th ed.), pp. 201-206. Examples of employers deliberately seeking "stupid", unimaginative and unambitious employees are found in R.A. Lester, Hiring Practices and Labor Competition, Princeton U. Press: Princeton, 1954, pp. 55-57.

² Simon Rottenberg, "On Choice in Labor Markets", Industrial and Labor Relations Review, January, 1956, pp. 183-199; Robert J. Lampman, "On Choice in Labor Markets: Comment", Ibid., July, 1956, pp. 629-636; Rottenberg, "Reply", Ibid., July, 1956, pp. 636-641.

³ For one empirical researcher's realization of this dilemma see D.I. MacKay et al, Labour Markets Under Different Employment Conditions, Geo. Allen and Unwin, London, 1971, pp. 15-20 and 65-66.

There have been some attempts to quantify at least certain of the monetary components of net advantages (pensions, life insurance etc.). These studies have consistently shown that pecuniary fringe benefits (and even some nonpecuniary aspects), net nonwage advantages and wages are positively correlated rather than offsetting.¹

It is perhaps paradoxical that modern empirical research has still not yielded a consensus concerning the effects of wages on labour supply. On the other hand, given the complexity of the subject, the incompleteness of available data and analytical instruments (and even the divergent personal values of the researchers), such a lack of singleness of the discipline's evaluation is understandable. To illustrate this point, the following recent findings and views are presented.²

Lerner et al. carried out intensive studies into the wage determination process in several industries in the U.K. during the mid-1960's. Their

¹ Richard Lester, "A Range Theory of Wage Differentials", I.L.R.R., July 1952, pp. 483-500 (p. 487); Lloyd Reynolds, The Structure of..., op. cit., pp. 220-222; D.I. MacKay et al., Labour Markets Under..., op. cit., pp. 91-92; A. Rees and G. Shultz, Workers and Wages..., op. cit., pp. 77, 218-219; L. Reynolds and C. Taft, The Evolution of..., op. cit., p. 369; James Fogel and D. Lewin, Wage Determination..., op. cit., p. 425; Richard Block, "The Impact of Union-Negotiated Employment Security Provisions...", I.R.R.A. Proceedings, September 1976, pp. 265-273, (p. 271).

² There were many empirical and theoretical labour market studies done in an earlier period, the 1940's and 1950's. That debate was centered mainly on whether market forces or power forces (mainly unions) determined wages.

faith in the relevance of a firm's wage position for its labour supply is expressed thusly.

"There was recurring evidence in all the studies of the need for earnings to conform in some degree to prevailing local levels." ¹

On the primacy of the wage (earnings) in the net advantages package, they conclude;

"...it appears that market pressure in earnings will not be significantly reduced by generous fringe benefits; that fringe benefits may be more important in retaining than in attracting labour..." ²

This reflects the spirit of Hicks' theoretical writing some 35 years earlier as he counseled that it was "chiefly wages" that influenced job choice. Again, echoing Hicks, they write;

"Sometimes this ["sluggishness of adjustment of labour supply in the short run..."] was taken as evidence of the non-operation of the market mechanism. However, it may be in the long run that labour market sanctions affect firms." ³

In their study on wages and labour supply for several occupational groups in the Chicago labour market of the early 1960's Rees and Shultz are also satisfied that wages do affect labour supply despite the complexity of the process.

¹ S.W. Lerner, J.R. Cable and S. Gupta (eds.), Workshop Wage Determination, Pergamon Press, Oxford, 1969, p. 250.

² Ibid.

³ Ibid.

"Wage determination, job search, and the movement of workers among employers are all influenced by a great variety of forces - economic, institutional, locational, and personal. However, we cannot concur in the view that because economic forces are mingled with others they are inoperative, or that because a process is highly complex it is necessarily in large part irrational."¹

Presenting an opposite emphasis, Lester concludes that there is only a weak relationship between wages and labour supply over the relevant range.

"Basically, it appears that there is a labor recruitment process and a wage determination process, each influenced by its own set of factors and usually without strong connections between the two, at least in the short run."²

He goes on to state that there is a band of wages within a local labour market which any employer can pay with immunity from market pressures to conform to a single, "equilibrium wage":

"...individual company wage scales differ by as much as 10 or 15 per cent [...] for essentially the same quality of labor at recruitment, assuming the same type of work and no compensating differences in nonwage aspects of the employment complex."³

Thus, except for the hedge on compensating net nonwage advantages, Lester concludes that wage rank has little effect on labour supply differences within a range of 10 to 15 percent about the market wage.

¹ Albert Rees and George Shultz, Workers and Wages in an Urban Labor Market, Univ. of Chicago Press, Chicago, 1970, p. 222.

² Richard A. Lester, The Economics of Labor, MacMillan, N.Y., 1964 (2nd edition), p. 267.

³ Ibid.

In his U.K. study of some 40 firms in a single locality Derek Robinson rambunctiously contends;

"We probably know more about conditions on the surface of the moon than we do about the operation of local labour markets." ¹

"The implication of all this [the existence of a wide range of rates] is that economic forces or market pressures do not in fact exert inescapable influences which firms have to yield to or perish.

There is a very wide variety of economic reactions on wages open to firms. They do not have to follow the field, and they are not subject to economic laws in the old textbook sense.

Rather, it might be said that firms have very considerable economic freedom, in that they have a very wide range of opportunity open to them for determining the level of, and changes in, wages paid to specific occupations. If there are economic forces in the local labour market in the old orthodox sense, they are doing so in a most peculiar way. Or, and this may be the better explanation, they are so weak and open to distortion that other factors dominate them." ²

Finally, D.I. MacKay et al. write,

"Economic rationality and competitive forces are not strong enough to result in a situation where each employer pays no more and no less than the market wage. Because competitive forces are present the

¹ Derek Robinson, 'Myths of the Local Labour Market', Personnel, (U.K.), December, 1967, p. 37.

² Idem., pp. 37-38. See also his, Local Labour Markets and Wage Structures, Gower Press, London, 1970.

concept of the market wage has its uses, but it also has severe limitations as a description of the realities which face the employer."¹

The degree of employer wage discretion and the resulting state of his labour supply has entered the recent literature through another concept: "queuing". Based on the existence of noncompetitive labour market forces, Reynolds posits that the typical employer is usually off his labour supply curve (above, to the left), paying a wage above the minimum necessary to attract the amount of labour he needs.² This creates an excess supply resulting in a "queue" of workers lined up awaiting a job vacancy. When the company requires additional workers it applies selective recruitment standards, taking on those with the highest qualifications. Presumably, lower wage firms have shorter queues or of poorer quality and those at the bottom of the local wage distribution may have no queues at all.

What is the relevance of the foregoing review for the present study? Should the difference in wage rank caused by the new geographic wage policy be expected to alter labour market experience in the way

¹ D.I. MacKay, D. Boddy, J. Brack, J.A. Diack, N. Jones, Labour Markets Under Different Employment Conditions, Geo. Allen and Unwin, Oxford, 1971, p. 391.

² Lloyd G. Reynolds, Labor Economics and Labor Relations, Prentice-Hall, Englewood Cliffs, 1976 (6th edition), p. 206.

predicted by the government? An appeal to economic thought has failed to uncover unanimity among students of the relative wage/labour supply relationship. While few writers feel that intense supply pressures result from minute deviations from the market wage, there was recognition even among the most skeptical, that beyond some range a labour market experience reaction will probably be felt. In the next few paragraphs some of the factors which can influence the sensitivity of labour supply to wage rank will be identified and their relevance to the letter carriers commented on.¹

On the supply side, age, family responsibilities and length of service are all likely to be inversely related to quit rates, while older workers are probably also less attracted to a letter carrier opening because of the relatively severe physical demands of the job. Nothing can be said a priori on those characteristics for letter carriers. In the city-by-city analysis in chapter IV the letter carrier/outside age differentials for new letter carriers are accounted for.

In general, other things equal, the lower the skill level the lower

¹ A thorough coverage of such factors (with appropriate reference to other writers) is given in chapter IV where the multiple regression analysis is undertaken. Wage ranks are held constant while the extent of the influence of such factors on various aspects of labour supply is estimated.

the voluntary mobility.¹ Workers without a marketable skill may be satisfied to retain the employment they have. However, the reverse may also hold on the following reasoning. Skilled workers' productivity is often at least partially firm-specific. Upon leaving one employer and taking up a new job some of this is lost, and a lower wage results as new experience must be acquired.² Letter carriers are essentially low skilled and their short training period produces a highly Post Office-specific skill. This factor should contribute to letter carriers' insensitivity to wage rank changes. On the other hand, because prior possession of a skill is not a prerequisite for letter carrier candidacy, increased attractiveness of the letter carrier job through a high wage rank may cause a relatively important increase in applicants.

Other things equal, the presence of a union should tend to reduce voluntary mobility. The grievance procedure and the opportunity to strike may appear as alternatives to quitting in an attempt to diffuse frustrations or to obtain improvements at the workplace. The Letter Carriers Union of Canada is a relatively militant union with several legal and other strikes

¹ For example these are the findings of MacKay et al., op. cit., p. 173. They also show that the skill/quit rate relationship varies with changes in labour market conditions. See O.E.C.D., op. cit., p. 62.

² MacKay et al, op. cit., p. 173.

on the record in the past decade. This should mitigate the adverse quit effects of a decline in wage rank. Since there is no closed shop, the presence of a union in this context does not inhibit new hiring so that there is no additional barrier to recruitment.

In situations where there are few nonwage aspects of employment the supply of labour will be more sensitive to changes in wage rank.¹ Such conditions prevail in temporary help agencies (clerical, blue collar and security guards) where job attachment is weak. Fringe benefits for letter carriers are about 32% of the wage² and these should constitute a barrier to movement.

The availability of information on job vacancies, wages and other working conditions in respective communities facilitate recruitment and may increase quit rates. There is no data on this factor in the present case.

From the demand side, monopsonist-specific skills in a city make it difficult for a worker to move to other jobs. As was already mentioned the letter carrier skill is Post Office-specific and the alternative employment

¹ O.E.C.D., op. cit., p. 59-60.

² Conciliation Board Report, Ottawa, (Mimeo.), 1972, p. 7 (Stewart's dissent appendix).

would be among the pool of semi and unskilled labour. This should reduce letter carrier quits.

The state of the labour market can be expected to affect labour market experience. With high unemployment (a slack market) there is more intense competition among workers for limited job opportunities. For a given wage differential, the greater the unemployment the greater the number of applicants expected. The reverse is true in a sellers' market, one characterised by numerous and long-standing job vacancies. A tight labour market should also make the quit rate more sensitive to differences in or changes in wage rank as the risk of unemployment is reduced.¹

If an employer's hiring standards are relatively low compared to competitors, available labour supply is likely to be greater for a given difference in wage rank. As will be shown in chapter III there is some room for adjustment of hiring standards in letter carrier recruiting.

This brief review of some of the factors believed to influence the sensitivity of labour market experience to wage rank concludes the section on economic thought.

¹ MacKay et al., op. cit., chapter 6 generally.

SUMMARY

The statement of the four Treasury Board eligibility criteria for nonnational wage was given in Section II of this chapter. It was then shown that on this basis, the letter carrier may qualify for community level wage rates.

The two objectives of the new wage policy - greater equity and greater operational effectiveness - were then examined. There are competing concepts of the most equitable geographic wage structure, a situation which is not likely to be resolved through objective analysis.

It was demonstrated through a series of official statements that "greater operational effectiveness" relates to labour supply and that the government finds the intercity pattern of labour market experience intolerable. The Treasury Board believes that this situation has been caused by the intercity pattern of letter carrier/outside wage differentials (wage ranks) resulting from the rigidity of the national letter carrier wage. The suggested remedy is, therefore, the fractionizing of the uniform wage into a series of rates based on alignment to the comparable outside level in respective local labour markets. Recommendations from previous official investigations (Glassco, Montpetit, Anderson) were based on impressions rather than on a systematic testing of the evidence.

A review of economic thought revealed a divergence on the probable

effects of wages on labour supply except at the extremes of a wage range.

Finally, some of the factors believed to affect the elasticity of labour market experience relative to a change in wage rank were briefly discussed.

In chapter III an empirical model is developed which is designed to test the likelihood that the new geographic wage policy will reduce the intercity dispersion of labour market experience; i.e., produce greater operational effectiveness.

CHAPTER THREE

THE METHOD AND THE MODEL

I

INTRODUCTION

The objective of this chapter is to provide a method with which to test the general hypothesis posed by the wage policy change: that letter carrier wage rates aligned to the local market wage will reduce the intercity dispersion of letter carrier labour market experience.

Insights into the answer are expected using multiple regression analysis. A series of eight equations are specified with various aspects of labour market experience as the dependent variables (Y-variables) to be explained. On the right hand side of these equations are one or several of each of three types of independent or explanatory variables (X-variables). These latter are grouped in three classes: the wage (wage rank), labour market conditions (LMC) and Y-specific variables.

The wage rank variable measures the position of the letter carrier in the local wage distribution. The labour market conditions variables indicate the state of the local labour market: the extent to which it is slack or tight. Finally, the Y-specific variables are directly related to the specific dependent variable being analyzed (e.g., intercity letter carrier age differences may be relevant to differences in the letter carrier quit rates, but have no expected bearing on the relative number of

applications received for letter carrier job openings). Their inclusion therefore varies with each equation. On the other hand, the wage and labour market conditions sets of variables are present in every equation.

The anticipated effects of each X-variable on the Y-variable, the hypotheses, are posited on a theoretical and logical basis. The computerized manipulation of the data provides the signs, magnitudes and levels of statistical significance of the estimated coefficients of these relationships (the "B-coefficients").

The general form of the equations is,

$$LMX_i = B_0 + B_1 (W_i) + B_2 (LMC_i) + B_3 (Y-specific_i) + \epsilon_i$$

where, LMX, is one of eight labour market experience variables;

B_0 , is the Y-intercept;

$B_1 \dots B_3$, are the regression coefficients;

W, is the letter carrier wage rank;

LMC, is the state of the labour market;

Y-specific, is the set of particular variables;

E, is the disturbance term accounting for nonspecified factors causing divergence between the observed values of labour market experience and the estimated values;

and i, is the i^{th} city.

On the basis of these estimated coefficients statements can be made about the likelihood of the change in wage rank achieving its goal: the

improvement of labour market experience where it is now "poor" or "inacceptable", while implicitly acknowledging a deterioration where it is now "superior".¹

Thus the initial independent variable in each equation is the letter carrier wage rank. The other sets of explanatory variables may be viewed conceptually as playing two roles. The labour market conditions variables show the extent to which a local labour market is slack. In the multiple regression technique these and the Y-specific variables may be seen as providing the necessary ceteris paribus conditions across the sample cities. Holding other factors constant permits the identification of estimates of the independent effects of an explanatory variable (here, wage rank), on a dependent variable (here, the labour market experience). This provision of ceteris paribus is one of the distinguishing advantages of the multiple regression methodology over simple correlation or regression analysis.²

The second advantage of the technique used here is that the additional

¹ The terms "poor" and "superior" are relative to national letter carrier mean values.

² In the past (and even today) this ceteris paribus has not always been provided and conclusions drawn on simple correlations are reported with confidence. One recent case, dealing with the subject at hand, is the well-known O.E.C.D. study on Wages and Labour Mobility (Paris, 1965, Pieter de Wolff, ed.) where thousands of simple correlation coefficients are purported to reveal certain relationships. These results were rightly taken to task by many writers for this (and other) methodological weakness (see, for example, V. Stoikov and R.L. Raimon, "Determinants of Differences in the Quit Rate Among Industries", A.E.R., December, 1968, pp. 1283-1298, (p. 1296, 7)).

independent variables also provide alternative explanations for the variations in labour market experience. Thus, in the present study, the variations in labour market conditions or in one of the Y-specific variables rather than wage rank may possibly provide the explanation for some labour market experience variations.

In section II the sample of cities used in the analysis is described. There is also a discussion on the type of data collected and its implications for the predictions from the coefficients.

Each of the dependent variables is described in section III with suitable references to their previous use in (or absence from) the literature. Section IV covers the same aspects for the independent variables.

Finally, the equations are specified in section V with hypotheses postulated on the signs of each explanatory variable.

II

METHODOLOGICAL NOTE AND THE SAMPLE

Because the government wage policy involves time (over which letter carrier wages are to be aligned to respective outside comparable going wages in each local labour market) the data should also be of the "time series" type. There should be observations on each variable in each letter carrier city in Canada, for, say, the past ten years. The regression coefficients thus obtained would then indicate the extent of the relationship between a change in wage rank and, ceteris paribus, its effect on labour market experience. It would also provide an estimate of the independent effects of the labour market conditions and Y-specific variables on labour market experience. With these coefficients in hand, a prediction could be made on the probable effects of a change in wage rank on labour market experience. This could in turn be set against the hypothesized relationships anticipated on the basis of the government policy and on theory.

However, such time series data was not made available by the sources possessing this information (the Treasury Board, the Post Office, the Union, etc.). In some instances the data sought simply did not exist. In the end, cross sectional data on Y and X variables were collected for a sample drawn from the 262 Canadian cities in which letter carriers work, covering the fiscal year May 1972 to April 1973.

What can be said about the possible effects of using cross sectional

data (differences in wage rank) for a prediction over time? The absence of time series data prevents us from estimating the effect of wages on labour market experience in each specific city and this is likely to vary among cities. The other effect is an absence of chronological time during which the agents can react to a change in wage rank. But even with a time series approach - using the partial equilibrium analysis usually associated with studies of the present type - only the initial and final positions are identified. There is, firstly, no information in our case on the length of time over which a wage alignment ($\frac{WLC}{Wpi} \rightarrow 100$) will take place. Secondly, there is even less known about the length of time needed to ascertain the reaction of the workers. Their recognition of a change in relative net advantages should lead to a subsequent alteration of labour supply to the Post Office. On the first, the government can possibly determine such delays itself but wage adjustment process will probably cover a period of several years.¹ On the second reason, given imperfect information and immobilities, it is not reasonable to assume anything like instantaneous reaction of labour supply to a change in wage rank. It is likely that the process of expected alteration in labour supply from a change in wage rank can take several years.

Thus a cross sectional approach which examines two different cities

¹ For example, when $\frac{WLC}{Wpi} > 100$, there will be no absolute decreases in letter carrier wages. Time is needed to allow small internal wage increases to fall behind a faster rising outside comparable wage and thus eliminate the favourable gap. Where $\frac{WLC}{Wpi} < 100$ it can also be assumed that there will be no sudden elimination of such a differential. In addition, rival employers can further extend this adjustment period by seeking to mitigate an adverse effect on their labour supply by following the federal government wage changes thus neutralizing the latter's attempt to alter wage rank. The government may still be able to overcome this reaction, but the time involved is then lengthened.

can be compared, for analytical purposes, to two positions of a single city separated by a considerable period of time. The cross sectional method can be thought of as a view of changes in the long run (chronological time). Indeed, the factors controlled for by ceteris paribus in cross section (labour market conditions, Y-specific factors) while the effects of different wage ranks are examined are, in the present case, identical to those which must be controlled for in time series analysis as the wage rank changed.¹

Therefore, for both conceptual and practical reasons there should be little hesitation, aside from those applicable to all results of regression analysis, in evaluating the government wage policy on the basis of the B-coefficients to be generated below. With the least squares regression technique it is the underlying structural relationships that are sought. To the extent that the statistical operations produce systematic and significant regression coefficients, confidence will be engendered that these underlying relationships among the variables, the structural parameters, have indeed been identified.²

The present sample is stratified, semi-random, comprising 29 cities (12.2% of the total). It is stratified because it was necessary to account for the various geographic regions of the country since each possesses

¹ Cross sectional analysis forces the assumption of long run equilibrium.

² Robert Gaston, examining one aspect of the same subject treated in this thesis, uses cross sectional data for a time series problem without distinguishing between the two. He uses "changes in" and "differences in" indiscriminately. See his "Labor Market Conditions and Hiring Standards", I.R., May 1972, pp. 272-278, esp. p. 272.

particular population and other characteristics. It is stratified also as to city size because this factor can affect labour market experience. It is stratified finally, because high wage, average wage and low wage cities are required in order to obtain a range of letter carrier wage ranks. On the other hand, the sample has random aspects because within each of the stratification cells the cities were randomly selected.

TABLE III-1
 GEOGRAPHIC DISTRIBUTION
 OF THE LETTER CARRIER
 POPULATION AND THE SAMPLE

<u>Region</u>	<u>Population</u> ^a		<u>Sample</u> ^b	
	<u>Letter Carriers</u>	<u>Percentage of Total</u>	<u>Letter Carriers</u>	<u>Percentage of Total</u>
Atlantic	492	4.4%	240	4.4
Quebec	2858	25.7%	1610	29.5
Ontario	4607	41.4%	1970	36.1
Prairies	1549	13.9%	796	14.6%
B.C.	<u>1615</u>	<u>14.5%</u>	<u>842</u>	<u>15.4%</u>
Total	<u>11,121</u>	<u>99.9%</u>	<u>5,458</u>	<u>99.9%</u>

Sources: a. Author's compilation from a personal communication, Treasury Board, January 18, 1974.
 b. Returns from Post Office questionnaire, July 30, 1973.

Table III-1 shows that the sample proportions closely reflect the geographic distribution of letter carriers across the country. Quebec is slightly overrepresented while Ontario is somewhat underrepresented, but these anomalies do not have a serious effect on the validity of the sample.¹

Wage and labour market experience decisions are usually made at the firm and establishment levels and therefore an investigation of the determinants of labour market experience should logically proceed with interfirm or interestablishment level data. Data at too high a level of aggregation only captures net results, missing out the activity of the decision-making unit.

In his study on the effect of wage rank on quit rates, Hill writes;

"...it is unusual to have the [recruitment and quit] data available for all the separate establishments of an industry in conjunction with additional relevant data on items such as wages... This writer has been unable to discover any comparable study to that undertaken here."²

Stoikov and Raimon also examined the determinants of quit rates and comment,

"Alas, industries - not companies, not establishments. Compromise imposed by the limitations of the data thus asserts itself at the outset. Ideally, the

¹ These are good results especially in view of the Post Office's reluctance to provide data for the expanded sample initially submitted.

² T.P. Hill, "Wages and Labour Turnover", *The Bulletin*, Institute of Statistics, Oxford University, May, 1962, pp. 185-233 (p. 187).

effort calls for establishment data." ¹

MacKay et al. did take the trouble to collect original data at the firm level.

"Previous studies conducted at a highly aggregative level and using net changes in employment [quit rates and recruitment experience] as the dependent variable do not constitute an ideal test of the [neoclassical] theory." ²

The O.E.C.D. study on Wages and Labour Mobility ³ uses data at the national level, hardly the equivalent to the theoretical concept of a labour market for most occupations.

In the present study the wage and labour market experience data are for a single employer, the Post Office, and a specific occupation, the letter carrier. This establishment level data is compared to representative data from the equivalent of the conceptual labour market, the community. It is the establishment/labour market interaction that is examined, for it is between these two economic agents that competition over labour takes place.

¹ V. Stoikov and R.L. Raimon, "Determinants of Differences in the Quit Rates Among Industries", A.E.R., pp. 1283-1298 (p. 1283). Terence J. Wales also turned to industry data for quit rate analysis because of the lack of information at the firm level (see "Quit Rates in Manufacturing Industries in the United States", C.J.E., 1968, pp. 123-139).

² MacKay et al., Labour Markets... op. cit., p. 389.

³ op. cit., esp. pp. 10, 15.

III

THE DEPENDENT VARIABLES

As has already been mentioned, the nature of the labour supply to an employer can only really be ascertained in its many dimensions. Three categories have been retained for this study: recruitment, retention and quality.¹ Each category contains several specific operational variables describing one aspect of labour supply and for which data were collected.

The procedure to be followed in this section is to identify the variable, explain its relevance and illustrate its recognition by reference to the literature.²

Recruitment

In analyzing the recruitment experience of local post offices this study seeks to measure the attractiveness of the letter carrier job. Of the total potential labour supply in a market what proportion of workers and of what quality is sufficiently attracted to actually apply? Applicants

¹ These are the standard categories used by Belcher, op. cit.; MacKay et al, op. cit.; Reynolds, op. cit., the Treasury Board itself, etc.

² At this point the reference to the literature is limited to showing that others have thought the variable important. The results obtained in other studies are discussed when the letter carrier data is itself analyzed in section II of chapter IV.

will either be employed elsewhere or unemployed, but the main point is that the net advantages of the letter carrier job are considered by these workers as better (or at least no worse) than those of other jobs. Following other researchers, it is the economic aspects that are deemed to attract, with special emphasis given to the wage rank.

"Most people differ in their attitudes towards pleasant surroundings (monotonous), danger (adventure), but are usually consistent in their attitudes to money, preferring more to less."¹

In the context of the time series aspect of the wage policy, the hypothesis is that, ceteris paribus, a rise in wage rank of an employer in his local distribution will improve his recruitment experience.²

Gross recruitment rates (accessions per 100 employees) are sometimes used as an indicator of recruitment experience. This is not relevant for present purposes since it fails to measure the degree of recruitment success or job attractiveness. An establishment with five openings filled may have received only five suitable candidates, while another, with one vacancy may have gotten 100 qualified applications. Given identical total

¹ B.J. McCormick, Wages, Penguin Books, Middlesex, 1969, p. 22. George E. Johnson makes a similar assumption: "Throughout this paper, however, in the absence of any hypothesis concerning consistent influences on preferences, it is assumed simply that individuals prefer higher to lower income". "Wage theory and Inter-Regional Variation", I.R., May 1967, pp. 321-338 (p. 324).

² It is implicitly expected that the net nonwage advantage rank of the employer will not deteriorate to offset the rise in wage rank.

employment in each case, the recruitment rate of the first establishment is five times the latter. However the recruitment success of the latter is 100 times the former.¹ In the present study the recruitment question is how well the current wage rank attracts candidates for letter carrier job openings. What is needed therefore, is a measure of this attractiveness. Five such quantitative and qualitative measures are described below.

Before discussing these measures, and in order to understand why they were finally chosen, a brief description of the letter carrier recruitment procedure is now given.

Letter Carrier Recruitment Process

When a local Post Office feels it needs additional letter carriers, a "competition" is established. This operation involves the release of a "poster" (form 22-52-011 [2-37]) describing the letter carrier job requirements and the corresponding desired characteristics of candidates. This announcement is distributed to all post offices in the locality² and displayed so that the general public may be made aware that the competition is being held. These posters are valid for exactly two weeks.

¹ The establishment with five openings had one applicant per vacancy while the other had 100 applicants per vacancy. An alternative measure of relative recruitment success may be the differences in the number of applicants attracted by a letter carrier job vacancy in two cities of identical size, or again through standardization by city size of labour force.

² All federal public service job openings are displayed in post offices.

Application forms are available from various government offices and, when completed, are directed either to the local post office or the Canada Manpower Center. An initial selection is made, screening out those who do not possess the obvious minimal requirements: ability to read, write and count (elementary schooling); reasonable physical condition (a history of cardiac or respiratory pathology will suffice for disqualification) and possession of a driver's permit.

Those meeting these basic requirements are given a written examination which tests IQ, elementary arithmetic and verbal ability, memory and observation. The successful candidates on this exam are then invited to an oral interview. During this second phase, applicants are evaluated on such personal traits as appearance, ability to communicate, politeness, tact and evidence of reliability, integrity and alertness. For some cities a second language is necessary.

Recognition of the fact that the letter carrier is probably the federal employee having the most continual personal contact with the public is to be found in the relative weighting of the written and oral tests: one to two.

The candidates surviving the oral are placed on an "eligible list", ranked in order of score on both tests (60% is the combined minimum).¹

¹ The weights attached to the qualifications are: education-10; experience, knowledge and abilities-50; personal stability-40.

As and when additional letter carriers are required they are called following the order on the list.

Normally a new competition must be held once per year, but depending on the demands made upon it, a list may be kept for two years (e.g., Cornwall in 1971-73) or it may only last less than a single month (e.g., Vancouver drew up 18 new lists in fiscal 1972-73).

The training period of a new letter carrier is relatively short. The recruit spends one week inside the post office learning how to set up his pieces of mail in delivery sequence and how to keep his ledgers and addresses up to date. A second week out on the walk completes the instruction.

Now that the meaning of recruitment experience has been discussed and the recruitment process described, attention is focused on the five individual recruitment variables.

1. Number of Applications $\left(\frac{APP}{LFM}\right)$

One of the most obvious measures of worker response to a job opening is the number of applications received. Ceteris paribus, the greater the number of applications received per competition, the better the labour market experience. For the present study it was decided to standardize the absolute number of applications by the total potential number of applications. The latter series is represented here by the male labour

force in each city.¹ The symbol for this Y-variable is $\frac{APP}{LF_m}$.

Proportion of total potential applications_i $\equiv \frac{\text{number of applications } i}{\text{male labour force}_i} \times 100$

Thus an $\frac{APP}{LF_m}$ of .50 means that one-half of one percent of all males in that city's labour force were attracted to the letter carrier job opening and actually applied. As shown in Table III-2 the values for the 20 cities for which letter carrier data was available range from .06% in Sydney, N.S. and Winnipeg to a high of .87% in Hull. The sample mean is .34%, the σ (standard deviation), .23% and the C.V. (coefficient of variation), 67.6%. These measures indicate an inter-city variation in $\frac{APP}{LF_m}$ which may be interpreted as constituting a "substantial" dispersion. The Post Office may be particularly concerned with the response in the cities at the low end.

¹ Though there are a few female letter carriers, the occupation is still mainly male.

TABLE III-2
THE NUMBER OF APPLICATIONS
FOR A LETTER CARRIER JOB
PER LABOUR FORCE MEMBER ($\frac{APP}{LFm}$)

City	$\frac{APP}{LFm}$
SDY	.06
QCT	.30
HLL	.87
MTL	.22
SBK	.62
GBY	.52
SRL	.21
CHI	.65
SIS	.19
TOR	.19
STT	.10
HMT	.36
SAR	.08
SSM	.26
OSH	.75
SBY	.17
VAN	.39
SKT	.46
WPG	.06
CGY	.29

Source: Post Office questionnaire (Appendix II, below).
The city code is given in Appendix V.

Aside from the usual caveat of possible reporting errors (which apply to all the data used here) this series seems like an accurate empirical representation of the conceptual variable.

Though this measure seems like a good indicator of recruitment success it has been almost totally neglected by economists. This is perhaps because no such information is collected by the government agencies gathering economic statistics. The only way to obtain these data is to get them directly from employers.¹

There are two minor exceptions to this paucity, Lloyd Reynolds and Richard Lester did publish some results on applications.² The main difference between their use of this variable and the present use is that the former data were fragmentary and collected unsystematically. Those analyses are limited to a few impressionistic remarks. In the present study the data has been systematically collected for the sample cities and subjected to regression analysis. There is another, perhaps related concept to be found in the contemporary literature and already mentioned above: queuing.³

¹ The first seven dependent variables were obtained by the Post Office headquarters from local post offices through a questionnaire which appears as appendix II of this thesis.

² Lloyd G. Reynolds, The Structure of Labor Markets, Harper and Bros., N.Y., 1951, pp. 49-51, 210; Richard A. Lester, Hiring Practices and Labor Competition, Princeton U. Press, Princeton, 1954, pp. 47-53.

³ This author knows of no empirical queuing study at the employer level. Queuing is mentioned by E.J. Devine, "Manpower Shortages in Local Government Employment", A.E.A. Proceedings 1968, May 1969, pp. 538-567 (p. 544). He shows no data in the article, but presumably there is such information in his Ph.D. dissertation on which it is based.

2. Number of Eligible Lists (NEL)

As was pointed out in the section on the public service recruitment procedure, a new competition is declared as the existing list runs out. Though the postal personnel manual calls for one new list annually, the author suspected that there would be some variation depending on the relative attractiveness of the letter carrier job in each city. In fact Table III-3 shows the range in NEL in fiscal 1972-73 was from 0 (St. Jean, N.B., Montreal, Cornwall, Brantford and Victoria) to 18 (Vancouver), with a mean of 3 lists, σ of 4.1 and a C.V. of 157.7%. This is an even greater inter-city variation than with the previous measure and again the Post Office may want to investigate the situation in those cities forced to call the greatest number of competitions.

The frequency of competitions indicates the state of labour reserve and reflects one aspect of recruitment effort. When a city post office has not had a single competition in 12 or 24 months, it may be said that its labour market experience is superior to that of a city post office

TABLE III-3
THE NUMBER OF LETTER
CARRIER ELIGIBLE LISTS (NEL)

City	NEL
SJN	0
HFX	1
SDY	1
SJS	1
CTN	1
QCT	7
HLL	2
MTL	0
SBK	2
GBY	1
SRL	1
CHI	1
DML	1
SIS	1
TOR	11
STT	1
HMT	1
SAR	2
SSM	1
CWL	0
OSH	3
BTD	0
SBY	2
SKT	2
WPG	2
CGY	11
VIC	0
VAN	18

Source: Post Office questionnaire (Appendix II).

which was forced to "go to the market" 10 or 15 times in a year. Of course it may be that the first type of post office simply had no job openings. In order to control both for this factor and also for the length of the eligible list, the number of new hires and the mean number of names on a city's lists appear as Y-specific variables in the regression equations.

The author is aware of no previous use of number of eligible lists as a labour market experience variable. Lester¹ does have some discussion on the useful life of a list, but again it is impressionistic.

3. "Names too Short" (NTS)

The data on this variable were obtained in answer to the question: "How many names are usually remaining on a list when a new list is established?". This is taken to indicate the degree of insecurity of hiring officials to fill job openings. If one post office replies that it waits until there are three names left while another sets off a new competition when there are fifteen names left, this indicates that, for various reasons (e.g., wage rank) the hiring officers in the former post office feel more confident in their ability to attract new candidates than in the latter post office.

Among the control (X-) variables is the number of new hires (NH), so

¹ Richard Lester, *Hiring Practices...*, op. cit., pp. 51-53.

TABLE III-4
NUMBER OF NAMES LEFT
WHEN NEW COMPETITION
CALLED (NTS)

City	NTS
SJN	0
HFX	2
SDY	2
SJS	2
CIN	3
QCT	5
HLL	3
MTL	0
SBK	4
GBY	5
SRL	6
CHI	5
DML	8
SIS	3
TOR	4
SIT	0
HMT	5
OTT	4
SAR	1
SSM	3
CWL	4
OSH	0
SBY	0
VAN	3
SKT	3
WPG	0
CGY	10
VIC	0

Source: Post Office questionnaire (see Appendix II)

that any differences in recent labour needs do not affect the relationship between NTS and the wage rank.

It is to be noted that this series is fundamentally different from all others used here and therefore provides an additional perspective on the nature of labour market experience. While the rest are ex post data, the record of acts and events actually carried out, NTS reveals instead, the state of labour market experience as perceived by those doing letter carrier hiring.

To the author's knowledge this type of variable has not been used in previous studies on the labour market.¹ Data were collected in Table III-4 for twenty-eight cities, with a range extending from zero (in seven cities: they allow a list to run out completely before calling for a new one), to ten (Calgary: postal officials reveal relatively greater insecurity in their ability to adequately attract candidates). As can be seen in Table III-4 the mean number of names left is three, the σ is 2.5 and the C.V., 83%.

4. Success Rate $\left(\frac{T_2}{APP} \right)$

The three previous variables measure the quantitative aspects of labour market experience, the next two assess qualitative aspects of the candidates and new hires respectively.

The description of the recruitment process (above) showed that applicants are subjected to two tests, one written and one oral. Only those passing

¹ Richard Lester speaks of an employer's concern for "...potential or reserve drawing power...", Ibid., p. 48.

TABLE III-5
 PROPORTION OF
 APPLICANTS QUALIFYING
 ON TESTS (SUCCESS RATE, SR)

City	SR
SDY	83
QCT	31
HLL	14
SBK	8
GBY	18
SRL	50
CHI	5
SIS	38
TOR	7
STT	33
SAR	17
SSM	22
OSH	5
SBY	17
VAN	18
SKT	24
CGY	35

Source: Post Office questionnaire (Appendix II)

the first are admitted to the second. The number who successfully pass the second test (T_2) as a proportion of all those who originally applied (APP) is termed the "success rate" (S.R.). A higher success rate indicates that the quality of candidates attracted in that city is superior to the type attracted by the letter carrier net advantages in a post office with a lower success rate (or a higher failure rate).

The success rate is measured by:

$$\text{S.R.} \equiv \frac{\text{number passing both tests, fiscal 1972-73}}{\text{number of applications, fiscal 1972-73}} \times 100$$

Table III-5 shows that the range of values found for the seventeen observations in this series is from 83% (Sydney) to 5% (Oshawa, Chicoutimi). The mean is 25%, the σ is 19% and the C.V., 76%.

Test results have been used by several researchers previously attempting to find relationships similar to those sought here. The hypothesis usually verified is that the higher wage permits an employer to attract and hire better quality employees, the higher quality measured by score achievement on appropriate tests. In the present study it is not the actual test score which is used but the proportion of applicants passing tests. This latter is expected to be positively associated with the wage rank of the letter carrier in respective local wage distributions, other things equal.

Eaton Conant investigated the differences between nominal (or money) wage differentials and efficiency wage differentials through the use of typists test scores in the Madison (Wis.) labour market of 1958.¹ John Owen used the results of verbal ability tests to see if higher wages attracted higher quality teachers in the U.S.A. in 1959.²

¹ Eaton H. Conant, "Worker Efficiency and Wage Differentials in a Clerical Labor Market", I.L.R.R., April, 1963, pp. 428-433. At this point reference is only made to others who have used test scores. Their analytical techniques and results are discussed when the present data is analyzed in section II of chapter IV.

² John D. Owen, "Toward a Public Employment Wage Theory: Some Econometric Evidence on Teacher Quality", I.L.R.R., January, 1972, pp. 213-222.

Test scores as quality indicators were also used by Robert Evans Jr. while attempting to relate higher quality to higher wages for clerical workers in Boston in 1960.¹ Rees and Shultz in their, Workers and Wages in an Urban Labor Market,² used test scores for typists and keypunch operators in explaining wage differentials in the 1962 Chicago labour market.

5. Prime Age New Hires $\frac{NHPA}{NH}$

Interviews with postal officials and letter carriers, and an examination of the personal requirements of the job revealed that there is a "prime age" for letter carriers. The Post Office prefers not to hire "very young" (under 25) or those labelled "too old" (over 35). Candidates under 25 are viewed as unstable because they are typically unmarried, tenants rather than property owners, merely trying out jobs rather than wanting to settle down, more accident prone (risk takers) and lacking patience.³ Candidates over 35 are seen as declining in physical capacity and unprofitable as a long run investment.

¹ Robert Evans Jr. "Worker Quality and Wage Dispersion: An Analysis of a Clerical Labor Market in Boston", IRRA, 14th Annual Meeting, Proceedings, 1961, pp. 246-259.

² op. cit., pp. 88-90.

³ These are the consistent opinions of hiring officers interviewed for this study. MacKay et al. (op. cit., p. 361) discovered that workers 25-40 years are considered as "most desirable" by employers, especially if married. Employers complained that the younger quit more frequently (an investment loss) and that the older were less fit physically and created problems concerning group pension plans, etc. Robert Gaston used 26-35 years as "prime age" in his study.

TABLE III-6
PRIME AGE
NEW HIRES ($\frac{NHPA}{NH}$)

City	$\frac{NHPA}{NH}$
SJN	100
HFX	50
SDY	100
QCT	20
HLL	0
SBK	0
SRL	33
CHI	14
DML	0
SIS	13
TOR	17
STT	50
HMT	38
OTT	23
SAR	33
SSM	50
CWL	0
OSH	25
BTD	50
SBY	20
VAN	28
SKT	0
WPG	8
CGY	33
VIC	44

Source: Post Office Questionnaire (Appendix II).

Thus if a local post office is observed hiring larger proportions of letter carriers outside this "prime age" range (25-35) it indicates

that their labour market experience is poorer than another post office which manages to hire all or most of its new letter carriers within the prime age.

The measure of the variable used is,

$$\frac{NHPA}{NH} = \frac{\text{new hires of prime age}}{\text{total new hires}} \times 100$$

The range for the twenty-five cities for which observations were available (Table III-6) extended from 0% (in five cities) to 100% (in two cities).

The mean is 30%, the σ 27% and the C.V., 89%.

The five variables described thus far constitute the measures of the letter carrier quantity and quality of recruitment experience. The sixth labour market experience variable describes retention experience and the two remaining dependent variables cover letter carrier quality and morale.

Retention

The ability of an employer to retain his employees is a measure of the relative attractiveness of jobs. For example, it may be hypothesized that a firm ranking high in the local wage distribution should be expected to have a relatively low quit rate, ceteris paribus.¹

6. The Quit Rate (q)

While the quit rate is the most widely used indicator of retention power, length of service is also sometimes seen in the literature. Thus Rees and Shultz use seniority (years of service) to help explain wage differentials.² Robert Evans also used length of service for similar purposes.³

At the macro level the quit rate has been taken to represent the state of the labour market.⁴ In that context a high quit rate is a sign

¹ In an empirical study of the type done here only a limited number of variables of all those affecting the quit rate (besides wage rank) can be explicitly accounted for and their effects measured. Of course the disturbance term captures the total effects of all other factors.

² Workers and Wages... op. cit., pp. 83-85.

³ "Worker Quality..." op. cit.

⁴ For example see Sara Behman, "Labor Mobility, Increasing Labor Demand...", Rev. of Economic Studies, vol. XXXI, no. 4, pp. 253-266.

of a tight labour market, with workers changing jobs presumably in response to higher paying employment openings. At the level of the individual establishment, the quit rate shows the employer's ability (in fact the relative net advantages of the job) to retain his employees in the face of competition from other employers.

It is important to note that the quit rate is a distinctive subset, and not synonymous with "turnover rate" or "separation rate". A turnover rate is the greater of hiring or separation rates ¹ in a given time period. Separation rates include the various classes of involuntary departures (retirement, death, dismissal, etc.) as well as voluntary separations - the pure quits.² Only the latter is used here since only these separations can be deemed to have occurred because of greater attractiveness of outside jobs. It will be recalled that both the Montpetit Report and the Anderson Report fail to make this distinction in their considerations of the causes of post office leavers.

Numerous studies use the quit rate as the dependent variable in regression analysis with the wage rate among other explanatory variables.

¹ See D.B.S. Hiring and Separation Rates, Ottawa, 72-006.

² For an interesting discussion of the relationship between dismissals and quits see, Ken Jennings, "When a Quit is Not a Quit", Personnel Journal, December, 1971, pp. 927-932. That writer claims that many nominal quits are really discharges, employers forcing unwanted employees to leave "on their own accord".

TABLE III-7
LETTER CARRIER
QUIT RATES (q)

City	q
SJN	2.0
HFX	2.1
SDY	0.0
SJS	0.0
CTN	0.0
QCT	2.0
HLL	5.1
MTL	0.6
SBK	1.6
GBY	4.5
SRI	4.3
CHI	3.2
DML	0.0
SIS	11.8
TOR	6.7
STT	0.0
HMT	1.6
OTT	3.4
SAR	6.0
SSM	7.0
CWL	3.6
OSH	3.6
BTD	2.0
SBY	4.8
VAN	10.2
SKT	0.0
WPG	1.1
CGY	14.0
VIC	3.8

Source: Post Office questionnaire (Appendix II).

In most cases however, the industry is the unit of comparison, while the use of the establishment as the relevant level (as in the present case) is as yet the exception.¹ Conceptually, in seeking relative job attractiveness, it is the interaction between establishment and the relevant labour market (usually the community) that constitutes the correct focus of analysis of the wage/quit rate relationship.² The analytical methods and results of previous studies on the relationship between quit rates and wage (as well as other explanatory variables) will be dealt with when the results of the present study are analyzed and evaluated in section II, chapter IV.

The measure of the quit rate as used here is computed as follows:

$$q \equiv \frac{\text{number of quits, May 1972 - April 1973}}{\text{number of letter carriers, April 1973}} \times 100^3$$

Table III-7 shows a range of quit rates among the total twenty-nine city sample from zero (six cities) to 14.0% (in Calgary). The mean is 3.6%, the σ , 3.5%, and the C.V., 97%.

¹ MacKay et al., *op. cit.*, Hill *op. cit.*, use plant data. Most establishment level studies are from the United Kingdom.

² See above, pp. 143-144.

³ Strictly speaking, the denominator should have been the average number of letter carriers over that year. Such data was not made available.

Most of the labour supply variables used in the present study are original in the sense that they are not found in the literature. It is thus not possible to make comparisons as to the "seriousness" of the letter carrier situation. One exception to this paucity is the quit rate. While there are of course no objective norms which delineate "high" quit rates from "low" quit rates, an attempt will be made later on to locate reasonably defensible benchmarks.¹ Given that quit rate data may be available for comparable groups, some judgement can then be made on the range of value found in Table III-7. However, at first glance, the actual city rates, the mean and dispersion seem rather modest although three cities stand out as having relatively (to the present sample) high quit rates: Calgary (14.0%), Sept Iles (11.8%) and Vancouver (10.2%).

Data was also requested for the numbers of quits from among the newly hired letter carriers.² This is an even more sensitive labour market

¹ This is done when the regression results on quit rates are analyzed in chapter IV.

² The newly hired letter carriers were those with less than twelve months' service.

experience variable because new employees have little vested interest in a job and should thus be more responsive to greater relative attractiveness of outside jobs. Lester, MacKay and Reynolds note an "induction crisis" for new employees during which time they are highly susceptible to quitting.¹ In addition to their greater sensitivity to be attracted out, the newly hired quits are more homogeneous than those constituting the overall quit rate: they are generally younger and have a more common length of service. These are useful properties for present purposes.

Unfortunately, data on short service quits were only obtained for seven of the twenty-nine sample cities. It was therefore not possible to include this information in the regression analysis. However, more simple analytical techniques will be used to incorporate these valuable statistics in the analysis of the problem.

The present subsection dealt with retention as labour market experience, the next explains the role of labour quality as an indicator of labour market experience.

Quality

"Labour quality" can mean different things to different investigators depending on such factors as the use to which the concept is put, the

¹ Lester, *Hiring Practices...*, op. cit., p. 61; MacKay et al, *Labour Markets Under...*, op. cit., p. 156; Reynolds, *The Structure...*, op. cit., pp. 20-23.

occupational group examined, and, in empirical research, on the kinds of data available.¹

In general, two types of measures can be used to judge worker quality: direct performance on the job and indirect predictors such as demographical proxies or tests which are assumed to indicate performance (see figure III-1, p. 159.)

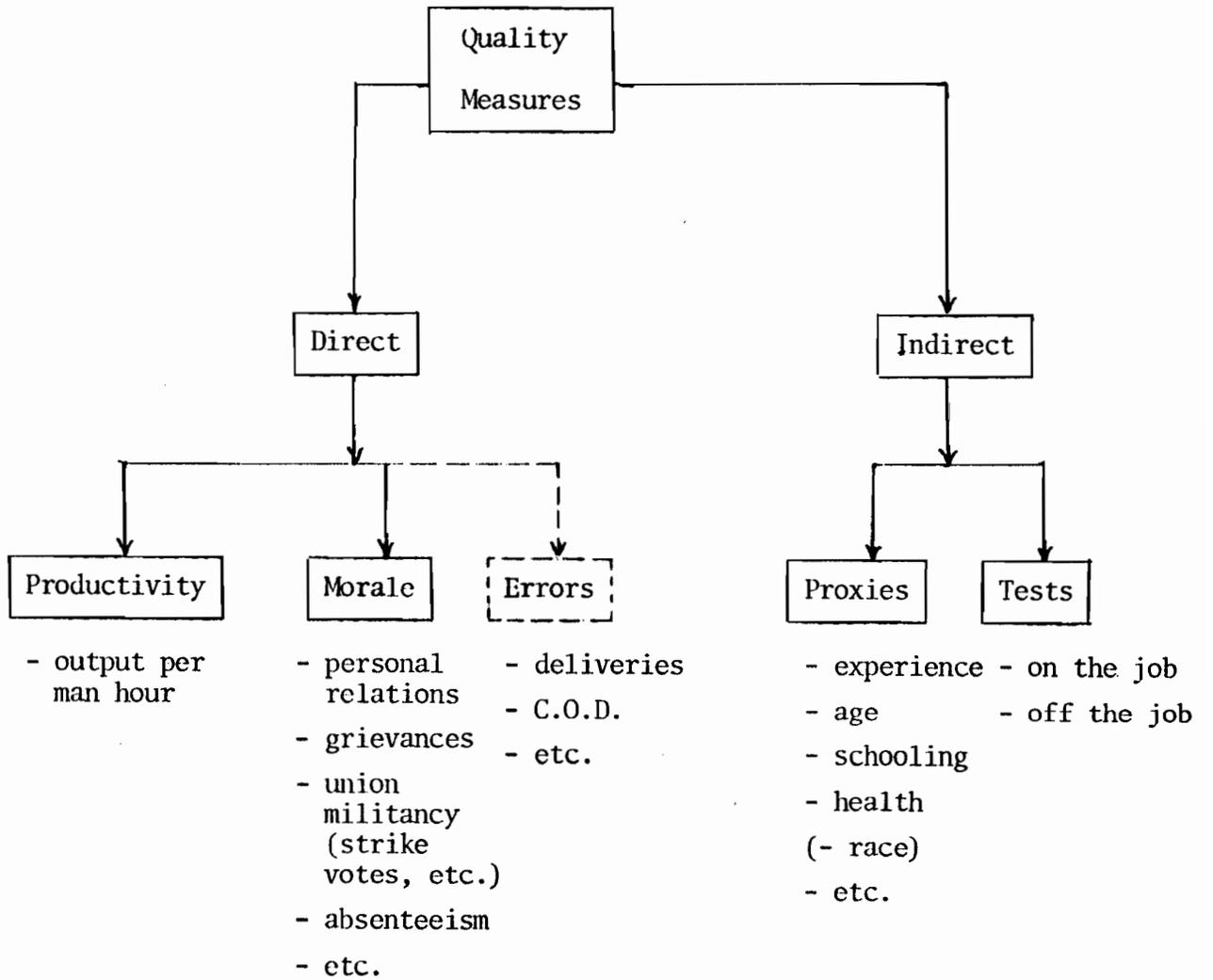
There are two groups of direct performance measures: productivity and personal relations (morale).² Basically an employer hires labour to perform directed tasks and the personality traits of an employee are of secondary importance.³

¹ "'Quality' of labor turns out to be remarkably difficult to measure or even to define...", Lloyd G. Reynolds, *The Structure of...*, op. cit., p. 219.

² These are not perfectly mutually exclusive.

³ An employee who is an excellent producer may have so unacceptable a "character" that he becomes intolerable. On the other hand, a very congenial worker whose production is substantially below the standard is more clearly disposable.

Figure III-1
MEASURES OF LABOUR QUALITY



The best known measure of direct performance is the actual output (physical, or value of) per unit of time per worker, or "productivity". This is the indicator of the value of the workers' production to the organization, and though there may be some other long run considerations,¹ productivity measures relevant worker quality.² However, in the case at hand this is not a useful yardstick. In terms of physical³ productivity, all letter carriers have equal performance. Each letter carrier must deliver all the mail destined for his walk each day. The walk size is adjusted annually so as to cover 400 minutes of daily work. If he is so disposed, a letter carrier may work more quickly and efficiently and take less than the 400 nominal minutes, however, the Post Office will never

¹ For example, the employer may estimate the value of an employee to a firm by including promotional potential. This may not necessarily coincide perfectly with performance on a job at any given time. The letter carrier has no promotional prospects.

² It is assumed that complementary capital equipment and organizational arrangements are equally efficient. This is a realistic assumption in the case of the letter carrier.

³ The use of the value of the product, as presented in microeconomic texts, is unrealistic here since it is difficult to evaluate the worth of mail delivery to the public. (Perhaps the cost of alternative methods of forwarding letters and parcels may be a starting point). Leonard Merewitz measured inter-post office productivity differences for the U.S., but his study covered mostly inside operations where mail handling technology and lengths of runs varies considerably. See his, The Production Function in the Public Sector, unpublished Ph.D. dissertation, U. of California, Berkeley, 1969.

learn of this. The letter carrier punches "in" at the outset of the day and again "in" and "out" at noon, but he does not punch "out" at the end of his shift. He thus internalizes his efficiency in the length of his working day. When the walk assessment officer is present the letter carrier slows down to a nominal performance.¹ If he did operate at a higher level of efficiency his walk would thereupon be physically expanded to provide the required 400 minutes.

There are other direct performance indicators complementing the strict, productivity sort described above and which are measurable. Among these are the frequency of wrongly delivered mail, missing mail, c.o.d. accounting errors, etc. The Post Office refused to release these data.

The second type of direct performance indicator, morale, evaluates personal relations of the letter carrier with supervisors, peers and clients. These may be measured by the types and frequencies of reprimands or commendation from supervisors, complaints from fellow workers, clients, and absenteeism, honesty, punctuality, etc. If such morale could be measured, it would provide information on the worker's attitude toward his job and therefore, performance. In the context of collective bargaining, city differentials in letter carrier morale can also be measured by the numbers (and subjects) of grievances lodged per city, by the intercity differences in strike votes, or, in any context, by absenteeism. These latter two concepts are potentially

¹ Walk assessment is described below (p. 200).

useful for judging the perceived adequacy of a job's relative net advantage (wage) and are taken up below.

The second type of labour quality measure is the indirect, demographical or biographical proxy. Among those encountered most often in the research literature are experience, age, schooling, race, etc.

There have been many recent attempts to measure labour quality, and what is even more relevant to the present study, to relate quality differences to wage differences. Before going on to describe the specific quality proxies which are used as dependent variables here, the complexities and pitfalls of measuring worker quality will be illustrated from the recent literature.

In attempting to discover the relationship between wage levels and the efficiency of typists, Eaton Conant used clerical efficiency test scores (aptitude, accuracy and speed).¹ Because his simple coefficient of determination is only .10 ("...90%, of the variation is unexplained...", p. 433) he concludes that though the tests do measure ability and predict performance accurately "...employers, however, used other selection criteria in addition to aptitude and proficiency tests... Quite probably such worker features as appearance, health, and other characteristics are related to payment differences."² Thus, though the researcher is satisfied that

¹ Eaton Conant, "Worker Efficiency...", op. cit.

² Ibid., p. 433.

he had identified objective quality measures, the perceived desirability by an employer may or may not respect these predictors.

Robert Evans Jr. used length of service, additional schooling and test results as quality indicators.¹ Only the length of service turns out to be statistically significant in explaining wage differentials. Evans claims that in the context of his study most wage increases were based on merit, therefore wages could be explained by quality (length of service). However, in many other instances, including the postal letter carriers, wage increases are granted through automatic progression along a wage scale. In the Evans paper the sequence is: length of service → quality evaluation → wage decision by employer. For letter carrier it is: length of service → time → wage increase.²

In his study on international differences in labour quality at the macro level Vladimir Stoikov assumes that the wage level accurately measures quality or skill differences "...on the not too implausible assumption that labour inputs are paid in proportion to their marginal product."³ In the

¹ Robert Evans Jr., "Worker Quality and Wage Dispersion..." op. cit.

² Length of service and quality may be positively correlated.

³ Vladimir Stoikov, "Productivity and the Quality of the Labour Force: An International Comparison", British Journal of Industrial Relations, Vol. VI, No. 2, pp. 156-163, (p. 158).

context of the present study such a measure would beg the question since it is desired here to discover the relationship between quality and the relative wage.

In an attempt to ascertain the effect of quality on wage levels of teachers, John D. Owen takes verbal ability, highest university degree and experience as quality indicators.¹ The results of a cross sectional econometric regression of 1964-65 data are not statistically significant. None of these measures is relevant to the letter carrier function.

Leonard Weiss examined the relationship between worker quality and wage levels in a cross sectional multiple regression analysis of 1960 U.S. industry data.² He found that "...employers who...pay high salaries receive 'superior' labor in the bargain."³ However, it is of crucial importance to note that his measures of quality include race (spanish surnames, negros), sex, city size, schooling, area of the country, country of origin of parent, moving habits, family size, etc. That some of these are highly doubtful indicators of worker quality is admitted by Weiss himself.

"Labor 'quality' in this study includes such

¹ John D. Owen, "Toward a Public Employment Wage Theory..." op. cit.

² Leonard Weiss, "Concentration and Labor Earnings", A.E.R., March 1966, pp. 96-117.

³ Ibid., p. 115.

personal characteristics as race, which may be quite irrelevant to the objectively evaluated productivity of the labor involved." ¹

His recommendations for improvement of quality measures echo those of Conant (see p. 173, above).

"Such obviously pertinent variables as health, intelligence, appearance, strength, manual dexterity, sobriety, and responsibility...which could not be measured...could only be approximated [here] by distant proxies such as age, sex, education, family status..."²

This is an example of "correct" econometric results (the hypothesis that higher wages lead to higher labour quality holds) but the use of questionable measures of quality.

Robert J. Gaston uses several variables to distinguish worker quality between cities: formal schooling, length of service, "prime work age", and proportions of non-prime and part-time workers, and admits,

"Measuring the quality of labor, however, is a difficult task. I shall use a number of partial indicators..."³

Finally, in her study on the U.S. federal public service Sharon P. Smith uses marital status (divorced, spouse absent, widowed) sex and race as proxies for productivity.⁴ Migration is taken as an investment in human

¹ Ibid., p. 116.

² Ibid., p. 117.

³ Robert J. Gaston, "Labor Market Conditions and Hiring Standards", op. cit., p. 272.

⁴ Sharon P. Smith, "Pay Differentials Between Federal...", op. cit., p. 193,4.

capital and "is associated with", and "captured by", schooling.¹ Logical acrobatics such as these show how far it is sometimes tempting to go in order to determine operational counterparts of worker quality.

This review of studies has shown that worker quality is a difficult concept to operationalize. Even if some reasonable measures or proxies are identified the data is often only partially applicable. Though an attempt is made in the present study to avoid some of the errors or unjustified liberties of previous researchers, this effort has, as will be pointed out below, been only partially successful.

In the pages that follow, five measures of letter carrier quality are identified: sick leave abuse, the results of a strike vote, the incidence of real illness, the proportions of "prime age" letter carriers and the proportions of letter carriers with post-secondary schooling.²

7. Casual Sick Leave (SL¹)

There are two kinds of sick leave in the federal public service: "casual" and "certified". Under the first, the letter carrier may take up to seven days per year of paid sick leave without a supporting medical

¹ Ibid., p. 193.

² For both conceptual and data availability reasons only two - sick leave abuse and the vote - will be treated in the analysis.

certificate providing that no single absence exceeds three days.¹

When the casual leave is exhausted the letter carrier is still entitled to additional paid leave ("certified sick leave") but such days must then be justified by a medical certificate.

While much of sick leave days claimed is properly for incidents of real illness, some proportion is also likely an abuse of the system.

"...much of what passes for sick leave is probably not..."²

The Montpetit Report reveals the same view about Canadian postal employees of the 1960's.

"...the [Post Office] Department is [very] concerned about the problem of absenteeism attributed in part to the abuse of sick leave."³

In the present context casual sick leave is most vulnerable to abuse since there is no need to produce a medical certificate. Such an act may be viewed analytically as a reduction in time worked, and a corresponding increase in worked hourly pay by an employee who feels underpaid. E.E. Lawler, the industrial psychologist, explains the same phenomenon but from a behavioural viewpoint.

¹ Collective Agreement, Council of Postal Unions, March 27, 1972 to December 31, 1974, arts. 22.06 and 22.08 (p. 58).

² John B. Miner, Personnel and Industrial Relations, MacMillan Co., N.Y., 1969, p. 203. No data or source is given for the opinion expressed.

³ op. cit., p. 110. On the complexity of detection, Montpetit adds: "We are skeptical about its [supervisors' unannounced home visits] practical effectiveness: how can a supervisor with no professional medical knowledge determine, beyond a reasonable doubt, whether an employee is sick or not?" (p. 111).

"According to equity theory, underpayment should lead employees to try to reduce their inputs, and certainly one way to do this is to be absent." ¹

Sick leave abuse may of course, be motivated by any other negative feelings towards the job environment.

"The morale of an employee plays a part in his use or abuse of sick leave. An employee who is happy in his work reports for duty unless he is really unable to do so, whereas an employee who gets little satisfaction from his work finds all kinds of excuses to justify a real or imaginary illness." ²

In the present study casual sick leave is taken as an indicator of the level of employee morale and examined as a function of several economic variables (especially wage rank). In the cross sectional analysis below the relationship between the intercity variation in casual sick leave taking and wage rank is sought. ³

The most obvious measure of the incidence of casual sick leave for the present study is the total number of such days taken per letter carrier in a city in fiscal 1972-73. However the Post Office declined to provide data for the 12 month period, offering instead one single month. One weakness of this information is that such a shorter time period is more susceptible

¹ E.E. Lawler, Pay and Organizational Effectiveness: A Psychological View, McGraw-Hill, N.Y., 1971, p. 236. There is a considerable literature dealing with absenteeism and its correlatives. These are discussed in section II of chapter IV.

² The Montpetit Report, op. cit., p. 112.

³ The possibility that the proportion of real abuse in casual sick leave may vary is considered in section II, chapter IV.

TABLE III-8
THE INCIDENCE
OF CASUAL SICK LEAVE
TAKING (SL¹)

CITY	SL ¹
SJN	.28
HFX	.42
SDY	.22
SJS	.30
CTN	.90
QCT	.46
HLL	.62
MTL	.54
SBK	.44
GBY	.59
SRL	.04
CHI	.48
DML	.48
SIS	.29
TOR	.45
SIT	.20
HMT	.37
OTT	.57
SAR	.48
SSM	.35
CWL	.92
OSH	.47
BTD	.47
SBY	.74
VAN	.39
SKT	.23
WPG	.36
CGY	.30
VIC	.22

Source: The Post Office personnel records (communicated July 31, 1973).

to random extensive sick leave by particular illnesses or to nonrepresentative absence. May (1973) was selected because it is the most climate-neutral month considering the range of temperatures, precipitation, etc. across Canada.

$$SL_i^1 \equiv \frac{\text{number of casual sick leave days, May, 1973}_i}{\text{number of letter carriers}_i}$$

Table III-8 shows a range in days per letter carrier in May 1973 of from .04 in Sorel to .92 in Cornwall. The mean is .43, the σ , .19 and the C.V. is 44%. This is a much smaller dispersion than with any of the dependent variables up to this point.

8. Vote (V)

A second indicator of letter carrier morale is the result of a ratification vote for the 1972 renewal of the Council of Postal Unions' collective agreement. A vote for contract rejection, which in this case was a vote for a strike, can be taken as a sign of dissatisfaction with relative net advantages of a job. If the vote in one city is heavily against acceptance while in an other there is an overwhelming majority favouring acceptance, it may be hypothesized that differences in wage rank are at least partially responsible for the divergent outcomes. It was not possible to obtain the results only for letter carriers since the Council voted as a single group. The present city level data therefore covers letter carriers and inside postal workers combined. The effects of this compromise are discussed in chapter IV.

There are some studies dealing with union voting patterns, but to the author's knowledge, none has attempted to trace the causes of differences in vote results to differences in economic environments. For example, Burke and Rubin examine rank and file rejection of contract proposals approved by the union negotiating committee.¹ The approach was to attempt to discover the reasons why the rank and file view of what was acceptable differed from that of their own negotiating committee. In the present case it is the effect of economic (wage rank, the labour market) and other environmental conditions on the vote that is sought.

A potentially more fruitful literature is that examining the relationship between economic conditions and actual strike activity. Though a vote for a strike does not necessarily result in a real stoppage, the orientation of researchers on strikes more closely parallels the present effort.

Robert Stern's "Intermetropolitan Patterns of Strike Frequency",² uses wage rank, the unemployment rate and other variables on 1970 cross sectional data for some 250 U.S. cities. His methodology is an analysis of differences in means (with t significance tests) in "high", "moderate", and "low" conflict cities. The results of this and other studies are incorporated into the present one when the letter carrier data are analyzed in chapter IV below.

¹ Donald R. Burke and Lester Rubin, "Is Contract Rejection a Major Collective Bargaining Problem?", I.L.R.R., January, 1973, pp. 820-833. This subject was in vogue among academic researchers half a decade ago when this phenomenon was considered by some to be a "serious problem". For example: "Rejections by the rank and file of contracts negotiated by union officials with management appear to many to be a serious and growing problem", (Burke and Rubin, op. cit., p. 820). Other studies include William E. Simkin, "Refusals to Ratify Contracts" I.L.R.R., July 1968, pp. 517-540; Clyde W. Summers, "Ratification of Agreements" in John Dunlop and Neil W. Chamberlain (eds.), Frontiers of Collective Bargaining, Harper and Row, N.Y., 1967.

² I.L.R.R., January 1976, pp. 218-235.

TABLE III-9
 THE POSTAL VOTE ON
 THE COLLECTIVE AGREEMENT,
 1973 (V)

CITY	V
SJN	135
HFX	139
SDY	117
SJS	136
CTN	120
QCT	91
MTL	27
SBK	108
GBY	46
SRL	0
CHI	44
DML	36
SIS	9
TOR	123
STT	123
HMT	92
OTT	127
SAR	114
SSM	83
CWL	130
OSH	130
BTD	141
SBY	112
VAN	111
SKT	150
WPG	130
CGY	96
VIC	127

Source: Communication to the author by the Council of Postal Unions, February 22, 1973. The results are for letter carriers and inside workers combined.

The measures used in the present analysis is the ratio of the local proportion of the "Yes" vote to the total sample (national) "Yes" proportion.

$$V_i \equiv \frac{\left(\frac{Y}{Y+N}\right)_i}{\left(\frac{Y}{Y+N}\right)_n} \times 100$$

where Y = the "yes" vote,
 N = the "no" vote,
 i = cities, 1..29,
 n = sample (national) mean.

The sample $\left(\frac{Y}{Y+N}\right)_n$ value is 66%,¹ and the V series ranges from a low of 0% (Sorel) to a high of 150% in Saskatoon. The mean is 100%, with a σ of 42% and a C.V. of 42%.

This completes the series of eight aspects of labour market experience, the dependent variables, against each of which is to be set the series of explanatory variables (including the letter carrier wage rank) in attempts to estimate the effects of changes in (really differences in) the latter on the former.

For the first six variables the coefficient of variation ranges between 67% and 158% and are 44% and 42% for the final two variables.

¹ The value was 72% for the entire universe of letter carrier cities.

It would appear at first glance that dispersions of these magnitudes could constitute a "problem" in the geographic pattern of labour market experience. However in many cases the extreme readings (especially on the "bad" side) are concentrated in a relatively few cities.

Other Variables

In addition to these eight variables there were five others on which data were collected. Three could not be used for technical reasons, while only insufficient information was obtained for the other two. There were still other variables which are labour market experience measures but for which no data were forthcoming.

The three variables for which data on all twenty-nine cities were

obtained are quality indicators: certified sick leave, SL^2 ; the proportion of "prime age letter carriers", $\frac{LCPA}{LC}$; and the proportion of "letter carriers with post-secondary schooling", $\frac{LCPS}{LC}$.¹ There is an abundant literature which recognizes health, age and schooling as proxies for worker quality. Intercity comparisons of each of these variables are believed to indicate differences in labour market experience.

While casual sick leave is taken as a measure of quality through morale, the certified sick leave (SL^2) days provides a different quality aspect. To begin with, it is assumed that all certified sick leave is the result of genuine illnesses.² Strictly speaking, only a weaker assumption is needed: that the proportions of certified to total sick leave do not vary greatly among the sample cities.

The intercity variation in letter carrier SL^2 is thus presumed to represent differences in physical and mental health and therefore of

¹ The Treasury Board and Post Office refused to release this information. It was purchased directly from Statistics Canada (the 1971 census).

² The present author is not aware of any study attempting to distinguish between genuine and abusive sick leave. The greyest area is that of psychosomatic illness: those psychologically self-induced states with pathological symptoms.

worker quality. When minimal health standards are lowered because of recruitment and retention difficulties (possibly attributed to a low wage rank or to a tight labour market) candidates may be accepted even if they are judged to have health problems. The letter carrier job function is physically demanding and while a relaxation of the physical standards can increase the supply of recruits, it may also involve a deterioration of the quality of letter carriers.

As with casual sick leave, certified sick leave data is for the month of May, 1973. The measure is,

$$SL_i^2 \equiv \frac{\text{number of certified sick leave days}_i}{\text{number of letter carriers}_i}$$

The range of values found for the twenty-nine cities is from zero (four cities) to 2.59 days per letter carrier (in Chicoutimi), with a mean of .52.

Unfortunately, for the same reasons applicable to the formal schooling labour market experience variable below¹ $\left(\frac{LCPS}{LC}\right)$, SL^2 cannot be analyzed in the present study and is herewith dropped from further consideration.

The problem with the age variable is that current wage rank, labour market conditions and Y-specific information could not be used to explain the differences found, since the age composition is a function of three specific variables as in the equation below,

$$\frac{LCPA}{LC} = a_0 + a_1 IIR_{t1...t-ni} + a_2 SR_{t1...tni} + a_3 T_i + \epsilon_{t1...t-ni}$$

where $\frac{LCPA}{LC}$ is the proportion of prime age letter carriers in a city's

¹ See p. 189.

- total letter carriers,
- HR is the hiring rate from years 1 to n,
- SR is the separation rate from years 1 to n,
- T is time in years,
- E is the disturbance term,
- i is a city.

Initially, with the size of establishment assumed unchanged over time, the HR and SR can have different effects on $\frac{LCPA}{LC}$ depending on the remoteness of such activity. With no new hires in the past five years (i.e., a SR of zero), a post office should have a zero value for the dependent variable. If a high proportion of letter carriers were hired, say, in the past five years (i.e., a high SR) then $\frac{LCPA}{LC}$ should be relatively high. But this latter result will also depend on the wage rank, labour market conditions and the relevant Y-specific variables in each market for each past time period as specified for the $\frac{NIPA}{NI}$ variable in chapter III.

When the fixity of the establishment size is relaxed, which is the more realistic case for most Canadian cities, the hypotheses concerning the relationships in the above equation become far more complex and need not be pursued for present purposes.¹ No information was available on

¹ For the sake of completeness, the range of $\frac{LCPA}{LC} \times 100$ was zero (St. Thomas, Cornwall), to 41% (St. John's, Sudbury) with a sample mean of 24%.

the time structure of establishment size, hiring rate or separation rate and therefore it was not even possible to set up a series of equations of the $\frac{NHPA}{NH}$ - type for past years.¹

¹ Despite this unwillingness at this point to postulate stability of the letter carrier wage rank and other variables over time, econometric experiments were carried out relating current wage rank to the age structure of letter carriers (see Appendix VI, p. 395, below). In no case does the wage rank emerge as a statistically significant determinant of any of the three age composition measures.

The level of formal schooling has been widely used as an indicator of worker quality.¹ The city having a higher proportion of letter carriers with post-secondary schooling ($\frac{LCPS}{LC}$) can be said to have a higher average letter carrier quality than a city with a lower proportion.^{2,3}

Such higher (lower) quality can be attributed to a higher (lower) wage rank or to a slack (tight) labour market or to differences in the Y-specific variables. However the integration of this variable into the regression technique used below encounters obstacles similar to those met by the preceding variables. Though time is not as crucial a barrier to this schooling measure, it does mean that this quality indicator must be discarded.

The present proportions of LCPS to total letter carriers is a function

¹ See section II, chapter IV, below.

² This statement can be contested on the grounds that a letter carrier is fully qualified (according to hiring standards) with only the equivalent of elementary schooling. Indeed all mention of formal schooling as a hiring factor has been eliminated for meter readers (an occupation to which letter carriers have often been compared) at Hydro-Quebec on the grounds that this was not necessary to perform the work, and therefore discriminated against the undereducated. (See Plan D'Evaluation, "Releveur de Compteurs", Emploi B, 6.311, classe 10, June 9, 1971).

³ Though post-secondary schooling is clearly beyond the job requirements, it was nevertheless selected here in preference to post-elementary schooling because the intercity dispersion was much greater in the former case. The measure chosen is relevant also because it is believed that postal hiring officers view a candidate with post-secondary education as of a higher quality than one with less formal education, other things equal.

of the schooling compositions of all past hirings. It is thus not possible to set out a regression equation with independent variable data from the 1972-73 year.¹ A potentially fruitful analysis would then be to run a series of regressions (one for each year) back, say to forty years, using this model's wage rank, labour market conditions and Y-specific variables. Unfortunately not only is the sample city schooling mix not available for past years, it was not even provided for the newly hired letter carrier of 1972-73. Therefore, while 1972-73 data on $\frac{NHPA}{NH}$ is regressed below, this was not possible for the schooling-as-quality variable and this variable is thus set aside.²

The two variables on which insufficient data were obtained are "newly hired quits" (quits with less than six months service) and "cut off levels" (the total minimum points necessary to pass letter carrier selection examinations).

Quits among newly hired letter carriers was already commented on earlier in this section. The data for seven cities will be examined below for a possible contribution to the understanding of the retention/wage rank relationship.

It is hypothesized that the cut off level (C.O.) will be positively

¹ In his study on the effects of job security provisions on quit rates Richard Block makes this type of assumption on 1972 data and 1961 data. ("The Impact of Union—Negotiated...", op. cit.)

² In the interests of completeness the $\frac{LCPS}{IC}$ range is from zero % (Sept Iles, Charlestown) to 40% (Sydney) with a sample mean of 17%.

related to local letter carrier wage rank. A regression test will be made of this hypothesis using data for ten cities. In addition to its value as a labour market experience variable, it should also have an independent effect on the recruitment variables.¹ The absence of the C.O. data in the equations to follow may constitute a weakness in the model. This author is not aware of any study where the variations in test score "pass" standards have been analyzed in relation to relative wages or labour market conditions.

Finally among the labour market experience and explanatory variables for which sample city information was requested and refused were:

1. The number and subject-matter of grievances (morale)
2. punctuality
3. reprimands
4. length of service
5. length of service by age
6. quits by length of service
7. quits by age
8. overtime
9. use of "casuals"²
10. exit interview information (reasons for quits, new jobs, etc.)

¹ $\frac{APP}{LPM}$, N.E.L., N.T.S., $\frac{T_2}{APP}$, $\frac{NHPA}{NI}$.

² "Casuals" are hired by the hour (at the minimum wage) to fill letter carrier positions on a temporary basis. Intercity differences in the use of casuals should be a good indicator of recruitment and retention difficulties.

11. schooling mix

12. age mix.

Now that the labour market experience or dependent variables have been explained, attention is turned to the independent variables to be used in the regression analysis.

IV

THE INDEPENDENT VARIABLES

The previous section identified eight measures of labour market experience as the dependent variables in the equations being developed. In the present section a series of independent variables expected to explain the intercity differences in labour market experience will be discussed and their measures described.

There are three groups of such explanatory variables: the wage rank, the labour market conditions (LMC) and Y-specific.¹

The Wage Variable

The wage variable is important for two reasons. Firstly, the government has singled out the intercity differences in letter carrier wage rank as the cause of the intercity variation in letter carrier labour market experience. It has therefore adopted the new geographic wage policy of local wage alignment as the means of correcting an undesirable national pattern of labour market experience (especially on the poor side). The wage is also important because,

¹ Using a basically similar model to explain interindustrial quit rate differences, Stoikov and Raimon (op. cit.) have two groups of explanatory variables (desirability of quitting, ease of quitting), while Burton and Parker have four groups (incentive to quit, opportunity to quit, public and other variables: John F. Burton and John E. Parker, "Interindustry Variations in Voluntary Mobility", I.L.R.R., January, 1969, pp. 199-216).

as was seen in previous sections, relative net advantages are deemed to influence job choice. In effect, workers are viewed as choosing among jobs in such a way as to maximize these net advantages. It was also shown that wages are an important component of net advantages and though the method may be open to criticism, the wage alone is often taken as its proxy. Job choice is therefore considered to be heavily influenced by relative wages in a local labour market. This is the method generally used for interindustry, interarea and interfirm analysis of differences in quit rates and in labour quality.¹

In the present study, it is the interemployer wage differences in the respective local labour markets that is the focus of attention. The hypothesis to be tested is that, other things equal, an employer's labour market experience is directly related to his rank in the local labour market wage distribution.

In order to ascertain wage rank, two reference points are needed: the letter carrier or internal wage, and some measure of the outside distribution. Wage rank can be measured in several ways. The present study uses the ratio of the (average) letter carrier (national) wage to the mean wage for similar

¹ With few exceptions researchers hypothesize that the wage differential is mainly responsible for variations in quit rates and labour quality, after appropriate assumptions (e.g., on nonwage aspects) are postulated. Studies at the national level also use the wage as the important, if not sole, explanatory factor.

workers in each respective local labour market. The determination of these two points is more complex than may appear at first sight and the resolution of these problems involves making decisions that include some degree of arbitrariness.¹ In the next two subsections the "letter carrier wage" and the "outside wage" are defined.

The Letter Carrier Wage

The letter carriers are paid according to one of four wage steps as stipulated in their collective agreement.² Progression from the hiring rate (step 1) through to the maximum (step 4) is automatic and annual.

The hiring rate could possibly be defended as representative of the letter carrier wage in equations dealing with recruitment variables. However this would not be appropriate either for retention or quality variables. In fact, because of limitations in the outside wage data, the letter carrier starting rate is not even relevant for recruitment analysis.³

¹ On the difficulty of determining the market wage, see for example, L.G. Reynolds and C.H. Taft. The Evolution of Wage Structure, Yale U. Press., New Haven, 1956, pp. 7-13; M. Reder, "Wage Structure: Theory and Measurement", in Aspects of Labor Economics, N.B.E.R., Princeton U., 1962, pp. 257-318.

² See table III-10, p. 196 below.

³ It was not possible to obtain outside starting salaries. Only the averages of all such comparable wages paid were available.

The maximum rate (fourth step) could be used as the letter carrier wage since progression is automatic. However because there are letter carriers on the first three steps, such a practice overstates the wage. The arithmetic mean of the four steps themselves has intuitive appeal but such a figure would misrepresent reality since the distribution of letter carriers over the range is unequal. In order to account for the actual distribution of letter carriers along the scale, a weighted average of the steps accounting for the numbers of letter carriers on each seems most appropriate. This was the measure finally adopted.¹ Table III-1 shows the rates, weights and the resulting "letter carrier wage".

TABLE III-10
LETTER CARRIER WAGE STEPS AND WEIGHTS

	Wage Rate ^a	Percentage of letter carriers ^b	Weighted Average
Step 4	\$3.54	81.23%	
Step 3	\$3.46	2.44%	
Step 2	\$3.38	7.90%	
Step 1	\$3.31	8.42%	
			3.51

- Sources: a. the collective agreement signed October 16, 1970, (p. 89) and in effect through 1972.
b. interview, Harry Powell, Pay Research Officer, Post Office Ottawa, May 26, 1972.

¹ A similar method is suggested in David Lewin, "The Prevailing-Wage Principle..." op. cit., p. 477.

One weakness in this measure is that these percentages of letter carriers on each step are weights related to national aggregates. Such information was not available for each city. While there are probably different intercity proportions of letter carriers on each step (depending essentially on recent recruitment rates) the distortion introduced by these differences is small.¹

Thus \$3.51 is to be used as the letter carrier national wage which will ultimately be set against the various individual local outside comparable rates to establish the letter carrier wage ranks.

The Outside Wage

Now that the letter carrier wage has been determined, the outside wage must be identified.

There are two main aspects to dealing with the comparable outside wage. The first concerns only those jobs, like the letter carrier, which are unique to government (or to any employer).² The second aspect is the determination of the precise outside rate once the comparable outside group has been

¹ This was the assurance given by the postal officials possessing this data (interview, Harry Powell, Pay Research Officer, Post Office, Ottawa, May 26, 1972.)

² The Post Office Act (article 8) gives the federal government a monopoly on first class (letter) mail delivery.

found.¹ The overall process involves three problems: the selection of the comparable outside occupation, the appropriate outside universe, and the choice of a single outside rate for comparison. These are treated in turn.

The method of determining the comparable outside wage depends on the use to which such information is to be put. Four methods are described.

In the context of government wage setting for unique jobs, comparison can be to a second, internal job which does have an outside counterpart. Through a job evaluation (point) system internal relativity may be established and thus indirect comparability to the outside market accomplished.² Such a method, with its double links, has little relevance for present purposes not only because it is generally complex but also because it introduces an additional potential source of value judgement (and possibly of error).

The three remaining methods considered below for our research purposes here can also be followed by a public employer formulating actual wage policy. In essence the exercise centers about the identification of those

¹ It should be realized that the following sections are not an exercise in actual wage setting. The objective is strictly limited to the analysis of wage data.

² This is in the spirit of John Dunlop's "job clusters - key rate" approach. See "The Task of Contemporary Wage Theory", in John Dunlop (ed.), The Theory of Wage Determination, MacMillan, London, 1957, pp. 3-30. See also D.W. Belcher, Wage and Salary Administration, Prentice-Hall Inc., Englewood Cliffs, 1962, (2nd edition), esp. pp. 173-328.

outside jobs which are similar enough so that an incumbent can be attracted out into a letter carrier job and vice versa. It is the set of jobs against which the Post Office must compete in attracting new employees and retaining present ones.¹

Because the first two methods require an understanding of the letter carrier function, a brief description of the job tasks is now given.

For the most part letter carriers are hired from among the unskilled since there is little outside work that can provide valuable experience for the job.² If a letter carrier quits, only marginal aspects of his skills can be transferred to a new occupation. In terms of formal training, a new recruit receives one week's instruction inside the post office and a second one on the walk.

His daily routine parallels these two phases. The day begins at 6:30 AM inside his postal station where the letter carrier performs minor clerical functions. These include settling C.O.D. payments, entering the day's registrations, keeping change-of-address book up to date, etc. However,

¹ Martin Lapinsky (A Study in Occupational Labor Supply Elasticities, unpublished Ph D dissertation, New School for Social Research, 1966, quoted in Owens, *op. cit.*, p. 215-219), in his study on wages of a monopsonistic employer (school boards) also used such a "potential alternative employment" concept. Teachers' salaries were compared to those of "managers, officials and proprietors". (The last-named occupation seems remote as a teacher's alternative job).

² The Postal Personnel Manual does mention past experience as an attribute, but this is only a minor consideration in the selection process.

most of the time is spent in ordering and stacking mail bundles to correspond to the delivery sequence.

Phase two starts at about 8:00 AM as he sets out with his thirty-five pound mail bag. (Trucks are dispatched with the balance of the day's deliveries which are deposited in the green relay boxes). A walk is assessed at 400 minutes per day and re-evaluated annually for changes in required delivery time caused by alterations in topography and the composition and density of the clientele.

There is thus a clerical aspect to the function, but the letter carrier spends most of his time out on the streets with no direct supervision.¹

Given this summary description, which outside occupations can qualify as letter carrier proxies? It will be useful initially to mention the occupations that have been used by Treasury Board wage administrators themselves.² In Canada the outside reference is a composite proxy made up

¹ Some indirect external supervision is carried out by incognito inspectors.

² There are two bases, among others, that can be used to identify comparable outside wage groups: the job tasks and the incumbent's qualifications. In the present study both are used in combination and without formal apportionment of weights. In a radical departure from this widely accepted approach to wage determination in the public service, Sharon P. Smith makes comparisons to outside workers using variables relating only to personal characteristics (race, schooling, etc.) of the job holders (see pp. 94, 176, 177 above). She does not attach any importance to the occupations of those being compared. It is as though worth was determined solely by what the worker is rather than what he does.

of two unevenly weighted individual occupations: the hydroelectric meter reader (60%) and the delivery truck driver (40%). A recent extensive investigation into U.S. postal operations used the truck driver alone as the outside proxy for purposes of wage comparison.¹

For the present study outside wage data was collected for the following three categories of outside occupations (eight series in all).

Composite Proxies

On the basis of the job description, five composite proxies were constructed.

1. Meter Reader (60%) - Truck Driver (40%)
2. Meter Reader - Truck Driver - Junior Clerk - Bus Driver - Labourer.
(equal weights).
3. Meter Reader - Truck Driver - Junior Clerk - Bus Driver (equal weights).
4. Meter Reader - Truck Driver - Intermediate Clerk - Bus Driver - Labourer (equal weights).
5. Meter Reader - Truck Driver - Intermediate Clerk - Bus Driver
(equal weights).

¹ Towards Postal Excellence, op. cit., Annex, Vol. IV, pp. 5.46-5.49.

Homogeneous Proxy

The Truck Driver was singled out for individual consideration.¹

Broadly Based Outside Wage

1. Manufacturing
2. Industrial Composite

Of the five composite proxies the first was considered too narrowly based.² The second was set aside because a re-examination of the contents of the labourer occupation indicated that it could not really qualify as an alternative employment for letter carriers. The fourth and fifth proxies, with their "intermediate clerk", were abandoned after a comparison between the letter carrier clerical duties and those specified in the Wage Rate Survey definition for intermediate clerk revealed that the "junior clerk" tasks were appropriate. The third proxy seemed broadly based and representative enough to be used as the letter carrier composite proxy.

The Truck Driver wage series was also selected for analysis below because of its relative homogeneity and since the skills required are similar to those of the letter carrier (also the letter carrier must possess a

¹ Meter reader wages are only available on a provincial basis.

² In the Anderson Report, op. cit. (Volume II, p. 7 et seq.) the Commissioner goes to great lengths in attempting to show that there are important differences between the letter carrier and meter reader jobs.

driver's licence).

Between the two broadly based series, manufacturing was abandoned because wage data was only available for a few of the sample cities. In contrast, the industrial composite wage data was published for all sample cities.

Thus, with the selection of composite proxy # 3, the truck driver, and the industrial composite as relevant wage comparison series the first problem - that of defining the outside comparable occupation - has been resolved for this study. The second problem, identifying the appropriate universe of employers, is dealt with immediately below. The third problem, the determination of the precise representative wage of the outside distribution is discussed following that.

Once the outside occupations have been decided upon it remains to specify the kinds of employers that are deemed "comparable". Which employers' jobs are to be included in the computations? There may be reasons why certain jobs should be included and others excluded. The development of criteria for inclusion in "the appropriate universe" is an extremely complex undertaking, and in a collective bargaining (or arbitration) context is one of the most crucial negotiation issues. For example, in computing the federal public service maintenance trades outside comparable wages, the Treasury Board has always excluded contract construction rates. It is claimed that their higher hourly wage rates reflect a shorter work year. Since the government is a "big" employer, are only "big" outside employers

comparable? If the "good" employer criterion is advanced what are the criteria which distinguish "good" from "nongood" employers?¹ If the federal public service occupation being examined is found mainly in large or small cities, does this become an additional criterion for inclusion?² Should the specific work environment be another inclusion criterion?³

While considerations of the kind enumerated above may indeed be important criteria for the determination of an appropriate outside universe it was not possible to consider any of these in the definition of the comparable letter carrier wage because of data and resource limitations. The Pay Research Bureau does on occasion, produce outside wage data on more than one universe but most of this information is not at the city level and is for distribution only to the parties and survey participants.

In view of these constraints, it is the Canada Department of Labour's

¹ See, chapter II, section IV, above.

² The federal public service firefighters face this Treasury Board position at each agreement renewal. In fact federal firefighters work mostly on military bases and airports which are usually small civic agglomerations, but generally very close to metropolitan centers.

³ In its bargaining with federal public service nurses, the Treasury Board (and the Pay Research Bureau) computes outside wage data maintaining proportions of hospital types (general, psychiatric, rehabilitative, etc.) close to those of federal hospitals.

"Wage Rate Survey" Universe that served as the source of the outside wage data used here.¹ This universe is composed of all establishments with twenty or more employees in most industries. While it may be alleged that the exclusion of small establishments could introduce a bias in the outside wage among our sample cities (proportions of such small plants may vary systematically among regions and by city size, wage level, industry, etc.), this matter need not detain us in the present context. The federal government itself excludes small establishments when making internal-external wage comparisons through its use of the "good employer universe" (see chapter II, section IV, above).

The third problem is that of generating the "going" outside wage once the occupation and the universe have been defined.

Typically, there exists a range of rates (often extensive) in a local labour market even for a well specified occupation. Since it is not possible for present purposes to deal with the entire distribution, some representative wage(s) of central tendency must be selected. (Sometimes it is convenient to choose a limited outside range rather than a single rate and adjust the internal wage scale to it in some way). In a past period the Treasury Board decided that alignment would be made by matching the internal maximum to the external third quartile.² This was also the

¹ Canada Department of Labour, Wage Rates, Salaries and Hours of Labour, Ottawa, (annual). (see "Technical Notes", any issue).

² Treasury Board, Pay Determination: History and Techniques, Ottawa, mimeo., undated (C.1967), pp. 20-21.

criterion in the 1968 and 1970 rounds of collective bargaining in the Québec Public Service. More recently, both in Québec and federally, the governments seek to be an average employer and thus propose mean-to-mean alignments.¹

In any case, medians, modes and quartiles were not available from the Wage Rate Survey data. The outside means are available and these are used in a mean-to-mean comparison for the determination of letter carrier wage rank.

The measure of wage rank is thus an index: the ratio,

$$\text{Wage rank}_i \equiv \frac{\text{Wage, letter carrier } (\$3.51)}{\text{Comparable outside wage}_i} \times 100 \equiv \frac{WLC}{Wpi}$$

The sample city range of letter carrier wage ranks is shown in table III-11,² and the data for all sample cities is given in table III-12, below.

¹ The Public Service Alliance of Canada claims that it is now federal government policy to align the public service maximum to the comparable private sector mean wage rate (P.S.A.C., Argus-Journal, April, 1978, p. 1).

² To the extent that the federal government has retained the "good employer" outside universe concept, the present "total universe" (of establishments with twenty or more employees) overstates the letter carrier wage rank. This point was discussed in chapter II, section IV, above.

Table III-11

LETTER CARRIER WAGE RANK RANGES, 29 CITIES

1972

	RANK INDEX ^a	
	Minimum	Maximum
Composite Proxy	88	133
Truck Driver	84	127
Industrial Composite	61	122

Source: Table III-12, below.

a. when letter carrier wage - outside comparable wage, Index = 100.

TABLE III-12
LETTER CARRIER
WAGE RANGES: THREE SERIES

City	Composite ^a Proxy (Wpi)	Truck ^b Driver (WTD)	Industrial ^c Composite (WIC)
SJN	125	112	98
HFX	122	110	103
SDY	117	108	106
SJS	133	126	113
CTN	127	127	110
QCT	104	102	105
HLL	105	97	95
MTL	105	101	96
SBK	116	105	114
GBY	122	107	122
SRL	110	105	86
CHI	107	102	83
DML	123	106	118
SIS	102	100	61
TOR	95	87	90
STT	105	95	84
HMT	91	87	84
OTT	100	91	95
SAR	98	86	76
SSM	89	88	78
CWL	102	92	104
OSH	88	90	79
BTD	103	90	79
SBY	101	89	78
VAN	92	84	80
SKT	105	106	108
WPG	107	99	103
CGY	98	94	90
VIC	94	86	94

- Sources:
- a. Compiled by author as per text above from, Labour Canada, Wage Rates, Salaries and Hours of Labour, Information Canada, Ottawa, 1972.
 - b. Ibid.
 - c. Employment and Earnings, Statistics Canada (72-002) Ottawa, 1972.
 - d. A figure of 100 indicates that the letter carrier wage is "aligned" to outside comparable wage; when > 100, the letter carrier wage exceeds the outside comparable wage and when < 100, the letter carrier wage is less than the outside comparable wage.

Because of the difficulty of arriving at a perfectly defensible "comparable outside wage" the three series already identified are used as alternative inputs in the regression analysis to follow. Table III-12 shows that, except for the minimum of the Industrial Composite, the ranges are quite similar. Though, in the main, wage ranks are comparable across the three series, letter carrier wage ranks do change in some cities mainly because of differences in specific occupational and industrial wages and their weights in the local economy. Thus in Sept Iles the Industrial Composite shows a very high wage (and a low letter carrier wage rank) because of the exceptionally high weight in that city given to the manual trades and labourers. Since these occupations are excluded from the proxy #3 and the truck driver occupations, the letter carrier ranks much higher in these latter series. The same phenomenon applies to Oshawa (the high wage automobile industry) to Sudbury (high wage mining and metal refining industries) and to Brantford (agricultural implements).

These variations are accounted for in the regression analysis since all three series have been used in computing the structural coefficients in chapter IV.

This ends the discussion on the first explanatory variable, the wage rank. The following subsection deals with the second group of variables, the labour market conditions.

Labour Market Conditions

The second group of explanatory variables is discussed under the rubric, Labour Market Conditions. When the labour market is slack, employers are in a better position to recruit and retain the kinds of workers they want than in a situation characterized as a tight labour market.

"When business is booming and the labor market is tight, competent new employees are hard to recruit. Under these conditions, managers become reluctant to discharge marginal employees whose work barely gets by. This reluctance may disappear when economic conditions get worse and these marginal workers are no longer needed."¹

In the present study there are three indicators of the intercity differences in labour market conditions: the unemployment rate (U), recent employment growth (N), and alternatively, either the labour force or the total number of jobs in a city (E).

The Unemployment Rate (U_t)

One of the most common measures of excess supply in a labour market

¹ Leonard R. Sayles and George Strauss, Managing Human Resources, Prentice-Hall, Englewood Cliffs, 1977, p. 54.

is the unemployment rate. MacKay et al. write,

"Unemployment is taken as the relevant measure on the supply side showing the unused reserves of labour available to employers..."¹

Thus a higher unemployment rate should contribute to better recruitment experience since, other things equal, employers in such markets can usually count on larger numbers of applicants for each job opening than employers in tight labour markets. Through selective hiring, such employers can also recruit better quality applicants. In a cross sectional study between two labour markets, Robert J. Gaston considered the unemployment rate an important determinant of differences in labour quality.

"If substantial unemployment persists for a sufficiently long period, firms engaged in such selective hiring will thus raise the overall quality of their work force. It is this 'selective hiring' hypothesis which is to be tested in the present study."²

It also seems reasonable to hypothesize that, ceteris paribus, a higher local unemployment rate will discourage potential quits. In a slack labour market the voluntary leaver takes a greater risk of not finding a new job than in a tight labour market. Also, since an employee has some accumulated seniority in his present job (and would have to begin with no such protection in a new employment), other things equal, quits should be inversely related

¹ MacKay et al., *Labour Markets Under...*, op. cit., p. 54; see also pp. 61-63 and 275-277.

² Robert J. Gaston, "Labor Market Conditions and Hiring Standards"; I.R., May, 1972, pp. 272-278 (p. 272).

to the unemployment rate.¹

Employee quality, as measured by the morale indicators (SL¹ and V) should be directly related to the local unemployment rate. In terms of the two variables used in the present study, other things equal, workers will be more reluctant to vote for a strike with substantial local unemployment than in a tight labour market. Alternative full time or odd jobs are scarcer and also an employer can more easily find replacements for strikers in the former situation. On the question of sick leave abuse, engaging in such a practice, with its possible dismissal upon detection, is also more risky when potential alternative jobs are scarce.² This reasoning may even be extended to worker productivity (quality) generally, with workers viewed as increasing their output per unit time where possible in order to avoid lay off in the midst of high unemployment outside.

At one point in the equation specification procedure a second unemployment

¹ Such an hypothesis is made in Terence Wales, "Quit Rates...", op. cit., p. 26-7; E.E. Lawler, Pay and Organizational Effectiveness..., op. cit., p. 233; T.P. Hill, "Wages and Labour Turnover", op. cit., p. 193; D.I. MacKay et al, Labour Markets..., op. cit., pp. 180-199; and in other studies analyzed in the next chapter.

² Previous studies relating absenteeism to the unemployment rate are reviewed later in this dissertation.

rate was introduced. It was hypothesized that workers' attitudes toward their jobs would be influenced not only by the current unemployment rate, but also by the previous year's unemployment rate (U_{t-1}). Workers' perceptions of the state of the labour market are conditioned by recent, not only current degrees of slack. The use of both U_t and U_{t-1} created a serious multicollinearity problem since their coefficient of correlation, r , was .97. Because this prevented identification of the independent effects of U_t on labour market experience, U_{t-1} was abandoned.¹

Another indicator of the state of excess labour supply, the layoff rate, was considered. Several studies similar in some respects to the present one (reviewed in chapter IV, below) have used the layoff rate as a labour market variable. It was not possible to use it here since such data is not available in Canada at the city level.²

Recent Employment Growth (N)

A second labour market condition variable is recent employment growth.

¹ In H. Ruchlin, "Education as Labor Market Variable", I.R., October, 1971, (pp. 283-300) both U_t and U_{t-1} are used. The results are unchanged with either variable. Terence J. Wales intended to use U_{t-1} in exactly the same way in his quit rate study, but dropped it for identical reasons. "Quit Rates in Manufacturing Industries in the United States", C.J.E., 1968, pp. 123-139, (p. 133). Lerner et al., op. cit., p. 253 considers change in the unemployment rate as the relevant variable.

² The input data series for the unemployment rate as well as the two remaining labour market condition variables are presented in table III-13, below.

This demand side factor indicates one aspect of the extent of competition among employers for workers. It is hypothesized that other things equal, the greater the increase in job openings in a city the more difficult an individual employer's recruitment experience.¹ When total employment is growing faster, workers have more potential alternative employment opportunities.

For similar reasons it can also be hypothesized that other things equal, the quit rate will be greater in a city with greater recent employment growth.²

Recent employment growth is measured in the following way:

$$N_i \equiv \frac{(\text{Employment}_i \text{ April 1973}) - (\text{Employment}_i \text{ April 1968})}{(\text{Employment}_i \text{ 1968})} \times 100$$

5

where N_i = mean annual rate of employment growth in city i .³

A five year period was chosen because it is just long enough to establish a trend. There is another, more direct measure of excess labour

¹ Sometimes rapidly expanding markets also attract large numbers of workers and there is a simultaneous high rate of employment growth and high level of unemployment. These are exceptional cases and did exist in the 1960's and 1970's on the west coasts of both the U.S. and Canada.

² Similar hypotheses are made by other researchers, see next chapter.

³ The data is drawn from , Statistics Canada, Employment and Earnings (72-002), Information Canada, Ottawa, April issues and presented in table III-13, below.

demand in the literature: job vacancies. Unfortunately data on job vacancies are only available in Canada for the broad economic regions and some provinces rather than at the city level.

The Labour Force, Total Number of Alternative Jobs (E)

The third dimension of labour market conditions is a structural rather than a cyclical variable, indicating the size of labour market rather than its state per se.

For recruitment as labour market experience, other things equal, the greater the labour force in a city the greater the total potential number of respondents to a letter carrier competition.¹ Such applications come from those holding jobs (employed) and those seeking work (unemployed). In an attempt to measure the effect of wage rank differences on recruitment experience, differences in the total labour forces must be accounted for.²

When examining retention as labour market experience, it is the actual number of alternative jobs which is the relevant variable to be controlled. The hypothesis is that among cities, other things equal, the

¹ It is assumed that the proportion of semiskilled and unskilled in the overall labour force is roughly similar among cities.

² Ideally, only those presently in receipt of net advantages less than those offered by the letter carrier job should be counted. It is practically impossible to identify such workers.

greater the number of alternative jobs the greater the tendency to quit.¹ Thus employment levels must be held constant if the independent effect of intercity differences in wage rank is to be computed.

Quality or morale of employees can also be seen as influenced by the number of potential alternative job openings. In cities where there are few alternative jobs, workers minimize the risks of losing the employment they presently hold compared to others in cities with relatively more job openings.

For technical reasons the available series on total employment was found wanting as a measure of the intercity differences in the number of jobs. In Canada, Employment and Earnings (72-002) excludes establishments with less than twenty employees. Because the size of firm varies with industry type and since the intercity mix varies considerably among the sample cities, it was decided that this total employment series would be an unreliable measure for present purposes.²

¹ This hypothesis is also posed among others by Hill, Wales: see chapter IV below.

² The provincial coverages of establishments with 20 or more employees in total employment are as follows: Newfoundland - 55%, P.E.I. - 39%, Nova Scotia - 48%, New Brunswick - 53%, Québec - 57%, Ontario - 60%, Manitoba - 58%, Saskatchewan - 43%, Alberta - 51%, B.C. - 55%. (Statistics Canada, Employment and Earnings, April 1973, p. 128). The intercity variations are probably even greater.

Estimates of the total city labour force for the present sample cities are available from the 1971 Census (94-773, Vol. III, part 7, May 1975) but this series contains the unemployed. After consideration of the advantages and disadvantages of the available series it was decided that the intercity measurement error introduced by the numbers of unemployed is smaller than that caused by the variations in coverage of firms with twenty or more employees. Thus the total labour force was adopted as a proxy for the number of alternative jobs potentially open to a letter carrier (rival demand) and also as the measure of the reservoir from which a letter carrier competition can be expected to draw (the supply of labour).

TABLE III-13
 LABOUR MARKET CONDITIONS
 VARIABLES DATA SERIES

City	Unemployment ^a Rate (U_t) %	Employment ^b Growth (N) %/year 1968-73	Labour force, ^c Alternate Jobs (E) , 000's
SJN	7.4	.19	43
HFX	6.9	2.21	97
SDY	12.3	-1.10	30
SJS	8.3	5.30	43
CTN	8.1	2.50	11
QCT	8.1	3.96	184
HLL	8.5	4.87	57
MTL	9.2	1.18	1111
SBK	7.6	.13	33
GBY	7.6	2.36	15
SRL	7.6	5.71	12
CHI	15.0	1.87	43
DML	7.6	4.41	18
SIS	14.9	13.39	9
TOR	6.9	3.22	1265
STT	4.8	8.76	11
HMT	7.6	1.54	217
OTT	5.9	4.93	208
SAR	6.2	.45	33
SSM	5.4	2.15	33
CWL	5.2	1.09	19
OSH	5.2	1.12	51
BTD	5.7	4.60	36
SBY	6.1	-.62	63
VAN	9.4	4.78	486
SKT	8.7	.90	55
WPG	7.4	1.36	243
CGY	7.5	4.64	181
VIC	8.4	4.23	83

- Sources:
- Taken and computed from: Statistics Canada, The Labour Force, 71-001 (December, 1973); The 1971 Census, 94-773, Vol. III, part 7, Bul. 27-3 (May 1975) and personal communication from Labour Force Survey Section, Labour Division, Statistics Canada, July 5, 1972.
 - Statistics Canada, Employment and Earnings, 72-002, 1973.
 - Statistics Canada, The 1971 Census, 94-773, Vol. III, part 7, Bul. 27-3 (May 1975).

Y-Specific Variables

While the two groupings of independent variables presented to date, wage rank and labour market conditions, are found in all equations, those in this final group are only relevant for specific dependent variables.

Because of their specificity, the hypothesized role of each Y-specific variable will be described when the equations are specified below.

Now that the dependent and independent variables have been identified, the hypothesized relationships among them are set out as the regression equations specified in the next section.

V

SPECIFICATION OF EQUATIONS

With the dependent and independent variables described and their measures stated, it remains to specify their expected relationships in equation form. Using the data collected in the letter carrier case these multiple regression equations should yield the information needed to evaluate the likelihood that the new government wage policy will alter letter carrier labour market experience in the desired directions.

Note: "Ceteris Paribus". For the following eight equations it is understood that the expected effect of each independent variable on each dependent variable is hypothesized holding "other factors constant".

This ceteris paribus condition permits the use of the microeconomic partial analysis method.

Number of Applicants

$$\frac{APP}{L_{lm}} = B_{10} + B_{11}W + B_{12}U + B_{13}N + B_{15}\frac{LFPAM}{L_{lm}} + B_{16}S + B_{17}NEL + \epsilon_1 \dots (1)$$

$$W \text{ (wage rank)} : B_{11} > 0.$$

The higher up in the local wage distribution the greater the attractiveness of the letter carrier job, hence the greater the number of

applications relative to the size of the respective city male labour force.¹

U (unemployment) : $B_{12} > 0$.

The higher the unemployment rate the greater the numbers of unattached workers available to respond to a letter carrier job opening, hence a higher $\frac{APP}{LFM}$.

N (recent employment growth) : $B_{13} < 0$.

The greater the growth of potential alternative jobs the less likely any single worker will respond to a call for letter carrier candidates.

$\frac{LFPAM}{LFM}$ (proportion of prime age males, 25-35 years, in the total local male labour force) : $B_{15} > 0$. The greater the proportion of prime age males, the greater the likelihood of a higher response to a letter carrier competition.²

S (proportion of a city's population with less than thirteen years schooling) :³
 $B_{16} > 0$. Because of the low level of formal schooling required of a letter carrier it is hypothesized that those with post-secondary schooling will tend not to apply for a letter carrier position. Thus cities with high proportions

¹ See ceteris paribus note on previous page.

² As at 1971, from Canada Census: 92-720, Vol. I, part 2 (1.2-8), March 1974.

³ As at 1971, from Canada Census, 92-720, Vol. III, part 1 (3.1-5), March 1974.

of their populations with no post-secondary schooling will, other things equal, have more letter carrier applicants than other cities where lower proportions of citizens have only primary and secondary schooling.

NEL (number of eligible lists compiled in fiscal 1972-73):

$B_{17} > 0$. NEL is a demand side factor representing the quantitative dimension of the recruitment effort. Post offices in cities which hold greater numbers of competitions should, other things equal, be expected to attract more applicants over a given period of time than in cities with fewer competitions.

Number of Eligible Lists

$$NEL = B_{20} + B_{21}W + B_{22}U + B_{23}N + B_{24}E + B_{28} \frac{T_2}{NEL} + B_{29}NH + \epsilon_2 \dots (2)$$

W (wage rank): $B_{21} < 0$.

The hypothesis is that the higher the wage rank, the greater the "drawing power" and "holding power" and the less frequently a local post office will have to make calls on the market for new letter carriers.¹

¹ See ceteris paribus note on p. 220 above, which applies for each independent variable.

U (unemployment rate): $B_{22} < 0$.

The higher the excess labour supply the more successful each recruitment effort and therefore the fewer the number of competitions.

N (recent employment growth): $B_{23} > 0$.

The higher the employment growth the greater the competition among employers for available workers and the more often any one employer will be forced to go to the market to fill new labour needs.

E (labour force): $B_{24} < 0$.

The larger the number of workers in a market the more potential letter carrier applicants and the fewer the number of eligible lists.

$\frac{T_2}{NEL}$ (the average length of eligible list) $\equiv \frac{\text{number of candidates passing oral test}}{\text{number of eligible lists}}$

$B_{28} < 0$. Other things equal, the shorter the lists, the more often a post office will have to go to the market.

NH (new letter carrier hires): $B_{29} > 0$.

The greater the letter carrier hiring needs, whether for new positions or replacement, the more often a post office will have to call a competition.

Names When List "too short"

$$\begin{aligned}
 NTS = & B_{30} + B_{31}W + B_{32}U + B_{33}N + B_{34}E + B_{39}NH + B_{3,10} \frac{APP}{LFm} \\
 & + B_{3,11} \frac{T_2}{APP} + B_{3,12}q + B_{3,13}NL + \epsilon_3 \dots (3)
 \end{aligned}$$

W(wage rank): $B_{31} < 0$.

It is predicted that the higher the wage rank, the easier recruitment is perceived and the lower the number of names needed on an inventory before triggering off a new competition.¹

U (unemployment rate): $B_{32} < 0$.

The higher the unemployment rate the easier the recruitment and the less "protection" needed in terms of labour inventory.

N (recent employment growth): $B_{33} > 0$.

The higher the employment growth in a city the greater the competition for workers and the more insecure postal hiring officials are in their ability to meet manpower needs.

E (Labour force): $B_{34} < 0$.

The greater the total number of potential candidates the more secure are postal hiring officers and therefore the lower the minimum inventory of eligible candidates.

¹ See ceteris paribus note on p. 220 above, applying for each independent variable in this equation.

NH (new letter carrier hires): $B_{39} > 0$.

NH is a measure of letter carrier hiring needs over the fiscal year 1972-73. The higher the recent needs the greater the inventory required to back up a local post office.

$\frac{APP}{LF_m}$ (proportion of applicants out of a local male labour force):

$B_{3,10} \leftarrow 0$. The extent to which workers respond to a letter carrier competition will influence the attitude of hiring officials towards their labour reserve.

$\frac{T_2}{APP}$ (success ratio $\equiv \frac{\text{number of candidates passing oral test}}{\text{number of candidates}} \times 100$):

$B_{3,11} \leftarrow 0$. This variable is the qualitative counterpart of the previous one. While $\frac{APP}{LF_m}$ measures numbers of applicants, $\frac{T_2}{APP}$ indicates the quality of applicants.

Even when numbers are relatively adequate, if the quality is systematically below usual standards, postal officials will want a greater inventory than if candidates were generally of a higher quality.

q (the quit rate): $B_{3,12} \rightarrow 0$.

Even if all other factors are equal between cities, a difference in the letter carrier quit rate is likely to influence hiring officials' evaluation of the adequacy

of their existing eligible list. The higher the quit rate the greater the number of names left when a new competition is thought necessary.¹

NL (number of names left on eligible list as at April 30, 1973): $B_{3,13} < 0$.

This variable measures the length of the existing eligible list at the time the questionnaire was filled out by local postal officials. New eligible lists were generally compiled throughout the twelve-month period covered by the data and, strictly speaking, the numbers of NL on the eligible list in effect on April 30, 1973 should not necessarily affect the NTS on lists in general. However, interviews with postal officials led to the conclusion that hiring officers are seriously and disproportionately influenced in their general assessment of the minimum NTS by the actual NL on the current eligible list. The hypothesis is that, other things equal, the greater the NL (April 30, 1973) the smaller their NTS. The coefficient of this variable should reveal the bias in the reply of respondents.

¹ Such a view is also expressed by E.E. Lawler, op. cit., p. 252.

Success Rate

$$\frac{T_2}{APP} = B_{40} + B_{41}W + B_{42}U + B_{43}N + B_{44}E + B_{4,14}R + \epsilon_4 \dots (4)$$

W (wage rank): $B_{41} > 0$.

It is expected that the higher the letter carrier wage rank the greater the proportion of better quality candidates attracted and selected out by hiring officers.¹ This higher quality will be reflected in a higher proportion of successful candidates.

U (unemployment rate): $B_{42} > 0$.

The success rate is expected to be influenced by the unemployment rate. The higher the unemployment rate the greater the numbers of potential applicants and thus the easier for the Post Office to raise its recruitment standards,² hence a higher success rate.

N (recent employment growth): $B_{43} < 0$.

When employers in a local labour market are hiring extensively there is greater competition for workers than when the area is marked by stagnation or declines in employment. Other things equal, each individual employer

¹ See ceteris paribus note, p. 220 above, which applies for each independent variable.

² This hypothesis tested by Robert J. Gaston, "Hiring Standards..." op. cit. and is discussed in the next chapter.

should experience more difficulty in attracting workers of a given quality in a high growth market than in a slow growth or declining market.

E (labour force): $B_{44} > 0$.

The quality of applicant should be higher where the number of potential candidates is greater.

R (richness of the schooling mix) $\hat{=}$ $\frac{\text{number in the city population with 9-13 years schooling}}{\text{number in the city population with 0-13 years schooling}} \times 100$

$B_{4,14} > 0$. As was already shown, the letter carrier function does not require a high level of formal schooling. However, it is expected that the quality of letter carrier candidates will be higher the more concentrated a local population's educational attainment is towards the higher end of the 0-13 years range.¹ Robert Gaston's study ("Hiring Standards...")² focused attention on this schooling-quality relationship in the context of differing labour market conditions.³

¹ No data was made available on the schooling of letter carrier applicants. This would have made possible a more direct method of linking candidates' schooling and a city's letter carrier success rate.

² op. cit.

³ Present data is from, Canada Census, 1971, 92-720, Vol. I, part 2 (1.2-8), March, 1974.

Prime Age New Hires

$$\frac{NHPA}{NH} = B_{50} + B_{51}W + B_{52}U + B_{53}N + B_{54}E + B_{55}\frac{LFPAM}{Lm} + \epsilon_5 \dots (5)$$

W (wage rank): $B_{51} > 0$.

The hypothesis tested is that the higher the wage rank of the letter carrier in a local labour market the higher the proportion of recruits in the most desired age range (25-35 years).¹

U (unemployment rate): $B_{52} > 0$.

In cities where the unemployment rate is relatively high there are greater possibilities for the Post Office to attract and choose candidates within the prime age range than in cities with tighter labour markets.

N (recent employment growth): $B_{53} < 0$.

It will be easier for a post office to hire letter carrier candidates of prime age in slower growth markets than in cities with a higher rate of increase in labour demand.²

¹ See ceteris paribus note, p. 220 above, applying for each independent variable.

² Hypotheses relating prime age to local unemployment and employment growth are tested using a more primitive technique than the present one by Robert Gaston (op. cit.) and described in chapter IV, below.

E (labour force): $B_{54} > 0$.

The greater the number of potential letter carriers the more likely that any single employer will attract workers of prime age.

$\frac{LFPAM}{LFm}$ (proportion of a city's male labour force of prime age): $B_{55} > 0$.

Since the proportion of prime age males in the male labour force varies among cities, it was necessary to include this as an explanatory variable. A direct

relationship is hypothesized between $\frac{NHPA}{NH}$ and $\frac{LFPAM}{LFm}$.

Quit Rate

$$q = B_{60} + B_{61}W + B_{62}U + B_{63}N + B_{64}E + B_{6,15} \frac{NH}{LC} + B_{6,16} \frac{LC \ 20-24}{LC} + B_{6,17} \frac{LCm}{LC} + \epsilon_6 \dots (6)$$

W (wage rank): $B_{61} < 0$.

It is postulated that the higher the letter carrier wage rank in the local distribution the lower the letter carrier quit rate.¹

U (unemployment rate): $B_{62} < 0$.

In cities where the unemployment rate is relatively high

¹ It is assumed that all other things are equal, see note p. 220 above, for each independent variable.

there is greater competition among surplus workers for scarce jobs and employed workers will be more reluctant to quit than in markets with less excess supply.

" [workers] are redistributed...much more directly and forcefully by differentials in the availability of jobs than by changes in wage differentials."¹

N (recent employment growth): $B_{63} > 0$.

The hypothesis tested is that the greater the rate of new hiring generally in a local labour market, the greater the opportunity for a letter carrier to find an alternative job and thus the higher the letter carrier quit rate.

E (total employment): $B_{64} > 0$.

The greater the total number of jobs in the community the easier it is for a letter carrier quit to find a new one.

$\frac{NH}{LC}$ (the letter carrier new hire rate)_i = $\frac{\text{number of newly hired letter carriers}}{\text{number of letter carriers}_i}$

$$\frac{1972-73_i}{6,15} \times 100 : B_{6,15} > 0.$$

It is quite well documented that, because of the lower degree of vested interest (and other reasons), the quit rate is greater among newly hired employees than those

¹ Lloyd G. Reynolds, *The Structure of Labor Markets*, op. cit., p. 244. MacKay et al, op. cit., p. 162, offer a similar view.

with longer lengths of service.¹

$\frac{LC_{20-24}}{LC}$ (proportion of young in total letter carriers in a city): $B_{6,16} > 0$.

The greater the proportion of young (20-24 years) the greater the quit rate in a city. The rationale for this lesser attachment, fewer family and other responsibilities, has already been described above.

"So universally has mobility been found to decline with advancing age that this relationship may be regarded as convincingly established."²

$\frac{LCm}{LC}$ (proportion of married letter carriers in a city): $B_{6,17} < 0$.

Since married workers generally need more financial stability (expenses for children, mortgage payments etc.) they tend to be more conservative in their movement among jobs. The hypothesis is that cities with higher proportions of married letter carriers will have lower quit rates.³

¹ Findings of this and other empirical studies on this point are examined in chapter IV, below. The problem of the direction of causality is also raised there.

² H. Parnes, Research on Labor Mobility, Social Science Research Council, N.Y., 1954, p. 102. See also G. Palmer, Ten Years of Work Experience..., 1938, p. 49.

³ The regression was also run without this variable.

Casual Sick Leave

$$SL^1 = B_{70} + B_{71}W + B_{72}U + B_{73}N + B_{74}E + B_{7,16} \frac{LC\ 20-24}{LC}$$

$$+ B_{7,18} \frac{LC\ 25-49}{LC} + B_{7,19} \frac{LC\ 50p}{LC} + \epsilon_7 \dots (7)$$

W (wage rank): $B_{71} < 0$.

Since it is assumed that casual sick leave is largely abuse or "extra paid time off", the lower the wage rank the greater the feeling of resentment and the greater the incidence of casual sick leave taking.¹

U (unemployment rate): $B_{72} < 0$.

In a tight labour market the letter carrier can feel more secure in "calling in sick" with less fear of discovery. The Post Office is likely to be more lenient in its attitude towards abuse in a city with less labour surplus (or a labour shortage) than with a considerable labour surplus.

N (recent employment growth): $B_{73} > 0$.

In a city with rapid employment growth the employer is more reluctant to investigate and punish suspected sick leave abuse because of possible difficulties of replacing a dismissed employee. On the worker side there is relatively more incentive to incur risks in a seller's labour market

¹ Other things equal, see note p. 220 above, for each independent variable.

than in a buyer's market.

E (total employment): $B_{74} > 0$.

In a market where many potential alternative jobs exist the letter carrier can abuse sick leave with greater security than in a smaller city.

$\frac{LC\ 20-24}{LC}$ (proportion of young - 20-24 years - letter carriers): $B_{7,16} > 0$.

Because the youngest usually have the least financial obligations they can engage in more risky practices than those for whom dismissal would involve more considerable hardship.¹ Chances of finding a new job are lower for older semiskilled workers than for younger ones.²

$\frac{LC\ 25-49}{LC}$ (proportion of letter carriers of 25-49 years)³: $B_{7,18} < 0$.

It is expected that those in the 25-49 year group of letter carriers are seriously building their careers in

¹ For evidence that age and length of service are positively correlated see MacKay et al, op. cit., pp. 212-224; Reynolds, "Structure...", op. cit., pp. 21-23, 40; Rees and Shultz, op. cit., pp. 149-50. Also more indirect evidence on this relationship is presented in the analysis of the correlatives of letter carrier quit rates, below.

² Viewed from a different perspective the youngest can incur the greatest potential loss in case of dismissal since their lifetime earnings as a letter carrier normally exceeds that of another letter carrier with less years of service left. However, in terms of accumulated advantages and rights and the probability of finding another employment, theirs is the smaller loss.

³ Regression runs were also made without this variable.

in their jobs, have considerable financial responsibilities, and thus will minimize their risks of job loss.

$\frac{LC_{50p}}{LC}$ (proportion of letter carriers of 50 years and over):¹ $B_{7,19} < 0$.

Though they usually have lesser financial obligations, dismissal for those over fifty years can involve considerable loss in pension and other rights and as well as mean almost insurmountable difficulties in finding new employment. Thus cities with relatively large proportions of letter carriers in this age bracket will tend to have lower levels of sick leave abuse.

Voting Behavior

$$V = B_{80} + B_{81}W + B_{82}U + B_{83}N + B_{84}E + B_{8,16} \frac{LC_{20-24}}{LC} + B_{8,15} \frac{NH}{LC} + B_{8,20} \frac{LCP}{LC} + \epsilon_8 \dots (8)$$

W (wage rank): $B_{8,1} > 0$.

The higher in their local wage rank the more satisfied are the letter carriers.² This degree of satisfaction is indicated by a higher "yes" vote (higher value for V) on the 1973 agreement proposal.

¹ See footnote 3 on previous page.

² All other things equal, see note p. 220 above, for each independent variable.

U (unemployment rate): $B_{82} > 0$.

A vote against acceptance of the proposed agreement (a low V) is a vote in favour of a strike. The higher the local unemployment rate the lower the probability of finding alternative temporary¹ employment during a work stoppage and therefore the higher the "yes" vote (V).

N (recent employment growth): $B_{83} < 0$.

The higher the rate of increase in market labour demand the greater the probability of finding alternative work during a possible strike and thus the lower the expected value of V.

E (total employment): $B_{84} < 0$.

As with the two preceding variables, E also relates to the relative ease of finding an alternative job in the event of a strike. A negative coefficient is expected.

$\frac{LC_{20-24}}{LC}$ (proportion of young letter carriers: 20 to 24 years): $B_{8,16} < 0$.

The younger letter carriers usually have fewer financial obligations to meet than older letter carriers² and

¹ For newly hired letter carriers a prolonged strike may involve a decision to leave the Post Office and seek alternative permanent employment. The state of excess labour supply then becomes even more crucial as a criterion in a strike vote.

² They do not usually have mortgages, children's expenses, etc. On the other hand, the much older letter carrier (those above fifty) have usually paid off the mortgage and have financially more autonomous children. Though rent is almost as compelling an obligation as a mortgage payment, more younger letter carriers live with their parents than older letter carriers.

would thus tend to risk rejection of a proposed agreement.

$\frac{NH}{LC}$ (new hire rate):¹ $B_{8,15} < 0$.

Other things equal the vote should go more heavily against acceptance in cities with greater letter carrier new hire rates. Not only does the hypothesis described for the quit variable apply here, but to the extent that job security was an issue in the 1972-73 negotiations, the newly hired vote will favour rejection.

Unless there were very strong job guarantees in the face of the massive introduction of automation into postal operations, those with the least seniority are even more vulnerable to becoming redundant than they are in normal times.²

Also, the more senior employees are compensated in their net advantages calculations for some possible perceived wage inadequacy by the greater job security

¹ Though it might be argued that $\frac{LC_{20-24}}{LC}$ and $\frac{NH}{LC}$ measure the same phenomenon, the simple correlation coefficient for the present sample is only 0.39.

² The employment effects of technological change has been an important issue in Canadian postal bargaining since the early 1970's (see for example, Hansard, *op. cit.*, June 8, 1973, pp. 4584-4602). The automation question is further discussed in chapter IV.

that their longer seniority affords them.

On the other hand an opposite relationship ($B_{8,15} > 0$) between the vote and the proportion of new hires can be hypothesized. Those with longer job tenure may have greater financial reserves to keep them solvent during an interruption of postal income and therefore be more willing and able to risk a strike in efforts to get a higher wage increase or to improve job security.¹ In the context of the letter carrier job the first explanation of the relationship between the vote and the new hire rate seems the more valid one.

$\frac{LCP}{LC}$ (proportion of letter carriers who are proprietors of their dwellings):²

$B_{8,20} > 0$. A home is an asset involving important recurring expenditures (mortgage, taxes, repairs, etc) which in turn require a steady income flow. With such financial demands, risk of revenue loss must be minimized.

"In many cases home ownership is positively correlated with...job attachment..."³

¹ This viewpoint is taken up below in the analysis of the regression results on the vote.

² One regression run is made without this variable.

³ Hunter and Reid (OECD) op. cit., p. 147. In their discussion the authors examine the effect of home ownership on geographic mobility.

While rental obligations are as steady a drain on income as mortgage payments there is no counterpart to the risk of loss of accumulated payments in the event of foreclosure.

It is therefore hypothesized that, other things equal, the higher the proportion of letter carrier proprietors in a city the greater the "yes" vote.¹

This ends the specification of the eight equations on which the regular regressions will be run. In the next chapter tables showing the regression results are followed by the analyses of these findings. Comparisons are made to the findings and interpretations of other researchers. The discussion of other labour market experience variables is undertaken after that.

¹ On the other hand, it may be easier for a proprietor to raise money during a strike by increasing the existing mortgage on a house.

CHAPTER FOUR
ANALYSIS OF REGRESSION RESULTS

This chapter is composed of three sections. Initially there is a brief discussion of some statistical issues which might be raised about the empirical results. In section II the tables of the regression results are presented and analyzed, with substantial reference to similar research in other contexts. The chapter is summarized in section III.

I

TECHNICAL NOTES

The objective of this statistical analysis is to discover the extent to which post office's labour market experience has been influenced by the letter carrier's relative wage. The wage is the focus of attention in this study since the proposed government policy presumes that the letter carrier wage is an important determinant of the Post Office's labour market experience. Once the wage effect has been estimated, this hypothesis can be tested. A judgement can also be made about the probable magnitudes of the effects of aligning the letter carriers wage with local wages. Therefore, when evaluating the empirical results, attention will be focused on the magnitude and the sign of the coefficient on the wage rank variable and on whether this coefficient is statistically significant according to the conventional t-test. The size of the coefficient of determination R^2 , is of little interest here.¹

At this point two comments are in order with regard to the t-tests. First, in all cases the theory predicts the sign of the wage effect, i.e., that it should be positive or negative. Therefore one-tail t-tests are

¹ This contrasts with other studies seeking to explain the proportion of total variance in labour market experience accounted for by the combined selected independent variables. See, for example, Rees and Shultz, op. cit.

used throughout. The appearance of a "wrong" sign on any parameter estimate constitutes a rejection of the basic behavioural hypothesis.

Second, it will be observed that a relatively low level of statistical significance (15%) on the t-tests has been selected here. The use of 15% rather than the more conventional 5% or 1% is part of the general approach taken in this study of giving the government policy the greatest chance of success within reasonable limits.

The empirical results presented below indicate, perhaps surprisingly, that the letter carrier wage rank appears to have little influence on the Post Office's labour market experience. Because of these unexpected results it is useful to indicate at the outset of the empirical analysis that they probably cannot be attributed to any of the following potential technical problems.

1. The results cannot be attributed to the estimation method used. This issue arises because the set of relationships specified in the preceding chapter constitutes a simultaneous equation model. Some of the dependent variables appear as explanatory variables in other equations. This model has eight endogenous variables and seventeen exogenous variables. All of the equations are presumably identified since they satisfy the order condition for identification: in each equation the number of exogenous variables excluded exceeds the number of endogenous variables included minus one.

All parameter estimates presented in this chapter have been derived using the ordinary least squares (OLS) estimation procedure. However, the use of this method to estimate parameters of a simultaneous equation model can be questioned, so the two stage least squares (2SLS) estimation procedure has also been used to see if the parameter estimates are sensitive to the estimation method. In small samples both OLS and 2SLS procedures yield biased estimates of the coefficients and inappropriate t-ratios, but many econometricians argue that 2SLS estimates are nevertheless to be preferred (see Appendix VI). However, both methods yield similar empirical results in this research. Therefore the 2SLS estimates have been relegated to Appendix VI to simplify presentation of the basic empirical findings. The OLS and 2SLS estimates are compared in that appendix.

2. The results cannot be attributed to the choice of computer program. There is some evidence that different computer programs can sometimes yield somewhat different parameter estimates (see Appendix VI). Therefore, to see if these empirical results are affected by the computer program used, the model has been estimated using three different computer programs. The empirical results were the same in all three cases. For reference, the regression

estimates obtained with each program are compared in Appendix VI.

3. The results cannot be attributed to the way that missing observations have been dealt with. For several of the variables there were a few missing observations. In order to minimize wasted information, estimates of the missing values were used. The series for which there were missing observations and the procedure chosen to calculate these estimates are described in Appendix VI.

The model has also been estimated using only reported data. The empirical results are unaffected by whether or not estimates of the missing observations are included in the data set. For reference, the estimates obtained using a data set with the missing observations filled in and those obtained with reported data only are compared in Appendix VI.

4. The results cannot be attributed to data problems. Much of the original statistical information used here was gathered through a special questionnaire sent through the Employee Compensation Branch of the Post Office in Ottawa to city-wide level postal officials in the twenty-nine sample cities. This questionnaire is reproduced in Appendix II.

This survey data should not be affected by serious errors. The questions asked were very simple and designed after considerable consultation with officers in the Employee Compensation Branch of the Post Office and with labour market specialists at the Treasury Board. The questions required objective answers based on readily available data. The returned information was verified in cooperation with those federal government officials and found to be both internally consistent and of reasonable magnitudes. It can therefore be assumed that there are no serious errors in variables problems which might explain the results obtained.

A second possible problem with the data could be multicollinearity. The best example of multicollinearity is the case where one or more of the independent variables could be written as a linear combination of the other independent variables. This is clearly not a problem here because the computer programs have been able to perform the required matrix inversions.¹ Multicollinearity is sometimes used to refer to another, less well-defined situation where there is sufficient interrelationship among

¹ See Lawrence R. Klein, A Textbook of Econometrics, (2nd edition), Prentice-Hall, N.J., 1974, p. 189-194.

the independent variables that it is not possible to obtain very precise estimates (the standard errors are too large). The empirical results reported in the present chapter could thus be alleged to have been caused by such data problems. However, as will be argued later in this chapter, these results are reasonably consistent with those obtained by a number of other researchers using different data and different statistical techniques.¹

It thus seems appropriate to conclude that the parameter estimates and t-ratios reported in the present chapter cannot easily be attributed to an ill-conditioned data set.

5. It is difficult to contend that the results can easily be attributed to an incorrectly specified model, although this is an ever-present problem in empirical research. It is always possible that an important variable may have been inadvertently omitted, but the model has been constructed with reference to much of the contemporary analysis. This model

¹ Also, the search for high zero order correlations between independent variables, a frequently used test for the presence of multicollinearity, proved generally fruitless. This is an insufficient test, however, because multicollinearity can exist even with low zero order correlations.

takes into account the usual variables that other researchers have considered. This point is made abundantly clear in the extensive review of the empirical literature described later in this chapter.

This omitted variable issue is delicate. The Post Office's labour market experience may well have been influenced by a variety of factors not explicitly considered here (e.g., the behaviour of management in the different cities). But that is important for this research only if the omitted variable is highly correlated with the wage rank variable. If an omitted variable is not correlated with it, the omission would not affect the estimated coefficients on the wage rank.¹ Thus the basic argument is only that it is not obvious that a variable has been omitted which is highly correlated with the wage rank variable. As an ex-post check for an omitted variable, after the regressions were run, the residuals for each equation were examined to see if any systematic pattern was present. Such a condition could be caused by one or more omitted variables. No systematic pattern was observed however.

¹ See Jan Kmenta, Elements of Econometrics, Macmillan, N.Y. 1971, p. 392-393.

6. The results cannot be attributed to the choice of outside wage. There may be some uncertainty as to what constitutes an appropriate outside wage. It could be argued that the present results were obtained because the Post Office wage was compared to an inappropriate outside wage series. To see if the empirical results are sensitive to the comparable external wage used, the equations have been estimated using several different outside wage rates. The results do not seem to be affected by the choice of wage series.

The first outside wage, W_{pi} , is an average of the wage rates of five occupations: meter reader, truck driver, junior clerk and bus driver. As previously maintained (see pp. 201, 202, above) these are close in task content to the postal letter carrier occupation and their combination constitutes a comprehensive yet specific "comparable outside wage".

The second outside wage (W_{TD}), that of the truck driver, is also comparable but more specific and less comprehensive than the previous one. Both series however refer to the kinds of occupations that present letter carriers might be engaged in if they were not delivering the mail¹ and therefore both seem

¹ These are also the kinds of occupations potential letter candidates would be looking towards as alternative jobs.

'quite appropriate.

The third wage series (WIC) is the Industrial composite, an overall average of wages in a given city, which provides some general indication of whether the local labour market is high wage or low wage.

While other wage rates could have been tried, they would probably be highly correlated with these three outside wages.¹ It is therefore difficult to simply attribute the reported results here to a failure to use an appropriate outside wage series.

7. The particular empirical results in this chapter cannot be easily attributed to the presence of heteroscedasticity. When using cross sectional data, heteroscedasticity can sometimes be a problem. It affects the efficiency of the parameter estimates and biases the standard errors of the regression coefficients. However, an examination of the residuals in each equation suggests that their variance is constant, implying an absence of heteroscedasticity.

¹ Intercity correlations among wage ranks with different wage series are generally high. Because of this, the empirical results that would be obtained if other possible wages had been used would probably be quite similar to those reported here. The simple correlations, r , among the wage series used here are: r (Wpi : WTD) = .85, r (Wpi : WIC) = .70, r (WTD : WIC) = .61.

8. Finally it is difficult to attribute the results to serious functional form problems. The most frequent function form found in the empirical literature is the linear relationship. However, it is also reasonable to postulate a nonlinear relationship.¹ To check for this possibility, the wage variable is entered not only in the usual linear fashion but also in logarithmic form. In most cases the results are similar whichever form is used.

When there are serious functional form problems, they often give rise to systematic patterns in the residuals. As already mentioned, however, no systematic patterns were observed.

In summary, it is difficult to dismiss the results reported below as having been caused by one or more of the above technical problems. It is reasonable to conclude, based on all available evidence, that letter carrier labour market experience is not appreciably affected by differences in wage rank.

¹ For example, a logarithmic form is used by Wales, *op. cit.* and by T.P. Hill, *op. cit.* (log is in the dependent variable). For Hill, log form gives a slightly better fit than linear form (see his *op. cit.* p.220).

II

DATA ANALYSIS

In the present subsection the regression results of the letter carrier data are first described and then analyzed. The objective is to discover the structural relationships between the eight dependent variables (labour market experience) on the one hand and the wage, labour market conditions, and Y-specific factors on the other.

When they exist, the results of previous research in these areas are reported in order to provide some perspective on the present findings.

Recruitment

Number of applications, $\frac{APP}{LFM}$, (Table IV-1)

Table IV-1 shows that with a level of significance as low as 15%, none of the six explanatory variables is statistically significant. This result applies to all three wage proxies (Wpi, WTD, WIC), for both wage forms (linear and log), and no single proxy or form produces consistently higher t-values. This is an unexpected result regarding the theoretically defensible hypotheses that the wage rank, labour market conditions and the Y-specific variables should affect worker job choice, hence quantitative recruitment experience of local post offices.

degrees of freedom = 12

Table IV-1 Applications per Labour Force member $\left(\frac{APP}{LFM}\right)$

	*+W	+U	-N	+ $\frac{LFPAM}{LFM}$	+SL ₁₄	+NEL	r **	R ² ***
W _{Pi}	-.0028 ^x (.3226) [‡]	+.0139 (.5180)	-.0120 (.5830)	-.0151 (.5188)	+.0034 (.1939)	+.0004 (.0260)		.04
W _{TD}	-.0026 (.3400)	+.0100 (.4047)	-.0102 (.5058)	-.0143 (.5046)	+.0032 (.1830)	-.0013 (.0728)	(W:NEL) = -.57	.05
W _{IC}	+.0028 (.5588)	+.0092 (.3765)	-.0044 (.1911)	-.0093 (.3339)	-.0004 (.0199)	+.0015 (.1020)	(W:N) = -.45	.06
Log W _{Pi}	-.7831 (.3826)	+.0145 (.5428)	-.0121 (.5916)	-.0156 (.5372)	+.0036 (.2037)	+.0010 (.0063)		.05
Log W _{TD}	-.6409 (.3496)	+.0101 (.4100)	-.0102 (.5096)	-.0141 (.5013)	+.0033 (.1902)	-.0016 (.0894)	(W:NEL) = -.60	.05
Log W _{IC}	+.5967 (.5622)	+.0096 (.3926)	-.0037 (.1594)	-.0093 (.3326)	-.0005 (.0288)	+.0012 (.0831)	(W:N) = -.49	.06
correct signs (/6)	2	6	6	0	4	4		
t (/6)	0	0	0	0	0	0		

Notes: ^x the upper figure is the B-coefficient.

[‡] the lower figure is the t-value.

* the signs preceding this row of symbols are those expected on the basis of the hypotheses.

**r₂ is the simple (zero order) correlation coefficient between the variables in brackets.

***R² is the multiple regression coefficient.

LEVELS OF SIGNIFICANCE, t (one tail tests)

a = .005
 b = .01
 c = .025
 d = .05
 e = .1
 f = .15

While the wage rank carries the "wrong" sign in 4 of 6 cases, some small comfort may be taken from the labour market conditions variables, all of which (twelve observations) have the expected sign. Their t-statistics are, however, considerably below the critical values. Strangely enough the $\frac{LFPAM}{LFm}$ has a consistently unexpected sign. The second Y-specific variable, S_{L14} , has mixed signs. Number of eligible lists, one aspect of recruitment effort, has the expected sign, but with very low t-values.

At the theoretical level, it is possible that the dependent variable is not a measure of an employer's ability to attract candidates.¹ While this particular variable as such is almost absent from the previous literature, it is difficult to hold that the proportion of all local potential candidates actually applying is not determined at least partially by relative net advantages among employments.² To the extent that wages and net nonwage advantages are positively correlated rather than offsetting,³ the postulate of utility maximization by workers should lead to a ranking of job attractiveness on the basis of wage rank in a local labour market.

¹ Many of the interpretations of these results are equally relevant for other equations which follow.

² Our equation even accounts for differences in the age structure of each local labour force, $\frac{LFPAM}{LFm}$.

³ As was noted above, recent research has found such a relationship.

But perhaps workers are not rational in their labour market choices¹ or perhaps information and mobility imperfections are so pervasive as to make it appear that workers do not act rationally. Reynolds found as many complaints about insufficient applications from high wage as low wage firms.² On the basis of interviews, Lester also concludes that the links between wages and job choice are not clear.³ The earlier discussion on the subjective cost-benefit evaluation of the acquisition of labour market information and mobility undertakings may also mean that even known wage differentials do not necessarily motivate job changes.

Perhaps a more simple analytical technique may provide some insight into the possible effects of the wage on the proportion of applications.

¹ There is some evidence in the literature that workers leave one job without a new one in hand or even that they move from high to low wage employments.

² Lloyd Reynolds, The Structure of ..., op. cit., p.218

³ Richard Lester, Hiring Practices ..., op. cit., p. 48.

Table IV-2 shows the first and fifth quintiles of the city $\frac{APP}{LFm}$ distributions together with the corresponding letter carrier wage ranks (for only one proxy, Wpi).

Table IV-2
THE EXTREMES OF THE
 $\frac{APP}{LFm}$ DISTRIBUTION

First Quintile:

City	$\frac{APP}{LFm}$	$\frac{WLC}{Wpi}$	City	$\frac{APP}{LFm}$	$\frac{WLC}{Wpi}$
WPG	.06	107	HLL	.87	105
SDY	.06	117	CHI	.65	107
SAR	.08	98	SBK	.62	116
STT	.10	105	GBY	.52	122
		$\bar{x} = 107$			$\bar{x} = 113$

Source: Tables III-2 and III-12, above.

The mean wage rank of the poorest $\frac{APP}{LFm}$ experience is 107 while that of the cities with the best $\frac{APP}{LFm}$ is 113. Though this would tend to offer some weak support to the hypothesis that wage rank and $\frac{APP}{LFm}$ are positively related,

the simple coefficient of determination, r^2 , between $\frac{APP}{LFm}$ and $\frac{WLC}{Wpi}$, is virtually zero ($r = .01$).

Number of Eligible Lists, NEL (Table IV-3)

The regression results for the second recruitment variable, number of eligible lists, shown in table IV-3 are somewhat better than those of the previous one. There are no significant coefficients for the wage rank (W), the unemployment rate (U) or recent employment growth (N). The signs of the wage rank are mixed, while they are all as expected for the unemployment rate and consistently perverse for recent employment growth.

The labour force variable, E, shows the expected negative sign and all observations are statistically significant at a level of significance of .005. This implies that, ceteris paribus, the greater the number of potential letter carrier applicants the smaller the recruitment effort by post offices. With a regression coefficient of .006, and bearing in mind that E is measured in thousands of workers, an increase in the local labour force of 200,000 results in a reduction of just under $1\frac{1}{4}$ (1.20) eligible lists. Given the values of NEL ($\bar{x} = 3$), E is an important determinant of NEL.

The length of lists variable $\frac{T_2}{NEL}$ is not significant because its coefficient has a wrong sign.

Table IV-3 Number of Eligible Lists (NEL)

d.f. = 17

	-W (-)	-U (-)	+N (+)	-E (-)	T_2 NEL (-)	-NH (+)	r	R ²
W_{Pi}	+ .0091 (.4379)	- .0933 (.9684)	- .0557 (.6974)	- .0056 (3.4496) ^a	+ .0864 (2.6204)	+ .1527 (9.0393) ^a	(E: $\frac{T_2}{NEL}$) = .57, (E:NH) = .64	.89
W_{IC}	- .0090 (.5453)	- .0899 (.9485)	- .0699 (.8336)	- .0058 (3.4905) ^a	+ .0903 (2.6678)	+ .1524 (9.1563) ^a	do	.89
W_{TD}	+ .0071 (.4085)	- .0835 (.8782)	- .0588 (.7318)	- .0056 (3.4607) ^a	+ .0876 (2.6342)	+ .1530 (8.9348) ^a	do (W:NH) = -.58	.89
Log W_{Pi}	+ 2.4607 (.4751)	- .0946 (.9807)	- .0557 (.6982)	- .0056 (3.4510) ^a	+ .0863 (2.6198)	+ .1528 (9.0612) ^a	do	.89
Log W_{IC}	- 2.1462 (.6049)	- .0918 (.9710)	- .0737 (.8672)	- .0058 (3.5075) ^a	+ .0913 (2.6851)	+ .1528 (9.1627) ^a	do	.89
Log W_{TD}	+ 2.0799 (.4693)	- .0833 (.8790)	- .0589 (.7358)	- .0056 (3.4692) ^a	+ .0877 (2.6449)	+ .1533 (8.9667) ^a	do	.89
correct signs (/6)	2	6	0	6	0	6	Note: "do" means same as first entry.	
t (/6)	0	0	0	6	6	6		

The third consistently significant variable, at a level of significance of .005, is the letter carrier labour demand indicator, NH. The regression coefficient is stable across all six equations, with a range from .1524 to .1533. This means that an additional eligible list is associated with six new hires. Such an estimate seems somewhat implausible however, since it implies that for every six new hires, ceteris paribus, a post office must draw up a new eligible list.

What policy conclusions can be drawn from these findings? If the number of eligible lists is labour market experience and the Treasury Board wants to reduce the number of times it has to go to the market, the recommendation is to reduce NH. But NH is a structural variable in the sense that it is determined by labour needs and cannot be manipulated in order to meet labour market experience goals. The other significant variable, E, is also structural in nature and is unavailable to effect desired changes in letter carrier labour market experience.

The unexpected sign of the length of list, $\frac{T_2}{NEL}$, remains puzzling although some explanation may be obtained through the numerator, T_2 . T_2 is a measure of those successful on the two recruitment tests and this is

affected by minimum hiring standards. If the cut off level (pass/fail) varies among cities then this becomes a possibly important explanatory factor - an omitted variable. The (incomplete) data that was obtained on cut off levels is analyzed following the last of the eight equations. Viewed from another perspective, it may be that there is a systematic inverse relationship between the length of list and the (marginal) quality of applicants. A longer average list may thus not be expected to reduce recruitment effort (NEL).

An attempt to carry out the same exercise as was done at the end of $\frac{APP}{LFm}$, the analysis of the extremes in NEL distribution and wage rank, proved unfruitful because of the highly skewed number of eligible lists distribution. Of the twenty-five cities reporting number of eligible lists, three had zero lists, twelve had one list and five had two lists. Thus in 20/25 cases, there were two lists or less. This clear absence of normality in the distribution of the dependent variable could also be responsible for the regression results.

Names Too Short, N.T.S. (Table IV-4)

The wage rank in its linear and logarithmic forms does not seem to have the expected influence on the attitude of hiring officers insofar as minimum inventory (NTS) is concerned. In all six equations the coefficient on the wage rank has a perverse sign. According to these results a higher wage rank is associated with a higher, not lower NTS.

Table IV-4 Names Too Short (NTS)

d.f. = 6

	W (-)	U (-)	N (+)	E (-)	NH (+)	APP LFm (-)	T ₂ APP (-)	q (+)	NL (-)	r	R ²
W _{Pi}	+.1415 (1.4958)	-.0999 (.3810)	-.0671 (.3161)	-.0002 (.0328)	+.0240 (.4882)	+4.4987 (.9966)	+.04412 (.7838)	+.4574 (1.9979) ^d	-.0227 (.4344)	(W:q) = -.47, (N:q) = .44, (E:NH) = .82, (NH:q) = .46, (APP : T ₂ / LFm : APP) = -.58 (NH:NL) = .57 do (W:q) = -.52	.50
W _{IC}	+.1141 (2.2051)	+.0979 (.4336)	+.0536 (.2731)	-.0010 (.2107)	+.0135 (.3111)	+1.5320 (.3516)	+.0208 (.3988)	+.5078 (2.4808) ^c	-.0258 (.5627)	do (W:NL) = -.57 (W:NH) = -.60 (W:E) = -.41 (W:q) = -.66	.63
W _{TD}	+.1841 (1.744)	+.0996 (.4046)	-.2300 (1.0412)	+.0009 (.1847)	+.0169 (.3601)	+3.5476 (.8022)	+.0363 (.6634)	+.6102 (2.391) ^c	+.0077 (.1417)	do	.56
Log W _{Pi}	+35.0963 (1.5760)	-.1135 (.4352)	-.0749 (.3576)	-.0003 (.0537)	+.0257 (.5291)	+4.6665 (1.0532)	+.0450 (.8154)	+.4678 (2.0590) ^d	-.0245 (.4778)	do	.53
Log W _{IC}	+27.7053 (2.6056)	+.1385 (.6534)	+.0877 (.4749)	-.0013 (.3046)	+.0122 (.3014)	+.7584 (.1847)	+.0106 (.2136)	+.5448 (2.8232) ^c	-.0275 (.6481)	do	.68
Log W _{TD}	+46.9537 (1.9054)	+.0996 (.4158)	-.2351 (1.0943)	+.0007 (.1493)	+.0198 (.4309)	+3.2325 (.7446)	+.0323 (.6015)	+.6203 (2.5050) ^c	+.0132 (.2468)	do	.58
correct signs (/6)	0	2	2	4	6	0	0	6	4		
t (/6)	6	0	0	0	0	0	0	6	0		

None of the three labour market conditons variables is significant in any wage form or with any wage proxy and the signs on the coefficients are mixed. Though the signs for new hires (NH) are all as expected, none is significant. The signs for all $\frac{APP}{LFm}$ are perverse. The success rate $\frac{T_2}{APP}$ also has the wrong sign throughout.

The signs on the quit rate coefficient are all positive as expected and statistically significant. This implies that postal hiring officials require greater labour reserves (NTS) where quit rates are higher. With an average coefficient of about .50, a 2% increase in the quit rate induces postal officers to add one name to the minimum inventory.

While most of the NL signs are as expected ($B < 0$), none is significant.

One general problem with this equation is that there are only seventeen observations, and with nine independent variables, no more than six

degrees of freedom. The omitted, "cut off" level could be responsible for the unexpected wage effect. Another possible set of omitted variables are the personal characteristics of the respondents (postal officers) - age, etc. - since it is their attitudes which are being measured.

The analysis of the extremes (table IV-5) produces perverse results: the three cities with the highest NTS have a higher mean wage rank (110) than the lowest NTS cities (98). Their simple coefficient of determination, r^2 , is only .04.

Table IV-5
THE EXTREMES OF
THE NTS DISTRIBUTION

First Quintile:			Fifth Quintile:		
City	NTS	$\frac{WLC}{Wpi}$	City	NTS	$\frac{WLC}{Wpi}$
CGY	10	98	SIT	0	105
SRL	6	110	OSH	0	88
GBY	5	122	SBY	0	101
		110			98
		$\bar{x} = 110$			$\bar{x} = 98$

Success Rate, $\frac{T_2}{APP}$ (Table IV-6)

This variable represents one aspect of the quality of applicants, the percentage passing both eligibility tests. Here (table IV-6) the wage variable carries the correct sign throughout and is significant in four of the six equations. Ceteris paribus, the higher the wage rank, the greater the success rate. An increase of one unit in the former is thus estimated to cause the success rate to rise by 1.14% when the external wage is represented by the Wpi wage (composite proxy # 3) and by .71% when WTD (the truck driver) series is used as the outside comparable wage.

It was demonstrated in chapter II that the Treasury Board advocates the local wage alignment policy mainly because it is expected to reduce the dispersion in labour market experience, i.e., to flatten the geographic pattern. Given the above estimates of the structural parameter relating the letter carrier wage rank what new intercity pattern emerges? Pursuing the approach in this study of giving the government policy the greatest chance of success, and in the interests of providing a broadly based analysis, the present simulation of the estimated effects of a conversion from the national wage to local wage alignment is carried out with both wage series with significant parameters.

The formula for arriving at the new success rates with aligned wages is derived from the following two equations. With national wages, the actual situation (SR) is described in equation (4). This is the regression

Table IV-6 The Success Rate (S.R. = $\frac{T_2}{APP}$)

d.f. = 10

	W (+)	U (+)	N (-)	E (+)	R (+)	r	R ²
W _{Pi}	+1.1398 (1.6277) ^e	+1.0023 (.5671)	+1.0364 (.7261)	-.0049 (.2883)	+.9110 (1.3840) ^e	(W:R) = -.57	.32
W _{IC}	+.3765 (.9286)	+1.8800 (1.0200)	+1.2147 (.7191)	-.0150 (.8865)	+.5725 (.8820)	(W:N) = -.45	.22
W _{TD}	+.7129 (1.2643) ^f	+2.2110 (1.2134) ^f	+.4432 (.3077)	-.0048 (.2600)	+.6929 (1.0776)	(W:R) = -.42	.29
Log W _{Pi}	+267.6321 (1.6089) ^e	+.9774 (.5502)	+.9800 (.6886)	-.0051 (.3001)	+.8942 (1.3634) ^e	(W:R) = -.56	.32
Log W _{IC}	+84.0063 (.9879)	+1.9435 (1.0562)	+1.3174 (.7702)	-.0155 (.9218)	+.5714 (.8968)	(W:N) = -.48	.22
Log W _{TD}	+165.1841 (1.2558) ^f	+2.1815 (1.1991) ^f	+.4732 (.3282)	-.0047 (.2535)	+.6966 (1.0787)	(W:R) = -.42	.26
correct signs (/6)	6	6	0	0	6		
t (/6)	4	2	0	0	2		

equation specified on p. 227, above.

$$SR \equiv \frac{T_2}{APP} = B_{40} + B_{41}W + B_{42}U + B_{43}N + B_{44}E + B_{45}R + \epsilon_4 \dots (4)$$

where the B's are the estimated coefficients,

W is the letter carrier local outside going wage ratio, and the other explanatory variables are as per explanation on p. 227.

After the new policy of aligning letter carrier wages to local going rates has been applied, all wage gaps between the national letter carrier wage and the local going wage are eliminated. This means that the wage ratio is unity in equation (4). The success rate under such a condition (SR¹) then becomes,

$$SR^1 = B_{40} + B_{41} + B_{42}U + B_{43}N + B_{44}E + B_{4,14}R + \epsilon_4 \dots (4a)$$

as the value of the W-ratio goes to unity.

To find the change in the success rate caused by the alignment of wages, other things remaining unchanged, equation (4a) is subtracted from equation (4) yielding the identity (9).

$$\Delta SR \equiv SR - SR^1 = B_{41} (W - 1) \dots (9)$$

where SR = the success rate with the national wage,

SR¹ = the success rate with locally aligned wages,

B₄₁ = 1.14 with the W_{pi} wage series,

.71 with the WTD series,

W = the letter carrier wage/outside wage ratio

(the two series, W_{pi} and WTD are found in

table III-12, p. 208, above).

On this basis the predicted changes in the letter carrier success rates are computed and given in table IV-7, below.

Table IV-7
 EXPECTED EFFECTS OF LOCAL
 WAGE ALIGNMENT OF
 LETTER CARRIER
 SUCCESS RATE

City	Wage Rank		Success Rate ($B_1 = 1.14$ with W_{pi} ; $.71$ with WTD)				
	$\frac{WLC}{W_{pi}}$	$\frac{WLC}{WTD}$	Actual (SR)	Change (ΔSR)		After Alignment (SR^1)	
				W_{pi}	WTD	W_{pi}	WTD
SDY	117	108	83	-19	-13	64	70
QCT	104	102	31	- 5	- 3	26	28
HLL	105	97	14	- 6	- 4	8	10
SBK	116	105	8	-18	-14	0 (-10)	0 (-6)
GBY	122	107	18	-25	-16	0 (-7)	2
SRL	110	105	50	-11	- 7	39	43
CHI	107	102	5	- 8	- 5	0 (-3)	0
SIS	102	100	38	- 2	- 1	36	37
TOR	95	87	7	+ 6	+ 4	13	11
STT	105	95	33	- 6	- 4	27	29
SAR	98	86	17	+ 2	+ 1	19	18
SSM	89	88	22	+13	+ 8	35	30
CWL	102	92	5	- 2	- 1	3	4
SBY	101	89	17	- 1	- 1	16	16
VAN	92	84	18	+ 9	+ 6	27	24
SKT	105	106	24	- 6	- 4	18	20
CGY	98	94	35	+ 2	+ 1	37	36
		SR	25			22	22
		σ	19			18	18
		C.V.	76%			82%	82%

Source: Tables III-5, III-12, IV-6.

Wage alignment would not seem to have much effect on the geographic pattern of the SR. In table IV-7, comparing the bottom three rows of the "actual success rate" (i.e., with the national rate) to the "after alignment" data columns, remarkable stability is observed. The mean sample success rate deteriorates somewhat from 25% to 22% (a fall of 12%). However, the emphasis in the present study is on the intercity variation in labour market experience. Using the standard deviation generated by our data only a very slight decline (improvement) is observed, 19 to 18 (5% lower).¹ This marginal decline in the standard deviation means that 95% of the observed intercity variation remains after wage alignment and the fall in the mean sample success rate indicates an overall worsening in this aspect of recruitment experience. These initial results provide little comfort for the proposed wage policy.²

¹ The other measure of dispersion, the coefficient of variation shows a rise from 76% to 82%.

² When a relatively low success rate is combined with a relatively high wage rank the new policy can result in serious adverse labour market experience effects. Thus in the Quebec cities of Sherbrooke, Granby and Chicoutimi the application of the estimated wage coefficient with W_{pi} actually results in negative success rates. (zeros have been recorded in Table IV-7).

One additional important dimension of the evaluation remains to be explored. While government policy seems to be couched in terms of labour markets per se, i.e., that each city, hence each city's labour market experience, has equal value, the overall net effects in absolute numbers of letter carriers can hardly be ignored. Though the policy goal is to diminish the intercity labour market experience dispersion, even a slight deterioration in a city with a large proportion of all letter carriers can more than offset a more substantial improvement in one or even several small cities. Thus Table IV-8 shows these summary statistics: the mean weighted (by the number of letter carriers) success rate (\bar{SR}_w), the weighted standard deviation (σ_{SRW}) and the weighted coefficient of variation ($C.V._{SRW}$). The left hand columns give the results using the existing national wage (W_n) while the right hand columns give the estimated results after conversion to locally aligned wages (W_{1-n}).

Table IV-8
 SUMMARY OF EFFECTS OF LOCALLY
 ALIGNED WAGES ON WEIGHTED LETTER CARRIER SUCCESS RATES

W_n		W_{1-n}	
		W_{Pi}	W_{TD}
\overline{SR}_w	18	\overline{SR}_{w}^1 21	20
σ_w	14	σ_w^1 11	11
C.V.w	78	C.V. $_w^1$ 52	55

Symbols: W_n = actual wage structure, national wage.
 W_{1-n} = proposed wage structure, locally aligned wages.
 \overline{SR}_w = mean success rate with W_n .
 \overline{SR}_w^1 = mean success rate with W_{1-n} .
 σ_w = standard deviation with W_n .
 σ_w^1 = standard deviation with W_{1-n} .
 C.V.w = coefficient of variation with W_n .
 C.V. $_w^1$ = coefficient of variation with W_{1-n} .
 subscript "w" indicates values weighted by number of carriers in respective cities.

subscript "Pi" indicates use of the $\frac{WLC}{W_{pi}}$ wage series; "TD", the

$\frac{WLC}{WTD}$ wage series.

The index "1" indicates the situation after local wage alignment (with W_{1-n}).

Source: Table IV-7 and Appendix V.

When the number of letter carriers are accounted for, the mean success rate improves slightly from 18% to some 21%. But more importantly for present purposes are the effects of wage alignment on the intercity success rate dispersion as represented by the standard deviation. This is expected to decline from 14 with the national wage to 11 after the introduction of local wage alignment.¹ Such a reduction of 21.4% still leaves approximately four-fifths of the original observed dispersion following the revised wage structure. These are due to nonwage factors.

If the conversion of the wage structure were costless then the policy prescription would be to proceed with the plan since the predicted changes in the geographic success rate dispersion are in the correct direction. However the proposed new structure is not likely to be costless. In chapters I and II, above, it was amply demonstrated that such a conversion would entail additional costs. To begin with, it was shown that the unions involved were adamantly opposed to geographic wage differentials and a former postmaster general predicted a three-month strike as a reaction. Declines in morale can be expected in communities where wage rank would decline, and which may or may not be offset by increased morale where letter carriers would rise in the local wage distribution. Belcher and Dean pointed out the increased costs of wage surveys and of administration of the more complex set of wage scales under the proposal. In addition, the collective

¹ Because of the increase in the mean, the coefficient of variation ($\frac{\sigma}{\bar{X}}$) is expected to fall from 78% to some 54% after local alignment.

bargaining process itself would become greatly complicated with negotiations on a large number of wage scales replacing the bargaining over the single scale.¹ To the extent that the larger cities are the higher wage cities, a net increase in the wage bill can be expected. Finally, in chapter V, below, there is mention of alternative, nonwage means of seeking a reduction in the dispersion of letter carrier labour market experience (especially the poorest performance).

In summary, then, and in view of the likely increased overall costs and the prediction that four-fifths of the intercity variation in success rates would remain after the conversion of the wage structure, some hesitation must be expressed at this point regarding the overall benefits of locally aligned wages.

Returning to the remaining explanatory variables in Tables IV-6, the labour market conditions are generally not statistically significant. Only the unemployment rate has the correct signs. There is thus almost no support for the hypothesis that a tight labour market

¹ It will be recalled that the Kappel Commission on the U.S. Post Office rejected geographic wage differentials after weighing the costs and benefits.

results in lower quality applicants or that a slack market permits this employer to select out more successful applicants.

The richness of the schooling mix¹ (R) in the respective city populations has the expected sign but is significant only with the Wpi proxy.

As with the previous measures of recruitment experience, the results of this equation may have been improved had a cut off variable been included.

In contrast to the other labour market experience measures, there is some published research on the determinants of the quality of applicants. This is now reviewed.

Studying the Madison (Wisconsin, 1968) female clerical labour market (136 employees), Eaton Conant tested the hypothesis that differences in quality of recruits determine differences in starting salaries.² (Causally, this is in the opposite direction of the present study). Rather than multiple regression analysis he chose two, less complete techniques: correlation (simple and multiple) and a comparison of differences in means

¹ It will be recalled that R measures the proportion of those with some secondary schooling out of all those with less than thirteen years of formal education. The higher this proportion, the "more educated" the mix of those usually applying for a letter carrier job.

² "Worker Efficiency and Wage Differentials...", op. cit.

of quality (measured by test scores on aptitude, typing speed and accuracy) between the extreme upper and lower thirds of the wage range.¹

In all cases the hypothesis is supported by the sign and significance of the coefficients, though the combined test scores only account for ten per cent of the wage variation ($R^2 = .0971$). Conant reasons that fringe benefits and net nonpecuniary advantages were both unimportant and uniform across employers and thus relies on the wage alone to reflect comparative net advantages. But there is a serious weakness in this assumption for his comparison of extremes. The totality of the upper third (employees) in the wage range is accounted for by a single employer, the state civil service. Surely job security in that context must be considerably superior to that of the lowest third, composed of private financial institutions and insurance companies. Was it the higher wage or the better job security that attracted

¹ He rejected multiple regression analysis; "After these coefficients [zero order correlations between hiring salaries and each of the three test scores] were obtained it was decided not to perform a regression analysis because of the low magnitude of the coefficients" (p. 431). In any case his multiple correlation operation merely sets all three test scores alternatively against the wage.

the most qualified candidates? A second fundamental criticism is that there was no ceteris paribus control on other relevant personal characteristics of the workers (age, appearance, etc.) which could affect the wage/quality relationship. Employers do not necessarily limit their perception of worker quality to the results of objective tests. In the letter carrier model such a subjective dimension, was accounted for through the oral interview test.

Robert Gaston examined the relationship between pre-employment tests of retail food clerks and labour market conditions in two Ohio cities (two geographic divisions of a supermarket chain) for 1964.¹ The markets were characterized by greatly divergent patterns of employment growth and unemployment rates. His method is a simple comparison of several quality aspects between both groups of employees using the proportions of each of seven such variables in each city. The quality measures are: years of schooling, pre-employment tests (type unidentified), proportion of prime age in 1964, proportion of prime age at hire, length of service, hourly classification (full time), and work force attachment (primary, secondary earner).

¹ "Labor Market Conditions...", op. cit.

He found substantial differences: in the slack labour market worker quality was consistently higher than in the tight labour market. This supports his "selective hiring hypothesis", whereby an employer can and does raise recruitment standards in slack markets and thus gets a higher quality worker. Such a finding contrasts with our letter carrier results where labour market conditions have not been found to be related to the success rate. However, Gaston's model suffers from some serious deficiencies.

He does not account for differences in wage rank in the local wage distribution as a factor potentially contributing to the intercity variation in labour quality at hiring. This criticism was also raised by Robert Smith,¹ who added that Gaston should have created the ceteris paribus conditions through the use of linear multiple regression analysis in order to identify the independent effects of the labour market conditions on the quality of recruits to an employer. Smith also faults Gaston because there was no measure of recruitment effort, and then presents a multiple regression equation of his own study which seeks to explain labour quality differences at hiring. It covers San Francisco stenos (of one employer: Temporary Help Services, THS) for the period 1953-61. Using dictation test scores (words per minute)

¹ Robert J. Smith, "Comments on: Labor Market Conditions and Hiring Standards", I.R., May 1973, pp. 248-9.

as the dependent variable, the coefficient on the wage rank ($Wage_{IHS} / Wage_{city\ stenos}$) was + 13.58 and statistically significant at 5%.¹ A one unit increase in wage rank results in an increase in steno speed of fourteen words per minute. In the letter carrier case the coefficient was roughly one-fifteenth this magnitude but the measure of quality and the units were completely different (in ours, quality is the proportion of letter carrier applicants passing the two selection tests). The coefficient on the recruitment effort (index of classified advertising relative to other San Francisco firms) was + .62 and significant at 10%; the coefficient of the demand for stenos (the number of stenos hired by IHS)² was - .017 and significant at 5%, but the sign on the city unemployment rate was perverse.³ Smith concludes that wage rank and recruitment effort, rather than labour market conditions, determine labour quality at hire.⁴

It is interesting that Gaston's study includes a richness-of-schooling

¹ Of all the previous studies reviewed in this dissertation, Smith's wage variable, the ratio of his experimental group (IHS stenos) to the outside counterpart (local labour market stenos), is closest to the wage rank variable developed in the letter carrier model.

² This is close, but not identical to our N variable: the greater the number of stenos hired the lower their marginal quality.

³ Gaston comments that the steno, not the city-wide unemployment rate is appropriate. "Reply to Prof. Smith", Ibid., pp. 250-251.

⁴ There is no recruitment effort variable in our own quality equation either.

mix variable similar to ours.¹ For the present study it was hypothesized that, other things equal, the greater the average years of schooling in a city (of those likely to apply for a letter carrier job, i.e., those with no post-secondary years) the greater the probability of success on the recruitment tests. Gaston's analysis of high and low unemployment cities concludes that "...the level of schooling possessed by employees in the [high unemployment] market is significantly higher than in [the low unemployment market]", and is "the most persuasive finding" of his study. He adds, significantly,

"This difference in education is especially interesting in light of the fact that the general level of education is considerably higher in [the low unemployment city] than in [the high unemployment city] (the population in the former averages 11.9 years of schooling, completed as compared to only 9.7 years in the latter)".²

Though this finding (higher employee schooling in the city with lower general population schooling) support an hypothesis contrary to the one posed in the letter carrier study, it should be reiterated that Gaston attributes the better quality employees in the city with higher unemployment and lower general schooling attainment (of the population) to the depressed labour market conditions, not the lower richness of the schooling mix, and that his analytical technique is a simple comparison of proportions of employees with certain characteristics in both cities. He fails to hold

¹ In the letter carrier model, the proportion of those with some secondary schooling out of those with less than thirteen years schooling in the richness variable R.

² Gaston, *Labor Market Conditions...*, op. cit., p. 276.

constant labour market conditions or wage ranks while looking at schooling differences. In the present study multiple regression analysis provides no more than very weak support for the hypothesis that higher average city schooling is associated with higher schooling of applicants.¹

Finally the results of three other studies dealing with the determinants of the quality of recruits are briefly mentioned.

In their extensive study of the Chicago labour market in 1962, Rees and Shultz only managed to get crude information on the quality of new hires.² Their unevenly gathered data came from interview impressions rather than from a systematic collection of hard statistics. On that basis they conclude that the higher wage does enable an employer to raise recruitment standards (hence quality) and that labour market conditions also seem to affect quality in the expected direction.

Again, on the basis of impressionistic evidence Lloyd Reynolds concludes that lower wage ranks in a local labour market (especially at the extremes) result in lower quality recruits.³ He adds that additional reinforcement of this tendency comes from the practice of the public employment services

¹ It should be recalled that schooling as an explicit letter carrier hiring criterion is of minor importance per se. It is nevertheless used here because of the assumption that higher schooling will ultimately result in better test performance and because hiring officials will take schooling as quality indicator.

² op. cit., pp. 49-50.

³ His population covers male and female blue collar workers in New Haven, 1946-48. (The Structure of..., op. cit.)

sending out the more unstable applicants to lower wage firms.

MacKay et al. studied the personnel records of male and female plant workers in the engineering industry (1958-1966) in five U.K. cities.¹ They found that formal testing was rare² and thus limit their assessments to the opinions expressed by interviewees (both employers and workers) who claim that hiring standards are flexible and change with differing labour market conditions and wage levels.³

What kind of support does this review of the findings of others provide for our own hypotheses and results?

While there is considerable logic in the theoretical hypothesis that wage rank and labour market conditions affect the quality of recruits, the empirical tests seeking to verify such relationships are much less conclusive. It is true that the various authors generally find that there is some relationship, however methodologies in many of the studies cited leave much to be desired. Upon closer examination, their statistical results, whether cross sectional and time series are, on the whole, more vague.

Of the six authors reviewed only Smith provided the ceteris paribus condition necessary for the types of verifications of the relationships investigated. Thus while Conant finds the expected wage-quality association, he cannot claim that this represents the independent effect of wage rank on

¹ Labour Markets Under..., op. cit.

² Ibid., p. 62.

³ Ibid., p. 361.

quality. Gaston omitted the theoretically important wage rank variable and therefore considerable doubt is cast on his "correct" findings. Rees and Shultz, Reynolds and MacKay et al. were not able to do a systematic data analysis and their impressionistic evidence only provides weak support for their hypotheses.

Besides these methodological problems, difficulties in conceptualizing and operationalizing defensible measures of worker quality plagued the researchers. The "success rate" used in the letter carrier case is a defensible quality variable, but in the multiple regression analytical technique of the present study there is a possible important omitted variable on which only sparse data were obtained: the hiring standard itself (the "cut off" level). To the extent that hiring standards are below the official letter carrier levels in the high wage cities (where letter carrier wage rank is relatively low), the success rate is biased upward, and conversely underestimated in the low wage cities. How important is this omission and what can be said about a possible bias in the success rate-wage coefficient? Towards the end of the present chapter some limited regression evidence is obtained on the effect of wage rank on the cut off level. On the basis of the data for ten cities there is no support for a hypothesis that wage rank and the cut off level are directly related. On the basis of theory, hiring standards and wage rank as well as hiring standards and success rate are expected to be directly related. Since the (absent) cut off variable is already being picked up in the wage coefficient this latter value is likely to be, if anything, overestimated. In view of all of this our success rate findings do produce reliable estimates of the wage parameter given the data limitations.

As was pointed out in the Smith study, our analysis would have been more complete had the equation contained a variable reflecting recruitment effort. However in defense of this last point, it should be recalled that, in contrast to most of the other experiments cited here, our data deals with a single employer and furthermore that the recruitment practices in the federal public service are highly standardized across the country.¹

Despite these omissions, intercity differences in the letter carrier wage rank has been found to be an important determinant of success rate differences in the present study (the elasticity of the success rate to a change in wage rank is 4). On the other hand there is no firm support here or from the literature that labour market conditions affect the quality of recruits and only very weak evidence of a relationship between schooling attainment in respective local labour markets and the dependent variable.

Prime Age New Hires $\frac{NHPA}{NH}$ (Table IV-9)

On the basis of the hypotheses posed concerning prime age as a measure of the quality of recruits, none of the five explanatory variables emerges consistently as expected. In term of wage rank, only two of the six coefficients have the correct sign but they are not statistically significant. Among labour market conditions variables, U and N have the expected signs throughout but the t-values are mostly too low. E has the wrong sign. The results on the final variable, the $\frac{LFPAM}{LFm}$, are puzzling since there is a consistently unexpected sign.

¹ This does not mean to imply that postal hiring standards or recruitment effort are geographically identical.

Table IV-9 Prime Age New Hires ($\frac{NHPA}{NH}$)

d. f. = 18

	W (+)	U (-)	N (-)	E (+)	$\frac{LFPAM}{LFm}$ (+)	r	R ²
W _{Pi}	+ .2521 (.3887)	+ .3788 (.1592)	-1.7097 (.8554)	-.0043 (.1769)	-2.4672 (.9888)		.12
W _{IC}	-.6715 (1.4425)	+ .6774 (.3105)	-3.2041 (1.5693) ^e	-.0054 (.2429)	-3.7756 (1.6050)		.20
W _{TD}	-.0486 (.0809)	+ .6139 (.2660)	-1.9113 (.9822)	-.0071 (.2878)	-2.8094 (1.1743)		.12
Log W _{Pi}	+44.9438 (.2848)	+ .4410 (.1846)	-1.7697 (.8870)	-.0048 (.2002)	-2.5534 (1.0225)		.11
Log W _{IC}	-130.5162 (1.3203)	+ .5692 (.2588)	-3.2405 (1.5299) ^e	-.0046 (.2068)	-3.7352 (1.5697)		.19
Log W _{TD}	-15.1333 (.1099)	+ .6088 (.2640)	-1.9161 (.9843)	-.0074 (.2975)	-2.8144 (1.1793)		.11
correct signs (/6)	2	6	6	0	0		
t (/6)	2	0	2	0	4		

A lack of the expected relationships points to the possibility that there may be omitted variables such as characteristics other than age (e.g., personal appearance, etc.) which are considered desirable by hiring officers during the oral interviews. However the present econometric result is supported by Gaston who finds that labour market conditions have little effect on the proportion of new recruits of prime age (26-35 years).¹

From interviews, MacKay et al. found that employers preferred workers between 25 and 40 years of age (and married).² If nothing else there seems at least to be some consensus on the range considered "prime age" for letter carrier-type workers.

Finally, in his study based on interviews of company executives Lester discovered that low wage plants had higher proportions of older workers.³

¹ He does find a difference in the present age structure: the stores in the market with the higher unemployment rate have higher proportion of prime age employees (op. cit., p.275, 6).

² op. cit., p. 361.

³ Richard A. Lester, Hiring Practices..., op. cit., p. 49.

An analysis of the extreme quintiles of the letter carrier $\frac{\text{NHPA}}{\text{NH}}$ distribution reveals that there is essentially no difference in the mean wage rank between the two.¹

Summary of Results on Recruitment Experience

Five recruitment experience variables have been identified, three quantitative and two qualitative. In general there is little support for the hypotheses that wage rank, labour market conditions or Y-specific factors were responsible for differences in letter carrier recruitment experience among the sample cities. The notable exception is the wage rank effect on the success rate.

Retention

The Quit Rate (Table IV-10)

In neoclassical theory worker decision on job choice is viewed in terms

¹ The mean wage rank is 112 for the highest $\frac{\text{NHPA}}{\text{NH}}$ quintile and 110 for the lowest quintile.

d. f. = 20

Table IV-10 The Quit Rate (q)

	-W (-)	-U (-)	-N (+)	+E (+)	$\frac{NH}{LC}$ (+)	$\frac{LC\ 20-24}{LC}$ (+)	$\frac{LCm}{LC}$ (-)	r	R ²
W _{Pi}	-.0730 (1.1557) ^f	-.3298 (1.0142)	-.1153 (.4226)	+.0011 (.5866)	+.2882 (2.2666) ^c	+.0364 (.4933)	+.0479 (.6545)	$(\frac{LCm}{LC} : \frac{LC\ 20-24}{LC}) = -.47, (N : \frac{NH}{LC}) = .67,$ $(U : \frac{NH}{LC}) = .56$.54
W _{TD}	-.0966 (2.2302) ^c	-.3423 (1.2584) ^f	-.0085 (.0331)	+.0004 (.2352)	+.2471 (2.2456) ^c	+.0163 (.2529)	+.0140 (.2029)	do	.62
W _{IC}	-.0672 (1.3723) ^e	-.4009 (1.3803) ^e	-.1897 (.7423)	+.0017 (.9516)	+.3092 (2.7817) ^b	-.0016 (.0225)	+.0725 (.9656)	do, $(W : \frac{NH}{LC}) = -.56, (W : \frac{LCm}{LC}) = .49$.55
Log W _{Pi}	-19.1839 (1.2185) ^f	-.3166 (.9723)	-.1103 (.4060)	+.0011 (.5701)	+.2840 (2.2444) ^c	+.0387 (.5243)	+.0492 (.6734)	do	.54
Log W _{TD}	-25.2342 (2.3912) ^c	-.3428 (1.2841)	-.0135 (.0538)	+.0003 (.1836)	+.2457 (2.2937) ^c	+.0180 (.2833)	+.0165 (.2427)	do	.55
Log W _{IC}	-15.4595 (1.4610) ^e	-.0439 (1.4081) ^e	-.1986 (.7831)	+.0018 (1.0032)	+.3033 (2.7296) ^b	-.0023 (.0331)	+.0759 (1.0117)	do, $(W : \frac{NH}{LC}) = -.60, (W : \frac{LCm}{LC}) = .50$.52
correct signs (/6)	6	6	0	6	6	4	0		
t (/6)	6	3	0	0	6	0	0		

of utility maximization. Conceptually, relative net advantages are evaluated but it is common research practice that the wage alone is taken as its reasonable proxy. This implies that workers and markets are not in equilibrium, that net nonwage advantages are not offsetting. Ceteris paribus, movement from lower to higher wage employments are therefore rational.¹ An even stronger hypothesis (requiring a weaker assumption) is that a change in wage differential reallocates labour.²

As can be seen from table IV-10 the wage rank appears to be a statistically significant determinant of the intercity variation letter carrier quit rates. The magnitude of the relationship is generally modest however. With an elasticity of the quit rate with respect to the wage rank in the order of 2, a 1% difference in wage rank results in a 2% difference in the quit rate.

Since relative wage do appear to have some effect on quit rates, it is then reasonable to calculate the probable results of the Treasury Board local wage alignment policy on the intercity variation in letter carrier quit rates.

¹ This assumes that job vacancies exist in higher paying employments since undercutting incumbents is probably rare.

² The weaker assumption is that any offsetting change in nonwage relative advantage be less than the change in wage differential.

The expected changes in city quit rates caused by local wage alignment and the summary statistics are computed in the same manner as in the case of the success rates, above. Thus the change in quit rate in city_i is:

$$\Delta q_i = (q_i - q_i^1) = B_{61} (W_i - 1) \dots \dots (10)$$

and $q_i^1 \equiv q_i - q_i$, where, q_i = the actual quit rate in city_i with the national rate,

q_i^1 = the predicted quit rate in city_i with locally aligned rates,

B_{61} = the computed regression coefficient (-.07 with W_{pi} ; -.10 with WTD , -.07 with WIC),

W_i = the letter carrier wage rank;

$\frac{WIC}{W_{pi}}$, $\frac{WIC}{WTD}$, $\frac{WIC}{WIC}$.

Table IV-11 was constructed using this formula.

TABLE IV-11
 EXPECTED EFFECTS OF
 WAGE ALIGNMENT ON
 LETTER CARRIER QUIT RATES

City	Wage Rank			Quit Rates						
	$\frac{W_{LC}}{W_{Pi}}$	$\frac{W_{LC}}{W_{TD}}$	$\frac{W_{LC}}{W_{IC}}$	actual	change			after alignment		
					$B_{W_{Pi}} = -.07$	$B_{W_{TD}} = -.10$	$B_{W_{IC}} = -.07$	W_{Pi}	W_{TD}	W_{IC}
SJN	125	112	98	2.0	+11.8	+1.2	-0.1	3.8	3.2	1.9
HFX	122	110	103	2.1	+ 1.5	+1.0	+0.2	3.6	3.1	1.9
SDY	117	108	106	0.0	+ 1.2	+0.8	+0.4	1.2	0.8	0.4
SJS	133	126	113	0.0	+ 2.3	+2.6	+0.9	2.3	2.6	0.9
CTM	127	127	110	0.0	+ 1.9	+2.7	+0.7	1.9	2.7	0.7
QCT	104	102	105	2.0	+ 0.3	+0.2	+0.4	2.3	2.2	2.4
HLL	105	97	95	5.1	+ 0.4	-0.3	-0.4	5.5	4.8	4.7
MTL	105	101	96	0.6	+ 0.4	+0.1	-0.3	1.0	0.7	0.3
SBK	116	105	114	1.6	+ 1.1	+0.5	+1.0	2.7	2.1	2.6
GBY	122	107	122	4.5	+ 1.5	+0.7	+1.5	6.0	5.2	6.0
SRL	110	105	86	4.3	+ 7.7	+0.5	-1.0	5.0	4.8	3.3
CHI	107	102	83	3.2	+ 0.5	+0.2	-1.2	3.7	3.4	2.0
DML	123	106	118	0.0	+ 1.6	+0.6	+1.3	1.6	0.6	1.3
SIS	102	100	61	11.8	+ 0.1	0.0	-2.7	11.9	11.8	9.1
TOR	95	87	90	6.7	- 0.4	-1.3	-0.7	6.3	5.4	6.0
STT	105	95	84	0.0	+ 0.4	-0.5	-1.1	0.4	0.0	0.0 ^b
HMT	91	87	84	1.6	- 0.6	-1.3	-1.1	1.0	0.3	0.5
OTT	100	91	95	3.4	0.0	-0.9	-0.4	3.4	2.5	3.0
SAR	98	86	76	6.0	- 0.1	-1.4	-1.7	5.9	4.6	4.3
SSM	89	88	78	7.0	- 0.8	-1.2	-1.5	6.2	5.8	5.5
CWL	102	92	104	3.6	+ 0.1	-0.8	+0.3	3.7	2.8	3.9
OSH	88	90	79	3.6	- 0.8	-1.0	-1.5	2.8	2.6	2.1
BTD	103	90	79	2.0	+ 0.2	-1.0	-1.5	2.2	1.0	0.5
SBY	101	89	78	4.8	+ 0.1	-1.1	-1.5	4.9	3.7	3.3
VAN	92	84	80	10.2	- 0.6	-1.6	-1.4	9.6	8.6	9.8
SKT	105	106	108	0.0	+ 0.4	+0.6	+0.6	0.4	0.6	0.6
WPG	107	99	103	1.1	+ 0.5	-0.1	+0.2	1.6	1.0	1.3
CGY	98	94	90	14.0	- 0.1	-0.6	-0.7	13.9	13.4	13.3
VIC	94	86	94	3.8	- 0.4	-1.4	-0.4	3.4	2.4	3.4
		\bar{q}	3.6					4.1	3.5	3.3
		σq	3.5					3.3	3.2	3.2
		C.V. q	97.2					80.5%	91.5%	97.0%

Source: Tables III-7, III-12, IV-10.

a. (-0.5)
 b. (-1.1)

Carrying on with the general approach in the present study of providing broadly based results, all three outside comparable wage series (Wpi, WTD, WIC) and their respective regression coefficients are used in computing the quit rates reported in table IV-11.

It will be recalled that the rationale for the government's new geographic wage policy is to reduce the intercity dispersion in labour market experience. On the basis of the estimated coefficients, what results can be expected? At the bottom of table IV-11 the mean sample quit rates, actual and predicted, as well as the two dispersion measures, the standard deviation and the coefficient of variation, are provided.

The mean quit rate is 3.6% with national wages and generally remains unchanged over the three wage series after alignment. The precise mean quit rates are 4.1% with the Wpi series, 3.5% with WTD and 3.3% with the WIC series, for an average after alignment of 3.6%, exactly what it was before the new wage structure.

The standard deviation is 3.5 with the national wage, while after alignment it is 3.3 with Wpi, 3.2 with WTD and 3.2 with WIC, representing (improvements) declines of 6%, and 9% for an average decline of 8%. This leaves some 92% of the observed intercity quit rate dispersion remaining after local wage alignment. This is a relatively minor change, and on the basis of the earlier discussion on the success rate results, does not provide a meaningful basis for recommending the introduction of geographic wage differentials.

Again, as with the success rate treatment, and in order to account for the variations in the size of letter carrier establishment in each city, the same summary computations were made for quit rates weighted by the number of letter carriers per city. The results are reported in table IV-12.

Table IV-12
 SUMMARY OF EFFECTS OF LOCALLY
 ALIGNED WAGES ON WEIGHTED LETTER CARRIER QUIT
 RATES

W_n		W_{1-n}				
			Wpi	WTD	WIC	Means
\bar{q}_w	4.6	\bar{q}_{1w}^1	4.6	4.0	4.2	4.3
σ_w	4.2	σ_{1w}^1	3.8	3.7	4.0	3.8
C.V.w	91%	C.V. $_{1w}^1$	83%	93%	95%	90%

Symbols:

- W_n = actual wage structure, national wage.
 - W_{1-n} = proposed wage structure, locally aligned wages.
 - \bar{q}_w = mean quit rate with W_n
 - \bar{q}_{1w}^1 = mean quit rate with W_{1-n} .
 - σ_w = standard deviation, with W_n .
 - σ_{1w}^1 = standard deviation, with W_{1-n} .
 - C.V.w = coefficient of variation with W_n .
 - C.V. $_{1w}^1$ = coefficient of variation with W_{1-n} .
- subscript 'w' indicates values weighted by number of carriers in respective cities.
- Wpi, WTD and WIC indicate computations of \bar{q} , σ and C.V. made using these respective wage series.

Sources: Table IV-11 and Appendix V.

The sample mean weighted quit rate after alignment is the same as before alignment with the Wpi (4.6%), and falls slightly (improves) with WTD (4.0%) and also with WIC (4.2%). The mean of the three "after" quit rates is 4.3%, a drop of some 7%. However, the emphasis in the present study is on the intercity quit rate dispersion, and, as can be seen from table IV-12, the weighted standard deviation (σ_w) declines from 4.2% with the national wage to 3.8% with the Wpi series, 3.7% with WTD and 4.0% with WIC. The mean standard deviation over the three "after" series is 3.8 or a reduction in the dispersion of just under 10% (9.5%).¹ This leaves 90% of the existing observed variation and also means that factors other than wages are responsible for most of the dispersion (see analysis of other equation variables below). Under such circumstances the existing national wage does almost as well in terms of the quit rate dispersion as city level wage alignment.

¹ The coefficient of variation remains essentially unchanged, with a mean after alignment of 90% compared to 91% with the existing national wage.

Returning to the other variables in the quit rate equation the unemployment rate emerges consistently with the expected negative sign and is statistically significant with three out of six wage forms. This tends to offer some weak support to the hypothesis that the higher the unemployment rate the greater the risk involved in quitting and therefore the lower the letter carrier quit rate. The average coefficient is approximately $-.35$, meaning that a 1% increase in the unemployment rate is associated with a 1/3rd of 1% decline in the quit rate. Though this is a relatively substantial effect compared to that of the wage rank, it would still take an increase in the Calgary unemployment rate, 7.5%, to some 35% to bring its letter carrier quit rate to the national (sample) letter carrier mean! Thus even though the unemployment rate seems to have some influence on quit rates, it is not a useful policy variable. The government could not reasonably use its economic levers to raise unemployment rates in cities where it desires to reduce the quit rates of its own departmental public servants.

The next two labour market conditions variables, N and E, are not statistically significant. The first, employment growth, has an unexpected negative sign in all six equations while the E has the expected positive sign.

The new hire rate $\frac{NH}{LC}$ has the correct sign and is significant in all wage forms. This supports the hypothesis that quits are more frequent among new hires and that differences in new hire rates can account for some of the observed intercity differences in the quit rate. With a regression coefficient of approximately + .30, a 1% increase in the new hire rate can be expected to result in a 1/3rd of 1% increase in the quit rate. Before continuing with the remaining independent variables it will be useful to mention the issue of direction of causality between new hires and quits.

In the present model the new hire rate is an explanatory variable presumed to affect the quit rate. It is plausible however that quits, which create job openings, affect new hiring (replacement) activity. Ceteris paribus, the greater the quit rate the greater the new hire rate. It is thus reasonable to treat the new hire rate as an endogenous variable. This is done in Appendix VI below where a slightly revised version of the present model is estimated. The empirical results are not different from those presented here.

Additional evidence that a disproportionately high number of quits are from among new hires can be derived from table IV-13. Almost half of all quits (48% of the Council of Postal Unions, C.P.U.) occur among those

with twelve months or less of service and the rate declines rapidly after two years.¹ This is remarkably similar to Reynolds' findings for manual factory workers in New Haven following World War II.

¹ The letter carriers constituted about one-half of the total Council of Postal Unions which grouped both outside and inside postal operational employees.

Table IV-13
 QUILS BY LENGTH OF SERVICE

<u>years of service</u>	<u>C.P.U.^a</u>		<u>Reynolds^b</u>	
	<u>number of quits</u>	<u>proportion of quits</u>	<u>years of service</u>	<u>proportion of quits</u>
< 1	305	48%	< 1	44%
1-2	142	22	1-3	27
3-5	91	14	3-5	9
6-9	58	9	5-10	14
10-14	31	5	10-20	5
15-19	7	1	20 +	1
20-24	1	-		
25-29	1	-		
30-34	0	-		
35 +	0	-		
	<u>636</u>			

- Sources: a. Interview, Harry Powell, Post Office, Ottawa, March 26, 1972, The Council of Postal Unions covered inside postal workers as well as letter carriers.
- b. Lloyd G. Reynolds, The Structure of Labor Markets, op. cit., p. 22.

This confirms the regression finding that the $\frac{NH}{LC}$ is a meaningful explanatory variable for the letter carrier quit rate.

While the above table relates to national proportions of total quits, additional evidence, albeit scanty, was collected on quits among newly hired letter carriers by city. New hired quits, (those with less than six months' service) $q < 6$, should be more sensitive measure of wage adequacy than overall quits because the former have (uniformly) less ties to an employer than those with longer years of service.

Table IV-14 shows the numbers of such letter carrier quits, the proportion of quits among these new hires, and the city letter carrier wage rank for the seven cities for which $q < 6$ was available.¹

¹ The quits relate to those with less than six months' service while the NH have less than one year's service. Whatever error this distinction introduces is likely similar across observations.

Table IV-14
NEWLY HIRED LETTER CARRIER QUILTS, 1971

City	$\frac{WLC^a}{Wpi}$	q < 6	NH	q < 6
Vancouver	92	20	144	14%
Victoria	94	2	9	22%
Toronto	95	13	116	11%
Calgary	98	19	54	35%
Ottawa	100	2	44	5%
Sudbury	101	2	5	40%
Halifax	122	1	2	50%

Source: Post Office questionnaire, July 30, 1973. (see Appendix II).
a. The largest numbers indicate the highest letter carrier rank in their local labour market distributions.

Of the seven cities four can be termed "high wage" ($\frac{WLC}{Wpi} < 100$).

Except for Victoria, the numbers of quits among the newly hired ($q < 6$) in this group are clearly far greater than in the lower wage cities. Though this may be taken as a proof that wage rank and the incidence of newly hired quits are indeed inversely related, the more likely explanation is to be found elsewhere. Table IV-14 shows that the high wage cities hired considerably greater numbers of new letter carriers (NH) and, except for Victoria, all are much larger cities than the lower wage cities. As can be seen from the fifth column, when the quits are adjusted by the numbers of new hires, the pattern appearing in column three ($q < 6$) disappears. On the basis of Table IV-14 there is no evidence to support the hypothesis that quit rates among newly hired are inversely related to letter carrier wage ranks.¹

It is also surprising that the proportion of young letter carriers or those married do not seem to be determinants of the letter carrier quit rates.

The general conclusions of this quit rate analysis is that wage rank is a determinant of letter carrier quit rate. However, on the basis of the structural parameter generated with the present data, the expected effect of local wage alignment on the intercity quit rate dispersion is relatively small for both unweighted and weighted data.

Now that the letter carrier regression data have been analyzed, attention is turned to the results of other studies dealing with quit rate determinants.

¹ McKay et al., *op. cit.*, (pp. 224-228), find that quits among newly hired are particularly sensitive to differences in labour market conditions.

Stoikov and Raimon test an equation similar to the one regressed here but covering 52 U.S. industries, cross sectionally, for both 1963 and 1966.¹ Using linear least squares technique they find the wage level, standardized for skill mix, significant, with a regression coefficient of about $-.30$.² A change-in-wage variable (over three years) is not significant in 1963 but is significant in 1966.³ Their other explanatory variables are not relevant here: concentration ratio, unionization, percent negro and female. The coefficient of the layoff rate, an indicator of labour market conditions, is $+.26$ and significant. They pose a strange hypothesis: that the higher the layoff rate in an industry, the greater the fear of impending involuntary separation and the greater the quit rate. In the present study, the more reasonable, inverse relationship between labour market conditions and quits is posited.⁴ They discover that employees with brief job tenure do tend to quit more readily (the coefficient is $+.23$).

Their wage finding supports the letter carrier results, the labour market conditions effect is the opposite of what was discovered in the present study, and the quits among newly hired result is similar to that found in the letter carrier case. It is to be noted that the wage coefficient was about $-.30$, roughly four times the magnitude of $-.08$ found with our data.⁵

¹ V Stoikov and R.L. Raimon, op. cit.

² Their level of statistical significance is a relatively low 20%.

³ The use of a recent change in wage for a cross sectional study is logically related to changes in quit rate differences rather than the quit rate differences themselves. From this point of view their use of the dynamic form is unjustified.

⁴ This is the more usual interpretation and is shared in the two Burton and Parker studies summarized two pages hence.

⁵ Their wage variable is in dollars and cents, ours is a ratio ranking.

Age, an important determinant of quits, at least theoretically, is absent. There is also no explicit unemployment rate, this factor being only partially covered by the layoff rate and partially by the comparison of regression results in a high unemployment year (1963) with those in a low unemployment year (1966). On this latter basis, unemployment rates and quit rates are, as expected, inversely related. As was already pointed out, Stoikov and Raimon admit that establishments, not industries are the appropriate unit for an analysis of this type but state that they only had access to industry data.

John F. Burton and John E. Parker did two studies of quit rate determinants similar in many respects to the present one. In the first,¹ covering U.S. manufacturing industries for the periods 1930-1966, 1943-1966, the linear least squares multiple stepwise regression equation takes the general form:

$$q = (I, O, P, X)$$

where q is the quit rate, I are incentive to quit variables, O are opportunity to quit variables, P are public policy variables and X are others: The first are wage variables, the second, labour market conditions. As an explanatory

¹ op. cit.

variable for quit rate differences, the interindustry wage dispersion within manufacturing is consistently either not statistically significant or is significant but carrying the wrong sign. The manufacturing/all industry wage differentials are mostly not statistically significant. The natural log of the national unemployment rate is consistently significant in the correct direction as is the "accession rate". This latter is really the rate of employment growth, the analogue of the variable N, used in the letter carrier analysis. The other independent variables, degree of unionization etc. are not relevant for present purposes.

This study suffers from the same basic weaknesses as the Stoikov-Raimon study. Their unit of analysis is the industry rather than the more proper, labour market,¹ and the age-quit rate examination is absent. Their search for an explanation of the differences in interindustry quit rates through the use of variables similar to those in the present study (with the added advantage of time series data) is unsuccessful.

"We have thus found an apparent decline in voluntary mobility in the U.S. manufacturing sector over the past several decades, but we have not found the reason".²

Using the same basic equation and technique Burton and Parker did a second examination of quit rate determinants, cross sectionally, for 49 U.S.

¹ Generally these two units of analysis coincide only when the type of worker discussed possesses a highly industry-specific skill. For most unskilled and semiskilled workers the local labour market rather than the industry defines the scope of potential alternative employments.

² Ibid., p. 273.

manufacturing industries for 1960.¹ The hypothesis they test is that workers gravitate towards higher wage employers. Their explanatory factors are the wage level, firm size, unionization, concentration ratio, personal and geographic characteristics, the accession rate, layoff rate, unemployment, earnings and change in earnings. Using a seven equation, stepwise regression method they find the wage level coefficient significant and of the expected sign in all equations at about $-.80$, approximately ten times the letter carrier coefficient. Their units are dollars while in our model it is the letter carrier/outside wage ratio.³ The change in earnings, while having a (expected) negative value, is not significant (at $.05$).⁴

Their change in employment and accession rates cover only two years. A five year period was used in our data (N) because a relatively long span is necessary to properly establish the trend of growth in labour demand. Total employment (production workers) a variable similar to the E in the letter carrier equations, proves likewise to be statistically not significant. The unemployment rate is not significantly related to the quit rate.⁵

¹ op. cit.

² In the five equations containing the wage level, the parameter estimate ranges between -1.12 and $-.30$.

³ They do not give elasticities.

⁴ On the use of this dynamic variable in a cross sectional analysis, see footnote 3, p. 300, above.

⁵ They use the industry unemployment rate of experienced workers only.

Their results may be affected by data problems. E applies to all workers, their wage only to production employees while the quit rate covers all employees in manufacturing.

Terence Wales also studied interindustry quit rates in U.S. manufacturing for 1968.¹ He rejects a solely cross sectional or time series approach claiming the interrelationships among the variables are dynamic² and that only a combined cross sectional and time series model is fully adequate. There is a considerable and useful discussion on the workers' decision to quit and the determination of the "quit threshold". Both the model and the equation form are difficult to interpret, to the extent that is not at all clear which explanatory variables if any, are statistically significant. The logarithmic regression analysis of quits against some ten independent variables produces a wage level elasticity of approximately -2.0, an unemployment rate elasticity of approximately -1.6 and an age elasticity (proportion of 18-25 years) of .03. Though, from theory, he hypothesizes that the recent change in wages and not wage level is the theoretically correct incentive to quit, his regression results favour the latter. The wage level elasticity is very close to ours (both in the order of -2.0) and the same is true for the unemployment rate (approximately -.9 for the letter carriers and -1.6 for Wales). Wales discards the average worker age by industry as a useful variable because the variance of the readings is too low (overbunching). This is interesting because we

¹ Terence Wales, op. cit.

² The dynamic aspects of Wales' model are accounted for mainly by the use of lagged variables. On this matter, see our note on p. 300, above.

encountered the same problem and opted for a substitute variable which is very similar to Wales': the proportion of young.¹ While Wales claims that the proportion of young does affect quits in his model, it will be recalled that this variable has mixed signs and no statistically significant coefficients in our six equations. Again, as during the present research, he attempted to use the unemployment rate lagged by one period but also abandoned this explanatory variable because of multicollinearity with unemployment of the period following. Wales reiterates his awareness of the compromise on his unit of analysis: the industry, rather than the firm against its local labour market.

The final study on an industry basis to be covered here is that of Mark Lutz.² Using the familiar linear least squares multiple regression method, he attempts to explain the relationship between the quit rate and the wage structure for 41 U.S. manufacturing industries from 1958-1969. The regression coefficients for the variables explaining average annual quit rates are:

Earnings (standardized for skill mix) = -.03

The layoff rate = +.18

Age (proportion of young, 16-24, in 1960) = +.05

Location of industry (proportion of employment in large cities) = +.43

Firm size (proportion with 250 employees) = -.006

All are found to be significant (at $t = .5\%$ and 5%) except location. Lutz

¹ The Letter Carriers Union of Canada supplied average age of letter carriers by city but it is not used here because the range for the 29 cities is only 34 to 39 years. Wales uses the 18-24 age class to identify the young while we used a similar, 20-24.

² Mark Lutz, op. cit.

has no control on unemployment, though the layoff rate is a reasonable substitute in an industry study. His finding for the wage is of the same order of magnitude as the letter carrier results and his layoff rate result ($B > 0$) supports an hypothesis opposite to that suggested here between unemployment and letter carrier quits. While Lutz' proportion of young is significant (and of relatively minor magnitude with a coefficient close to that of Wales) the variable was not significant with letter carrier data.¹

The city size variable, (termed "location") does not explain quit rate differences. Its lack of statistical significance but correct sign are both similar to the letter carrier (E) findings.

T.P. Hill made an extensive study of quit rate determinants in the U.K. coal mining industry in 1954.² For the first time firm level data (actually collieries) rather than industry data constitute the basis of analysis. The typical establishment quit rate is in the order of 20% compared to a mean of only 3.6% for the present letter carrier sample. An initial methodological compromise is made when overall separation rates rather than pure quit rates are used as the dependent variable.³

¹ Lutz postulates that job searching is cheaper for the younger, unmarried and tenant workers because of lower job search and transfer costs (op. cit., p. 65).

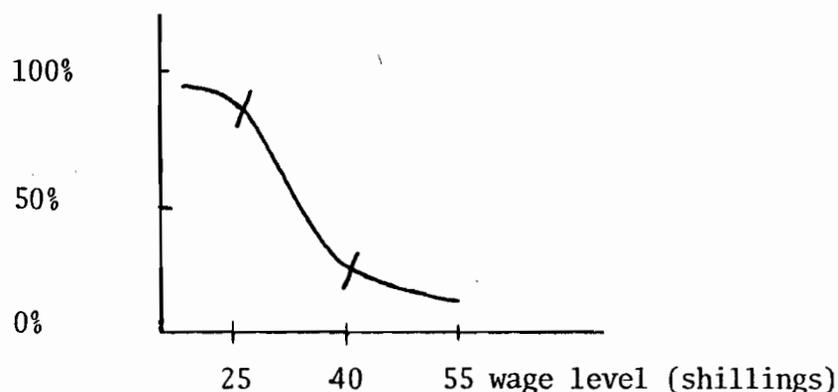
² T.P. Hill, op. cit.

³ Hill is satisfied that the proportion of quits in separations is both high (80%) and constant across establishments.

He begins with 799 collieries which constitute a sigmoid wage-quit curve as in figure III-2.¹ By removing the extremes he is left with a linear relationship.

Figure III-2
HILL'S RELATIONSHIP BETWEEN
QUITS AND WAGE LEVELS

quit rate



Had the letter carrier sample been sufficiently large to permit removal of the extreme observations, our regression results would likely have been improved. Though Hill uses some multiple regressions, his main technique is simple correlation. His control on ceteris paribus is therefore unsystematic.²

¹ Hill discusses functional form, considering logarithmic, negative hyperbolic and exponential relationships. This hypothetical curve has a partially empirical basis (Ibid., p. 198-200).

² Ibid., p. 232.

There is a considerable discussion on the theoretical relationship between quits and changes in wages. The change in wage does not explain quits well but the $r(q: \frac{NH}{N})$ is high.¹ He concludes that the proportion of intercolliery quit differences associated with wage differences is "alarmingly small".² There are multicollinearity problems which the author leaves unresolved and there is insufficient reporting of t-tests. On the basis of his analysis Hill is satisfied that expected quit rate differences do show up at the extremes of the wage distribution though a random variation is found within these poles.

MacKay et al. carried out a substantial investigation of many aspects of local labour markets, studying the personnel records of thousands of U.K. engineering industry (metal fabricating) employees in five cities for the period 1959-1966.³ Their basic concern with the determinants of quit experience in the establishments covered is expressed at the outset thusly:

"We do not know whether quits are a function of present unemployment, past unemployment or expected unemployment in some future period; whether they are affected by the size of plant or by the demand for labour; whether they are a response to wage differentials

¹ Ibid., pp. 218-227. $\frac{NH}{N}$ is the equivalent of $\frac{NH}{LC}$, the letter carrier new hire rate. In our multiple regressions the $\frac{NH}{LC}$ also emerges as a very important factor explaining quit rates.

² Ibid., p. 228.

³ D.I. MacKay et al., op. cit.

or to changes in wage differentials and so forth."¹

Their model is both cross sectional and time series with some multiple regression analysis, but is based mainly on simple correlation. The reason for their reluctance to use the more complete technique, which would have provided the essential ceteris paribus conditions, is their fear of insufficient degrees of freedom.²

Their methodology involves a breakdown of the analysis into three classes of quit correlatives: intracity (i.e., labour market conditions constant), intercity (different labour market conditions), and interpersonal characteristics of workers.

Within local labour markets, (i.e., with labour market conditions held constant) simple correlations between quit rates and wage (earnings) levels produce expected (negative) signs, but few are statistically significant.³ A similar exercise using recent change in wages (2½ quarters' lag) as the independent variable is even less successful. They conclude with the strange statement that the wage/quit rate relationship is weak (based on low t-values) but not "insignificant".⁴ Three sources of poor results are proposed: the

¹ Ibid., p. 27.

² With some 15 independent variables in all and 32 quarters of data, the resultant 16 degrees of freedom was judged inadequate to produce reliable results. In some of our equations there were fewer degrees of freedom.

³ For similar results see D.I. MacKay, "Wages and Labour Turnover", in Derek Robinson, Local Labour Markets and Wage Structure, Gower Press, London, 1970, p. 94.

⁴ D.I. MacKay et al., op. cit., p. 153.

sample is imperfect, the choice of time periods (quarters) is too short and affected by random factors, and the omission of nonpecuniary elements of net advantages. The authors are content to have found consistently "correct" signs even though the overwhelming proportion of observations do not pass the t-test at 5%. They then turn to a linear least squares multiple regression analysis, controlling the wage rank for plant size and the new hire rate. The wage level has the correct (negative) sign in 40 of 47 observations but is significant (at 5%) in only 11 of 47 observations. Plant size is found not to be systematically related to the quit rate, but the new hire rate has the correct (positive) sign in 47 of 48 observations and is significant in 28 of 48.

In the second phase of their study, the intermarket analysis, the effect of differences in labour market conditions are expected to be captured. The specification of their multiple regression equation is made on a trial and error basis, the final selection of the independent variables is based on whether these were significant at 5%. Their estimates of the effects of the unemployment rate on the quit rate are close to those with letter carrier data. The results for job vacancies are poor, many of the coefficients have wrong signs and are not statistically significant.

In contrast to Hill's conclusion on the functional form between quit rates and wage levels, and quit rates and unemployment rates (a sigmoid), MacKay et al. feel a log-log relationship exists among these variables.

However, they share Hill's view that over the relevant range the relationship is linear.

In the third and final phase of their study MacKay et al. examine the effects of personal characteristics (age, occupation, length of service) on quit rates. They find the simple correlation between the quit rate and age, and quit rate and length of service each significant. A complicated effort to discover the extent of the independent contribution of each of these variables is largely unsuccessful. Had they used multiple regression analysis, the effort to ascribe individual explanatory power might have been more productive.

In all, MacKay et al.'s results do not offer substantial support for the hypothesis that wage levels, labour market conditions or the personal characteristics specified provide an explanation for variations in quit rates.

Richard Block studied the effect of union negotiated job security provisions on the quit rate in U.S. manufacturing industries for 1971-72.¹ He identifies six measures of job security and constructs a linear least squares multiple regression model with the corresponding six equations (one for each dependent variable) in the following form.

¹ Richard Block, op. cit.

quit rate = f (job security, hourly earnings, % urban, schooling (years), number of hours worked, % nonwhite, % female, age	} the test variable (six measures) } } } <u>ceteris</u> } <u>paribus</u> } } } } } }
--	--

Block hypothesizes that workers seek to maximize the certainty rather than the level of income. His regression results are poor: none of the coefficients is significant (at 5%) and there is multicollinearity between the wage (hourly earnings) and the job security measures (r ranges from + .49 to +.78).¹ In the end, and without explanation, Block concludes that schooling determines quits (b ≈ -.66): "For whatever reason people with more schooling have lower quit rates."² The policy conclusion from this finding for letter carriers is that the schooling requirement in recruiting should be raised in cities where letter carrier quit rates are judged excessive. But it was shown in our discussion on labour quality that years of schooling is not an important factor in letter carrier recruitment standards or expected performance. The most plausible explanation of the Block finding is that schooling was a proxy for occupation and he

¹ His study also involves relatively low degrees of freedom: 14, 17.

² Ibid., p. 273.

in fact discovered the relationship between voluntary separations and occupations, not years of schooling per se.

The last, brief review covers Lloyd Reynolds' 1946-48 New Haven study.¹ Though this pioneering work provided important insights for future labour market researchers to follow, the methodology was relatively primitive. Simple rank correlations between wages and quit rates showed r-values from .18 to .27 (for 1942, '45, '48) "...indicating only a slight relationship between the two variables."² He then speculates on the effects on quit rates of recent changes in wages, quality of the voluntary leaver, size of plant and morale and efficiency of employees.³

Summary of Results on Retention Experience

The analysis of the letter carrier data on quit rates and both linear and log forms of wage rank revealed a consistent inverse and statistically significant relationship. However, the regression coefficients are so small and most wage ranks close to 100 that alteration of postal quit experience through the change in wage rank is impractical.

Use of the structural coefficient with unweighted data gives unchanged results, while there is only a relatively minor improvement in the intercity letter carrier quit rate dispersion with weighted data.

On the other hand the U and $\frac{NH}{LC}$ variables were not only of the expected signs and significant, but are also estimated to have a more

¹ Lloyd Reynolds, The Structure of Labour Markets, Harper, N.Y., 1951.

² Ibid., p. 217.

³ Ibid., p. 219. His table relating quits to length of service was reported above, p. 299.

substantial impact on quit rates. This was mitigated however because U and $\frac{NH}{LC}$ cannot be used as policy measures to alter letter carrier quit rates. Analysis of fragmentary data between newly hired quits and wage rank is inconclusive.

An extensive review of the recent literature on the wage-quit relationship revealed mixed results. There were recurring problems in model design (omitted variables; industry, rather than local labour market as unit of analysis; etc.), discrepancies between theoretical concepts and operational data, sample composition and size, and multicollinearity.¹ Though there was considerable prior belief that wage ranks, labour market conditions and Y-specific factors do affect quit rates, these hypotheses were seldom strongly upheld by the data analysis. The stress by some writers of the need to include nonwage aspects of the compensation package in job choice studies may be a case of "misplaced correctness" since there is increasing evidence that such advantages are positively correlated with wages.²

Aside from explicit length of service, these studies did not suggest any important omitted variables in the quit model developed here. Nonregression analysis of national letter carrier quit data did reveal a substantial relationship between the propensity to quit and length of service and this

¹ None of the studies was concerned with the possible problems of the implicit assumptions regarding the error term in least squares regression (e.g., heteroscedasticity).

² See for example, R.G. Rice, "Skill, Earnings, and Growth of Wage Supplements" A.E.R. Proceedings, May 1966, pp. 583-93. They are also causally related because increases in wage directly determine the levels of some monetary fringe benefits (e.g., pensions, life insurance). However there may be some offsetting effect in a collective bargaining context as wage increases are traded off against improvements in fringe benefits.

latter factor is probably the most important one affecting voluntary separations.¹

At this point a final question must be posed on the rationale for the revised geographic wage policy, given the quit rate information contained in table III-7. Were the 1972-1973 letter carrier quit rates of such an extraordinarily large magnitude as to constitute a "problem" to be "solved" by local wage alignment? In contrast to the other labour market experience variables of the present model, it was possible to locate some quit rate data with which the 1972-73 letter carrier quit rates can be compared.

To begin with, the important quit rate statistics from the letter carrier data are the sample mean, 3.6% and the highest city rates: Calgary, 14%; Sept Iles, 11.8% and Vancouver, 10.2%. Can these be interpreted as being clearly "excessive"? The sample mean of 3.6% is considerably lower than those for comparable groups in 1966-67

¹ Our $\frac{NH}{LC}$ probably does not adequately capture the length of service composition of a group of letter carriers.

as may be seen from section B of table IV-15 and is less than half the mean rate for the postal group over the decade 1956-57 to 1965-66 (5%), section C. Though the mean rates do not reveal distributions, it is hardly likely that the present dispersion of letter carrier quit rates have not declined in the face of this substantial reduction in the average national letter carrier quit rate.¹

Fragmentary data on city-level postal quit rates are given in section C of table IV-15.² In the eight cases shown, the 1965-66 quit rates have either declined or remained unchanged. Especially significant are the big reductions in Oshawa (21% to 4%), Sault Ste. Marie (11% to 7%), Sarnia (10% to 6%) and Ottawa (7% to 3%).

Though an employer can always strive to reduce quit rates, especially in the worst cities, this analysis of "comparable" quit rates leads to the conclusion that, in general and even on the high side, the values encountered among the 1972-73 letter carrier quit rates do not constitute a serious problem.³

¹ We have not been able to obtain comparable dispersion values.

² Montpetit refers to "total staff". This includes employees other than letter carriers. Section B of table IV-15 shows very similar rates for postal group, letter carriers and clerks.

³ This conclusion is reinforced by the relatively low cost of letter carrier hiring. One estimate places direct and indirect expenditures (including advertising and training) at some \$42.00. (Interview, postal officer, May 26, 1972).

Table IV-15
 "COMPARABLE" QUIT
 RATES

(<u>section A</u>)	<u>1960^a</u>	<u>1970^b</u>	<u>1972^b</u>	<u>1975^b</u>
whole Civil Service	8%	7%	8%	9%
(<u>section B</u>)	<u>1966-67^c</u>			
whole Civil Service	8%			
Postal Group	5%			
Letter Carriers	6%			
Postal Clerks	6%			
Crafts and Trades	8%			
Clerical	12%			
(<u>section C</u>)	<u>1956-57 to 1965-66^d</u>		<u>1972-73^e</u>	
Postal group (pop.)	5%		2%	^f
	<u>1965-66</u>			
Quebec city	2%		2%	
Oshawa	21%		4%	
Sault St. Marie	11%		7%	
Sarnia	10%		6%	
Hamilton	5%		2%	
Toronto	7%		7%	
Ottawa	7%		3%	
Victoria	5%		4%	

(continued on next page)

(continued from previous page)

- Sources:
- a. The Glassco Report, op. cit., p. 346.
 - b. Public Service Commission, Annual Reports.
 - c. The Department of Finance, Wage and Salary Trends and Wage Determination in the Public Service, Woods Task Force, Ottawa (mimeo.), Appendix X-3, pp. 1, 14.
 - d. The Montpetit Report, op. cit., p. 49. (covers the whole postal group)
 - e. Table III-7, above. (covers only letter carriers).
 - f. Interview, Harry Powell, op. cit.

- Notes:
1. All rates are rounded to nearest percentage point.
 2. Sources b, c and d were originally given in terms of "separation rates". These were converted to pure "quit rates" by applying a factor of .75, which is the mean ratio of quits to separations in the federal public service between 1960 and 1975 (from Public Service Commission's Annual Reports and other sources).
 3. In section C, only cities common to both the Montpetit data and present data are cited here. Post Credit had a 19% quit rate in 1965-66; Oakville, 16%, Downsview, 15%, and Burlington, 14%.

Quality

Casual Sick Leave, SL¹ (Table IV-16)

In view of the hypotheses posed, the results of the table IV-16 are generally disappointing. The wage rank variable has the wrong sign in all cases. Paid absence thus seems not to be used for compensating a low wage rank.

The coefficients on the unemployment rate (U) and the city size (E) are not significant, while employment growth (N) has the wrong sign. Indeed, high labour demand growth seems to be associated with lower rather than higher (as hypothesized) casual sick leave.

The three age categories give mixed results. The sign of the youngest (20-24 years) is positive as expected throughout, but statistically significant in only 2 of 6 cases. The coefficients on the middle age group (25-49 years) and the oldest group, (50 plus) all have the wrong signs. This latter finding implies that post offices in cities with higher proportions of older letter carriers experience higher, not lower incidence of SL.¹

¹ Our $\frac{NH}{LC}$ probably does not adequately capture the length of service composition of a group of letter carriers.

d.f. = 20

Table IV-16 Casual Sick Leave (SL¹)

	W (-)	U (-)	N (+)	E (+)	LC 20-24 (+) LC	LC 25-48 (-) LC	LC 50p (-) LC	r	R ²
W _{Pi}	+.0021 (.5805)	-.0149 (.8626)	-.0205 (1.3383)	+.0001 (.3577)	+.0055 (.8595)	+.0044 (1.0479)	+.0082 (1.1746)	$\left(\frac{LC\ 25-49}{LC} ; \frac{LC50p}{LC}\right) =$ -.57	.17
W _{IC}	+.0013 (.4320)	-.01364 (.7986)	-.0198 (1.2504)	+.0000 (.2398)	+.0061 (.9296)	+.0039 (.9437)	+.0074 (1.0656)	do	.17
W _{TD}	+.0046 (1.5320)	-.0123 (.7590)	-.0230 (1.5850)	+.0001 (.7147)	+.0079 (1.2521) ^f	+.0063 (1.4996)	+.0116 (1.6312)	do	.24
Log W _{Pi}	+.5276 (.5945)	-.0150 (.8710)	-.0204 (1.3340)	+.0001 (.3612)	+.0055 (.8547)	+.0044 (1.0496)	+.0082 (1.1725)	do	.17
Log W _{IC}	+.2164 (.3387)	-.0134 (.7850)	-.0201 (1.2479)	+.0000 (.2205)	+.0060 (.9187)	+.0040 (.9597)	+.0075 (1.0750)	do	.16
Log W _{TD}	+1.0547 (1.4010)	-.0123 (.7486)	-.0228 (1.5601)	+.0001 (.6767)	+.0078 (1.2147) ^f	+.0061 (1.4323)	+.0114 (1.5823)	do	.23
correct signs (/6)	0	6	0	6	6	0	0		
t (/6)	2	0	6	0	2	2	6		

These positive coefficients of the $\frac{LC50p}{LC}$ may simply indicate that SL^1 reflects the frequency of genuine illness and that older letter carriers are sick more often. The regression coefficient in the order of .008 suggests that a one percentage point increase in the proportion of $\frac{LC50p}{LC}$ will raise casual sick leave taking by just under one one-hundredth of a man-day per letter carrier. This is not a substantial relationship given the sample mean values of SL^1 (.43) and $\frac{LC50p}{LC}$ (18.8%). In any case, $\frac{LC50p}{LC}$ is a given which cannot be used as an instrument to alter undesirable levels of SL^1 .

These findings point to the likelihood that the incidence of casual sick leave taking is not an indication of sick leave abuse or that letter carriers do not offset their lower wage status in respective communities by increasing paid time off. On the other hand, it may be that letter carriers do engage in compensation of this type but that this phenomenon has not been captured by the variables or data used here.

What has been the experience of previous investigations on the determinants of sick leave abuse? Though the supply of labour is an important aspect of economics, the study of absenteeism has been largely confined to behavioural scientists.

In their seminal article, Porter and Steers review no less than 60 studies seeking the correlatives of absenteeism (and turnover).¹ Based on a "job

¹ Lyman W. Porter and Richard M. Steers, "Organizational, Work and Personal Factors in Employee Turnover and Absenteeism", Richard M. Steers and Lyman W. Porter, Motivation and Work Behavior, McGraw Hill, N.Y., 1975, pp. 276-296.

satisfaction-met-expectations-withdrawal" model they classify reasons for absenteeism into organizational, work and personal factors. The limits of this socio-psychological approach is confirmed by:

"Omitted from the present analysis is the obviously crucial set of 'external' factors pertaining to such things as economic conditions, the availability of specific job opportunities and the various unavoidable causes of withdrawal (e.g., pregnancy, illness, etc.)." ¹

Thus labour market conditions constitute an important omitted variable in their models. Among the "internal" factors which they do account for and which are also contained in our own model are satisfaction with pay² and age. Their conclusions on the effects of wages on absenteeism are as vague as our own results of the letter carrier analysis.

"Much less can be concluded about the impact of [pay, job satisfaction] on absenteeism [than on turnover] due to a general lack of information." ³

In terms of the age/absenteeism relationship they find that, "[Age is] somewhat positively (though weakly) related to absenteeism." ⁴ This is

¹ Ibid., p. 277.

² It is important to note that for behavioural scientists pay satisfaction is measured through workers' perceptions of adequacy and equity. This contrasts with the economists' approach (to be found in the present study) of using objective wage differentials. This distinction, based on our assumptions of worker behaviour, may be crucial in differentiating the dependent variable of the studies under review from the concept used in the letter carrier case.

³ Ibid., p. 287.

⁴ Ibid., pp. 285-6.

somewhat similar to the findings with the letter carrier data. Mixed results on the job tenure, family size and absenteeism relations preclude "solid conclusions."¹

Porter and Steers' observation that age is positively correlated with absenteeism supports our own (unexpected) letter carrier results. While the hypothesis posed in the present study predicts an inverse relationship (the older employees, with generally greater lengths of service, will be more reluctant to incur the risk of discovery of an abuse because of the valuable vested interests in their jobs), they offer an alternative explanation for a direct relationship. Because the cost of quitting (to improve compensation, etc.) is higher for older workers, absenteeism becomes the more practical substitute for release of frustrations and dissatisfactions on the job. The difference between these two views on the sign of the age/absenteeism coefficient is founded on the assessment of the risk of discovery and its consequences. Each particular context will determine such degree of risk of a sanction (ultimately, discharge), hence the propensity to engage in sick leave abuse.² Porter and Steers' view thus sheds important light on the hypothesis and findings in the letter carrier case. With relatively little chance of

¹ Ibid., p. 287

² It will be recalled that the Montpetit Report on the Post Office, dealt with the methods used to uncover sick leave abuse.

discovery and some degree of leniency (tolerance) on the part of postal officials, a positive, not negative coefficient is to be expected. This new element has little policy prescription content however since the age composition of a group of letter carrier at any point in time is a given. (As was pointed out above, the alteration of the age mix of letter carrier recruits has its limitations.)

Hilde Behrend also compiled a review article on the subject of absenteeism.¹ Twelve explanatory variables are identified. She postulates an hypothesis similar to ours on labour market conditions (that SL^1 and U are inversely related) but finds no systematic relationship. The wage level was seen in two possible roles. A relatively low wage could cause increased absenteeism as workers attempt to compensate with time paid but not worked (our hypothesis). On the other hand, an income effect (with SL^1 seen as a leisure good), may predominate. The empirical results of the five studies reviewed are inconclusive. There were also mixed results among studies relating age to absenteeism, but length of service generally emerged as being inversely associated with absenteeism. Among the eight other factors, none very relevant to the letter carrier case, results were either mixed or inconclusive.²

¹ Hilde Behrend, "Absentéisme dans l'industrie", Revue Internationale du Travail, February, 1959, pp. 117-153. While the Porter and Steers review covers mainly American authors, the Behrend article analyzes the findings principally of U.K. researchers.

² These were sex, family size, occupation, physical conditions of work, size of firm, payday, climate and distance to work.

She concludes that the incidence of absenteeism is usually concentrated among small groups of employees and related to job satisfaction (motivation, attitudes toward supervisors) and upbringing (discipline, etc.). Studies show that attempts to enforce lower absenteeism (e.g., through discharges) failed to reduce its frequency.

After examining the results of American research on the determinants of absenteeism E.E. Lawler concludes:

"Overall there is not a great deal of evidence to support the view that absenteeism can result from pay dissatisfaction...".¹

but quickly adds

"...but what data there are, are consistent with this view. Clearly, research is needed to determine how different factors affect the relationship between absenteeism and pay dissatisfaction."²

The analysis of the letter carrier data seeking the extent of the effect of wage rank on absenteeism has not produced the expected results. While age, which emerges as statistically significant, has an unexpected sign, a modification of our initial hypothesis on the Behrend explanation seems reasonable.

It would appear that our assumption about casual sick leave being abuse (or at least that the proportion of real abuse in casual sick leave is constant among cities) does not represent reality. The single month's

¹ E.E. Lawler, Pay and Organizational Effectiveness, McGraw Hill, New York, 1971, p. 237.

² Ibid.

sick leave data rather than the broader annual averages could be another source of error in our SL^1 series.

The review of the findings of other empirical experiments similar to our own reveals that in most cases few expected systematic relationships have been found though age and length of service seem to affect absenteeism.

Vote, V (Table IV-17)

The second variable used to determine the state of letter carrier morale is the vote on the 1972 post office proposal for the renewal of the collective agreement. It is expected that the greater the satisfaction with letter carrier working conditions, including the wage rank, the higher the morale and the higher the V (proportion of "yes" vote).

The results of this equation (see table IV-17) are no more conclusive than those for the previous one. The wage variable, which carries the correct sign ($B > 0$) throughout the linear and log versions, is not statistically significant.

There are contradictory findings for the labour market conditions variables. The unemployment rate (U) has the wrong sign with all wage forms. Recent employment growth (N) has the correct sign consistently and is significant in five of the six equations, while total employment, E, carries mostly correct signs but is not significant. This

Table IV-17 VOTE (V)

d. f. = 20

	W (+)	U (+)	N (-)	E (-)	LC 20-24 (-) LC	NH (-) LC	LCP (+) LC	r	R ²
W _{Pi}	+ .3623 (.3857)	-8.1629 (1.7574)	-4.3729 ^f (1.1475)	+ .0002 (.0061)	+ .2498 (.2622)	+ .7169 (.3820)	+ .8479 (1.5058) ^e	(U: $\frac{NH}{LC}$) = .56, (N: $\frac{NH}{LC}$) = .67	.38
W _{IC}	+ .0790 (.1166)	-7.3022 (1.7785)	-3.8515 ^f (1.0848)	- .0043 (.1708)	+ .3678 (.3793)	+ .3123 (.1935)	+ .7791 (1.4617) ^e	do, (W: $\frac{NH}{LC}$) = -.56	.37
W _{TD}	+ .2062 (.3016)	-7.4700 (1.8899)	-4.2238 ^f (1.1150)	- .0011 (.0402)	+ .3150 (.3386)	+ .4829 (.2985)	+ .8173 (1.4895) ^e	do	.37
Log W _{Pi}	+67.6901 (.2896)	-7.9093 (1.6956)	-4.2222 ^f (1.1082)	- .0011 (.0411)	+ .2687 (.2809)	+ .5855 (.3134)	+ .8257 (1.436) ^e	do	.37
Log W _{IC}	+28.4200 (.1944)	-7.4075 (1.8217)	-3.8753 ^f (1.0969)	- .0042 (.1672)	+ .3891 (.4016)	+ .3849 (.2377)	+ .7828 (1.4764) ^e	do, (W: $\frac{NH}{LC}$) = -.60	.37
Log W _{TD}	+22.0345 (.1294)	-7.232 (1.8391)	-3.9630 (1.0528)	- .0032 (.1145)	+ .3271 (.3510)	+ .3226 (.2006)	+ .7896 (1.4363) ^e	do	.37
correct signs (/6)	6	0	6	5	0	0	6		
t (/6)	0	6	5	0	0	0	6		

implies that the higher the unemployment rate the lower the "yes" vote (a sign of dissatisfaction), while the predicted effect was that the insecurity created by a high unemployment rate would result in greater contentment with conditions at work and therefore increased acceptance of the employer's offers. Aside from the discussion on job security which follows the analysis of the final independent variable below, there are no apparent explanations for these findings at this point. Some comfort is derived from the results of the variable N. In cities with a high rate of labour absorption alternative employment can more easily be found and thus workers are more inclined to accept the (lower) risks involved in pressing for a more advantageous negotiated settlement by rejecting the proposal. There is no contradiction between the U and N results since the first relates to a single year while the last is a dynamic variable covering five years, (the r between U and N is only + .23). The coefficient of N has a value of approximately 4.0: a 1% increase in employment growth (sample range: -1.10 to +13.4, mean = +3.1% per year) is associated with a 4% increase in the "yes" vote ($\bar{x} = 100$). For policy purposes however, manipulation of N is not a practical means of increasing the value of V.

Though it was hypothesized that the lesser financial responsibilities and vested interest of the very young letter carriers $\frac{LC\ 20-24}{LC}$ would tend to cause greater proportions of these to reject the employer's proposal and accept the risk of a strike, this is not borne out by the regression. The coefficients consistently bear the wrong sign.

The same type of results are obtained for the proportion of new hires $\frac{NH}{LC}$. As already noted above, $\frac{LC\ 20-24}{LC}$ and $\frac{NH}{LC}$ are not proxies one for another since the r^2 is only .16.

The final independent variable, the proportion of home proprietors $\frac{LCP}{LC}$ yields the predicted and significant results. Other things equal proprietors have greater and more strict financial obligations than tenants and this is reflected in a greater tendency to avoid the risk of income interruption caused by a possible work stoppage. In all forms and with all wage proxies the coefficients are of the correct signs and significant at 10%. The average regression coefficient is about .8, which means that an increase of 1% in the ratio of homeowners to total letter carriers ($\bar{x} = 41\%$) results in an increase of 4/5ths of 1% in the city's "yes" vote relative to the national vote (mean $\cong 100\%$).

What lies behind the poor wage results? One possible explanation is that the wage issue may not have been an important aspect of the 1972-73 negotiations and that some other factor dominated the intercity letter carrier voting patterns thus distorting the effect of wage rank. Such a factor can indeed be identified: the question of technical change. Beginning in the late 1960's the Post Office embarked on a massive program to automate inside mail handling and sorting procedures.¹ This will probably have

¹ See Hansard, Ottawa, June 8, 1973, pp. 4577 et seq.; The Courier (Letter Carrier newspaper) various issues from 1970 on; Toronto Globe and Mail, ("Neither Post Office nor Union Blameless in dispute over Automation") October 7, 1976, p. 4; Article 32 of the Council of Postal Unions Collective Agreement signed March 2, 1973; and the Union's adverse reaction in, Canadian Union of Postal Workers, National Policy Statement No. 4, Automation, 1971 ["Within our rank and file, the word automation has a frightening aspect to it, one which creates fear and insecurity for the member, which then forces him into a fight for his livelihood or facing the other reality of impoverishing him" (p. 1).] The unions' well publicized campaign "Boycott the Postal Code" in the early 1970's is another indication of the importance of the automation - job security issue.

substantial long run effects on the level and the composition of the demand for postal labour services.¹ As has already been pointed out, the letter carrier only spends under one-quarter of his time inside the post office (approximately 1½ hours out of 8) and therefore this round of mechanization should not substantially affect his status in the short run. However, the automation issue must be accounted for here since as was pointed out in chapter III, our vote data covers the entire Council of Postal Unions: both letter carriers and inside postal workers.²

What is the probable effect of this lack of homogeneity between vote and wage data? In 1973 postal clerks were paid \$3.69 (P.O. 4, maximum) while letter carriers received \$3.54 (P.O. 3 maximum), thus the wage levels used in the present study are too low and understate wage ranks. However, this is an intercity analysis and there is no reason to believe that the ratio of postal clerks to letter carriers varies systematically among cities. Thus this difference in the groups covered by vote and wage series should not introduce any bias in our analysis.

It is possible to attempt to predict which groups, by city size, age, region, etc., are most affected by technical change (and therefore in their vote) since the impact is not likely to be evenly distributed. For example, most of the new equipment is being installed in the larger cities and those postal employees will bear the brunt of these transformations. Nevertheless, while Montreal letter carriers rejected the offer overwhelmingly (V = 27),

¹ In some cases the automated job has been classified substantially below that of the more manual job it replaced (e.g., the "coder" case which caused the 1972-75 series of strikes - see The Taylor Report, Ottawa, (mimeo.), June 7, 1974 (six pages).

² In addition, the Prime Minister has recently revealed long run plans to eliminate postal home delivery. This was quickly denied by the Postmaster General. See Hansard, January 24, 1978 (p. 2090) and January 26, 1978 (p. 2252)

Ottawa and Toronto voted in favour of accepting the offer (unexpected) ($V = 127, 125$ respectively). Surprisingly, there does not seem to be a consistent city size-vote pattern.¹ In fact, upon closer examination of the V data, a very definite geographic voting pattern emerges. Of the ten cities with a $V < 100$, seven are in Quebec. Indeed, except for one city, (Sherbrooke), all the Quebec cities voted to reject the offer.² Three possible causes of this phenomenon can be found. Firstly, and probably most importantly, the union leadership (of both the Letter Carriers Union of Canada and CUPW) is generally more militant in Quebec than in the rest of the country.³ Secondly, while 44% of the sample letter carriers are home proprietors in the rest of Canada, only 30% own their homes in Quebec and proprietorship has been shown here to affect the vote. Thirdly, the proportion of very young letter carriers $\frac{LC_{20-24}}{LC}$, those who have lesser financial responsibilities, is 19% in Quebec sample cities and 17% in the remainder of the country.

Finally, it may be that a vote to reject the proposal was not really

¹ The $r(E : V)$ is only $-.07$.

² The (unweighted) mean of sample Quebec city votes was only 45% compared to 121% for the sample, Canada-less-Quebec.

³ There is a disproportionately high number of wildcat strikes in Quebec. The national strike on the coder issue (Spring, 1974) began in Montreal, etc. This does not imply that these unions are lethargic in the rest of Canada.

perceived as a vote for a strike and therefore the labour market conditions and other ceteris paribus conditions were not completely relevant.¹

Though the "vote" equation with the present data has not provided much explicit insight into the effect of wage rank on letter carrier quality, the analysis will be extended somewhat for the following reasons:

1. The type of vote data obtained here is rarely available,
2. The ensuing exploration of the issues relating letter carrier morale and technical change are of greatest practical importance to the parties directly involved,
3. In the end the exercise does contribute to a greater understanding of the interrelationships among job security, morale, vote patterns, wage adequacy and labour market conditions.

The finding that technical change rather than wages may have been the most important issue in the 1972-73 postal negotiations may shed some

¹ A strike mandate was given but without a definite date.

light on the unexpected negative relationship between V and U. Our hypothesis was that the "yes" vote (against a strike) would be high in cities with high unemployment rates because of the low probability of finding an alternative (permanent or temporary) job. However, postal employment offers excellent job security in the short run, since, in contrast to private sector employers, there is no question of going out of business as a result of a work stoppage. A rejection vote (low V) seems reasonable for postal workers in high unemployment cities if the objective is to obtain greater assurance of long run job security, i.e., protection against the effects of automation. The immediacy of being unemployed is less intensely perceived in low unemployment cities and, other things equal, those postal workers are therefore less concerned with the possibility of becoming redundant and vote to accept the agreement. Such voting behaviour would indeed produce the inverse relationship discovered by our regression.

How do the above results compare with those of other researchers? While there is some literature on voting patterns for collective agreement renewals, these are consistently in the context of the rejection by the rank and file of proposals already accepted by the union negotiating committee.¹ They are not really relevant here because their main emphasis is on seeking out the

¹ See Donald R. Burke and Lester Rubin, "Is Contract Rejection a Major Collective Bargaining Problem?", I.L.R.R., January 1973, pp. 820-833 and footnote references therein. See our comments on p.182, above, and E.E. Lawler and Edward Lewin, "Union Officers' Perception of Members' Pay Preferences" I.L.R.R., July 1968, pp. 509-517.

causes of differences in the preferences between the leadership and the rank and file.

More appropriate is the literature dealing with the determinants of the propensity to strike, even though studies on the strike vote rather than actual strike activity would be closer to the present subject. Strike studies seek environmental (wage level, unemployment, etc.) and other factors (age, etc.) contributing to differences in strike activity among groups along the lines of the present letter carrier model.

Typical of these studies is Robert N. Stern's cross sectional research on the factors underlying intercity differences in strike frequency.¹ This is particularly appropriate here since his unit of analysis is the city rather than the more usual, industry.

Following a useful review of the literature on the determinants of strike activity, Stern uses two methods of ascertaining the effects of the relevant variables on stoppages per worker. Initially he divides the sample of 243 cities into low, moderate and high conflict cities, dropping the first category (87 cities) because of their fundamental difference from the other cities.² The remaining 156 cities, those with moderate and high strike observations, are tested for the levels of statistical significance

¹ "Intermetropolitan Patterns of Strike Frequency", I.L.R.R., January 1976, pp. 218-235.

² He feels that such factors as stage of industrialization, proportion of college graduates etc., render these cities incomparable to the rest.

of the differences in means for fourteen explanatory variables.¹ The second stage of analysis is a linear least squares multiple regression using six independent variables: population size (the equivalent of our, E), unionization, plant size, national bargaining, wages as a proportion of mean city income² and expected strike frequency.³ Since the unemployment rate, the wage levels and city size are the only relevant variables for the present letter carrier study, their results alone are reported here.

The difference in means of the unemployment rates between cities with moderate and high levels of conflict is not statistically significant. Stern had hypothesized an inverse relationship, just as we did: the higher the unemployment rate the scarcer the number of alternate jobs in the event of a stoppage and the lower the incentive to engage in a strike. It will be recalled that the letter carrier regression produced an unexpected, inverse relationship with statistically significant coefficients. However, Stern's explanation for his "poor" results provides a possible rationale for our own.

¹ Among these are population size, political climate, unemployment rate, sex, wage levels, etc.

² Because of a lack of price level data for the sample cities Stern uses mean city income differences as a proxy for price differences. This does not appear to be a satisfactory method of arriving at a measure of differences in real wages.

³ "Expected strike frequency" is a measure of industry mix. (See Ibid., p. 230).

"It is possible that this census-based cross sectional measurement of unemployment does not reflect the state of the labor market as adequately as a time series would. It is also possible that both unemployment and strike activity are promoted by industrialization, which masks the negative effect of unemployment on strike frequency in a cross sectional analysis." ¹

Our unemployment rates are also partially census-based and cross sectional and the letter carrier equations do not contain an industrialization control variable.

Stern's hypothesis regarding the influence of wages on strike activity is based on an "ability-to-strike" approach in which high wage workers are more able to sustain a strike and therefore resort to it more easily.² His results conform to that hypothesis. In the letter carrier case the expected inverse relationship between wage rank and contract rejection³ is founded on an "incentive-to-vote-a-strike" approach as letter carriers lowest in the local wage distributions express their dissatisfaction. In our case, though all regression coefficients were of the expected positive sign they were not statistically significant.

¹ Ibid., p. 299.

² Our wage variable is the letter carrier wage rank in respective local labour market distributions. Stern's wage variable compares entire local labour market average wages among cities.

³ Our, V, is couched in terms of the proportion of the "yes" vote.

On the final relevant variable, city size, Stern posits greater strikes per worker in large cities though he does not give an explicit rationale for this expected relationship.¹ The results do not support such a direct link and he concludes that the underlying relationship must be curvilinear. He adds that an inverse relationship may be reasonable after all because, other things equal, a strike has a greater economic impact on a smaller rather than a larger community, with workers aware of this greater bargaining power. Our hypothesis, based on the assumption of greater availability of alternative jobs in a larger city, predicted a direct relationship between the acceptance of a possible strike (a low V) and city size (E).² In the letter carrier case, though the coefficient signs were as expected none was significant.

As with most of the other equations, neither the letter carrier regressions nor the results of the efforts of other researchers provide support for the hypothesis that wage rank or indeed labour market conditions differences (taken together) can be held responsible for the intercity vote pattern.

Summary of results on Quality Experience

It was shown earlier that labour quality is multifaceted and difficult to measure. The two concepts used here, sick leave abuse and the vote on a proposed labour agreement were presented as possessing the characteristics

¹ However, Stern provides some indications of what other researchers hypothesized (Ibid., pp. 221-222).

² It will be recalled that E is a proxy measure of the number of alternative jobs.

needed to distinguish intercity differences in one aspect of labour quality: morale.

It appears that SL¹ may not be a measure of voluntary absenteeism after all.¹ Our results and a review of the literature provide little support for the hypothesis that absenteeism is seriously affected by wage rank. Rather, age and length of service appear to influence absenteeism.

Compromise was necessary on the vote data since the only information available covers both letter carriers and inside postal operations employees. Though the wage rank was hypothesized as systematically affecting the vote, it was later discovered that technical change and job security were the overriding issues in the 1972-73 round of postal negotiations. Recent changes in labour demand and home proprietorship rather than the wage rank emerge as significant explanatory variables of the vote. There is a regional pattern, with union leadership probably a factor.

A review of a study on strike propensity determinants did not provide any new insights having policy content. While we hypothesized that letter carriers lower in their local wage ranks would be more frustrated, hence hold out for a higher wage offer, this was not confirmed by our data. Stern's intercity study found higher wage employees were more strike prone. On this basis the government would not be increasing acceptance of its proposals (higher V) by increasing letter carrier wage rank.

¹ There is no method known to the author of clearly differentiating genuine from abusive sick leave except at the extremes.

Other Variables

In addition to the eight labour market experience variables analyzed above three other measures of letter carrier quality were identified: certified sick leave (SL^2), proportion of prime age letter carriers $\frac{LCPA}{LC}$ and proportion with post-secondary schooling $\frac{LCPS}{LC}$. Data on these were collected for all the present sample cities.¹ Also, incomplete data (10/29 cities) were obtained from the Post Office for an additional recruitment experience measure: the cut off level (C.O.) or pass mark on the recruitment selection tests.

Unfortunately, as has already been shown (see pp. 185-192, above) the three quality measures could not be analyzed in this study because their 1972-73 values are a function not only of the values of that years' explanatory variables, but also of those of previous hiring periods.

While there is no such time dimension problem for the cut off level there is a lack of data since only ten of the twenty-nine sample cities reported. The cut off level is similar in some respects to the NTS variable both being the results of evaluations made by hiring officers. It is hypothesized that this pass mark or hiring standard is adjusted by postal officials depending on the relative ease of recruitment. The standard is assumed adjusted so as to yield the necessary number of eligible candidates.

¹ For SL^2 the information came from the Post Office. The letter carrier schooling and age data were obtained by a special Statistics Canada compilation from the 1971 census.

The personnel manual states that this minimum total score on the two tests is 60/100. However, as can be seen in table IV-18 there is a considerable range of minima (58 to 100),¹ indicating that cut off levels may indeed be manipulated in an effort to overcome hiring difficulties. It should be noted moreover, that no post office among the ten reporting has a hiring standard above the norm. This means that postal officers will reduce standards perhaps to raise the numbers of successful candidates, but that they will not formally exceed this hiring standard to increase the quality of recruits.²

The effects of the wage, labour market conditions and Y-specific variables will be estimated by least squares, multiple regression. A few preliminary remarks are in order. The sample size is very small ($n = 10$) which means that the regression coefficients should be treated with considerable caution. In addition, there are no Atlantic cities represented and only one from Quebec. Also, with six independent variables there are only two degrees of freedom, so that a relatively high t-value will be needed for statistical significance.

Furthermore, there could be a systematic reporting error since

¹ The cut off figures shown in that table have been standardized by the nominal pass mark: 60. Thus the raw score of 35 appears as 58 in the table and 60 is 100.

² This appears to cast some doubt on one interpretation of Gaston's conclusion about his "selective hiring" hypothesis (see p.275, above).

Table IV-18
INTERCITY "CUT OFF"
LEVELS

City	Raw ^a Cut off levels	Standardized ^b Cut off levels
SRL	60	100
TOR	35	58
STT	55	92
SAR	60	100
SSM	50	83
OSH	45	75
SBY	50	83
SKT	56	93
CGY	45	75
VIC	60	100

Source: Post Office questionnaire (see Appendix II)

Symbols: a. These are the actual reported levels.

b. The raw levels have been standardized (divided) by the nominal or standard pass mark = 60.

respondents may feel that their answers to the questionnaire will influence departmental policy on hiring standards or related matters. In recognition of this possibility, and to the extent that the cut off level is indeed used to compensate for poor recruitment experience, we should expect that the lowest reported standards are, in reality, higher.

The following equation specifies the independent variables and hypotheses on their effects on the cut off level.

$$C.O. = g_0 + g_1W + g_2U + g_{11} \frac{T_2}{APP} + g_{10} \frac{APP}{LF_m} + g_{12} q + g_{15} \frac{NH}{LC} + \epsilon \quad \text{--- (11)}$$

1. Wage rank (W): the higher the wage rank the more attractive the letter carrier job and the higher can be the recruitment standard ($g_1 > 0$).¹
2. Unemployment rate (U): the higher the local unemployment rate the greater the potential numbers of candidates and the higher can be the pass mark. ($g_2 > 0$).²
3. Success Rate $\frac{T_2}{APP}$: the smaller the proportion of applicants passing at the normal 60 cut off level the greater the need to reduce that cut off level ($g_{11} > 0$).³

¹ It is understood that other things are held constant while the value of each single independent variable is altered.

² This corresponds to Robert Gaston's "selective hiring standard" discussed earlier.

³ Strictly speaking, $\frac{T_2}{APP}$ must refer to the previous period to allow time for the alteration of the C.O. While it is true that the C.O. can be adjusted to affect the current period's success rate this is the wrong causal direction and furthermore, we have no data on what the raw success rate was just prior to its modification as the C.O. was altered.

4. Applications $\frac{APP}{LFm}$: the greater the number of applicants (per male labour force member) the higher can be the cut off level ($g_{10} > 0$).
5. Quit Rate (q): the higher the quit rate the more insecure the hiring officials and the lower their standards ($g_{12} < 0$).
6. New Hire Rate $\frac{NH}{LC}$: the greater the recent additional letter carrier needs the lower the cut off level in order to facilitate a build up of the inventory of eligible candidates ($g_{15} < 0$).

As may be seen from table IV-19 there is no support for the hypothesis that post offices in low prevailing wage markets have higher hiring standards than those in higher wage areas. In fact, if anything, there is some indication of an opposite relationship. There are partially anticipated results on the hypothesis that officials raise recruitment standards in cities with higher excess labour supply. The findings also give considerable weight to the hypothesis that the pass mark is higher (lower) where the quality of candidates $\frac{T_2}{APP}$ is high. The results on the numbers of applicants are inconclusive, while those for quit rates and new hire rates offer very weak support for the hypotheses.

Table IV-19 THE CUT OFF LEVEL (C.O.)

d.f. = 2

	$\frac{W}{(+)}$	$\frac{U}{(+)}$	$\frac{T_2}{(+)} \frac{APP}{APP}$	$\frac{APP}{(+)} \frac{LFM}{LFM}$	$\frac{q}{(-)}$	$\frac{NH}{(-)} \frac{LC}{LC}$	r	R ²
W_{Pi}	-1.0315 (.6751)	+1.3993 (.2981)	+ .9843 (1.5418) ^f	-16.4095 (.5467)	- .7265 (.2872)	-2.3009 (1.0381)	(W: $\frac{T_2}{APP}$) = +.75, (q: $\frac{NH}{LC}$) = +.74	.68
W_{IC}	-1.3512 (2.0722)	+7.5224 (1.6155) ^f	+ .7406 (2.4126) ^e	+5.5960 (.3024)	- .5230 (.3567)	-2.7218 (1.8107) ^f	(W:U) = +.81, do	.85
W_{TD}	-1.8753 (2.7903)	- 4.4434 (1.6340)	+1.6194 (3.8409) ^d	+17.2526 (1.0319)	-3.7355 (2.0218) ^e	-1.0882 (.8099)	(W: $\frac{T_2}{APP}$) = +.57, (W:q) = -.55, do	.90
Log W_{Pi}	-228.4545 (.6828)	+1.4000 (.2995)	+ .9704 (1.5655) ^f	-16.9339 (.5590)	- .6711 (.2716)	-2.3315 (1.0547)	(W: $\frac{T_2}{APP}$) = +.74, do	.68
Log W_{IC}	-264.3687 (1.8965)	+7.3417 (1.4850) ^f	+ .7116 (2.2126) ^e	+3.4919 (.1818)	- .6317 (.4044)	-2.4383 (1.5431) ^f	(W:U) = +.81, do	.83
Log W_{TD}	-417.2449 (2.9383)	-4.4423 (1.7038)	+1.5849 (4.0324) ^d	+19.0078 (1.1628)	-3.3667 (2.0169) ^e	-1.2499 (.9839)	(W: $\frac{T_2}{APP}$) = +.56, (W:q) = -.53, do	.90
Correct Signs (/6)	0	4	6	4	6	6		
t (/6)	4	4	6	0	2	2		

Thus in summary, and subject to some important caveats;

1. a higher letter carrier wage rank (presumably greater job attractiveness) does not seem to cause postal officers to raise hiring standards (C.O.) (if anything, weak evidence points to an opposite effect);
2. a slacker labour market appears to offer some encouragement for hiring officers to apply more stringent recruitment requirements (C.O.);
3. hiring standards (C.O.) are lower where the quality of candidates is poorer.

What was the relevant policy question to which the above C.O. analysis is addressed? Have insights into possible policy prescriptions emerged? The question was: do post offices use the C.O. to help overcome labour market experience problems caused by low wage rank? Are the prescribed rises in letter carrier wage ranks in high prevailing wage markets likely to raise the C.O. values back toward the official level? As a labour market experience policy instrument the C.O. level appears to be conditioned not by the letter carrier wage rank but rather by the state of the labour market (U). Also, the C.O. level seems to be used to influence eligible labour supply but the effects are on quality $\frac{T_2}{APP}$ rather than on quantity $\frac{APP}{LFM}$.

These findings have raised some (qualified) doubts about the hypothesis or "prior belief" that transformation of the existing national letter carrier wage is likely to "even out" the intercity variation in the standards applied during the selection of candidates for letter carrier jobs.

SUMMARY

The objective of the present chapter was to test the regression model developed in chapter III with the letter carrier data from our particular sample. That model evolved directly from the Treasury Board statements on the goals of the new geographic wage policy. It is the government's view that the alignment of the letter carrier wage to each local going wage level is necessary to achieve adequate letter carrier labour market experience across the country.

Using the best data available, a fairly representative sample and with the best analytical methodology relevant to the problem there is little evidence that local wage alignment is likely to alter the overall labour market experience pattern in the desired direction. For many of the regression equations, the estimated coefficients proved not statistically significant.

The results on the wage rank as explanatory variable for the labour market experience variance does provide support for the local wage policy with only two of the eight labour market experience measures: one aspect of the quality of recruits, the success rate, and the quit rate (q). From the perspective of the econometrics, there is some support for both these findings since the signs of the coefficients are "correct", though the levels of statistical significance are unusually low.

The estimated effects of local wage alignment on the intercity patterns of both success rate and quit rate were demonstrated in tables IV-7, IV-8, IV-11 and IV-12. It was shown that, for both measures of labour market experience, aligned wages had little effect on the intercity dispersions if each city bore equal weight. When the respective numbers of letter carriers are accounted for, the dispersions, as measured by the standard deviation of the distribution, would decline by some 20% in the case of the success rate and by 10% for the quit rate. Such improvements cannot be reasonably viewed as worthwhile results especially considering the resistances, uncertainties and added costs involved in the proposed major transformation of the internal wage structure.

The results of experimentation with an additional estimation procedure, two additional computer programs, a slightly different data set and a moderately revised model offer even less support for the government policy than these conclusions (see Appendix VI). Nevertheless, model t was estimated in the present chapter because this is consistent with the general approach taken in this thesis of making the strongest case in favour of the government policy. In addition, not only does the empirical test of our model offer no comfort for the revised government policy, but indeed the conclusions of the review of the literature generally substantiate this lack of support.

In this context, though this price of labour seems to have some effect on labour supply, the bulk of any improvement in letter carrier labour market experience may be attained through nonwage measures rather than through local wage alignment.

CHAPTER FIVE

CONCLUSIONS

The present chapter is composed of two sections. The first describes the trends in geographic wage policy taking place among employers most comparable to the federal government. This constitutes an additional source of information in the process of evaluating the issue at hand.

The second section begins with an overview of the findings of the entire study. There then follows a brief discussion of alternative means of dealing with labour supply problems.

I
TRENDS IN GEOGRAPHIC
WAGE POLICY OUTSIDE THE
FEDERAL PUBLIC SERVICE

Previous chapters have brought to bear various approaches in an effort to ascertain the probable effects of the government's new wage policy. In general, and more particularly on the basis of the Treasury Board's own main objective, (diminishing the intermarket dispersion of labour market experience) the results of these efforts have not provided much support for wage fractionization.

The present section adds a further dimension to this evaluation process. It was decided to uncover trends, if any, taking place in the geographic wage policies of large, well-known public and private enterprises which are most comparable to the federal public service. A series of interviews was held with employers in the service, transportation and communications industries.¹ An effort was made to limit discussions to functions and skills similar to those of the letter carriers, thereby dealing with labour pools shared in common with the Post Office. The principles underlying the directions of change were sought.

¹ These are randomly selected among the best-known employers. As will be seen, some discussions are also based on written sources.

Bell Canada

Bell Canada provides telephone services covering mainly the central provinces of Ontario and Quebec. It has traffic (operators), crafts and clerical employees in approximately eighty communities. The company has operated with a geographic zone system of four or five intra-occupational wage scales depending on occupation.

"We are reducing both the numbers of zones and the interzone wage differentials because our wage surveys show that there is a growing tendency towards wage parity in the economy generally." ¹

Other reasons given by M. Hay for the decline in the wage zone system are:

1. The geographic space of major metropolitan areas is growing rapidly because of increased mobility of workers. Travelling times have been cut drastically by extensive and efficient road systems.
2. There is strong union pressure for wage parity.
3. The rising legal minimum wage tends to level out geographic differentials within and among provinces.
4. The ongoing process of industrial decentralization means that

¹ Interview, Ian M. Hay, Staff Supervisor, Working Conditions and Contract Analysis, Montreal, June 27, 1972. The Bell wage survey covers 1700 firms, 80,000 employees, in 52 localities in Quebec and Ontario. In the collective agreement between Bell Canada and Communications Union of Canada covering Traffic Department and Dining Service employees, the number of wage zones was reduced from three to two effective April 1, 1978 (see Part 4, article 1).

many national firms bring their high wages into low prevailing wage areas,

5. Technical change results in decreasing skill levels thus further accentuating wage equalization.
6. Though it has been held in the past that the cost of living is lower in smaller towns, this is no longer true.
7. Wage zones mean that at the boundaries employees doing identical work in adjacent municipalities are paid different rates. This has been a cause of friction and dissatisfaction.¹

A second source of views on recent geographic wage policy at Bell Canada is the 1971 Conciliation Board Report for telephone operators.²

The union nominee reported that the association seeks a single, system-wide wage scale for each occupation, but was asking for a reduction in the number of zones from four to three as an immediate concession. He noted the "inequitable anomaly" that while the company maintained geographic wage differentials, it charged province-wide prices for its services and that

¹ The problem of boundaries in a multiple wage zone system is discussed in, The Geographical Factor in Civil Service Pay, Heeney Staff Study # 24, Ottawa, (mimeo.), April, 1964.

² Conciliation Board Report, Bell Canada and Traffic Employees Association, November 5, 1971, Ottawa, (mimeo.).

technology, hence productivity, were the same everywhere.¹

The company nominee suggested the upgrading of fifteen localities (20% of the total) within the existing, four-zone system. The chairman accepted the company recommendation.

The Canadian Railroads

The Canadian National reported² that some employees are on national rates while others operate with two zones: Eastern and Western regions. The wage differentials are less than 2% and thus more symbolic than real. These gaps are "historical accidents", compensating for differences in work rules. For example, in the East, overtime is taken in money payment while in the West the employees prefer pro rata time off. Wages differentials are not tied to local or regional prevailing wage levels. There are no pressures for change in the wage system.

The Canadian Pacific has a general policy of national rates, with few exceptions.³ There is some pressure to increase wages in British Columbia

¹ This resembles the argument made by Roger Decarie, former president of the Letter Carriers' Union of Canada to justify national wages and mentioned earlier in this study.

² Interview, Frank Schnuringer, Supervisor, Personnel and Labour Statistics, C.N., Montreal, August 30, 1973.

³ Interview Len Sheppard, Supervisor of Research, Industrial Relations Department, Montreal, June 18, 1972.

however, this is not caused by problems in labour market experience, but rather by interunion rivalry. The company has proposed breaking up the country into several wage zones but the unions were strongly opposed.

"Our national wage is marginally below prevailing rates for similar workers in prosperous areas, which means that we get higher quality employees in low wage cities. What potential problems we may have in labour supply are overcome not by changes in wages but by fringe benefits, improvement in supervisory quality and by more efficient recruitment and training techniques." ¹

Ontario Hydro

Ontario Hydro had three wage zones based on differences in cost of living but measured through population density.² There were ten percent differentials between zones. In 1972 it was decided to replace the zone system with a single, province-wide rate because of the impact of the Fair Employment Practices Act. The unions threatened to lay a complaint of discrimination against the company "...because the skill requirements and responsibilities of workers bearing identical job titles were 'worth' the same regardless of geographic location."

"We are in the upper 2% of employers, which means 15% to 20% above rates for comparable workers in rural areas. In such locations we get the cream of the graduates. One of the adverse effects of

¹ Ibid.

² Interview, Jack Courtice, Salary Services Administrator, Toronto, April 18, 1978.

the single wage is that we can no longer attract our employees from rural areas into Toronto as replacement needs arise. With a one or two grade (step) promotion (there is 6½% between wage steps) and the zone differential, the employee would stand to gain close to a 25% increase. With the single, provincial rate, the 13% increase (two steps) is usually insufficient to outweigh the advantages of the rural lifestyle.

We don't get pressure about our high wages in small towns from the larger organizations, but the locally-based employers do complain." ¹

Quebec

When Hydro Quebec was created through the nationalization of private electric companies in 1962-63, the numerous city-level wage rates of the utilities were replaced with a single, province-wide wage. The main factors in this change were union pressure, equity, internal mobility and ease of administration.² There are no reported problems with labour supply.

The Quebec government instituted a single provincial wage for teachers in 1967 replacing the some 1500 different salary scales then in existence (one for each autonomous school commission). Paul Martel Roy

¹ Ibid.

² Interview, Oscar Fredette, Remuneration Services Advisor, Montreal, April 18, 1978.

has found that the elimination of wage differentials did not affect intercity differences in teacher quality.¹

In 1971 the government standardized wages throughout all hospitals with Bill 46.

The U.S. Telephone System

The U.S. telephone system is made up of many companies but most workers are covered by a single union, The Communications Workers of America (CWA). At present wages are based on the prevailing rate system (essentially local wage alignment) which has resulted in over 100 wage zones. The union has attempted to bargain a single national wage. A study commissioned by the CWA has condemned the existing system as archaic because it claims that the neoclassical theory on which it is based cannot function in a context where local wages for similar work often varies between 50% and 100%.²

'We in the Communication Workers of America, have at least assured ourselves, by talking to working authorities, that the application of a community wage theory (however applied) is obsolete and unfair.'³

Because they have decided that equity means equalized real wages the

¹ Paul Martel Roy, L'Instauration d'une Seule Echelle..., op. cit.

² The Communication Workers of America, Geographical Wage Standards for Reclassification of Work Locations in the Telephone Industry (R. Nathan Associates), January 1965.

³ Ibid., p. 7 (Joseph A. Berine, President CWA).

consultants devised a model which produced seven wage bands with no more than \$4.00 per week between successive scales and covering 217 major labour market areas. Strangely enough, the regression equation on which these differentials are based contains several independent variables bearing very close resemblance to local wage levels.¹ Such a formula scheme seems unduly rigid and complex, making its application somewhat incompatible with current concepts of collective bargaining.²

Echoing an argument similar to the one advanced by Roger Decarie

¹ The dependent variable on which the city wage levels, hence intercity differentials, are to be based is per capita expenditures for current consumption (later transformed into a family budget measure). The explanatory variables are: percentage of families with income over \$10,000., rent, percentage of employment in durable manufacturing, median family income, population, and families with less than \$3,000. annual income (p. 6).

² The Anderson Report (op. cit.) also suggested a "formula-type" solution to the geographic wage issue. The Commission advised the government to provide a wage increase about the basic national rate when a local public service — outside comparable differential reached 5%. Besides all the usual criticism of complexity of administration, is it realistic to expect employees and their unions to accept a loss of such a "bonus" when the differential falls below 5%?

The Heeney Staff Study No. 24 (op. cit.) has also devised an extremely complicated multi-tier system as a means of dealing with wage zones.

of the Letter Carriers Union of Canada, the CWA study evokes an equity-productivity wage criterion which abstracts from the local labour market concept and from the prevailing rate principle.

"Telephone rates do not fall in low wage areas. The anomaly of the industry is that its policy of determining geographic wage differentials flies in the face of its homogeneity of occupation, technology and productivity and of the relatively equal rate of return to capital enforced by state regulation." ¹

The U.S. Postal Service

Up until 1971 the U.S. Post Office Department was an integral part of the Federal Civil Service, with the usual single national wages for all its employees. Following a major investigation of postal operations by the Kappel Commission (report released in 1968)² and an unprecedented strike of postal employees in 1970, the Post Office Department was transformed into a more autonomous organization, close to the status of a crown corporation in Canadian terms. Relevant for present purposes is that for the first time a local union has the statutory possibility of negotiating city wage differentials based on cost of living differences.³

¹ Ibid., p. 23.

² Towards Postal Excellence, op. cit.

³ Interview, James V. P. Conway, Senior Assistant Postmaster General, Employee and Labor Relations Group, U.S. Postal Service, April, 22, 1975.

Though some locals have requested such differentials, management has consistently refused to accede on the grounds that it would create inequities and that the costs of administering such a diversity of wage scales would be prohibitive.¹

¹ Ibid.

Summary

Without exception, in all of the cases reviewed here, the trend is towards a jurisdiction-wide wage. While some employers did mention differences in labour market experience resulting from local wage differentials, such pressures were generally not sufficiently strong to overcome other pressures operating on wage policy formation and wage determination. When acute labour supply problems did emerge they were dealt with through nonwage means: improvements in the quality of supervision and more effective recruitment techniques. There were some pressures for local wage alignment emanating from other, mostly smaller firms.

Mention should be made of the type of employer covered by this survey. All are either publicly-owned organizations or government regulated enterprises. But it is precisely such employers (whose demand for labour is, within limits, somewhat insulated from immediate local market pressures) which are most comparable to the federal public service. As important as it may be, this is not the occasion to analyze the nature and particularities of the demand for labour services in organizations of this kind or to compare this reality to demand situations for small employers. It is sufficient to acknowledge that these are the comparable employers and to have ascertained the trends in their geographic wage policies. It seems characteristic of at least such organizations that

the wage determination process and labour supply are to some extent, two independent systems (as Lester has described), with pressure for interaction only felt when conditions go beyond a certain range.¹

¹ The determination of the size and location of such a range are also important matters to be analyzed elsewhere.

II

CONCLUSIONS

This last section of chapter V is composed of two sub-sections: an overview (tying together the findings of the various methodologies used to evaluate the new geographic wage policy), and an alternative approach to dealing with labour supply problems.

An Overview of Findings

This dissertation has described the new geographic wage policy and identified its principal objective. In the main test, operational variables were designated to represent several aspects of this labour supply goal, hypotheses were posed and tested using a multiple equation, multiple regression model fed with data for the postal letter carriers. The results of this examination do not provide support for the Treasury Board contention that locally aligned wages will noticeably reduce the inter-city dispersion in letter carrier labour market experience. Where statistically significant structural parameters do emerge, indicating that a change in wage rank can be expected to alter labour market experience in the desired direction, the estimated effects of such wage alignments are so limited as to question the usefulness of the wage transformation.¹ Such were the results despite the particular and unusual efforts made

¹ As already mentioned previously, results with different econometric methodologies conclude even more strongly that the proposed government wage policy is unlikely to attain its goal (see Appendix VI pp.409-413).

throughout the testing process favouring the policy success: the use of an unconventionally low level of statistical significance, the use of three measures of the outside going wage and the use of two functional forms.

The section on wage formation in a local labour market concluded that there is a rather extensive variety of sources of wage pressures other than local labour supply and demand in the usual sense. What are taken as the ceteris paribus factors or "institutional parameters" in partial equilibrium analysis, may, in practice, overwhelm local labour market forces in the wage determination process.

While the federal government claims it is being forced to pay the going market wage by competitive labour market pressures, the economic theory of the competitive labour market does not predict wage equalization for a specific skill in a local labour market except when worker quality is homogeneous and when net nonwage advantages are either absent or equal. Given, in addition, the subjective nature of many aspects of particular employments, it is unlikely that the concept of the (common) market equilibrium wage as an identifiable goal can ever be attained in a real labour market. It is not realistic to view an equilibrium position as a specific value towards which deviations are inexorably driven by the disciplinary pressures of the market.

As was seen in the review of previous empirical experiments similar to the present one, there is no consistency in the findings of the

relationship between wage level and an employer's labour market experience except at the extremes of a local wage distribution.

Finally, the preceding section on the trends in geographic wage policy taking place among comparable employers revealed a constant tendency in the direction of jurisdiction-wide wage uniformity. This indicates that such organizations are not particularly sensitive to the labour supply effects, if any, caused by a lack of alignment to the local going wage.

Thus, whether viewed through the present regression findings, the formation of local wage structure, the economic theory of competitive labour markets, the results of previous studies or the tendency in actual policies of real employers, a constant conclusion emerges: the new federal government geographic wage policy is not likely to achieve its goal.

Multi-Dimensional Approach

It was shown in chapter III that the order of magnitude of the letter carrier labour market experience dispersions could, as a first approximation and in general, be said to be relatively substantial. However, comparable data was found for only one of these measures, the quit rate. It will be recalled that the average 1972-73 letter carrier quit rate is much smaller than those of comparable employees and seems to be declining in recent years. Though it was not possible to compute other dispersions,

comparisons were made of the extremes of the present data with the means of comparable public servants and also with extremes of a past sample of letter carriers. On this basis it is doubtful that a claim of the existence of a "problem" can be forcefully defended. It should be recalled that the government itself could not provide concrete evidence of labour market problems, let alone the seriousness of the problem. Nevertheless, because of an absence of a more generalized assessment of the "seriousness" of the labour market experience problem, the government's position will be given the benefit of the doubt. It is thus presumed that there is indeed an intolerable intercity disparity in labour market experience and more specifically on the poorest side.

When the results of the preceding sub-section (Trends) are combined with the conclusions of chapter IV (that wage alignment by itself can only be expected to have a relatively minor effect on two labour market experience indicators), the fact that there were important declines in letter carrier quits since the 1960's without a change in geographic wage structure (table IV-15, esp. section C), and the findings of the extensive review of the literature (that wages seem not to be as important a determinant of an employer's labour supply as is generally held), they lead to the prescription of what may be termed a "multi-dimensional", as opposed to a "single-dimensional" approach to the labour market experience problems in the present type of context. The single-dimensional approach, as proposed by the Treasury Board, involves a single-dimensional solution - paying a wage equal to the local going rate - to redress all aspects of labour market experience and applied across all cities. The multi-dimensional approach counsels examination of the various aspects of the specific complex of employment conditions prevailing in the post offices in each particular city.

This approach thus has three dimensions:

- 1) each labour market experience problem (quantity of applications, quality of applicants, quit rate, morale, etc.) is examined individually with a view to finding solutions specific to those observations requiring improvement;
- 2) the entire set of working conditions, not only the wage (physical conditions, supervisory style, organization of work, etc.), are examined to see what role each has played in creating each specific labour market experience problem and also how each aspect of these working environments can be changed to ameliorate labour market experience;
- 3) each city receives individual analysis of its particular labour market experience problems and particular possible causes and solutions.

Alignment of letter carrier wages to local going rates does not seem to have an appreciable effect on labour market experience. These results imply that nonwage changes will be necessary to improve labour market performance at the Post Office.

APPENDIX I

COMPUTER

REGRESSION RESULTS

(using only W_{Pi} proxy

and only in linear form)

LEGEND OF SYMBOLS

DEPENDENT VARIABLES: MEASURES OF LABOUR MARKET EXPERIENCE (for fiscal year
1972-73)

$\frac{APP}{LFm}$, number of applications received for letter carrier jobs/male labour force in city.

NEL, number of eligible lists compiled in city.

NTS, minimum number of names left on eligible list when new competition is called.

$\frac{T_2}{APP}$, number of candidates successfully passing with selection tests/number of applicants (the "success rate").

$\frac{NHPA}{NH}$, number of new hires of "prime age" (26-35 years)/number of new hires.

q, the quit rate (number of quits/number of letter carriers).

SL¹, number of casual sick leave days taken (May 1973)/number of letter carriers.

V, number of votes "yes" (to accept Post Office proposals)/total number of votes/proportion of "yes" votes nationally (66%).

INDEPENDENT VARIABLES

U, unemployment rate (city).

N, rate of growth in employment, 1968-1973.

E, the labour force .

$\frac{LFPAM}{LFm}$, proportion of males of "prime age" in city/male labour force in city.

SL_{14} , proportion of population with less than 14 years schooling/population.

$\frac{T_2}{NEL}$, average length of eligible list (total passing both selection tests/
number of eligible lists).

NH, number of newly hired letter carriers, fiscal 1972-73.

NL, number of names left on the eligible list as at May 1973.

R, richness of schooling mix in population (proportion of city population
with 9-13 years schooling/population with less than 14 years schooling).

$\frac{NH}{LC}$, new hire rate (total new hires/total letter carriers in a city).

$\frac{LC_{20-24}}{LC}$, proportion of letter carriers aged 20-24/total letter carriers in a
city.

$\frac{LCm}{LC}$, proportion of married letter carriers/total letter carriers in a city.

$\frac{LC_{25-49}}{LC}$, proportion of letter carriers aged 25-49/total letter carriers in
a city.

$\frac{LC_{50P}}{LC}$, proportion of letter carriers over 50 years/total letter carriers
in a city.

$\frac{LCp}{LC}$, proportion of letter carrier homeowners/total letter carriers in a city.

VILLE	APP/LFM	NPT	NEL	SL14	U1	N	LFPAN/LFM	CONSTANTE
SDY	.06	117.00	7.00	75.40	12.30	1.10	19.50	1.00
DCT	.30	104.00	7.00	77.60	8.10	1.10	20.80	1.00
HLL	.27	105.00	7.00	75.00	8.50	1.43	21.20	1.00
MTL	.22	105.00	7.00	76.30	9.20	1.18	22.10	1.00
SBAL	.22	116.00	7.00	73.90	7.50	1.18	19.70	1.00
CHV	.52	122.00	7.00	74.40	7.60	1.10	20.60	1.00
SRL	.21	110.00	7.00	77.10	7.60	1.10	21.80	1.00
CHI	.65	107.00	7.00	72.30	15.00	1.10	21.70	1.00
SIS	.19	102.00	7.00	72.10	14.90	1.10	21.90	1.00
TOR	.19	99.00	7.00	70.50	6.90	1.10	22.60	1.00
STT	.10	105.00	7.00	75.40	4.80	1.10	17.10	1.00
HNT	.36	91.00	7.00	75.70	7.60	1.10	21.60	1.00
SAR	.08	92.00	7.00	70.20	6.20	1.10	22.40	1.00
SGH	.26	89.00	7.00	77.40	5.40	2.15	23.20	1.00
OSM	.75	88.00	7.00	74.90	5.20	1.10	23.70	1.00
SBY	.17	101.00	7.00	74.50	5.10	1.10	20.00	1.00
LAN	.39	92.00	7.00	66.00	9.40	1.10	20.90	1.00
SAT	.46	105.00	7.00	65.80	8.70	1.10	19.90	1.00
IBG	.06	107.00	7.00	72.60	7.40	1.36	24.30	1.00
CGY	.29	94.00	11.00	82.40	7.50	4.64	22.80	1.00
MOYENNE	.34	106.41	2.64	73.36	7.91	3.11	20.74	1.00
ECART-TYPE	.231	11.895	4.073	4.713	2.440	2.931	2.421	0.000

LA MATRICE DE CORRELATION

	1	2	3	4	5	6	7
1	1.00						
2	.01	1.00					
3	.01	.01	1.00				
4	.00	.00	.00	1.00			
5	.00	.00	.00	.00	1.00		
6	.00	.00	.00	.00	.00	1.00	
7	.00	.00	.00	.00	.00	.00	1.00

	COEFFICIENT	ECART-TYPE	TEST T	ELASTICITE
NPT	-.2796580E+02	(.86693E+02)	-.3226	-.8818
NEL	-.4016182E+03	(.15454E+01)	-.0260	-.0031
SL14	-.3409047E+02	(.17580E+01)	-.1934	-.7410
U1	-.1388567E+01	(.26880E+01)	-.5180	-.3254
N	-.1200601E+01	(.20595E+01)	-.5830	-.1106
LFPAN/LFM	-.1507035E+01	(.29049E+01)	-.5180	-.9262
CONSTANTE	-.6179746E+00	(.16219E+01)	-.3810	1.8310

N2	R2C	RMO	DW
.085206	-.395469	-.140217	2.237795

VILLE	NEL	IWPI	U1	N	E	T2/NEL	NH	CONSTANTE
HFX	1.00	122.00	6.90	2.21	97.00	4.30	2.00	1.00
SDY	1.00	117.00	12.30	-1.10	30.00	10.00	1.00	1.00
SJS	1.00	133.00	8.30	1.30	43.00	11.70	3.00	1.00
CTN	1.00	127.00	8.10	2.50	11.00	6.10	1.00	1.00
ICT	7.00	104.00	8.10	2.96	184.00	15.40	51.00	1.00
HLL	2.00	105.00	8.50	2.87	57.00	22.50	6.00	1.00
HIL	0.00	105.00	9.20	1.18	1111.00	63.70	0.00	1.00
SHK	2.00	116.00	7.60	1.13	33.00	5.00	6.00	1.00
GRHY	1.00	122.00	7.60	2.36	15.00	9.00	0.00	1.00
SRL	1.00	110.00	7.60	1.71	12.00	9.00	3.00	1.00
CHI	1.00	107.00	15.00	1.87	43.00	9.00	7.00	1.00
OHL	1.00	123.00	7.60	4.41	18.00	11.80	1.00	1.00
SIS	1.00	102.00	14.40	1.39	9.00	5.00	8.00	1.00
TOR	11.00	95.00	6.90	3.22	1265.00	6.70	116.00	1.00
STI	1.00	105.00	4.80	1.76	11.00	3.00	2.00	1.00
HMT	1.00	91.00	7.60	1.54	217.00	5.20	21.00	1.00
SAK	2.00	98.00	6.20	1.45	33.00	1.50	3.00	1.00
ASH	1.00	89.00	5.40	2.15	33.00	13.00	4.00	1.00
CHL	0.00	102.00	5.20	1.09	19.00	10.70	2.00	1.00
OSH	0.00	88.00	5.20	1.12	51.00	4.30	8.00	1.00
SDY	0.00	101.00	6.10	1.62	63.00	6.50	5.00	1.00
SAT	2.00	105.00	8.70	1.90	55.00	18.50	1.00	1.00
CPG	2.00	107.00	7.40	1.36	243.00	7.40	12.00	1.00
CGY	11.00	98.00	7.30	4.64	181.00	10.70	54.00	1.00
YIC	0.00	94.00	6.40	4.23	83.00	6.90	9.00	1.00
MOYENNE	2.64	106.41	7.91	3.11	161.72	10.83	17.72	1.00
ECART-TYPE	4.073	11.495	2.440	2.931	297.681	11.601	33.571	0.000

LA MATRICE DE CORRELATION

	1	2	3	4	5	6	7
1	1.00						
2	.20	1.00					
3	.03	.27	1.00				
4	-.23	-.03	-.11	1.00			
5	-.30	-.13	-.12	.57	1.00		
6	-.34	-.08	.08	.64	-.06	1.00	
7	.00	.00	.00	.00	.00	.00	1.00
Y	-.29	-.13	.05	.45	-.08	.90	.00

	COEFFICIENT	ECART-TYPE	TEST T	ELASTICITE
1 IWPI	.9079209E-02	(.20733E-01)	-.4379	.3656
2 N	-.9325880E-01	(.86298E-01)	-.9684	.2793
3 E	-.5566529E-01	(.79816E-01)	-.6474	.0655
4 T2/NEL	-.5592615E-02	(.16213E-02)	-3.4496	.3422
5 NH	.644301E-01	(.32988E-01)	2.6204	.3544
6	.1527388E+00	(.16897E-01)	9.0393	1.0243
7 CONSTANTE	.1105449E+00	(.22726E+01)	.0466	.0418

R2 .89052 R2C .853402 RHO -.269257 DW 2.391001

VILLE	NTS	IWPI	U1	N	E	NH	APP/LFM	T2/APP	Q	NL	CONSTANTE
SUY	2.00	117.00	12.30	-1.10	30.00	1.00	.06	83.00	0.00	3.00	1.00
DCT	3.00	104.00	8.10	3.40	184.00	51.00	.30	31.00	2.00	4.00	1.00
HLL	3.00	105.00	8.50	4.87	57.00	6.00	.87	14.00	5.10	41.00	1.00
SHK	3.00	116.00	7.60	1.13	33.00	0.00	.62	8.00	1.60	3.00	1.00
GHY	3.00	122.00	7.60	2.13	15.00	0.00	.32	18.00	4.50	5.00	1.00
SRL	3.00	110.00	7.60	3.71	12.00	3.00	.21	50.00	4.30	6.00	1.00
CHI	3.00	107.00	15.00	1.87	43.00	7.00	.63	5.00	3.20	3.00	1.00
SIS	3.00	102.00	14.40	3.39	9.00	6.00	.19	38.00	11.80	4.00	1.00
TUN	3.00	95.00	6.40	2.22	1265.00	116.00	.19	7.00	6.70	2.00	1.00
SYT	3.00	105.00	4.80	3.76	11.00	2.00	.10	33.00	0.00	2.00	1.00
SAR	1.00	98.00	6.20	1.45	33.00	3.00	.08	17.00	6.00	2.00	1.00
SSM	3.00	89.00	5.40	2.15	33.00	4.00	.26	22.00	7.00	2.00	1.00
OSH	3.00	88.00	5.20	1.15	51.00	8.00	.75	5.00	3.60	7.00	1.00
SHY	3.00	101.00	6.10	4.82	63.00	5.00	.17	17.00	4.80	7.00	1.00
VAN	3.00	92.00	6.40	4.78	486.00	141.00	.59	18.00	10.20	91.00	1.00
SAT	3.00	105.00	6.70	4.90	55.00	1.00	.46	24.00	0.00	81.00	1.00
EGY	1.00	98.00	7.50	4.64	181.00	54.00	.29	35.00	14.00	84.00	1.00
MOYENNE	3.08	106.41	7.41	3.11	161.72	17.72	.34	25.00	3.62	18.48	1.00
ECART-TYPE	2.885	11.895	2.440	2.931	297.681	33.571	.231	18.486	3.533	37.623	0.000

LA MATRICE DE CORRELATION

	1	2	3	4	5	6	7	8	9	10
1	1.00									
2	.32	1.00								
3	.15	.26	1.00							
4	.43	.10	.01	1.00						
5	.05	.02	.13	.82	1.00					
6	.37	.28	.16	.19	.10	1.00				
7	.47	.13	.44	.26	.46	.58	1.00			
8	.28	.05	.09	.16	.57	.27	.11	1.00		
9	0.00	0.00	0.00	0.00	0.00	0.00	0.09	.38	1.00	
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
r	.20	.23	.15	.14	.25	.10	.11	.44	.21	0.00

	COEFFICIENT	ECART-TYPE	TEST T	ELASTICITE
1	1414703E+00	(.94576E-01)	1.4958	4.9591
2	999099E+01	(.26246E+00)	-.3810	-.2607
3	5709329E-01	(.31224E+00)	-.3181	-.0887
4	1753982E-03	(.35337E-02)	-.0328	-.00493
5	2402492E-01	(.49210E-01)	.4882	-.14033
6	4498760E+01	(.45140E+01)	.9966	.50022
7	4412237E-01	(.35629E-01)	.7838	.3634
8	4574207E+00	(.322495E+00)	1.9979	.5456
9	226584E-01	(.21677E-01)	.4344	-.1380
10	1534539E+02	(.94006E+01)	-1.6366	-5.0681

R2 .520122 R2C -.096864 RMD .018688 DM 1.765226

VILLE	T2/APP	PMPI	UI	N	E	R	CONSTANTE
SDY	83.00	117.00	12.30	-1.10	30.00	55.80	1.00
DCT	31.00	104.00	8.10	3.87	184.00	45.20	1.00
HLL	14.00	105.00	8.50	4.13	57.00	42.20	1.00
SHK	18.00	116.00	7.80	2.10	33.00	37.10	1.00
CHY	50.00	122.00	7.80	5.71	12.00	34.00	1.00
SHY	50.00	119.00	15.00	1.87	43.00	44.30	1.00
SHS	38.00	102.00	14.40	13.22	1265.00	46.50	1.00
TUR	7.00	195.00	6.90	8.76	11.00	48.50	1.00
SHY	33.00	105.00	4.80	4.45	33.00	62.60	1.00
SHK	17.00	194.00	6.20	2.12	33.00	63.50	1.00
SHM	22.00	88.00	5.20	1.12	33.00	53.40	1.00
SHY	17.00	101.00	6.10	5.82	63.00	50.80	1.00
VAN	18.00	192.00	9.40	4.78	486.00	60.50	1.00
SAT	24.00	105.00	8.70	4.90	55.00	54.70	1.00
CGY	35.00	198.00	7.50	4.64	141.00	65.00	1.00
MOYENNE	25.00	106.41	7.91	3.91	191.72	51.86	1.00
ECART-TYPE	18.986	11.895	2.440	2.931	297.661	8.466	0.000

LA MATRICE DE CORRELATION

	1	2	3	4	5	6
1	1.00					
2	.32	1.00				
3	.11	.26	1.00			
4	.57	.10	.01	1.00		
5	.57	.26	.06	.06	1.00	
6	0.00	0.00	0.00	0.00	0.00	1.00
Y	.37	.28	.14	.26	.06	0.00

	COEFFICIENT	ECART-TYPE	TEST T	ELASTICITE
1 MPI	.139442E+01	{ .70028E+00 }	1.6277	4.8518
2 UI	.1002384E+01	{ .17675E+01 }	.5671	.3173
3 N	.036447E+01	{ .14275E+01 }	.7261	.1286
4 E	.4906907E+02	{ .17020E+01 }	.2883	.0317
5 R	.9110415E+00	{ .65835E+00 }	1.3840	1.8409
6 CONSTANTE	-.1501325E+03	{ .95866E+02 }	-1.3601	-6.0053

R2 .321420 R2C .012975 RMO -.128973 DW 1.910278

VILLE	NMPA/NH	MP1	UI	N	E	LFPAM/LFM	CONSTANTE
1	100.00	125.00	7.40	19	43.00	18.40	1.00
2	50.00	122.00	6.90	2.21	97.00	19.80	1.00
3	100.00	117.00	12.30	-1.10	30.00	19.50	1.00
4	20.00	104.00	8.10	3.96	184.00	20.80	1.00
5	0.00	105.00	8.50	4.67	57.00	21.20	1.00
6	0.00	116.00	7.60	1.3	35.00	19.70	1.00
7	33.00	110.00	7.60	5.71	12.00	21.80	1.00
8	14.00	107.00	17.60	1.47	43.00	21.70	1.00
9	0.00	123.00	17.60	4.41	18.00	16.80	1.00
10	13.00	102.00	14.90	13.39	19.00	21.90	1.00
11	17.00	195.00	6.90	3.22	1265.00	22.60	1.00
12	50.00	105.00	4.80	6.78	11.00	17.10	1.00
13	34.00	101.00	7.60	1.54	217.00	21.60	1.00
14	33.00	100.00	5.70	4.33	208.00	15.90	1.00
15	33.00	82.00	9.20	1.45	33.00	22.40	1.00
16	50.00	89.00	9.40	2.15	33.00	23.20	1.00
17	0.00	102.00	5.20	1.09	19.00	20.00	1.00
18	25.00	102.00	5.20	1.12	51.00	23.70	1.00
19	50.00	103.00	5.70	4.60	36.00	19.90	1.00
20	20.00	101.00	9.10	6.62	65.00	20.00	1.00
21	28.00	102.00	9.40	4.74	482.00	20.90	1.00
22	0.00	105.00	6.70	1.90	53.00	19.90	1.00
23	8.00	107.00	7.40	1.38	243.00	19.50	1.00
24	33.00	98.00	7.50	4.64	181.00	22.80	1.00
25	44.00	94.00	8.40	4.25	83.00	18.60	1.00
Moyenne	29.96	106.41	7.41	3.61	161.72	20.74	1.00
ECART-TYPE	26.580	11.895	2.480	2.631	297.681	2.421	0.000

LA MATRICE DE CORRELATION

1	1.00					
2	.19	1.00				
3	-.13	.25	1.00			
4	-.31	-.07	.01	1.00		
5	-.00	.04	-.13	.21	1.00	
6	.00	.00	.00	.00	1.00	
Y	.21	-.01	-.17	-.12	-.24	.00

1	MP1	COEFFICIENT	ECART-TYPE	TEST I	ELASTICITE
1	MP1	.2521365E+00	(.64859E+00)	.3887	.8456
2	UI	.3744297E+00	(.23793E+01)	.1592	.1001
3	N	.1704721E+01	(.19987E+01)	.8554	.1774
4	E	.4246756E+02	(.24007E+01)	.1769	.0229
5	LFPAM/LFM	.2897222E+01	(.24953E+01)	.9888	-.17081
6	CONSTANTE	.3220444E+02	(.96034E+02)	.6061	1.19427
R2					
.117307	R2C				
.117307	RMU	.071479	1.665850		

VILLE	Q	MPD	UI	N	E	NH/IC	LC2024/IC	LCM/IC	CONSTANTE
SJH	2.00	100.00	7.40	19	43.00	2.00	13.00	67.00	1.00
HFX	2.00	100.00	12.60	2.21	97.00	2.00	13.00	67.00	1.00
SDY	2.00	100.00	12.60	-1.10	30.00	3.70	13.00	67.00	1.00
SJS	2.00	100.00	12.60	-5.30	41.00	4.10	13.00	67.00	1.00
CTH	2.00	100.00	12.60	2.50	11.00	5.20	13.00	67.00	1.00
OCT	2.00	100.00	12.60	3.90	144.00	20.00	13.00	67.00	1.00
HLL	2.00	100.00	12.60	4.87	57.00	15.40	13.00	67.00	1.00
MTL	2.00	100.00	12.60	1.18	111.00	15.40	13.00	67.00	1.00
SRK	2.00	100.00	12.60	4.13	33.00	6.00	13.00	67.00	1.00
GRY	2.00	100.00	12.60	2.36	15.00	2.00	13.00	67.00	1.00
CPI	2.00	100.00	12.60	5.71	12.00	13.00	13.00	67.00	1.00
CHI	2.00	100.00	12.60	1.87	43.00	22.00	13.00	67.00	1.00
DMI	2.00	100.00	12.60	4.41	18.00	4.00	13.00	67.00	1.00
STS	2.00	100.00	12.60	13.39	9.00	47.10	13.00	67.00	1.00
TOR	2.00	100.00	12.60	3.22	126.00	11.10	13.00	67.00	1.00
STT	2.00	100.00	12.60	8.76	11.00	8.00	13.00	67.00	1.00
MMT	2.00	100.00	12.60	1.54	217.00	8.00	13.00	67.00	1.00
CTT	2.00	100.00	12.60	4.03	208.00	13.00	13.00	67.00	1.00
KAP	2.00	100.00	12.60	4.55	33.00	0.00	13.00	67.00	1.00
ESM	2.00	100.00	12.60	2.15	33.00	0.00	13.00	67.00	1.00
CHI	2.00	100.00	12.60	1.09	10.00	7.10	13.00	67.00	1.00
OSW	2.00	100.00	12.60	1.12	51.00	0.00	13.00	67.00	1.00
RTD	2.00	100.00	12.60	4.60	36.00	3.00	13.00	67.00	1.00
SRV	2.00	100.00	12.60	1.10	63.00	8.10	13.00	67.00	1.00
VAN	2.00	100.00	12.60	4.78	486.00	20.00	13.00	67.00	1.00
WRT	2.00	100.00	12.60	1.90	55.00	1.10	13.00	67.00	1.00
WPG	2.00	100.00	12.60	1.36	243.00	3.30	13.00	67.00	1.00
CGY	2.00	100.00	12.60	4.64	131.00	16.10	13.00	67.00	1.00
YIC	2.00	100.00	12.60	4.23	83.00	5.70	13.00	67.00	1.00
MOYENNE	3.62	106.41	7.91	3.11	161.72	9.77	16.07	67.40	1.00
ECART-TYPE	3.533	11.805	2.440	2.931	297.681	9.285	9.270	8.701	0.000

LA MATRICE DE CORRELATION

	1	2	3	4	5	6	7	8
1	1.00							
2	0.07	1.00						
3	0.21	0.23	1.00					
4	0.15	0.17	0.05	1.00				
5	0.11	0.15	0.04	0.05	1.00			
6	0.07	0.15	0.05	0.35	0.47	1.00		
7	0.00	0.00	0.00	0.00	0.00	0.00	1.00	
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Y	-.50	.14	.38	.12	.63	.18	-.20	.00

	COEFFICIENT	ECART-TYPE	TEST T	ELASTICITE
WDT	-.7297647E-01	(.63146E-01)	-1.1557	-2.1448
UI	.3298404E+00	(.72522E+00)	-1.0142	-.7200
N	.1152643E+00	(.27272E+00)	-.4226	-.0980
E	.1126358E+02	(.10169E+02)	.5866	.0502
NH/IC	.2822224E+00	(.12716E+00)	2.2666	.7770
LC2124/LC	.3638683E-01	(.73766E-01)	.4933	.1705
LCM/LC	.4792907E-01	(.73228E-01)	.6545	.0933
CONSTANTE	.7506743E+01	(.76747E+01)	.0778	2.0727

VILLE	SL1	#WP1	U1	N	E	LC224/IC	LC2549/IC	LC500/IC	CONSTANTE
SUN	.28	125.00	7.40	19	43.00	40.00	40.00	13.00	1.00
WFX	.22	117.00	6.00	21	87.00	13.00	51.00	22.00	1.00
SDY	.22	117.00	12.00	30	30.00	10.00	49.00	20.00	1.00
SJS	.30	133.00	8.30	55	43.00	10.00	65.00	6.00	1.00
DTM	.90	27.00	8.10	2	11.00	25.00	25.00	25.00	1.00
DCT	.46	104.00	8.10	3	184.00	18.00	57.00	18.00	1.00
HLL	.52	105.00	8.30	4	57.00	21.00	63.00	17.00	1.00
MIL	.54	105.00	9.20	1	1111.00	15.00	65.00	12.00	1.00
SBK	.44	116.00	7.60	3	33.00	6.00	72.00	17.00	1.00
GRY	.50	122.00	7.60	2	15.00	13.00	88.00	13.00	1.00
SPL	.34	110.00	7.60	5	12.00	29.00	63.00	0.00	1.00
CHI	.48	107.00	15.00	1	43.00	17.00	71.00	8.00	1.00
DML	.48	107.00	7.60	4	18.00	11.00	67.00	22.00	1.00
SIS	.29	102.00	14.00	13	9.00	40.00	50.00	17.00	1.00
YAD	.25	105.00	6.00	22	1265.00	17.00	53.00	18.00	1.00
STT	.20	105.00	4.80	2	11.00	15.00	17.00	32.00	1.00
HNT	.37	91.00	7.60	1	217.00	19.00	49.00	24.00	1.00
OTT	.57	100.00	5.90	4	200.00	10.00	48.00	23.00	1.00
RAP	.48	98.00	6.20	4	33.00	25.00	54.00	8.00	1.00
SSM	.35	89.00	5.40	2	33.00	0.00	80.00	13.00	1.00
CWL	.92	102.00	5.20	1	19.00	0.00	57.00	29.00	1.00
DSH	.47	88.00	5.20	1	51.00	12.00	75.00	6.00	1.00
PTD	.47	103.00	5.70	4	36.00	16.00	44.00	33.00	1.00
SBY	.74	101.00	6.10	1	63.00	27.00	64.00	0.00	1.00
VAN	.39	92.00	9.40	4	486.00	17.00	45.00	28.00	1.00
SKT	.23	105.00	8.70	9	55.00	15.00	60.00	14.00	1.00
WDR	.35	107.00	7.40	1	243.00	14.00	52.00	32.00	1.00
CGY	.10	98.00	7.50	4	181.00	14.00	49.00	25.00	1.00
VIC	.22	94.00	8.40	2	83.00	5.00	52.00	41.00	1.00
MOYENNE	.43	106.41	7.91	3.11	161.72	16.07	55.72	18.83	1.00
ECART-TYPE	.194	11.895	2.440	2.931	297.681	9.279	14.800	9.458	0.000

LA MATRICE DE CORRELATION

	1	2	3	4	5	6	7	8
1	1.00							
2	.15	1.00						
3	.27	.23	1.00					
4	.20	.11	.17	1.00				
5	.05	.07	.12	.04	1.00			
6	.17	.07	.26	.01	.29	1.00		
7	.00	.16	.20	.02	.16	.57	1.00	
8	.00	.00	.00	.00	.00	.00	.00	1.00
Y	.06	-.21	-.29	.05	-.11	.19	.06	.00

	COEFFICIENT	ECART-TYPE	TEST T	ELASTICITE
WP1	.2063589F-A2	(.25549F-02)	.5885	.5063
U1	-.1484863F-A1	(.17214F-01)	-.8626	-.2700
N	-.2049041F-A1	(.15311F-01)	-1.3383	-.1469
E	.4855758F-A4	(.13576F-03)	.3577	.2181
LC224/IC	.5538011F-A2	(.44435F-02)	.8995	.2166
LC2549/IC	.4372433F-A2	(.41727F-02)	1.0479	.5617
LC500/IC	.8222124F-A2	(.70001F-02)	1.1746	.3560
CONSTANTE	-.1048705F-A0	(.50097F+00)	-.1775	-.2418

VILLE	V	WPI	UI	N	E	LC2024/LC NH/LC	LCP/LC	CONSTANTE
SJM	135.00	125.00	7.40	.19	43.00	40.00	40.00	1.00
DFX	139.00	122.00	6.90	2.21	97.00	2.10	25.00	1.00
SUY	117.00	117.00	12.50	-1.10	30.00	13.00	40.00	1.00
SJS	136.00	133.00	8.30	5.30	43.00	3.70	70.00	1.00
CTM	124.00	127.00	8.10	2.50	11.00	6.10	41.00	1.00
JTL	104.00	104.00	8.10	3.96	144.00	20.60	25.00	1.00
SHK	104.00	105.00	9.20	1.18	111.00	0.00	22.00	1.00
SHY	146.00	116.00	7.60	1.13	33.00	9.70	29.00	1.00
SRL	110.00	122.00	7.60	2.36	15.00	0.00	50.00	1.00
SMI	44.00	110.00	7.60	5.71	12.00	13.00	57.00	1.00
UWL	36.00	123.00	17.60	1.47	42.00	22.60	26.00	1.00
SIS	9.00	102.00	14.90	4.41	18.00	47.30	11.00	1.00
TUM	123.00	95.00	6.40	3.39	1265.00	47.10	11.00	1.00
STT	123.00	105.00	4.80	3.76	11.00	11.10	35.00	1.00
STT	192.00	191.00	7.60	1.54	117.00	16.00	50.00	1.00
JTT	127.00	100.00	5.40	1.93	217.00	19.00	37.00	1.00
SSA	114.00	106.00	5.20	4.35	204.00	13.50	26.00	1.00
SSA	143.00	149.00	5.40	2.15	35.00	9.30	33.00	1.00
CSL	130.00	102.00	5.20	1.09	19.00	7.10	71.00	1.00
SHY	141.00	103.00	5.70	4.12	31.00	9.60	35.00	1.00
SHY	112.00	101.00	6.10	4.62	36.00	3.90	42.00	1.00
YAN	150.00	192.00	9.40	4.78	63.00	8.60	27.00	1.00
SPI	150.00	192.00	9.40	4.90	486.00	20.10	45.00	1.00
SPI	130.00	107.00	7.40	1.36	233.00	3.30	69.00	1.00
VCY	127.00	94.00	6.40	4.23	141.00	14.00	60.00	1.00
VCY	127.00	94.00	6.40	4.23	141.00	15.70	66.00	1.00
MOYENNE	99.89	106.91	7.91	3.11	161.72	9.97	40.52	1.00
Ecart-type	41.773	11.895	2.440	2.631	297.681	9.279	16.092	0.000

LA MATRICE DE CORRELATION

	1	2	3	4	5	6	7	8
1	1.00							
2	.16	1.00						
3	-.07	.23	1.00					
4	-.24	.01	-.31	1.00				
5	-.31	.50	.67	-.04	1.00			
6	-.12	-.13	-.17	-.16	-.41	1.00		
7	.00	.00	.00	.00	.00	.00	1.00	
8	.03	-.47	-.36	-.07	-.24	-.43	.36	1.00

I	WPI	COEFFICIENT	Ecart-type	TEST T	ELASTICITE
1	WPI	.363230E+00	(.94167E+00)	3857	.3869
2	UI	.412287E+01	(.46448E+01)	-1.7574	-.6467
3	N	-.473242E+01	(.34107E+01)	-1.1475	-.1361
4	E	.1705740E+03	(.24147E+01)	.0091	.0403
5	LC2024/LC	.2043396E+00	(.95290E+00)	.2622	.0424
6	NH/LC	.7109720E+00	(.18771E+01)	.3820	.0701
7	LCP/LC	.4496530E+00	(.56425E+00)	1.5058	.3446
8	CONSTANTE	.936916AE+02	(.10112E+03)	.9266	.9379

VILLE	C0	IWPI	UI	T2/APP	APP/LFM	Q	NH/LC	CONSTANTE
SML	100.00	110.00	7.60	50.00	.21	4.30	13.00	1.00
TUR	58.00	95.00	6.90	7.00	.19	6.70	11.10	1.00
STT	42.00	105.00	4.80	33.00	.10	0.00	8.00	1.00
SAH	100.00	98.00	6.20	17.00	.08	6.00	6.00	1.00
SSM	83.00	89.00	5.40	22.00	.20	7.00	9.30	1.00
NSH	75.00	88.00	5.20	5.00	.75	3.60	9.60	1.00
SBY	83.00	101.00	6.10	17.00	.17	4.80	8.10	1.00
SAT	93.00	105.00	8.70	24.00	.46	0.00	1.10	1.00
CGY	75.00	98.00	7.50	35.00	.29	14.00	16.10	1.00
VIC	100.00	94.00	8.40	12.00	.25	3.80	5.70	1.00
MOYENNE	85.90	106.41	7.91	25.07	.33	3.62	9.77	1.00
ECART-TYPE	11.103	11.895	2.140	19.088	1.05	1.511	9.285	0.000

LA MATRICE DE CORRELATION

	1	2	3	4	5	6	7
1	1.00						
2	.71	1.00					
3	.75	.18	1.00				
4	.02	.03	-.33	1.00			
5	.33	.07	.08	-.12	1.00		
6	.07	.18	.16	-.08	.74	1.00	
7	.06	.00	.00	.00	.00	.00	1.00
Y	.47	.24	.43	-.26	-.43	-.46	.00

	COEFFICIENT	ECART-TYPE	TEST T	ELASTICITE
1 IWPI	-.1031549E+01	(.15279E+01)	-.6751	-1.2779
2 UI	-.1700299E+01	(.46941E+01)	-.2981	-.1289
3 T2/APP	.9442018E+00	(.63840E+00)	1.5418	.2872
4 APP/LFM	-.1640952E+02	(.30018E+02)	-.5467	-.0638
5 Q	-.7265352E+00	(.25296E+01)	-.2872	-.0306
6 NH/LC	-.2300884E+01	(.22164E+01)	-1.0381	-.2618
7 CONSTANTE	.1845273E+03	(.13518E+03)	1.3651	2.1482

N2 .675029 N2C .025086 NMI -.426164 DW 2.536487

APPENDIX II

POST OFFICE QUESTIONNAIRE

POST OFFICE DEPARTMENT
EMPLOYEE COMPENSATION BRANCH

SURVEY

Post Office

Where actual data for any question is not available please estimate answer and identify as estimated with an asterisk *

1. Strength effective 31 March 1973:-

- (a) Letter Carriers
- (b) Supervisory Letter Carriers
- (c) New L.C. positions established in fiscal year 1972/1973

2. How many Letter Carriers with less than one year service are in each of the following age categories?

- (a) Under 20 (b) 20 to 25
- (c) 26 to 50 (d) Over 50

3. Please note that in this question only estimated, not actual data is requested.

- (a) Estimated number of LC/SLC resignations during the fiscal year 1972/1973.
LC SLC
- (b) Estimated number in 3(a) with less than 6 months service when they resigned.
LC SLC

4. (a) How many external applications were received for Letter Carrier positions during the fiscal year 1972/1973? (Where applicable please obtain data or estimate from Canada Manpower Centre)

- No. of Applications
- (b) How many passed the written test?
- (c) How many passed the oral interview and were put on eligible list?
- (d) If a cut-off mark other than the normal pass mark was used on the last written test please indicate what the cut-off mark was.

- 2 -

5. (a) How many applicants remained on your eligible list(s) for Letter Carrier positions as of 31 March 1973?

- internal list (if either list not applicable mark N/A)
- external list
- total

(b) How many letter carrier eligible lists were established during the fiscal year 1972/1973?

- internal lists (if either list not applicable mark N/A)
- external lists
- total

(c) How many names are usually remaining on a list when a new list is established?

Please complete and return by 30 July 1973 to:

Research and Employee Statistics Division
Employee Compensation Branch
Post Office Department
Sir Alexander Campbell Building
Confederation Heights
OTTAWA, Ontario
K1A 0B1

APPENDIX III

FOUR ALTERNATIVE REGIONALIZATION

PLANS AND COSTS

APPENDIX III

EMPLOYEE COMPENSATION BRANCH

POSITION PAPER CONCERNING

TRANSITION TO REGIONAL PAY SCALES

The pay position paper (Ritchie - Powell 1972) substantiated the need for regional rates of pay for C.P.U. employees. Two methods of regional pay rates were included in that paper and in this costing exercise a third alternative is presented.

Table 1 indicates that a 6.13% national increase applied across all occupational classifications of the C.P.U. non-supervisory employees will cost \$220,994,682.59. This represents an additional cost of \$12,806,118.86 over the forecast 1972-73 straight time payroll of \$208,188,563.73 which was calculated using the population figures generated 01/01/72 by the Compensation Research and Statistics Division survey and the rates of pay for each increment level in each occupational classification in effect at the termination of the present agreement 26/03/72.

These same procedures and population figures by class and level were used in costing the various regional pay plans with the only exception being that the rates of pay used were those resulting from applications of the recommended pay increase rounded up to the nearest cent in cases where the recommended cents per hour increase was stated in half cent amounts.

1. The initial plan (entitled Plan 2, Table 1) recommended the following increases, Atlantic Region 3%, Quebec Region 4%, Ontario Region 8%, Western Region 6.5% and the Montreal/Toronto Metropolitan area which was defined as the Montreal and Toronto Post Office only 7.5%.

This regional pay plan would cost \$221,731,366.29 which represents an additional cost of \$736,683.38 over the 6.13% nationally applied salary increase and \$13,542,802.56 over the forecast 1972-73 straight-time payroll calculated at present rates of pay.

2. A second alternative is presented in Table 1 and is entitled "plan 3". This plan recommended the following percentage increases. Atlantic Region 3%, Quebec Region 4%, Montreal Metro (again Montreal Post Office employees only) 5%, Ontario Region 8%, Toronto Metro, (Toronto Post Office employees only) 8%, Western Region 5% and Vancouver Metro (Vancouver Post Office employees only) 7%.

The cost of this alternative plan amounts to \$220,933,970.93. This is indicated by Table 1 as the cheapest of the regional pay alternative plans but yet the cost of it represents a departure of \$521,384.34 from a 6.13% national increase and a \$12,745,407.20 additional expenditure to be added to the 1972-73 forecast straight-time payroll.

3. The final alternative plan is indicated by Table 1 as "Plan 4". It represents a purely regional approach with account being taken for the metropolitan areas.

This alternative recommended the following regional increases in pay: Atlantic Region 3%, Quebec Region 5%, Ontario Region 8%, and the Western Region 6.5%.

The cost of this alternative is \$221,471,738.52 which is \$1,059,151.93 above a 6.13% national increase and \$13,283,174.79 additional expense to the 1972-73 forecast straight-time payroll calculated on present rates of pay and (POD) population figures as of 01/01/72.

Table 1 yields a summary of plan recommendations and differences in costs. Tables 2 - 12 indicate the costing procedures used and serve as supporting documentation in the generation of Table 1.

REGIONAL PAY ANALYSIS

$\Delta WB = (1.13, -1.05)$

TABLE 1

SUMMARY OF COSTS

1972-1973 FORECAST S.T.P. \$ 208,188,563.73 WB

PLAN 1 6.13% NATIONAL INCREASE

COST = \$ 220,994,682.91 ΔWB

PLAN 2

- a) ATLANTIC 3%
- b) QUEBEC 4%
- c) ONTARIO — 8%
- d) WESTERN 6.5%
- e) M/T 7.5%

COST = \$ 221,731,366.29 WB

PLAN 3

- a) ATLANTIC 3%
- b) QUEBEC 4%
- c) MONTREAL 5%
- d) ONTARIO — 8%
- e) TORONTO 8%
- f) WESTERN 5%
- g) VANCOUVER 7%

COST = \$ 220,672,214.37 WB

PLAN 4

(ALTERNATIVE)
(PURE REGIONAL)

- a) ATLANTIC 3%
- b) QUEBEC 5%
- c) ONTARIO — 8%
- d) WESTERN 6.5%

COST = \$ 221,471,738.52 WB

COSTS OF REGIONAL PAY OVER NATIONAL INCREASE OF 6.13%

$(\Delta WB - 6.13)$

<u>PLAN</u>		<u>% INCREASE</u>
2	\$ 736,683.38	0.33
3	\$ 322,468.54	-0.14 (comp. increase 6.13)
4	\$ 477,055.61	0.21

COSTS OF REGIONAL PAY OVER

-387-

FORECAST S.T.P.R. 1972-73

PLAN

% INCREASE

2	\$13,542,802.56	6.51
3	\$12,483,560.64	5.99
4	\$13,283,174.79	6.38

alt. = win $\frac{1}{y}$ + 6.13

APPENDIX IV

REAL WAGE AND RELATIVE WAGE

EFFECTS OF THE 1972 TREASURY BOARD PROPOSAL

TO LETTER CARRIERS

This appendix investigates two aspects of the specific wage regionalization plans submitted to the letter carriers on May 3, 1972. It is hoped that insights can be gained into the motives for the rejection of the proposal and also into the probable labour market experience effects of the change in geographic wage structure.

Table A IV-1 (plate C) shows the changes in real wages in each of the proposed regions for the years 1972-73 and 1973-74.¹ In nineteen of the twenty-two cases there would have been declines in real wages regardless of region. (There would have been marginal increases, 0.2, in both Toronto and Vancouver for 1972-73 and no change in that year for Ontario-less-Toronto). Over the two years there would have been lower real wages in all regions ranging from a loss of 14.1% in Newfoundland to 3.2% in Toronto. The mean indicated (unweighted) decline was 7.6%. Bearing in mind the price trends in 1971 and 1972 (see plate B for 1971-72, 1972-73 and 1973-74) and the union's awareness of these movements, this could have been one reason for the union's rejection of the Treasury Board proposal.

¹ Changes in real wages are computed thusly;

$$\left[\frac{(\text{LC wage } 1973) - (\text{LC wage } 1972)}{(\text{LC wage } 1972)} \times 100 \right] - \left[\frac{(\text{CPI city}_i 1973) - (\text{CPI city}_i 1972)}{(\text{CPI city}_i 1972)} \times 100 \right]$$

Table AIV-1

CHANGES IN REAL WAGES

Plate A CONSUMER PRICE INDEX (CPI)

	NFLD	PEI	NS	NB	ATL	QUE 1969=100	MTL	ONT	TOR	MAN	SAS	ALTA	BC	VAN
1972	127.5	-	129.9	129.5	-	107.0	130.4	134.2	133.9	131.9	127.3	132.0	-	131.6
1973	177.2	-	137.4	138.1	-	112.0	137.2	141.9	141.3	139.3	133.6	137.2	-	138.6
1974	154.3	-	149.9	150.8	-	123.7	151.6	156.3	154.2	152.4	144.6	151.3	-	152.4

Plate B $\Delta W =$ as per Treasury Board offer $\Delta P = \Delta CPI = \frac{(CPI, '72) - (CPI, '71)}{CPI, '71}$

1972-73	3.0	3.0	3.0	3.0	3.0	3.4	3.7	5.7	5.7	3.4	3.1	3.7	5.5	5.5
	7.6	-	5.8	6.6	-	4.7	5.2	5.7	5.5	5.6	4.9	5.5	-	5.3
1973-74	3.0	3.0	3.0	3.0	3.0	3.4	3.7	5.7	5.7	3.4	3.1	3.7	5.5	5.5
	12.5	-	9.1	9.2	-	10.5	10.5	10.2	9.1	9.4	8.2	8.7	-	9.9

Plate C change in real wage $\bar{X} = (\Delta W) - (\Delta P)$

1972-73	-4.6	-	-2.8	-3.3	-	-1.3	-1.5	0	+0.2	-2.2	-1.8	-1.8	-	+0.2
1973-74	-9.5	-	-6.1	-6.2	-	-7.1	-6.8	-4.5	-3.4	-6.0	-5.1	-5.0	-	-4.4

Totals: -14.1 - -8.9 -9.5 - -8.4 -8.3 -4.5 -3.2 -8.2 -6.9 -6.8 - -4.2

$\bar{X} = -7.6\%$

Source: Prices + Price Indexes (62 - 002) 1961 = 100 (April 1st)

The second aspect of the wage proposal concerns the effects on letter carrier wage ranks in respective labour markets. It will be recalled that letter carriers' relative wages were to rise in those markets where they were low compared to outside going wages for similar jobs.¹ This is the principle of wage alignment which was given the task of altering labour market experience in the desired direction.

Table A IV-2 (plate C) reveals that, for 1972-74, the letter carrier wage rank would have fallen in every one of the nine regions.² The projected, two year declines ranged from 23.4% in St. John New Brunswick to 9.7% in Halifax and Toronto, with a national mean of -15.2%. Thus even in the high (1974) wage regions (Vancouver Wpi = \$5.06, Toronto = \$4.53, Saskatoon = \$4.35) there would have been deteriorations in letter carrier wage ranks (of 13.8%, 7.0% and 12.6% respectively). With no rises in wage ranks there could not have been any of the improvements in letter carrier labour market experience expected from the Treasury Board policy of alignment to outside comparable wages.

¹ Changes in wage ranks in city_i are computed thusly;

$$\left[\frac{(\text{LC wage } 1973) - (\text{LC wage } 1972)}{(\text{LC wage } 1972)} \times 100 \right] - \left[\frac{(\text{Proxy \#3 wage}_i \text{ } 1973) - (\text{Proxy \#3 wage}_i \text{ } 1972)}{(\text{Proxy \#3 wage}_i \text{ } 1972)} \times 100 \right]$$

² Nine sample cities are taken as representative of the nine regions.

Table AIV-2
CHANGES IN RELATIVE WAGES

Plate A occupation #3 average earnings (MR + TD + JC + BD) ÷ WPI

WPI	St. John's	HFX	St. John	MTL	TOR.	WPG	SASK.	CALG.	VANC.
1972	2.64	2.88	2.81	3.35	3.71	3.28	3.33	3.60	3.83
1973	3.09	3.12	3.05	3.68	4.02	3.47	3.76	3.80	4.24
1974	3.26	3.35	3.69	4.02	4.53	3.99	4.35	4.28	5.06

Plate B

Δ LC wage ÷ as per Treasury Board offer

Δ proxy wage ÷ $\frac{\text{occup. \# 3, '72} - \text{occup. \# 3, '71}}{\text{occup. \# 3, '71}} \times 100$ ÷ Δ WPI)

1972-73	3.0	3.0	3.0	3.7	5.7	3.4	3.1	3.7	5.5
	17.1	8.3	8.5	9.9	8.4	5.8	12.9	5.6	10.7
1973-74	3.0	3.0	3.0	3.7	5.7	3.4	3.1	3.7	5.5
	5.5	7.4	20.9	9.2	12.7	14.9	15.7	12.6	19.3

Plate C

Δ LC wage rank = (Δ WLC) - (Δ WPI)

1972-73	-14.1	-5.3	-5.5	-6.2	-2.7	-2.4	-9.8	-1.9	-5.2
1973-74	-2.5	-4.4	-17.9	-5.5	-7.0	-11.5	-12.6	-8.9	-13.8

Totals: -16.6 -9.7 -23.4 -11.7 -9.7 -13.9 -22.4 -10.8 -19.0

$\bar{X} = -15.2\%$

Source: Labour Canada, Wage Rates, Salaries and Hours of Labour, plus author's computations.

APPENDIX V

NUMBER OF

LETTER CARRIERS PER CITY

AND CITY CODE

NUMBER OF
LETTER CARRIERS PER CITY, CITY CODE

	City	Number of Letter Carriers	
ATLANTIC	SJN, St. John, N.B.	51	
	HFX Halifax, N.S.	96	
	SDY Sydney, N.S.	27	
	SJS St. John's, N.F.L.D.	46	
	CTN Charlottetown, P.E.I.	20	
QUEBEC	QCT Quebec City	248	
	HLL Hull	39	
	MTL Montreal	1145	
	SBK Sherbrooke	62	
	GBY Granby	22	
	SRL Sorel	23	
	CHI Chicoutimi	31	
	DML Drummondville	23	
	SIS Sept Iles	17	
	ONTARIO	TOR Toronto	1047
		SIT St. Thomas	25
IMT Hamilton		255	
OTT Ottawa		326	
SAR Sarnia		50	
SSM Sault Ste. Marie		43	
CWL Cornwall		26	
OSH Oshawa		83	
BTD Brantford		51	
SBY Sudbury		62	
WEST		VAN Vancouver	685
		SKT Saskatoon	94
		WPG Winnipeg	366
	CGY Calgary	336	
	VIC Victoria	157	

Source: Post Office questionnaire (see appendix II).

APPENDIX VI

ALTERNATIVE ECONOMETRIC APPROACHES

INTRODUCTION

Because of the variety of econometric techniques available to the empirical researcher, judgements must be made on the selection of the methods used. Questions can be raised about their appropriateness in any particular case. Questions may be raised about some of the econometric techniques used to derive the estimates reported in Chapter IV. To discover whether those results are particularly sensitive to the econometric methods with which they were derived, the model has been estimated using different techniques. These alternative estimates are presented in this appendix. They turn out to be very similar to those in chapter IV, reinforcing the conclusions of this thesis: locally aligned letter carrier wages are unlikely to achieve the desired changes in labour market experience.

Before presenting the alternative results, the methodological issues are described. These include: the appropriateness of using ordinary least squares (OLS) to estimate parameters of a simultaneous equation model, the effects of different computer programs on the parameter estimates, and the treatment of missing observations.

SIMULTANEITY

In the model developed in chapter III, two of the eight equations contain endogenous explanatory variables. In equation (1) $\frac{APP}{LFm}$ depends on NEL which is itself an endogenous variable. In equation (3) NTS depends on $\frac{APP}{LFm}$, $\frac{T_2}{APP}$ and q , all three of which are endogenous variables. When such simultaneity exists, the use of OLS results in inconsistent and biased estimates of the parameters of the model. An alternative procedure, two stage least squares (2SLS), was therefore used to see if the results are appreciably affected by choice of estimation procedure.

For small samples, as in the present case, both OLS and 2SLS yield biased estimates, but as Cragg has suggested, using Monte Carlo methods, the bias may well be greater with OLS than with 2SLS.¹ However, the variance of the estimators may be less with OLS.² Furthermore, the t-ratios may tend to be too large when OLS procedures are used, so that the probability of rejecting the null hypothesis when it is correct is greater than the level of significance. But this last point may not be an important problem for

¹ J.C. Cragg, "On the Relative Small-Sample Properties of Several Structural Equation Estimators", Econometrica, Vol. 35, No.1 (January, 1967), pp. 89-110.

² Ibid.

this research. The t-ratios reported in the tables IV-1 to IV-17 are not high enough in six of the eight equations for the null hypothesis of no wage effects to be rejected even using low levels of significance.

MODELS

A slightly revised version of the model developed in chapter III has also been estimated. The revisions, though minor, give the model better analytical characteristics and facilitate estimation, particularly when using 2SLS.

For the remainder of this appendix, the revised model is labelled "Model t + 1" while the original one described in chapter III, is "Model t". The equations of Model t are now repeated and Model t + 1 is specified immediately below. It should be noted that for this appendix linear relationships are postulated for each equation in both models.

MODEL SPECIFICATIONS AS IN CHAPTER III

" MODEL t "

$$\frac{APP^1}{LFm} = f^1 (NEL, W, U, N, \frac{LFPAM}{LFm}, S) \text{ ----- (1)}$$

$$NEL = f^2 (\frac{T_2}{NEL}, NH, W, U, N, E) \text{ ----- (2)}$$

$$NTS = f^3 (\frac{APP}{LFm}, \frac{T_2}{APP}, q, W, N, E, NH, NL) \text{ ----- (3)}$$

$$\frac{T_2}{APP} = f^4 (W, U, N, E, R) \text{ ----- (4)}$$

$$\frac{NHPA}{NH} = f^5 (W, U, N, E, \frac{LFPAM}{LFm}) \text{ ----- (5)}$$

$$q = f^6 (\frac{NH}{LC}, \frac{LC20-24}{LC}, \frac{LCm}{LC}, W, U, N, E) \text{ ----- (6)}$$

$$SL^1 = f^7 (\frac{LC20-24}{LC}, \frac{LC25-49}{LC}, \frac{LC50p}{LC}, W, U, N, E) \text{ ----- (7)}$$

$$V = f^8 (\frac{NH}{LC}, \frac{LC20-24}{LC}, \frac{LCp}{LC}, W, U, N, E) \text{ ----- (8)}$$

¹ The symbols have been identified on pp.220-39, and in Appendix I, pp. 369-70.

ALTERNATIVE SPECIFICATIONS

" MODEL t + 1 "

$$\frac{NH}{LC} \equiv q + v, \quad v \equiv r + e \text{ ----- (9)}$$

$$q = f^6 \left(W, \frac{LC20-24}{LC}, \frac{LCm}{LC}, W, U, N, E \right) \text{ ----- (6)}$$

$$\frac{APP}{LFm} = f^1 \left(NEL, S, W, U, N, \frac{LFPAM}{LFm} \right) \text{ ----- (1)}$$

$$NEL = f^{10} \left(\frac{T_2}{APP}, \frac{APP}{LFm}, \frac{NH}{LC} \right) \text{ ----- (10)}$$

$$\frac{T_2}{APP} = f^{11} \left(\frac{NH}{LC}, W, U, N, E, R \right) \text{ ----- (11)}$$

$$\frac{NHPA}{NH} = f^{12} \left(\frac{NH}{LC}, W, U, N, E, \frac{LFPAM}{LFm} \right) \text{ ----- (12)}$$

$$\frac{LC20-24}{LC} = f^{13} \left(\frac{NH}{LC}, W, U, N, E, \frac{LFm 20-24}{LFm} \right) \text{ ----- (13)}$$

$$\frac{LC25-49}{LC} = f^{14} \left(\frac{NH}{LC}, W, U, N, E, \frac{LFm 25-49}{LFm} \right) \text{ ----- (14)}$$

$$\frac{LC50p}{LC} = f^{15} \left(\frac{NH}{LC}, W, U, N, E, \frac{LFm50p}{LFm} \right) \text{ ----- (15)}$$

$$\frac{LCm}{LC} = f^{16} \left(\frac{NH}{LC}, W, U, N, E, \frac{LFmm}{LFm} \right) \text{ ----- (16)}$$

$$SL^1 = f^7 \left(\frac{LC 20-24}{LC}, \frac{LC 25-49}{LC}, \frac{LC 50p}{LC}, W, U, N, E \right) \text{ ----- (7)}$$

Legend: v, nonquit vacancies; r, nonvoluntary separations; e, new positions.

$\frac{LFm 20-24}{LFm}$, proportion of a city's male labour force 20-24 years old;

$\frac{LFm 25-49}{LFm}$, 25-49 years; $\frac{LFm 50p}{LFm}$, 50 years an over; $\frac{LFmm}{LFm}$, married;

Those symbols also used in Model t have been identified in Chapter III (pp.220-239) and again in Appendix I (pp.369-370).

There are four differences between Model t and Model t + 1.

1. The new hire rate, $\frac{NH}{LC}$, is regarded as an endogenous variable in Model t + 1. As indicated in equation (9), the new hire rate equals the sum of the quit rate, q, and the nonvoluntary separations rate, v (retirements, dismissals, deaths, etc.). It is reasonable to specify this relationship as an identity ($\frac{NH}{LC} \equiv q + v$) since the Post Office does not have job vacancies. Information gathered from interviews with postal officials for this study reveals that when job openings do appear they are filled forthwith by reducing hiring standards. This procedure is confirmed by the very use of the eligible list recruitment method. It will be recalled that the Post Office chooses successive candidates from these existing lists on which ranking is determined by test scores, one measurement of labour quality.¹
2. To reflect these changes in recruitment standards as additional candidates are hired, the specification of Model t was modified to provide for an inverse relationship

¹ See pp. 147-149, above. This is the essence of the "merit principle" which is the basis for the ordering of names on an eligible list.

between the quality of letter carriers and the new hire rate, $\frac{NH}{LC}$. This new hire rate is thus an explanatory variable in equations (11) and (12) of Model $t + 1$. The new hire rate is also included as a determinant of four other dimensions of labour quality in equations (13) to (16).

3. It was decided to use a different set of variables to explain NEL, the number of eligible lists. NEL is the frequency with which a post office must go to the labour market to ensure an adequate number of candidates. In Model $t + 1$ it is explained by three variables. First ceteris paribus, the greater the proportion of applicants who are of acceptable quality ($\frac{T_2}{APP}$), the less often will a post office need to hold a competition and draw up a new list. Similarly, other things equal, the number of lists is less the greater the propensity of the local male labour force to apply ($\frac{APP}{LFm}$). Negative relationships are therefore postulated between NEL and $\frac{T_2}{APP}$ and also between NEL and $\frac{APP}{LFm}$.

Finally, ceteris paribus, the number of times a post office needs to enter the market within a given time period will be lower the less the needs for new employees. The relationship between NEL and the new hire rate, $\frac{NH}{LC}$, is therefore expected to be positive.

In Model $t + 1$ the Post Office's wage rank affects NEL only indirectly through its effect on these three explanatory variables. If the wage rank does not affect any of these, it does not affect NEL. The wage rank is not entered as a variable in this equation.

4. The proportions of letter carriers in each of the three age groups, $\frac{LC_{20-24}}{LC}$, $\frac{LC_{25-49}}{LC}$ and $\frac{LC_{50p}}{LC}$ and those married, $\frac{LC_m}{LC}$, may also be perceived as indicators of letter carrier quality. They are therefore treated as endogenous variables in Model $t + 1$. To the extent that letter carrier wage ranks in each city have been relatively stable over time, the age composition and marital status of the letter carriers in each city may be related to the city's current wage rank. Post offices with low wage rank are expected to be forced to hire a greater proportion of

letter carriers who are "too young" ($\frac{LC20-24}{LC}$) while post offices with high wage rank will be able to select those of prime age ($\frac{LC25-49}{LC}$). Therefore a negative relationship is postulated between wage rank and $\frac{LC20-24}{LC}$ and a positive relationship between wage rank and $\frac{LC25-49}{LC}$. Long term maintenance of a high wage rank is likely to result in relatively low quit rates and an accumulation of older letter carriers ($\frac{LC50p}{LC}$): a positive relationship is expected. A positive relationship is also hypothesized between wage rank and the proportion of married letter carriers ($\frac{LCm}{LC}$).

Thus, with these measures of letter carrier quality as dependent variables, four additional functional relationships are specified in equations (13) to (16) of Model $t + 1$. The data for the new variable, nonvoluntary separations, v , were supplied by the Post Office, while those for the additional explanatory variables, $\frac{LFm\ 20-24}{LFm}$, $\frac{LFm\ 25-49}{LFm}$, $\frac{LFm\ 50p}{LFm}$ and $\frac{LFmm}{LFm}$ were obtained from the 1971 Canada Census (92-720, Vol. 1 part 1.2. - 8, March 1974).

Using the order condition for identification, Model $t + 1$ is overidentified. In each of the stochastic equations the number of exogenous variables excluded from the equation is greater than the number of endogenous variables included in the equations minus one.

COMPUTER PROGRAMS

Estimates of the structural parameters may be affected by the choice of computer program and indeed by the computer itself. A number of authors have indicated that when using the same data set to estimate the same parameters, different computer programs and computers may yield varying results.¹ It was therefore thought useful to see whether alternative programs and machines would generate results different from those found in the main text.

¹ For example see James W. Longley, "An Appraisal of Least Squares Programs for the Electronic Computer from the Point of View of the User", American Statistical Association Journal, September 1967, pp. 819-841; Roy H. Wampler, "A Report on the Accuracy of Some Widely Used Least Squares Computer Programs", Journal of the American Statistical Association, June, 1970, pp. 549-565; A. Zellner and H. Thornber, "Computational Accuracy and Estimation of Simultaneous Equation Econometric Models", Econometrica, Vol. 34, No.3, July 1966, pp. 727-729.

The estimates presented in Chapter IV were calculated using a computer program especially prepared for this research. It was written in Fortran and made use of the matrix inversion subroutine from IBM's Scientific Subroutine Program to perform the critical matrix inversions. This program, hereafter labelled SSP, was run on a CDC computer at the Université of Montréal. Model t was then estimated using two additional programs. Model $t + 1$ was also estimated with all three programs.

The first additional program was TSP (Harvard Version Rev. 2.7, Concordia University, May 1976) run on the CDC computer at the Université de Montréal. The other program was the Statistical Analysis System (SAS), 1976 version, run at McGill University on an IBM-370 computer.

MISSING OBSERVATIONS

The number of degrees of freedom was quite low for four equation (2, 3, 6 and 8) in Model t because some observations were missing for four exogenous variables (NH , $\frac{NH}{LC}$, NL and $\frac{T_2}{NEL}$). To deal with this problem estimates were generated for sixteen missing observations: two for $\frac{NH}{LC}$, two for NH , three for NL and nine for $\frac{T_2}{NEL}$. The procedure used was to regress the available

observations for each of these variables on other exogenous independent variables with the results of these regression equations then used to predict the values for the missing observations. Thus for each of these variables, regressors were chosen from those other independent variables in the data set which had a simple correlation coefficient of about .45 or more with the variable for which predicted values were sought. For $\frac{NH}{LC}$ the regressors were U, N, A, W_{m2} and W_{m4} .¹ For NL, the regressors were LC^2 and E and for $\frac{T_2}{NEL}$, they were R, W_{m1} ,³ W_{m2} and NL. The two NH estimates were computed by multiplying the $\frac{NH}{LC}$ values generated by the respective LC in the two cities concerned.

Generating estimates of missing observations with procedures similar to the one used here seems to be fairly common in econometrics especially when dealing with small samples where the researcher wants to minimize

¹ A is the average letter carrier age in each city, W_{m2} and W_{m4} are letter carrier wage rank series.

² LC is the number of letter carriers in each city.

³ W_{m1} is another wage series.

wasted information.¹ Alternatively, when estimating a particular equation for which there is a missing value for a variable for one city, the city could be deleted from the data set.

The parameter estimates presented in Chapter IV were derived using the data set containing the estimates for the missing observations. To see whether those estimates for the regression coefficients are sensitive to the use of the estimated observations, the equations have been re-estimated using only the data provided by the Post Office. The data set with the sixteen estimated observations is labelled "completed data set" while that containing only reported data is called "the reported data set".

In summary, then, this appendix provides alternative estimates of the regression coefficients derived using an additional estimation procedure, an additional model, additional computer programs and an additional data set. In no case did these alternative estimates differ appreciably from those

¹ See for example, G.S. Maddala, Econometrics, McGraw-Hill, New York, 1977, pp. 201-207; S.F. Buck, "A Method of Estimation of Missing Values in Multivariate Data suitable for use with an Electronic Computer", Journal of the Royal Statistical Society, Series B, 22, 1960, pp. 302-307; A.A. Afifi and R.M. Elashoff, "Missing Observations in Multivariate Statistics (Part) I. Review of the Literature", American Statistical Association Journal, September, 1966, pp. 595-604, and (Part) II "Point Estimation in Simple Linear Regression", Ibid., March 1967, pp. 10-29; R.R. Hocking and Wm. B. Smith, "Estimation of Parameters in the Multivariate Normal Distribution with Missing Observations", American Statistical Association Journal, March, 1968. pp.159-173; Marcel G. Dagenais, "Further Suggestions Concerning the Utilization of Incomplete Observations in Regression Analysis", Journal of the American Statistical Association, March 1971, pp. 93-98.

reported in the text. If anything, these results suggest that relative wages have even less influence on the Post Office's labour market experience than indicated by the results presented in Chapter IV.

RESULTS

The findings of the additional econometric methodologies are now reported below in Tables VI-1 to VI-12 adjoining the present appendix. In the tables the expected signs of the coefficients are indicated beneath each explanatory variable. Throughout the following discussion the statistical significance of the regression coefficients are determined by referring to t-statistics even though, as has already been indicated, these t-ratios do not seem to have a t-distribution.

In the interest of brevity and in contrast to the practice in the main text, a single wage series is used in the computations to follow. The W_{pi} linear proxy has been selected because it seems intuitively like the most reasonable. In any case the results in Chapter IV demonstrate that the choice of wage series or functional form do not seem to affect the outcome.

Missing Observations

The inclusion of the estimates for the missing observations only relates to four equations in Model t (see tables VI-2, VI-5, VI-11 and VI-12 in this appendix). The estimates of the structural parameters in these four equations do not seem to be affected much by the data set used. For example, in equation (2) (see the first two lines of table VI-2) the coefficient on the wage variable was .0091 with completed data set (containing estimates of missing observations for $\frac{T_2}{NEL}$ and NH). With the reported data set the parameter estimate was - .0107. In neither case does the wage variable seem to have a statistically significant effect on NEL since the t-ratios in both instances are well below the levels needed for statistical significance.

Computer Programs

In none of the thirteen equations were there any important differences between parameter estimates obtained using the SSP program and those generated with SAS. For instance, in equation (1) (table VI-1 lines 1 and 2) both programs yield identical regression coefficients and t-ratios for OLS with Model t. The coefficient estimates of this equation with 2SLS for Model t+ 1

are also the same for both programs, though there are very slight differences in the values of the t-ratios (compare lines 5 and 6 in that table).

In none of the equations does the choice of program affect the signs of the coefficients or their statistical significance. The results using the TSP program are not reported in the accompanying tables because they were the same as those obtained using SSP.

Models

The choice of model has no effect on the conclusion that wage rank seems to have little influence on letter carrier labour market experience.¹ For example, in equation (4) (see table VI-3) the coefficient on the new explanatory variable $\frac{NH}{LC}$ in Model $t + 1$ is not statistically significant. Furthermore, with OLS, its inclusion offers even less support to the Post Office's proposed wage policy than is the case with Model t . Whereas the wage coefficient appears statistically significant (at a significance level of .10) with Model t it is no longer significant with Model $t + 1$ (compare lines 1 with 3, or 2 with 4 in table VI-3). Such a finding strengthens the general conclusion of this thesis that the proposed wage

¹ Only the OLS estimates of the parameters of Models t and $t + 1$ are reported and compared in this section.

structure is unlikely to achieve its objective.

Again, for equation (5), on the age structure of new hires ($\frac{NHPA}{NH}$) in table VI-4, the difference in the models - the addition of $\frac{NH}{LC}$ in Model $t + 1$ - has no noteworthy effect on the estimates. In either case the coefficient of the wage variable is not statistically significant when OLS is used.

In the revised NEL equation for Model $t + 1$ none of the explanatory variables seems to have a statistically significant effect (table VI-2). The relative wage does not seem to influence NEL because wage ranks do not appear to affect the explanatory variables in this equation and the explanatory variables themselves do not appear to have an effect on NEL.

Finally, in none of the four new equations of Model $t + 1$ does the wage rank emerge with a statistically significant coefficient (see tables VI-7 to VI-10).

Estimation Procedure

The wage coefficient in Model $t + 1$ does not seem to be affected by choice of estimation procedure. A typical effect is observed in table VI-1 where, though there are slight changes in parameter estimates and t-ratios, none is statistically significant with either OLS or 2SLS procedure. Among

all the equations in Model $t + 1$ there is no case in which the wage variable changes in statistical significance as between OLS and 2SLS.

SUMMARY

This appendix has provided additional parameter estimates using several alternative econometric techniques. These additional results generally reinforce the conclusion reached in Chapter IV: there is no support for the hypothesis that the government's new wage policy will improve the Post Office's pattern of labour market experience.

TABLE VI-1

ESTIMATES FOR THE $\frac{APP}{LF_m}$ EQUATION (1)

USING ALTERNATIVE ECONOMETRIC METHODOLOGIES

Lines	Model	Estimation Procedure	Program	Degrees of Freedom	NEL ₁ (+) ¹	W (+)	U (+)	N (-)	$\frac{LF_{PAM}}{LF_m}$ (+)	S (+)
1	t	OLS	SSP	13	.0004 ² (.0260) ³	-.0028 (-.3226)	.0139 (.5180)	-.0120 (-.5830)	-.151 (-.5188)	-.0034 (-.1939)
2			SAS	13	.0004 (.0260)	-.0028 (-.3226)	.0139 (.5180)	-.0120 (-.5830)	-.0151 (-.5188)	-.0034 (-.1939)
3	t + 1	OLS	SSP	13	Same specification, same OLS results as with Model t.					
4			SAS	13	Same specification, same OLS results as with Model t.					
5	t + 1	2SLS	SSP	13	-.0135 (-.4942)	-.0063 (-.5729)	.0158 (.5650)	-.0107 (-.5048)	-.0147 (-.4884)	.0041 (.2276)
6			SAS	13	-.0135 (-.5160)	-.0063 (-.5981)	.0158 (.5897)	-.0107 (-.5266)	-.0147 (-.5098)	-.0041 (-.2377)

Notes:

1. Expected sign of the regression coefficient.
2. Estimated value of the regression coefficient.
3. t-ratio in brackets.

Key to code for levels of significance:

a = .005	e = .10
b = .01	f = .15
c = .025	
d = .05	

TABLE VI-2
ESTIMATES FOR THE NEL EQUATIONS (2) and (10) USING
ALTERNATIVE ECONOMETRIC METHODOLOGIES

Lines	Model	Estimation Procedure	Program	Degrees of Freedom	T2 NEL (-)	NH (+)	W (-)	U (-)	N (+)	E (-)
1	t	OLS	SSP ¹	18	.0864 (2.6204)	.1527 (9.0393) ^a	.0091 (.4379)	-.0933 (-.9684)	-.0557 (-.6974)	-.0056 (-3.4496) ^a
2			SSP ²	9	.0082 (.1786)	.1815 (8.2775) ^a	-.0107 (-.3502)	-.0928 (-1.0214)	-.0946 (-1.2895)	-.0090 (-4.1174) ^a
3			SAS	9	.0082 (.1786)	.1815 (8.2775) ^a	-.0107 (-.3502)	-.0928 (-1.0214)	-.0946 (-1.2895)	-.0090 (-4.1174) ^a
4	t + 1	OLS	SSP	13	T2 APP (-)	APP LFm (-)	NH LC (+)			
4	t + 1	OLS	SSP	13	-.0729 (-.8964)	-4.4056 (-.6821)	.0807 (.6794)			
5			SAS	13	-.0729 (-.8964)	-4.4056 (-.6821)	.0807 (.6794)			
6	t + 1	2SLS	SSP	13	-.1746 (-1.6334) ^e	-16.7886 (-1.7042) ^e	.0469 (.3430)			
7			SAS	13	-.1747 (-2.1524) ^d	-16.7995 (-2.2454) ^c	.0468 (.4515)			

1. The first line in this table reproduces the results presented in Chapter IV, in which values for some missing observations were estimated (the completed data set).
2. All other lines use only reported data (the reported data set).

TABLE VI-3

ESTIMATES FOR THE $\frac{T_2}{APP}$ EQUATIONS (4) AND (11) USING
ALTERNATIVE ECONOMETRIC METHODOLOGIES

Lines	Model	Estimation Procedure	Program	Degrees of Freedom	$\frac{NH}{LC}$ (-)	W (+)	U (+)	N (-)	E (+)	R (+)
1	t	OLS	SSP	11		1.1398 (1.6277) ^e	1.0023 (.5671)	1.0364 (.7261)	-.0049 (-.2883)	.9110 (1.3840) ^e
2			SAS	11		1.1398 (1.6277) ^e	1.0024 (.5671)	1.0365 (.7261)	-.0049 (-.2883)	.9110 (1.3840) ^e
3	t + 1	OLS	SSP	10	-.6525 (-.5008)	.7664 (.7366)	2.3441 (.7223)	2.0587 (.8167)	-.0066 (-.3687)	.7372 (.9634)
4			SAS	10	-.6525 (-.5008)	.7664 (.7366)	2.3441 (.7223)	2.0587 (.8167)	-.0066 (-.3687)	.7372 (.9634)
5	t + 1	2SLS	SSP	10	-1.0143 (-.7547)	.5747 (.5496)	3.0253 (.9301)	2.6646 (1.0167)	-.0108 (-.5553)	.6741 (.8933)
6			SAS	10	-1.0143 (-.7721)	.5748 (.5624)	3.0253 (.9516)	2.6647 (1.0401)	-.1017 (-.5680)	.6742 (.9141)

TABLE VI-4

ESTIMATES FOR THE $\frac{NHPA}{NH}$ EQUATIONS (5) AND (12) USING
ALTERNATIVE ECONOMETRIC METHODOLOGIES

Lines	Model	Estimation Procedure	Program	Degrees of Freedom	$\frac{NH}{LC}$ (-)	W (+)	U (+)	N (-)	E (+)	$\frac{LF_{PAM}}{LF_m}$ (+)
1	t	OLS	SSP	19		.2521 (.3887)	.3788 (.1592)	-1.7097 (-.8554)	-.0043 (-.1769)	-2.4672 (-.9888)
2			SAS	19		.2521 (.3887)	.3788 (.1592)	-1.7097 (-.8554)	-.0043 (-.1769)	-2.4672 (-.9888)
3	t + 1	OLS	SSP	18	-1.5383 ^f (-1.2301)	-.1293 (-.1818)	3.3275 (.9917)	.8153 (.2864)	-.0046 (-.1924)	-2.1182 (-.8546)
4			SAS	18	-1.5383 ^f (-1.2301)	-.1293 (-.1818)	3.3275 (.9917)	.8153 (.2864)	-.0046 (-.1924)	-2.1182 (-.8546)
5	t + 1	2SLS	SSP	18	-2.1752 ^e (-1.5752)	-.2963 (-.4195)	4.3978 ^f (1.2629)	1.9668 (.6411)	-.0111 (-.4566)	1.8993 (-.7562)
6			SAS	18	-2.1762 ^e (-1.6375)	-.2966 (-.4200)	4.4000 ^f (1.3129)	1.9687 (.6668)	-.0111 (-.4745)	1.8990 (-.7858)

TABLE VI-5

ESTIMATES FOR THE q EQUATION (6)
USING ALTERNATIVE ECONOMETRIC METHODOLOGIES

Lines	Model	Estimation Procedure	Program	Degrees of Freedom	NH LC (+)	LC20-24 LC (+)	LCm LC (-)	W (-)	U (-)	N (+)	E (+)
1	t	OLS	SSP ¹	21	.2882 (2.2666) ^c	.0364 (.4933)	.0479 (.6545)	-.0730 (-1.1557) ^f	-.3298 (-1.0142)	-.1153 (-.4226)	.0011 (.5866)
2			SSP ²	19	.2892 (2.1534) ^c	.0345 (.4405)	.0470 (.5383)	-.0651 (-.8569)	-.3368 (-.9814)	-.1056 (-.3649)	.0012 (.5747)
3			SAS	19	.2892 (2.1534) ^c	.0345 (.4405)	.0470 (.5383)	-.0651 (-.8569)	-.3368 (-.9814)	-.1056 (-.3649)	.0012 (.5747)
4	t + 1	OLS	SSP	21	Same specification, same OLS results as with Model t.						
5			SAS	19	Same specification, same OLS results as with Model t.						
6	t + 1	2SLS	SSP	19	.3118 (1.1463) ^f	-.0804 (-.3531)	.2982 (1.3473)	-.0793 (-.5881)	-.2251 (-.4103)	.0496 (.1097)	.0015 (.4977)
7			SAS	19	.3120 (1.5964) ^e	-.0805 (-.4920)	.2983 (1.8757)	-.0739 (-.8177)	-.2255 (-.5722)	.0494 (.1522)	.0015 (.6932)

1. The first line in this table reproduces the results presented in Chapter IV, in which values for some missing observations were estimated (the completed data set).
2. All other lines use only reported data (the reported data set).

TABLE VI-6

ESTIMATES FOR THE SL¹ EQUATION (7) USING
ALTERNATIVE ECONOMETRIC METHODOLOGIES

Lines	Model	Estimation Procedure	Program	Degrees of Freedom	LC20-24 LC (+)	LC25-49 LC (-)	LC50p LC (-)	W (-)	U (-)	N (+)	E (-)
1	t	OLS	SSP	21	.0055 (.8595)	.0044 (1.0479)	.0082 (1.1746)	.0021 (.5805)	-.0149 (-.8626)	-.0205 (-1.3383)	-.0001 (-.3577)
2			SAS	21	.0055 (.8595)	.0044 (1.0479)	.0082 (1.1746)	.0021 (.5805)	-.0149 (-.8626)	-.0205 (-1.3383)	-.0001 (-.3577)
3	t + 1	OLS	SSP	21	Same specification, same OLS results as with Model t.						
4			SAS	21	Same specification, same OLS results as with Model t.						
5	t + 1	2SLS	SSP	21	-.0107 (-.7507)	-.0024 (-.2910)	-.0078 (-.4975)	.0020 (.4350)	-.0090 (-.4296)	-.0041 (-.1915)	.0000 (.2772)
6			SAS	21	-.0106 (-.8531)	-.0023 (-.3226)	-.0077 (-.5604)	.0020 (.4974)	-.0090 (-.4896)	-.0042 (-.2201)	.0000 (.3175)

TABLE VI-7

ESTIMATES FOR THE $\frac{LC20-24}{LC}$ EQUATION (13) USING
ALTERNATIVE ECONOMETRIC METHODOLOGIES

Lines	Model	Estimation Procedure	Program	Degree of Freedom	$\frac{NH}{LC}$ (-)	W (-)	U (-)	N (-)	E (+)	$\frac{LFm20-24}{LFm}$ (+)
1	t	OLS	SSP		Not in Model t					
2			SAS		Not in Model t					
3	t + 1	OLS	SSP	20	.6316 (1.5530)	.3921 (1.4707)	-.3859 (-.3659)	-.0161 (-.0179)	.0030 (.4500)	-.4966 (-.2728)
4			SAS	20	.6316 (1.5530)	.3921 (1.4707)	-.3859 (-.3659)	-.0161 (-.0179)	.0030 (.4501)	-.4966 (-.2728)
5	t + 1	2SLS	SSP	20	.6464 (1.3974)	.3980 (1.4169)	-.4118 (-.3667)	-.0381 (-.0399)	.0030 (.4532)	-.5182 (-.2803)
6			SAS	20	.6464 (1.3974)	.3980 (1.4169)	-.4118 (-.3667)	-.0381 (-.0399)	.0030 (.4532)	-.5182 (-.2803)

TABLE VI-8

ESTIMATES FOR THE $\frac{LC25-49}{LC}$ EQUATION (14) USING
ALTERNATIVE ECONOMETRIC METHODOLOGIES

Lines	Model	Estimation Procedure	Program	Degrees of Freedom	$\frac{NH}{LC}$ (-)	W (+)	U (+)	N (-)	E (+)	$\frac{LFm25-49}{LFm}$ (+)
1	t	OLS	SSP		Not in Model t					
2			SAS		Not in Model t					
3	t + 1	OLS	SSP	20	-1.0614 (-1.8314) ^d	-.2834 (-1.0425)	1.9554 (1.4763) ^e	-1.8318 _d (-1.7428)	-.0147 (-1.8669)	3.4146 (4.3281) ^a
4			SAS	20	-1.0614 (-1.8314) ^d	-.2834 (-1.0425)	1.9554 (1.4763) ^e	-1.8318 _d (-1.7428)	-.0147 (-1.8669)	3.4146 (4.3281) ^a
5	t + 1	2SLS	SSP	20	-1.8189 (-2.4389) ^c	-.4956 (-1.6060)	3.2468 (2.0695) ^d	-.9409 (-.7776)	-.0189 (-2.2104)	4.0762 (4.4966) ^a
6			SAS	20	-1.8189 (-2.4389) ^c	-.4956 (-1.6060)	3.2468 (2.0695) ^d	-.9409 (-.7776)	-.0189 (-2.2104)	4.0762 (4.4966) ^a

TABLE VI-9

ESTIMATES FOR THE $\frac{LC50p}{LC}$ EQUATION (15) USING
ALTERNATIVE ECONOMETRIC METHODOLOGIES

Lines	Model	Estimation Procedure	Program	Degrees of Freedom	$\frac{NH}{LC}$ (+)	W (-)	U (-)	N (+)	E (+)	$\frac{LFm50p}{LFm}$ (+)
1	t	OLS	SSP		Not in Model t.					
2			SAS		Not in Model t.					
3	t + 1	OLS	SSP	20	-.1960 (-.4805)	-.0777 (-.3659)	.3360 (.3591)	1.7739 (2.2020) ^c	-.0018 (-.3277)	1.4467 (2.4792) ^c
4			SAS	20	-.1960 (-.4805)	-.0777 (-.3659)	.3360 (.3591)	1.7739 (2.2020) ^c	-.0018 (-.3277)	1.4467 (2.4792) ^c
5	t + 1	2SLS	SSP	20	-.2155 (-.4437)	-.0841 (-.3667)	.3649 (.3598)	1.8005 (2.0404) ^d	-.0019 (-.3347)	1.4311 (2.3069) ^c
6			SAS	20	-.2155 (-.4437)	-.0841 (-.3668)	.3649 (.3598)	1.8005 (2.0404) ^d	-.0019 (-.3347)	1.4311 (2.3069) ^c

TABLE VI-10

ESTIMATES FOR THE $\frac{LC_m}{LC}$ EQUATION (16) USING
ALTERNATIVE ECONOMETRIC METHODOLOGIES

Lines	Model	Estimation Procedure	Program	Degrees of Freedom	$\frac{NH}{LC}$ (-)	W (+)	U (+)	N (-)	E (-)	$\frac{LF_{mm}}{LF_m}$ (+)
1	t	OLS	SSP		Not in Model t.					
2			SAS		Not in Model t.					
3	t + 1	OLS	SSP	20	-.6364 (-1.8002) ^d	.0038 (.0182)	.9583 (1.0091)	.6577 (.8200)	-.0031 (-.5422)	.1101 (.2479)
4			SAS	20	-.6364 (-1.8002) ^d	.0038 (.0182)	.9583 (1.0091)	.6577 (.8200)	-.0031 (-.5422)	.1101 (.2479)
5	t + 1	2SLS	SSP	20	-.5802 (-1.4548) ^e	.0230 (.1051)	.8523 (.8424)	.5691 (.6668)	-.0029 (-.4950)	.1258 (.2812)
6			SAS	20	-.5802 (-1.4548) ^e	.0230 (.1051)	.8523 (.8424)	.5691 (.6668)	-.0029 (-.4950)	.1258 (.2812)

TABLE VI-11

ESTIMATES FOR THE NTS EQUATION (3) USING
ALTERNATIVE ECONOMETRIC METHODOLOGIES

Lines	Model	Estimation Procedure	Program	Degrees of Freedom	APP LFm (-)	T ₂ APP (-)	q (+)	W (-)	U (-)	N (+)	E (-)	NH (+)	NL (-)
1	t	OLS	SSP ¹	7	4.4987 (.9966)	.0141 (.7838)	.4574 (1.9979) ^d	.1415 (1.4958)	-.0999 (-.3810)	-.0671 (-.3161)	-.0002 (-.0328)	.0240 (.4882)	-.0227 (-.4344)
2			SSP ²	4	1.0623 (.2367)	-.0020 (-.0390)	.2248 (.8408)	.1815 (2.0768)	.0492 (.1926)	-.0067 (-.0250)	-.0078 (-1.3960)	f.1153 (2.0429)	e.0381 (.7536)
3			SAS	4	1.0623 (.2367)	-.0020 (-.0390)	.2248 (.8408)	.1815 (2.0768)	.0492 (.1926)	-.0067 (-.0250)	-.0078 (-1.3960)	f.1153 (2.0429)	e.0381 (.7536)
4	t + 1	OLS	SSP		Not in Model t + 1.								
5			SAS		Not in Model t + 1.								
6	t + 1	2SLS	SSP		Not in Model t + 1.								
7			SAS		Not in Model t + 1.								

1. The first line in this table reproduces the results presented in Chapter IV, in which values for some missing observations were estimated (the completed data set).
2. All other lines use only reported data (the reported data set).

TABLE VI-12

ESTIMATES FOR THE V EQUATION (8) USING
ALTERNATIVE ECONOMETRIC METHODOLOGIES

Lines	Model	Estimation Procedure	Program	Degrees of Freedom	$\frac{NH}{LC}$ (-)	$\frac{LC20-24}{LC}$ (-)	$\frac{LCp}{LC}$ (+)	W (+)	U (+)	N (-)	E (-)
1	t	OLS	SSP ¹	20	.7169 (.3820)	.2498 (.2622)	.8479 (1.5058) ^e	.3623 (.3857)	-8.1629 (-1.7574)	-4.3729 (-1.1475) ^f	.0002 (.0061)
2			SSP ²	18	.5562 (.2996)	.3098 (.3271)	.8376 (1.4891) ^e	-.3809 (-.3660)	-7.3392 (-1.5910)	-4.9848 (-1.3142) ^f	-.0031 (-.1096)
3			SAS	18	.5592 (.2996)	.3098 (.3271)	.8376 (1.4891) ^e	-.3809 (-.3660)	-7.3392 (-1.5910)	-4.9848 (-1.3142) ^f	-.0031 (-.1096)
4	t + 1	OLS	SSP		Not in Model t + 1.						
5			SAS		Not in Model t + 1.						
6	t + 1	2SLS	SSP		Not in Model t + 1.						
7			SAS		Not in Model t + 1.						

1. The first line in this table reproduces the results presented in Chapter IV, in which values for some missing observations were estimated (the completed data set).
2. All other lines use only reported data (the reported data set).

BIBLIOGRAPHY

ARTICLES

- Behman, Sara, "Labor Mobility, Increasing Labor Demand ...", Review of Economic Studies, Vol. XXXI, No. 4.
- Behrend, Hilde, "Absentéisme dans l'industrie", Revue Internationale du Travail, February, 1959.
- Block, Richard, "The Impact of Union-Negotiated Employment Security Provisions...", I.R.R.A. Proceedings, September, 1976.
- Bernier, Jean, "L'Extention des Conventions Collectives...", Relations Industrielles (Laval), janvier, 1969.
- Buckley, John E., "Intraoccupational Wage Dispersion in Metropolitan Areas, 1967-68", Monthly Labor Review, September, 1969.
- Burke, Donald R. and Rubin, Lester, "Is Contract Rejection a Major Collective Bargaining Problem?", I.L.R.R., January, 1973.
- Burton, John F. and Parker, John E., "Interindustry Variations in Voluntary Labor Mobility", in I.L.R.R., January, 1969, p. 199-216.
- Clegg, H.A., "The Scope of Fair Comparisons", British Journal of Industrial Economics, July, 1961.
- Conant, Eaton H., "Worker Efficiency and Wage Differentials in a Clerical Labor Market", I.L.R.R., April, 1963.
- Cowan, G.K., "Fair Comparison Criteria in Public Sector Bargaining", Monthly Labor Review, July, 1976.
- Devine, E.J., "Manpower Shortages in Local Government Employment", A.E.A. Proceedings 1968, May, 1969.
- Douty, H.M., "Some Aspects of Wage Statistics and Wage Theory", I.R.R.A. Proceedings, Chicago, 1958.
- Downs, Anthony, "Nonmarket Decision Making, A Theory of Bureaucracy", A.E.A. Proceedings, 1957, p. 42k.

- Eckstein, O. and Wilson, T.A., "The Determinants of Money Wages in American Industry", Q.J.E., Vol. 76, 1962, pp. 379-414.
- Evans, Jr., Robert, "Worker Quality and Wage Dispersion: An Analysis of a Clerical Labor Market in Boston", I.R.R.A., 14th Annual Meeting, Proceedings, 1961.
- Fisher, Lloyd H., "The Harvest Labor Market in California", Q.J.E., November, 1951.
- Fleisher, Belton M., Labor Economics, Englewood Cliffs, Prentice Hall, 1970.
- Fogel, Walter and Lewin, David, "Wage Determination in the Public Sector", I.L.R.R., April, 1974.
- Freund, James, "Market and Union Influence on Municipal Employee Wages", I.L.R.R., April, 1974.
- Fuchs, Victor R., "Hourly Earnings Differentials by Region and Size of City", in Monthly Labor Review, January, 1967.
- Gaston, R.J., "Labor Market Conditions and Hiring Standards", I.R., May, 1972.
- Goodman, J.F.B., "The Definition and Analysis of Local Labour Markets", British Journal of Industrial Relations, July, 1970.
- Hanawalt, Wilbur R., "How Big is your Labor Area", The Management Review, August, 1953.
- Hicks, J.R., "The Economic Foundations of Wage Policy", E.J., December, 1955.
- Hill, T.P., "Wages and Labour Turnover", The Bulletin, Institute of Statistics, Oxford University, May, 1962.
- Jennings, Ken, "When a Quit is Not a Quit", Personnel Journal, December, 1971.
- Johnson, George E., "Wage Theory and Inter-Regional Variation", I.R., May, 1967.
- Kerr, Clark, "Labor Markets: Their Character and Consequences", A.E.R. Proceedings, May, 1950.
- Lampman, Robert J., "On Choice in Labor Markets: Comment", Industrial and Relations Review, July, 1956.

- Lawler, E.E. and Lewin, Edward, 'Union Officers' Perception of Members' Pay Preferences', I.L.R.R., July, 1968.
- Lester, Richard, 'Wage Diversity and its Theoretical Implications', Review of Economics and Statistics, May, 1946.
- Lester, Richard, 'A Range Theory of Wage Differentials', Industrial and Labor Relations Review, July, 1952.
- Lewin, David, 'The Prevailing Wage Principle and Public Wage Decisions', Public Personnel Management, November-December, 1974.
- Lutz, Mark, 'Quit Rates and the Quality of the Industrial Wage Structure', I.R., February, 1977.
- O'Connell, Hon. Martin, Comments on a paper by Hugh Clegg ('Are Strikes in the Public Sector Inevitable?') in Proceedings of the International Conference on Trends in Industrial and Labour Relations (Francis Bairstow, ed.), Montreal, July 24-28, 1976.
- Oi, Walter, 'Labor as a Quasi-Fixed Factor', J.P.E., December, 1962.
- Owen, John, D., 'Toward a Public Employment Wage Theory: Some Econometric Evidence on Teacher Quality', I.L.R.R., January, 1972.
- Parker, John E. and Burton, John F., 'Voluntary Labor Mobility in the U.S. Manufacturing Sector', I.R.R.A., Proceedings Twentieth Annual Winter Meeting, (G.G. Somers, ed.), 1967, pp. 61-70.
- Raimon, Robert L., 'The Indeterminateness of Wages of Semiskilled Workers', Industrial and Labor Relations Review, January, 1953.
- Rees, Albert, 'Information Networks in Labor Markets', A.E.R., May, 1966.
- Reggio, Vitto, 'How to set Fair Salaries at Branch Locations', Personnel Journal, August, 1971.
- Rice, R.G., 'Skill, Earnings, and Growth of Wage Supplements', A.E.R. Proceedings, May, 1966.
- Robinson, Derek, 'Myths of the Local Labour Market', Personnel, (U.K.), December, 1967.
- Rosow, Jerome M., 'Public Sector Pay and Benefits', Public Administration Review, Chicago, September/October, 1976.
- Rottenberg, Simon, 'On Choice in Labor Markets', Industrial and Labor Relations Review, January, 1956.

- Ruchlin, H., "Education as a Labor Market Variable", I.R., October, 1971.
- Sartin, P., "L'absentéisme", Travail et Méthodes, March, 1976.
- Seidman, Joel, "Collective Bargaining in Postal Service", in Industrial Relations, October, 1969, p. 38.
- Simkin, William E., "Refusals to Ratify Contracts", I.L.R.R., July, 1968.
- Simon, Herbert A., "Theories of Decision Making in Economics", A.E.R., June, 1959.
- Smith, Robert, J., "Comments on: Labor Market Conditions and Hiring Standards", I.R., May, 1973.
- Smith, Sharon P., "Are Postal Workers Over- or Underpaid?", Industrial Relations, May, 1976.
- Smith, Sharon P., "Pay Differentials Between Federal Government and Private Sectors Workers" Industrial and Labor Relations Review, January, 1976.
- Stern, Robert, "Intermetropolitan Patterns of Strike Frequency", I.L.R.R., January, 1976.
- Stigler, George J., "Information in the Labor Market", J.P.E., (supp.), October, 1962.
- Stoikov, Vladimir, "Productivity and the Quality of the Labour Force: An International Comparison", British Journal of Industrial Relations, Vol. VI, No. 2.
- Stoikov, V. and Raimon, R.L., "Determinants of Differences in the Quit Rate Among Industries", A.E.R., December, 1968.
- Wales, Terence J., "Quit Rates in Manufacturing Industries in the United States", C.J.E., 1968.
- Weiss, D., "Nouveaux Propos sur l'absentéisme", Production et Gestion, February, 1976.
- Weiss, Leonard, "Concentration and Labor Earnings", A.E.R., March, 1966.
- Williams, B.C., "Collective Bargaining and Wage Equalization in Canada's Iron and Steel Industry, 1939-1964", in Relations Industrielles (Laval), April, 1971.

BOOKS

- Arthurs, H.W., Collective Bargaining by Public Employees in Canada, University of Michigan, Ann Arbor, 1971.
- Belcher, D.W., Wage and Salary Administration (2nd edition), Englewood Cliffs, Prentice-Hall, 1962.
- Belcher, D.W., Compensation Administration, Englewood Cliffs, Prentice-Hall, 1974.
- Brown, E.H. Phelps, The Economics of Labor, New Haven, Yale University Press, 1962.
- Cyert, Richard M. and March, James G., "The Goal Formation Process", in W.A. Hill and D. Egan, Readings in Organization Theory, Boston, Allyn and Bacon, 1966.
- Dean, Joel, "Geographical Wage Administration" in J. Doober and V. Marquis (eds.), Handbook of Wage and Salary Administration, Chicago, A.M.A., 1950.
- Delorme, François, La Rémunération Globale, Est-il possible de la Mesurer?, Ministère du Travail du Québec, (mimeo.), November, 1977.
- de Wolff, Pieter, (ed.), Wages and Labour Mobility, Paris, O.E.C.D., 1965.
- Doeringer, Peter B. and Piore, Michael J., Internal Labor Markets and Manpower Analysis, Lexington, Heath and Co., 1971.
- Downs, Anthony, An Economic Theory of Democracy, N.Y., McGraw-Hill, 1957.
- Dunlop, John, "The Task of Contemporary Wage Theory", in John Dunlop (ed.), The Theory of Wage Determination, London, MacMillan, 1957.
- Economic Council of Canada, Living Together, Supply and Services, Ottawa, 1977.
- Frankel, E.J., Staff Relations in The Civil Service, McGill University Press, Montreal, 1962.
- Friedman, Milton, "Some Comments on the Significance of the Labor Union", in David McCord Wright (ed.), The Impact of the Union, N.Y., Augustus Kelley, 1966 (original edition, 1951).
- Hicks, J.R., The Theory of Wages, London, MacMillan, 1966 (original edition, 1932).

- Hildebrand, George H., "External Influences and the Determination of the Internal Wage Structure" in J.L. Meij (ed.) Internal Wage Structure, Amsterdam, North Holland Pub. Co., 1963.
- Hunter, Laurence C. and Reid, Graham L., Urban Worker Mobility, O.E.C.D., Paris, 1968.
- Kerlinger, F.N., and Pedhazer, E.J., Multiple Regression in Behavioral Research, N.Y., Holt, Rinehart, 1973.
- Kerr, Clark, "The Balkanization of Labor Markets", Labor Mobility and Economic Opportunity, Cambridge Mass., M.I.T. Press, 1954.
- Kerr, Clark, "Wage Relationships - The Comparative Impact of Market and Power Forces", in John T. Dunlop (ed.), The Theory of Wage Determination, London, MacMillan, 1964.
- Lawler, E.E., Pay and Organizational Effectiveness: A Psychological View, N.Y., McGraw-Hill, 1971.
- Leftwich, R.A., The Price System and Resource Allocation, (3rd ed), N.Y., Holt Rinehart Winston, 1966.
- Lerner, Shirley W., Cale, John R., Gupta, S., Workshop Wage Determination, Pergamon Press, 1969.
- Lester, Richard A., The Economics of Labor, (2nd edition), N.Y., MacMillan, 1964.
- Lester, Richard A., Hiring Practices and Labor Competition, Princeton, Princeton University Press, 1954.
- Lester, Richard A., and Shister, J., Insights into Labor Issues, N.Y., MacMillan, 1948.
- Levinson, H.M., Determining Forces in Collective Wage Bargaining, N.Y., Wiley, 1966.
- Lester, R.A. and Robie, E.A., Wages under National and Regional Collective Bargaining, Princeton, Princeton University Press, 1946.
- Machlup, Fritz, "Operationalism and Pure Theory in Economics", in S.R. Krupp, The Structure of Economic Science, Englewood Cliffs, Prentice-Hall, 1971.
- Lacroix, Robert, "The Regions and Unemployment", in Options, University of Toronto Press, August, 1977.

- Mackay, D.I., 'Wages and Labour Turnover', in Derek Robinson, Local Labour Markets and Wage Structures, London, Gower Press, 1970.
- Mackay, D.I., Boddy, D., Brack, J., Diack, J.A., Jones, N., Labour Markets Under Different Employment Conditions, Oxford, Geo. Allen and Unwin, 1971.
- Marshall, Alfred, Principles of Economics, London, MacMillan, 1966, (8th edition: 1920).
- McCormick, B.J., Wages, Middlesex, Penguin Books, 1969.
- Miner, John B., Personnel and Industrial Relations, N.Y., MacMillan Co., 1969.
- Musgrave, Richard A., The Theory of Public Finance, N.Y., McGraw-Hill, 1959.
- Nie, N.H. et al, S.P.S.S., (2nd ed.), N.Y., McGraw-Hill, 1975.
- Parnes, H., Research on Labor Mobility, N.Y., Social Science Research Council, 1954.
- Peach, David A. and Kuechle, David, The Practice of Industrial Relations, McGraw-Hill Ryerson, Toronto, 1975.
- Pierson, Frank C., 'An Evaluation of Wage Theory', in G.W. Taylor and F.C. Pierson (eds.) New Concepts in Wage Determination, N.Y., McGraw-Hill, 1957.
- Porter, Lyman W. and Steers, Richard M., 'Organizational, Work and Personal Factors in Employee Turnover and Absenteeism', in Lyman W. Porter and Richard M. Steers, Motivation and Work Behavior, N.Y., McGraw-Hill, 1975.
- Reder, M., 'Wage Structure: Theory and Measurement', in Aspects of Labor Economics, N.B.E.R., Princeton University, 1962.
- Rees, Albert, The Economics of Trade Unions, Chicago, University of Chicago Press, 1963.
- Rees Albert and Shultz, G.P., Workers and Wages in an Urban Labor Market, Chicago, University of Chicago Press, 1970.
- Reynolds, Lloyd, Labor Economics and Labor Relations, (6th ed.), Englewood Cliffs, Prentice Hall, 1976.

- Reynolds, Lloyd G., The Structure of Labor Markets, N.Y., Harper and Bros., 1951.
- Reynolds, L.G. and Taft, C.H., The Evolution of Wage Structure, New Haven, Yale University Press, 1956.
- Reynolds, Lloyd, "Some Aspects of Labor Market Structure", in R.A. Lester and J. Shister, Insights into Labor Issues, N.Y., 1948.
- Reynolds, Lloyd, G., "The Impact of Collective Bargaining on the Wage Structure in the United States" in John T. Dunlop (ed.) The Theory of Wage Determination, London, MacMillan, 1964.
- Robinson, Derek (ed.), Local Labour Markets and Wage Structures, London Gower Press, 1970.
- Sayles, Leonard R. and Strauss, George, Managing Human Resources, Englewood Cliffs, Prentice Hall, 1977.
- Smith, Adam, The Wealth of Nations, New York, The Modern Library, 1937, (original edition 1776).
- Summers, Clyde W., "Ratification of Agreements", in John Dunlop and Niel W. Chamberlain (eds.), Frontiers of Collective Bargaining, N.Y., Harper and Row, 1967.
- Teh-Wei, Hu, Econometrics, Baltimore, University Park Press, 1973.
- Wilkins, T.J., (Director, Pay Research Bureau), "Wage and Benefit Determination in the Public Service of Canada" in, Collective Bargaining in the Public Service, the Institute of Public Administration of Canada, Toronto, 1973.
- Wonnacott, T. and Wonnacott, R., Introductory Statistics, (3rd ed.), N.Y., John Wiley, 1977.
- Wooton, Barbara, Social Foundations of Wage Policy, London, Unwin Books, 1964.
- Youtsler, James S., Union Wage Theory, Iowa City, Twayne Pub., 1964.

ECONOMETRICS

- Afifi, A.A. and Elashoff, R.M., "Missing Observations in Multivariate Statistics, Part I", American Statistical Association Journal, September, 1966.
- Afifi, A.A. and Elashoff, R.M., "Missing Observations in Multivariate Statistics, Part II", American Statistical Association Journal, March 1967.
- Buck, S.F., "A Method of Estimation of Missing Observations in Multivariate Data suitable for use with an Electronic Computer", Journal of the Royal Statistical Society, Series B, 22, 1960.
- Cragg, J.C., "On the Relative Small-Sample Properties of Several Structural Equation Estimators", Econometrica, Vol. 35, No. 1, January, 1967.
- Dagenais, Marcel G., "Further Suggestions Concerning the Utilization of Incomplete Observations in Regression Analysis", Journal of the American Statistical Association, March 1971.
- Hocking, R.R. and Smith, Wm. B., "Estimation of Parameters in the Multivariate Normal Distribution with Missing Observations", American Statistical Association Journal, March 1968.
- Klein, Lawrence R., A Textbook of Econometrics, (2nd edition), N.J., Prentice-Hall, 1974.
- Kmenta, Jan, Elements of Econometrics, Macmillan, N.Y., 1973.
- Longly, James W., "An Appraisal of Least Squares Programs for the Electronic Computer from the Point of View of the User", American Statistical Association Journal, September, 1967.
- Maddala, G.S., Econometrics, N.Y., McGraw Hill, 1977.
- Wampler, Roy H., "A Report on the Accuracy of Some Widely Used Least Squares Computer Programs", Journal of the American Statistical Association, June, 1970.
- Zellner, A., and Thornber, H., "Computational Accuracy and Estimation of Simultaneous Equation Econometric Models", Econometrica, Vol. 34, No. 3, July 1966.

GOVERNMENT PUBLICATIONS

Anti-Inflation Board (Canada), Regulations to Anti-Inflation Act, Information Canada, Ottawa, 1975 (60 pp.).

Canada Department of Labour, Economics and Research Branch, Occupational Coding System, Ottawa (mimeo.) undated (C.1970).

Canada Department of Labour, Wage Rates, Salaries and Hours of Labour, Annual, various issues.

Dominion Bureau of Statistics, Hiring and Separation Rates, Queen's Printer, Ottawa, 72-006 (deleted).

Government of Canada, Agenda for Cooperation, Ottawa, May, 1977.

Government of Canada, The Civil Service Act, (C.57, N.7, 1960-61, Can. Stat. 381), 1961.

Government of Canada, The Post Office Act, (R.S., C.212, S.1), 1970.

Government of Canada, The Public Service Employment Act, (ch. 71, 14-15-16, Elizabeth II), 1975.

Government of Canada, The Public Service Staff Relations Act, (1966-67, C.72, S.1), 1977.

House of Commons Debates (Canada), Hansard, Ottawa, June 8, 1973,
Hansard, April 9, 1974,
Hansard, October 4, 1971,
Hansard, May 30, 1972,
Hansard, March 21, 1972,
Hansard, March 25, 1974,
Hansard, April 17, 1972,
Hansard, October 21, 1974,
Hansard, October 22, 1973,
Hansard, (Miscellaneous Estimates Committee),
February 2, 1973.

Pay Research Bureau, The Composition of The Public Service, 1970.

Pay Research Bureau, Total Compensation, Ottawa, 1975, (75-68) 51 pp.

- Pay Research Bureau, Trends in Rates of Pay in the Public Service of Canada, An Update, 1967-1975, Ottawa, 1975.
- Post Office, (Canada), Personnel Manual, Ch. 2, p. 68, Ottawa, (mimeo.), October, 1968.
- Preparatory Committee on Collective Bargaining in the Public Service (The), ("The Heeney Report"), Queen's Printer, Ottawa, July 1965.
- Prime Minister's Task Force on Labour Relations (The), (The "Woods Task Force"), Wage and Salary Trends and Wage Determination in the Public Sector, (Department of Finance) Ottawa (mimeo.), 1971.
- Public Service Arbitration Tribunal (The), Arbitral Award: The Firefighters Case, Ottawa, (mimeo.), June 19, 1974.
- Public Service Arbitration Tribunal (The), Arbitral Award: The Firefighters Case, Ottawa, (mimeo.), May 12, 1975.
- Public Service Commission, Annual Report, Information Canada Ottawa, various issues.
- Public Service Staff Relations Board (Canada), Conciliation Board Report for Treasury Board and Council of Postal Unions, Ottawa, (mimeo.), file Nos. 190-2-19 and 190-2-20, December, 1972.
- Royal Commission on Government Organization (The), ("The Glassco Report"), Volume I, "Management of the Public Service", Ottawa, The Queen's Printer, 1962.
- Report of the Commission of Inquiry into the Increases in Rates of Pay for Civil Servants in Group D ("The Anderson Report"), Mimeo. Ottawa, 3 vols. August 14; August 19; September 27; 1965.
- Report of the Royal Commission on Working Conditions in the Post Office Department ("The Montpetit Report") Queen's Printer, Ottawa, October, 1966.
- Special Joint Committee of the Senate and House of Commons on Employer - Employee Relations in the Public Service of Canada, (The), (Bill C-170) Proceedings, Queen's Printer, Ottawa, 1966-1967.
- Statistics Canada, Census, 1971, 92-720, Vol. I, part 2, March 1974.
- Statistics Canada, Employment and Earnings, Information Canada, Ottawa, April, 1973.

Treasury Board, Pay Determination: History and Techniques, Ottawa (mimeo.), undated (C.1967).

(U.K.) Royal Commission on the Civil Service, 1953-55, Report (The), ("The Priestly Report"), Her Majesty's Stationary Office, London, 1965.

U.S. Department of Labor, Dictionary of Occupational Titles, (3rd edition), U.S. Government Printing Office, Washington, D.C., 1965.

(U.S.) President's Commission on Postal Organization, Towards Postal Excellence (The), ("The Kappel Report"), U.S. Government Printing Office, Washington, D.C., 1968 (The Final Report and Annexes I to V).

MISCELLANEOUS

Collective Agreement, Treasury Board (Canada) and Council of Postal Unions, March 27, 1972 to December 31, 1974, arts. 22.06 and 22.08.

The Letter Carriers Union of Canada, The Courier (newspaper), Ottawa, various issues.

Canadian Union of Postal Workers, National Policy Statement No. 4, Automation, 1971.

Communications Workers of America, Geographical Wage Standards, (R. Nathan Associates Inc.), January, 1965.

The Journal of the Professional Institute of the Public Service, Ottawa, November, 1973.

Hydro-Quebec, Plan d'Evaluation, "Releveur de Compteurs", Emploi B, 6.311, Classe 10, June 9, 1971.

The Civil Service Review, Ottawa, March, 1951.

The Gazette, April 18, 1974.

The Montreal Star, May 8, 1974.

The Toronto Globe and Mail, October 7, 1976, April 27, 1974.

Council of Postal Unions, Bref Sommaire de l'Offre du Conseil du Trésor au Conseil des Unions des Postes en Date du 3 mai 1972 et la Suggestion en Date du 4 mai 1972, Ottawa, (mimeo.), May 12, 1972.

Giroux, R., Pay Determination in the Canadian Public Service, unpublished M.A. Thesis, University of Ottawa, 1969.

Lapinsky, Martin, A Study in Occupation Labor Supply Elasticities, unpublished Ph.D. dissertation, N.Y., New School for Social Research, 1966.

Merewitz, Leonard, The Production Function in the Public Sector, unpublished Ph.D. dissertation, Berkeley, University of California, 1969.

Preparatory Committee on Collective Bargaining in the Public Service, The Geographical Factor in Civil Service Pay, Staff Paper No. 24, Ottawa (mimeo.), April, 1964.

Preparatory Committee on Collective Bargaining in the Public Service, The Prevailing Rate Employees of Canadian Government Departments, Staff Paper No. 13, Ottawa, (mimeo.) December 1963.

Preparatory Committee on Collective Bargaining in the Public Service, Staff Relations and Pay Determination in the United Kingdom Government, Staff Paper No. 17, Ottawa (mimeo.), February, 1964.

Roy, Paul Martel, L'Instauration d'une Seule Echelle de Salaire Parmi les Enseignants du Secteur Public au Québec, Ph.D. dissertation, McGill University, Montreal, 1974.

Council of Postal Unions, Statement of the C.P.U. Negotiating Committee to the Treasury Board Committee, (mimeo.), Ottawa, May 11, 1972.

Courchene, Thomas, The Transfer System and Regional Disparities, lecture, Carleton University, Ottawa, January 23, 1978.

INTERVIEWS

Agius, A.J., Research Director, The Professional Institute of the Public Service, Ottawa, April 4, 1973.

Barrière, Lionel, Post Office Assistant Deputy Minister, Personnel, Ottawa, June 1, 1972.

Blanchette, Denis, Research Officer, Statistics Canada, Ottawa, March 21, 1977.

- Clarkson, Al, Director, Employee Compensation Branch Post Office Department
Ottawa, May 26, 1972, June 1, 1972.
- Cloutier, Sylvain, Former Civil Service Commissioner, Ottawa, November 20,
1973.
- Coté, B., Representative, Letter Carriers' Union of Canada, Montreal, June 20,
1974.
- Décarie, Roger, President, Letter Carriers' Union of Canada, Ottawa, November
15, 1973.
- Doherty, William, Vice-President, Public Service Alliance of Canada, Ottawa,
April 5, 1973.
- Gruslin, Paul, Secretary-Treasurer, Canadian Union of Postal Workers, Ottawa,
February 22, 1973.
- Harper, Cecil, Director, Economics and Research Branch, Canada Department
of Labour, Ottawa, May 18, 1972.
- Hay, Ian, Staff Supervisor, Working Conditions and Contract Analysis, Bell
Telephone, Canada, Montreal, June 27, 1972.
- Kierans, Hon. Eric, Former Postmaster General of Canada, Montreal, June
29, 1972.
- Lockman, Bernard, Operational Advisor, National Operations Bureau, Post Office,
Department, Ottawa, March 15, 1972.
- McGarry, Robert, National President, Letter Carriers' Union of Canada, Ottawa,
May 20, 1976.
- Montourdis, Martin, Officer, Canadian Union of Public Employees (Hydro-Québec),
February 27, 1973.
- Olson, Norman, Management Consultant, Montreal, July 10, 1972.
- Parrot, Jean Claude, Vice-President, Canadian Union of Postal Workers, Ottawa,
August 12, 1975.
- Poirier, Jean, Personnel Officer, Post Office Department, Montreal, July 25,
1972.
- Powell, Harry, Research Officer, Employee Compensation Branch, Canada Post
Office Department, Ottawa, May 26, 1972.

Ried, Larry, Chief Negotiator, Treasury Board, Ottawa, May 26, 1972.

Sheppard, Len, Supervisor of Research, Industrial Relations Department,
Canadian Pacific, Montreal, June 18, 1972.

Schnuringer, Frank, Supervisor, Personnel and Industrial Relations,
Canadian National, Montreal, August 30, 1973.

Watson, Ian, Research Officer, Treasury Board, Ottawa, May 26, 1972.

James V. P. Conway, Assistant Postmaster General, U.S. Postal Service,
April 25, 1975.

