

## University of Windsor Scholarship at UWindsor

---

Electronic Theses and Dissertations

---

1978

# Measuring for structural unemployment in Canada : 1953-1965.

Joan S. Sagert  
*University of Windsor*

Follow this and additional works at: <http://scholar.uwindsor.ca/etd>

---

### Recommended Citation

Sagert, Joan S., "Measuring for structural unemployment in Canada : 1953-1965." (1978). *Electronic Theses and Dissertations*. Paper 2689.

This online database contains the full-text of PhD dissertations and Masters' theses of University of Windsor students from 1954 forward. These documents are made available for personal study and research purposes only, in accordance with the Canadian Copyright Act and the Creative Commons license—CC BY-NC-ND (Attribution, Non-Commercial, No Derivative Works). Under this license, works must always be attributed to the copyright holder (original author), cannot be used for any commercial purposes, and may not be altered. Any other use would require the permission of the copyright holder. Students may inquire about withdrawing their dissertation and/or thesis from this database. For additional inquiries, please contact the repository administrator via email ([scholarship@uwindsor.ca](mailto:scholarship@uwindsor.ca)) or by telephone at 519-253-3000ext. 3208.





National Library of Canada

Cataloguing Branch  
Canadian Theses Division

Ottawa, Canada  
K1A 0N4

Bibliothèque nationale du Canada

Direction du catalogage  
Division des thèses canadiennes

## NOTICE

The quality of this microfiche is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us a poor photocopy.

Previously copyrighted materials (journal articles, published tests, etc.) are not filmed.

Reproduction in full or in part of this film is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30. Please read the authorization forms which accompany this thesis.

THIS DISSERTATION  
HAS BEEN MICROFILMED  
EXACTLY AS RECEIVED

## AVIS

La qualité de cette microfiche dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de mauvaise qualité.

Les documents qui font déjà l'objet d'un droit d'auteur (articles de revue, examens publiés, etc.) ne sont pas microfilmés.

La reproduction, même partielle, de ce microfilm est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30. Veuillez prendre connaissance des formules d'autorisation qui accompagnent cette thèse.

LA THÈSE A ÉTÉ  
MICROFILMÉE TELLE QUE  
NOUS L'AVONS REÇUE

MEASURING FOR STRUCTURAL UNEMPLOYMENT IN  
CANADA: 1953 - 1965

by

JOAN S. SAGERT

A Thesis  
submitted to the Faculty of Graduate Studies  
through the Department of  
Economics in Partial Fulfillment  
of the requirements for the Degree  
of Master of Arts at  
The University of Windsor

Windsor, Ontario, Canada

1978

© Joan S. Sagert 1978

TABLE OF CONTENTS

	Page
Chapter I. Introduction . . . . .	1
Chapter II. Measurement Models--Structural Unemployment . . . . .	4
Chapter III. Testing Canadian Data . . . . .	22
Chapter IV. Conclusions . . . . .	40
Footnotes . . . . .	44
Bibliography . . . . .	47

## FIGURES AND GRAPHS

	Page
Figure 1 . . . . .	9
Figure 2 . . . . .	13
Figure 3 . . . . .	15
Figure 4 . . . . .	16
Figure 5 . . . . .	21
Graph of Observations: Canada . . . . .	30
Ontario . . . . .	30
Quebec . . . . .	31
Atlantic . . . . .	31
Prairie . . . . .	32
British Columbia . . . . .	32

## TABLES

Table 1 . . . . .	27
Table 2 . . . . .	28
Table 3 . . . . .	29
Table 4 . . . . .	36

CHAPTER I  
INTRODUCTION

Over the period 1953 - 1965 the unemployment level in Canada rose sharply. This rapid increase in labour displacement sparked off a controversy over its most likely cause. One group of economists tended to put the blame for this upward swing on a lack of sufficient aggregate demand. Meanwhile, an opposing group held that the increase in unemployment was largely of a structural nature, and therefore, increasing the aggregate demand for goods and services would not lower the unemployment level substantially.

Those who supported the "aggregate demand" argument held that, given an increase in national income, spending would increase by an amount determined by the marginal propensity to consume.<sup>1</sup> This increase in spending would create a higher demand for goods and services, which in turn would create a higher demand for all factors of production, but particularly labour.

On the other hand, the structuralists argued that an increase in aggregate demand was not a sufficient means of lowering the unemployment level; that the labour market mechanism which served to adjust supply and demand was imperfect,<sup>2</sup> and that, even when the economy was expanding, the labour market mechanism would not ensure that all



categories of available labour would be sufficiently exposed<sup>2</sup> to the increasing demand for manpower. Thus, it was argued that much of the unemployment of the period was of a structural nature. In this thesis, the hypothesis to be tested is that the level of structural unemployment in Canada, rose over the period 1953 - 1965 and at a different rate in five different regions.

In order to test for structural unemployment there must be a clear understanding of just what it is.

Pierre-Paul Proulx has defined structural unemployment as:

long lasting unemployment due to a mismatching between the education, training, skills, locations, age and sex of work seekers and the requirements of employers.

This definition appears to be fully acceptable.

As to the root causes of structural unemployment, it can be seen as arising from such events as the exhaustion of natural resources in an area, changes in consumer demand due to the creation of new products, consumer taste changes, competition by an imported commodity which reduces work opportunities in any given industry (local or regional), technological changes which substitute capital for labour, or make specific skills or products redundant, or even from changes in organization or ownership of an industry that results in the closing down of certain plants.<sup>4</sup> Such circumstances seem to have been prevalent in Canada over the period 1953 - 1965; leading one to suspect that structural unemployment should have been present during the

period. Perhaps of even more interest is the fact that the <sup>3</sup>  
factors giving rise to structural unemployment were not  
evenly distributed regionally. Thus, regional structural  
unemployment rates should prove to have been similarly  
uneven in their distribution.

## CHAPTER II.

### MEASUREMENT MODELS--STRUCTURAL UNEMPLOYMENT

To indicate the presence and degree of structural unemployment, structural unemployment has to be separated from demand deficiency unemployment, which is unemployment caused by a lack of aggregate demand in an economy and from frictional unemployment. It is the latter separation which seems to present the greater problem.

Frictional unemployment is the amount of unemployment arising from the job changing process. Often, when a person changes jobs, there is a measurable passage of time between the day he finishes one job and the date that he starts another job, even though he may be eminently qualified for available job openings: As R. Pearlman puts it,

when vacancies exist, and qualified unemployed workers can fill some of these vacancies, these unemployed are considered frictionally unemployed.<sup>5</sup>

B. Fleisher attributes frictional unemployment to frictions or stickiness. It is one of the costs of imperfect labour market information and adjustment, and can be expected to last anywhere from one to three weeks.<sup>6</sup> It is the amount of unemployment which is caused by workers moving between occupations, jobs, industries and regions.

It is the period of time during which the worker is "between jobs"--the time required for a new entrant into the labour market to find employment

under full employment conditions, and the time that it takes a worker who changes over from one employment to another to effect the change. 5

However it would seem that structural and frictional unemployment tend to merge into each other with no clear boundary separating them, inasmuch as some of the structural unemployment is really frictional unemployment with a long, unacceptable time lag. 8

A. Butler indicated that structural unemployment was present if there was an increase in the variance of consumption values in a time study. 9 In another test, L. Galloway suggested that structural unemployment was present if the time factor was significant when a sector's unemployment rate was regressed against total unemployment, plus time. 10 To some extent, this same view is held by R.A. Gordon 11 and V. Stoikov.

Stoikov enlarged on this idea in order to test for an increase in structural unemployment. Group or sectoral unemployment rates were regressed against total unemployment and time for each sector which was suspected to have an increase in structural unemployment. If the resulting coefficient was positive and statistically significant, it implied a gradual upward shift over time of the sectoral unemployment rate. This could be taken as evidence that structural unemployment had increased, since the business cycle did not help to explain the phenomena. The linear form of this test is:

$$U_s = a + bU + et$$

where  $U_s$  is structural unemployment,  $U$  is total unemployment

rate and  $t$  is the time. Using this model, structural unemployment could be increasing if 'e' were to be greater than zero.<sup>12</sup>

Pearlman measured the total level of structural unemployment as the total number of vacancies less the number of unemployed workers qualified by the condition that the total number of persons unemployed had to be greater than the total number of vacancies. Therefore, with unemployment greater than vacancies, structural unemployment was considered to be equal to total unemployment minus frictional and cyclical unemployment with cyclical unemployment being that unemployment caused by seasonal work.

$$U = U_{\text{structural}} + U_{\text{frictional}} + U_{\text{cyclical}}$$
$$U_s = U - (U_f + U_c)$$

However, under different circumstances, such as an over abundance of vacancies in comparison to the total number unemployed, the total number of persons that would be considered structurally unemployed would be the total number of unemployed minus those unemployed persons who were qualified to fill those vacancies.<sup>13</sup> Unfortunately, no valid calculations of structural unemployment can be made from this method of measurement due to the necessity of separating out frictional unemployment, a difficult feat.

Vanderkamp's studies concentrated on the effect unemployment has on interregional mobility. His hypothesis was that a person is more likely to move from region A to region B the higher the net advantage derived from moving; with the

net advantage measured in terms of employment opportunities.<sup>14</sup> The employment opportunities are represented by regional unemployment rates, since these rates tend to reflect regional employment opportunities. However, Vanderkamp holds that changes in regional unemployment rates affect the net advantage differently, depending on if the change takes place in a home region or a 'strange' region. He sees the 'pull' aspect of employment opportunities for new migration in the receiving region outweighing the 'push' aspect of the sending region. However, for returning migrants, Vanderkamp sees the 'push' aspect of the sending region's unemployment rates as stronger than the 'pull' aspect of the receiving region.<sup>15</sup> This mobility clearly affects the frictional unemployment figures, and in some cases, the migrant may move from frictional unemployment to structural unemployment. But exactly where that boundary is, is difficult if not impossible to establish. In addition, when a worker migrates out of a region he adds to the unemployment of that region. He does so by taking with him the expenditure he would have spent in that region, so that the regional demand for products - and thus for labour - decreases.<sup>16</sup>

Up to this point, the means of measuring structural unemployment described have been rather general. However, more exacting analyses have been undertaken in this area of study which have resulted in the development of four basic models.

Richard Lipsey, in his trade-off model, ranges inflation

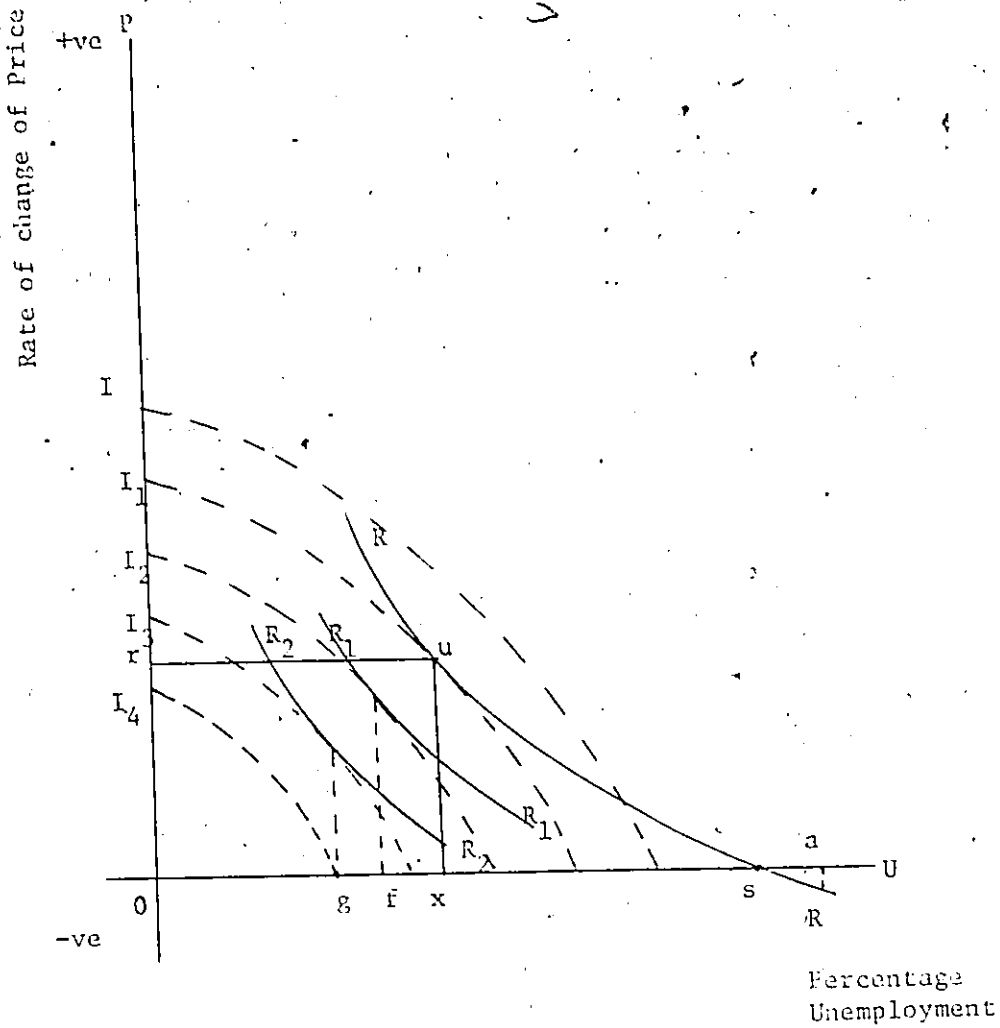
as a symptom of labour bottlenecks against unemployment.<sup>17</sup> In figure 1, on page 12, the RR curve depicts a behavioural relationship between unemployment and price changes. It "shows combinations of U and P which can be attained by varying the level of aggregate demand. . ."<sup>18</sup> The usual behaviour shown is an inverse relation between unemployment and aggregate demand. If the level of aggregate demand is high, the unemployment level will be low, but the rate of price inflation will be high.<sup>19</sup>

Since government has undertaken to keep unemployment at as low a level as possible without incurring an unacceptable rate of price inflation, (a distinction must be made between demand-deficiency unemployment versus structural and frictional unemployment.

Therefore, if the maximum rate of inflation which would be tolerated were given to be  $O_r$ , then the lowest level of unemployment possible would in turn be  $O_X$ . This  $O_X$  then is the level of structural plus frictional unemployment. Any amount of unemployment greater than  $O_X$ , say any amount between  $O_X$  and  $O_S$ , would be because of a lack of sufficient aggregate demand. In order to reduce unemployment below the  $O_X$  level, selective manpower measures would have to be put into operation. Such efforts to move the RR curve back to  $R^1R^1$  would only be employed so long as it yielded a net benefit in a cost-benefit analysis.<sup>20</sup> So long as future social benefits could be derived, other policies could be undertaken to reduce unemployment still further to  $R^2R^2$ .

FIGURE 1

THE LIPSEY MODEL





For the sake of argument, let it be assumed that  $R^2R^2$ <sup>10</sup> represents the trade off curve where the marginal social return equals the marginal social costs of the selected policies. In which case,  $O_g$  would represent structural unemployment.<sup>21</sup>

J. Vanderkamp, took Lipsey's model and applied it to the Canadian economy for the post war years--mainly 1957 and on. He chose the year 1957 as his cornerstone year because the increase in unemployment that was observed then is usually labelled as "structural".<sup>22</sup>

The model used in this test was a simultaneous equation of wage and price level determination. The rate of change in the consumer price index is expressed as a linear function of the following three variables:

- (1) the inverse of the unemployment rate
- (2) the rate of change of the import price index
- (3) the rate of change in the consumer price index one period lagged.<sup>23</sup>

Based on the above, the two word equations of the model are:

- (1) A wage change equation where unemployment and a change in prices are explanatory variables.
- (2) A price change equation where the wage change variable and the import price changes are determinants.<sup>24</sup>

In his model, Lipsey showed that an increase in structural unemployment would result in an upward shift in the relation between unemployment and the rate of price changes (the  $\bar{R}$  curve). Therefore, with other things being equal, a particular

rate of unemployment will be compatible only with a higher rate of inflation than before. To account for this time variables were added to the prior equation. If the time variables result in statistically significant coefficients, then it may be concluded that the trade-off between price changes and unemployment has worsened.<sup>25</sup> The three time variables Vanderkamp chose to allow for the various patterns in structural unemployment are:

- T<sub>1</sub> a linear time trend which is zero for the first quarter of 1947, one for the second quarter of 1947, etc.; this variable therefore tests whether structural unemployment has continuously increased over the period 1947-1965.
- T<sub>2</sub> this variable is zero for all quarters up to 1957, and it is a linear time trend from the first quarter of 1957 to the last quarter of 1967; the question asked in this case is whether structural unemployment may have remained at a constant level prior to 1957 but may have become increasingly important since then.
- T<sub>3</sub> a step variable which is zero in the pre-1957 years and unity from 1957 onwards; this variable tests if structural unemployment has suddenly become more important in 1957 but has not increased further since then.<sup>26</sup>

In his test, Vanderkamp found that the coefficients of the three T-variables were not significant. The T<sub>3</sub> variable (the one Lipsey thought to be the least likely) came closest to being significant. Therefore these tests do not support the conclusion that structural unemployment has increased significantly in the post war period or from 1957 on.<sup>27</sup>

It was mentioned that there is a possibility that structural unemployment shifted the trade-off position at low

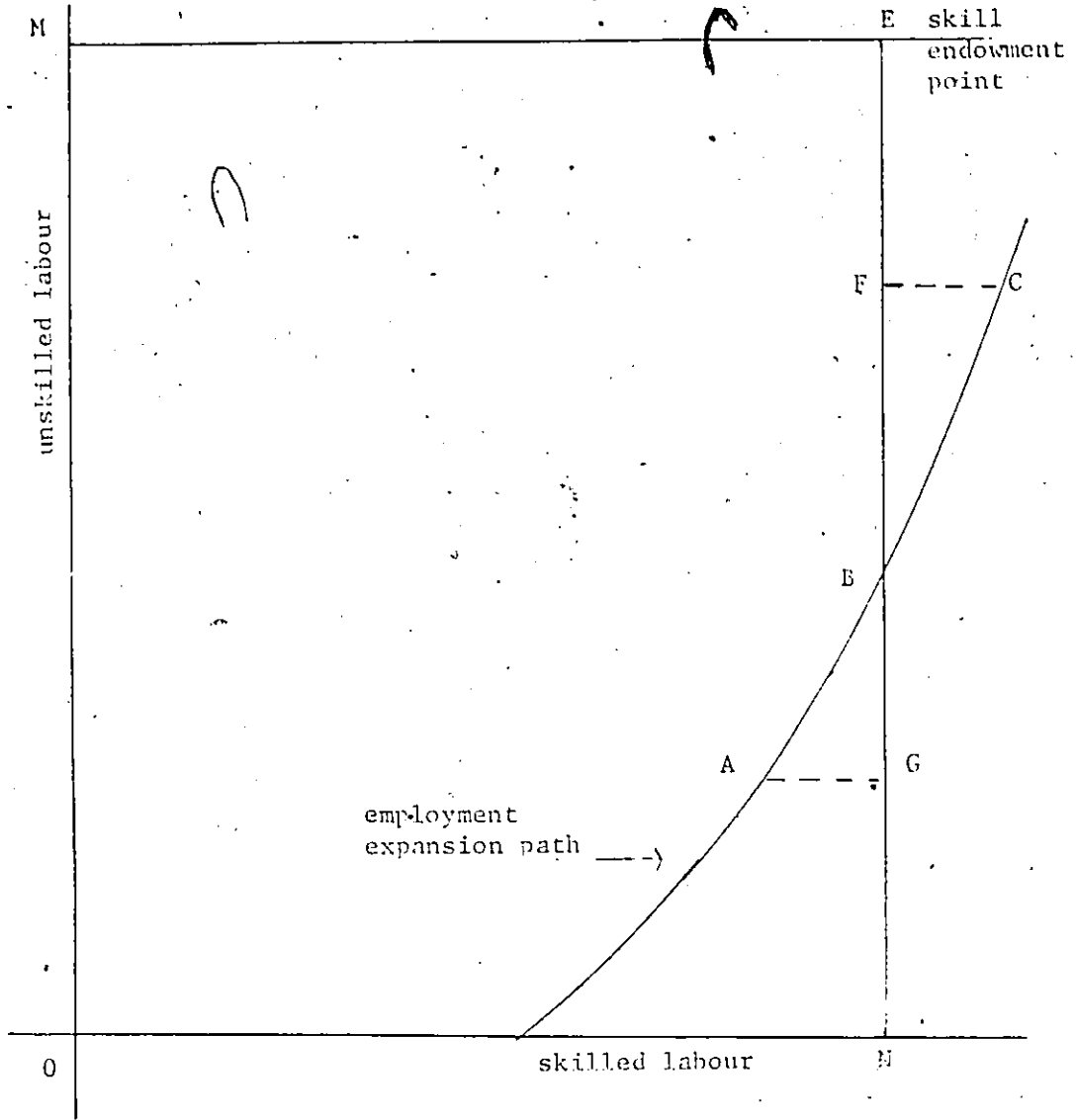
rates of unemployment without affecting it in the range of unemployment that prevailed in the 1957-1965 period (4 percent). Vanderkamp tested this possibility with a Phillips curve, but the results were not conclusive. He also tested the possibility, by examining the deviations of the actual price changes from the estimated price changes; but there were no clear cut trends in the deviations.<sup>28</sup>

Therefore, Vanderkamp concluded that if structural unemployment was to be defined in terms of the trade-off relation between unemployment and price changes, then there was no evidence to support the hypothesis that structural unemployment has increased in the post war period or in the years from 1957 on. At the same time there is no evidence to reject the hypothesis that increasing structural unemployment since 1957 has only affected the trade-off relation at very low levels of unemployment.<sup>29</sup>

Barbara Berman presented an alternative measure of structural unemployment in the "bottleneck" model. Here it was assumed that there were only two kinds of labour--the skilled and the unskilled. Furthermore, the proportions in which they were demanded for every level of output were rigid.<sup>30</sup> In an economy such as the one represented by ENOM, the coordinates of such a point as A, on the employment expansion path, would show the amount of skilled and unskilled labour employed to produce that level of output (figure 2, on page 16). At this point, total unemployment is the sum of skilled unemployment (AG) and unskilled unemployment (GE). However,

FIGURE 2

THE BERMAN MODEL



A - employment composition point

as production is expanded in response to an increase in aggregate demand, the employment composition point advances to B, which is a 'bottleneck' position for the supply of skilled workers.<sup>31</sup> Total unemployment is now restricted to the unskilled labour sector (BE). This could be labelled the level of structural unemployment because any expansion beyond this position demands retraining for the unskilled in order to convert them into skilled--and therefore employable--workers.

Retraining the unskilled worker allows the economy to approach point C on the employment expansion path. This makes it possible to employ BF more unskilled workers as well as FC more newly skilled workers. However, structural unemployment is still measured as BE. The employment expansion path moves over time, so any movement along the curve can only be shown in the short run. Also, the diagram does not make any allowance for frictional or hard core unemployment.<sup>32</sup>

This model appears to be impractical for purposes of this thesis since it does not show a direct relationship between job vacancies and unemployment. It also assumes that unemployment cannot be reduced in a 'bottleneck' situation except by selective manpower policies. In addition, the concept of this model tends to involve a whole economy, whereas this study is also concerned with covering separate sectors of the economy.

\*The Dow-Dicks Mireaux system seems to provide a more

FIGURE 3

THE DOW DICKS-MIREAUX MODEL

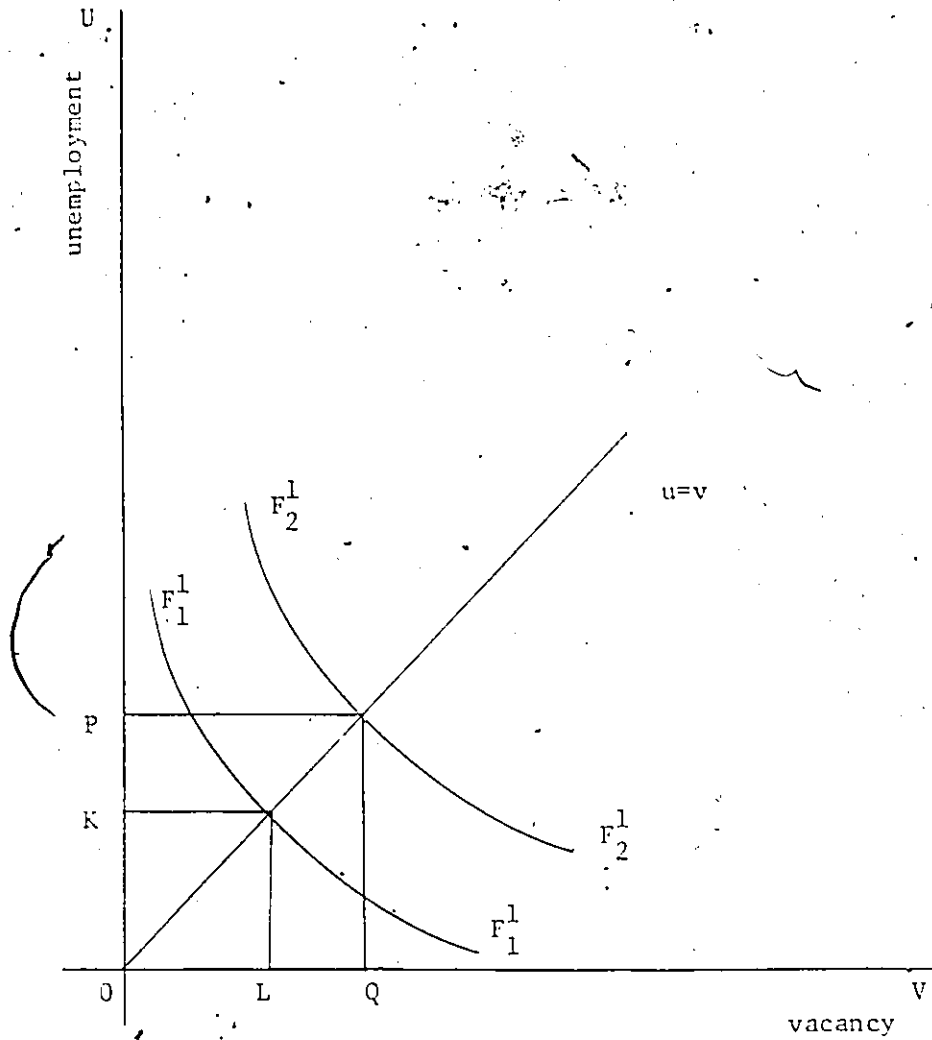
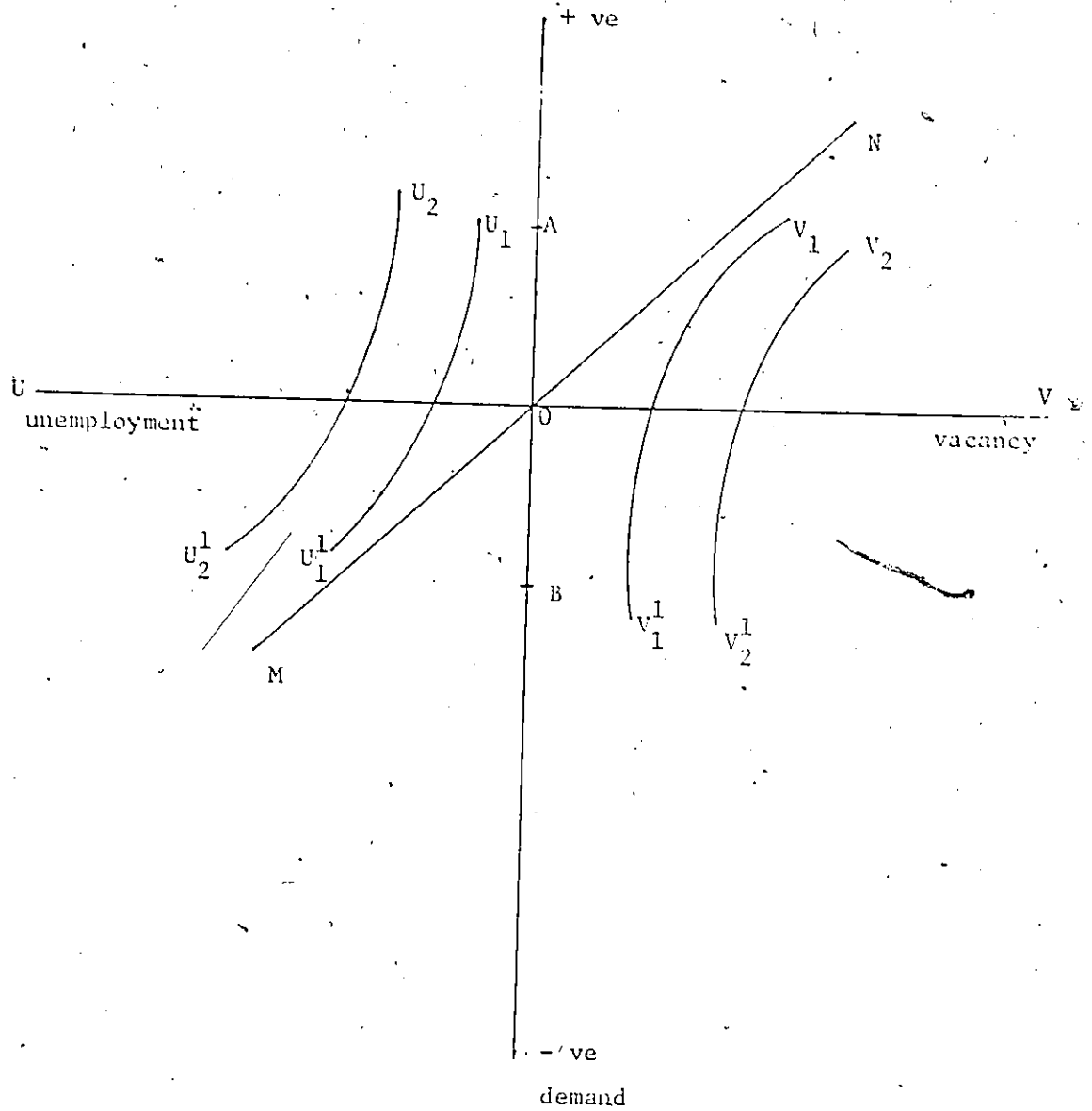


FIGURE 4  
 THE DOW DICKS-MIREAUX MODEL



acceptable method of measuring structural unemployment. 17  
This model utilized the concept of an inverse relationship  
between unfilled job vacancies and unemployment.<sup>33</sup>

Figure 3 on page 15 shows the shape of the unemployment-  
vacancy function. The link between unemployment and vacancies  
is demand for labour, which is demonstrated in figure 4.  
Labour demand's influence is depicted by:

$$d^* = -u + \sqrt{uv} \quad \text{where } u > v$$

$$d^* = v - \sqrt{uv} \quad \text{where } u < v$$
<sup>34</sup>

The unemployment ( $U_1, U_1'$ ) and vacancy functions ( $V_1, V_1'$ )  
take on a hyperbolic shape because they were formed under the  
following assumptions:

- (a) Unemployment will decrease at the same rate as  
demand increases from deficient demand to adequate  
demand ( $d^* = 0$ ).
- (b) If demand increases to the point where it becomes  
excess demand, unemployment will decrease at a  
decreasing rate.
- (c) As excess demand becomes smaller, vacancies will  
decrease at the same rate as demand decreases.
- (d) When demand falls below adequate demand ( $d^* = 0$ )  
vacancies will fall at a decreasing rate.<sup>35</sup>

Hence, maladjustment, or structural unemployment, is the amount  
of unemployment existing when demand is adequate ( $d^* = 0$ ).<sup>36</sup>

In the model, structural unemployment is measured as OK (OK=OL).  
If the degree of maladjustment increases, structural unemploy-  
ment will shift from OK to OP (OP = OQ). Similarly, the



unemployment-vacancy function will shift from  $F_1^1$   $F_1$  to  $F_2^1$   $F_2$ . 18

The vacancy data, however, is usually inadequate because of the many forms vacancies can take. This, plus the fact that a hyperbolic shape for the unemployment-vacancy function is assumed rather than being proved in some empirical way, hinders the use of this model for the purposes of this thesis.

However, if a clearer conception of the term 'job vacancy' were given by a more precise definition, a usable model could be constructed which would embody the framework of the Dow, Dicks-Mireaux unemployment-vacancy model.

Penz, in an effort to give a complete definition of the term 'job vacancy' which would include all conditions and situations possible, drew up the following definition:

... a job opening which could be filled immediately if (a) the appropriate job applicant presented himself or (b) the required complementary production inputs were available, and whose filling would not involve the dismissal of a presently employed worker.<sup>37</sup>

Working from this definition, Penz developed a model which tried to explain the relationship between the structural unemployment rate and the relative labour demand.

The Penz approach holds that structural equilibrium exists when the structure of labour demanded is matched by the structure of the labour supplied. Also, a partial complementarity of the factors of production is assumed. In other words, a labour bottleneck in one firm does not stop employment expansion in those firms which have not run into labour bottlenecks for supplies or orders. Nonetheless, Penz acknowledged that the presence of labour bottlenecks will

increase as aggregate demand increases, and that unemployment will tend to fall at a decreasing rate.<sup>38</sup> 19

In an economy with many industries, and therefore possessing a high distribution of bottlenecks, the unemployment-vacancy system is seen as a hyperbola. This curve is composed of a set of functions. Each function has the same relation between the unemployment rate and the vacancy rate, but at the same time, each function is related to a different level of structural imbalance.<sup>39</sup> If the basic equation is

$$u_t = f(v_t, a_t)$$

where  $u_t$  is unemployment at a point in time,  $v_t$  is the vacancy rate at a point in time, and  $a_t$  is a level of structural imbalance, then the structural unemployment rate can be found by solving

$$u = f(u, a_t)$$

To do this, the following is assumed:

$$u_t = \frac{a_t}{v_t}$$

$$\therefore a_t = u_t v_t$$

$$\therefore u = \frac{a_t}{u}$$

$$\text{or } u = \sqrt{a_t}$$

$$\text{or } u_{st} = \sqrt{u_t v_t} \quad 40$$

In this function  $u_{st}$  is the rate of structural unemployment at the point of time 't'.

Thus, when this model is applied to the situation in each of Canada's five economic regions, and / or to the nation as a whole, the amounts of structural unemployment for each time period involved, are calculated to be the square roots of the

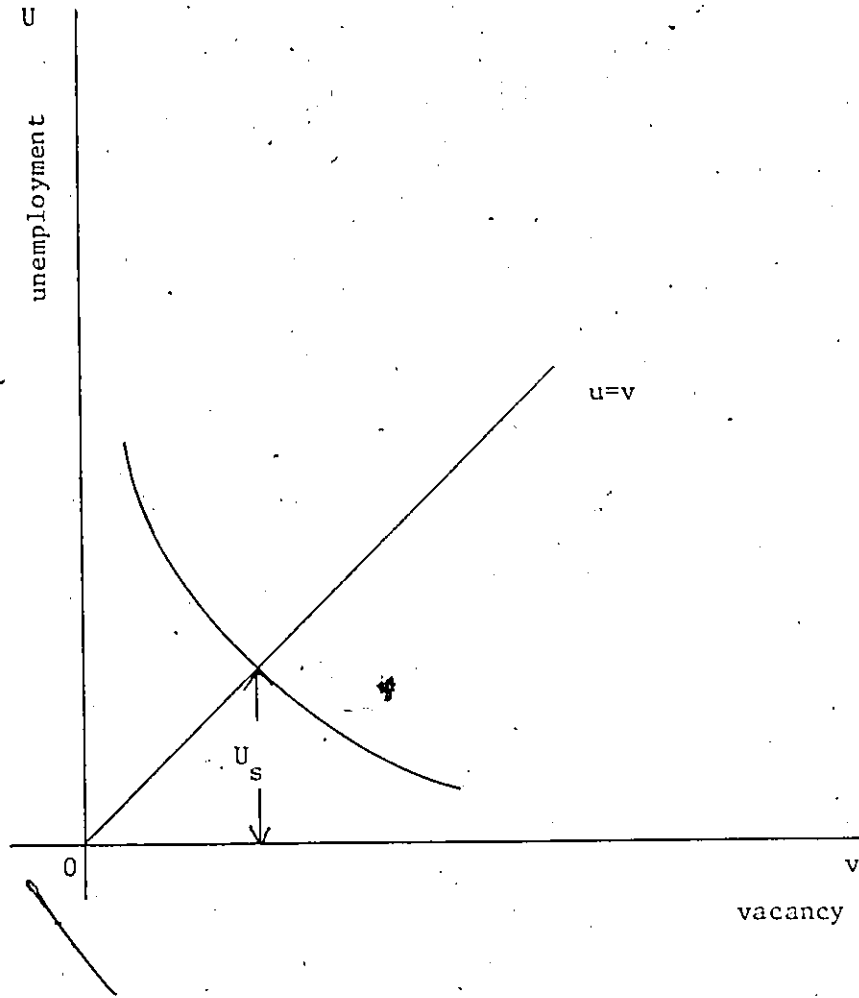
vacancy rates.

20

This model was chosen as a basis for testing in this thesis because it utilized the concept of an inverse relationship between unfilled job vacancies and unemployment. It tried to explain the relationship between the structural unemployment rate and the relative labour demanded. However, it was not restricted to the examination of a whole economy. This model permitted a comparison of structural unemployment rates in the different regions of Canada over a specified time period.

FIGURE 5

THE PENZ MODEL



### CHAPTER III

#### TESTING CANADIAN DATA

To test for the presence of structural unemployment, using either regional or national data, reliable statistics on vacancies were required. Since the only available statistics on the vacancy situation were those reported to the Department of Manpower and Immigration, these were used in the tests carried out in this thesis. Because of a change in organization within the Labour Department, the method of reporting vacancy data after the year 1965 was changed. This made the efforts of comparing the most recent data with the earlier statistics both difficult and unreliable. Therefore, only the years 1953 to 1965 are covered in this thesis.

The available vacancy data however, is subject to some degree of error; since the number of vacancies reported to the Canadian Manpower offices at any one time does not constitute the total number of vacancies within the economy. Not all employers will register a job vacancy with the Canada Manpower Center. Many employers prefer to fill job openings by promoting someone within the firm. This lowers the real vacancy estimate because the job is never reported to the Manpower office. Also, any vacancy which may finally emerge, after a series of internal promotions is often not considered worth bothering the Manpower office with, and at best results in an ad in the Help Wanted column of the local newspaper.

Furthermore many employers will always recruit via job vacancy ads in newspapers, local, regional or national, and not bother to utilize the local Manpower center. Still other employers by-pass the Manpower Center by registering their job vacancies with private employment agencies.

However, the error which might result from the incompleteness of vacancy data was not considered serious enough to affect the validity of the tests. Similarly the incompleteness of the unemployment and placement data emanating from Manpower sources was not seen as presenting a serious threat to the viability of the tests undertaken in this thesis.

In order to derive a satisfactory, comparable vacancy figure for the purpose of this study, labour placement figures were subtracted from labour vacancy figures. This calculation produced the unfilled vacancy figure. The statistics which formed the basis of these calculations were obtained from the Labour Gazette which is published by the Canadian Department of Labour. Figures were recorded on the quarterly basis, and then totalled to furnish the yearly totals for each of the five regions, and for Canada. Then, this unfilled vacancy figure was used as a percentage of the total employment in order to arrive at a vacancy figure<sup>41</sup> to be compared with the unemployment figure for test purposes.

The vacancy estimates used in this thesis differ in their derivation from the Penz estimates. Penz derived his vacancy estimate from a relationship between the duration of vacancies ( $d^v$ ) and the hiring rate ( $h$ ).

$$v = h d^v$$

In his study, Penz assumed that the duration of vacancies within the whole economy was equal to the duration of vacancies which were reported to the National Employment Service. Also, he used two different streams of information to obtain his hiring ratio. He used the Hiring and Separation Rates in Certain Industries, as published by the Dominion Bureau of Statistics, and the hiring rate published by the Canadian Department of Labour in the Labour Gazette. Because of this diversity in the sources of information, Penz resorted to extensive calculations in an attempt to reconcile one set of information with the other, leaving room for considerable errors of interpretation.

In the present study both the vacancy estimates and the placement estimates were obtained from the same source of information (the Canadian Department of Labour as reported in the Labour Gazette). The new vacancy figures were in fact the residual vacancies that could not be filled by the people who applied for the jobs. It was thought that this approach would provide a better measure of structural unemployment, since the basic data used emanated from the actual situation where the skills required for the vacancies available were being compared with the skills of applicants.

The unemployment figures<sup>42</sup> used in this thesis are the seasonally adjusted unemployment figures, which were obtained from the Canadian Department of Labour, expressed as a percentage of the total labour force.

In estimating the structural unemployment rate in this study, the following relationship was assumed.

$$u_t = f(v_t, a_t)$$

where  $u_t$  is the unemployment rate in a point in time,  $v_t$  is the vacancy rate in a point in time, and where

$$a_t = u_t v_t$$

In the above equation,  $u_t$  is the percentage of total unemployment which can be called structural. This claim can be made because the unemployment figures are already seasonally adjusted. The vacancy and placement schedules do not require such an adjustment because they, for the most part, are relatively unaffected by the seasonal factor. It is true that some industries, such as canning and lumbering, have mostly seasonal job opportunities. However, these jobs are, for the greatest part, filled by part time labourers-- those who work only during the summer months. Therefore, vacancies are filled and adjustments are made so quickly that unemployment and vacancy figures remain unaffected.

As for the frictional unemployment factor, it is seen as being largely neutralized by the fact that job placements are subtracted from job vacancies on a quarterly basis. Therefore, those who are in the process of changing jobs in the one quarter are accounted for in the following quarter. In other words, if one of those persons registered as being unemployed at a Canada Manpower Center filled a listed vacancy, the adjustment would be made on the files for the following quarter's report. It would show up as a decrease



in the unemployed, an increase in placement statistics and a decrease in the vacancy files. So then, the residue of the unemployed, those who are registered quarter after quarter, are structurally unemployed, providing there are job vacancies available.

From a simple regression analysis, the following results were obtained:

British Columbia	$u = 0.1185 - 0.4064 v$ (0.1325)	$R^2 = .46$	1:1
Prairie	$u = 0.0919 - 0.1098 v$ (0.0766)	$R^2 = .16$	1:2
Ontario	$u = 0.4160 - 1.2894 v$ (0.1969)	$R^2 = .80$	1:3
Quebec	$u = 0.3381 - 0.5623 v$ (0.2092)	$R^2 = .40$	1:4
Atlantic	$u = 0.1255 - 0.1700 v$ (0.0459)	$R^2 = .56$	1:5
Canada	$u = 1.3016 - 3.5614 v$ (0.6096)	$R^2 = .76$	1:6

From these results it can be seen that the regression coefficients for both Ontario and Canada as a whole are high. In both cases, the slopes are relatively steep, especially in the case of Canada. Further examination of the data shows that in no instance did either straight vacancy data (Table 1), or the vacancy minus the placement data (Table 2) exceed the unemployment rate (Table 3) for the parallel time period. This seems to indicate that, if the data were plotted, all of the observations would be found in one quadrant. However, the 't' value (-5.84217) for the Canadian test tends to limit the value of these particular results.

The Atlantic region's correlation coefficient is

TABLE 1

VACANCY RATES BY REGION AS NOTIFIED

Year	Canada	Atlantic	Quebec	Ontario	Prairie	B.C.	Ont.-Que.	Prairie-B.C.
1953	1,289,162	90,772	344,893	467,267	247,427	138,803	812,160	386,230
1954	1,088,320	83,632	276,832	366,863	207,619	153,375	643,694	360,994
1955	1,232,973	95,231	215,430	450,078	210,736	174,213	665,508	384,949
1956	1,425,528	91,123	368,149	528,725	267,119	180,412	896,874	447,531
1957	1,119,538	73,293	287,027	408,710	214,424	136,085	695,737	350,509
1958	994,639	64,436	232,974	360,351	201,923	134,955	593,325	336,878
1959	1,175,816	79,876	284,172	427,339	233,974	150,464	711,511	384,438
1960	1,128,922	96,617	296,140	382,214	215,265	138,486	678,354	353,751
1961	1,303,653	105,456	363,991	467,192	228,710	140,304	831,183	369,014
1962	1,555,160	109,147	439,077	585,577	257,333	164,026	1,024,654	421,359
1963	2,445,962	96,666	419,098	519,763	252,246	160,189	936,861	412,435
1964	1,560,775	108,790	444,161	550,239	277,136	180,449	994,400	457,585
1965	1,634,702	113,965	439,918	580,353	304,868	195,868	1,020,271	500,736

Source: 1. Canada Department of Labour: Labour Gazette Table D-1

2. Manpower 751, Department of Manpower and Immigration

TABLE 2

## UNFILLED VACANCIES AS A PERCENTAGE OF TOTAL EMPLOYMENT

YEAR	CANADA		ATLANTIC		QUEBEC		ONTARIO		PRAIRIE		BRITISH COLUMBIA	
	Vac-Pla	%	Vac-Pla	%	Vac-Pla	%	Vac-Pla	%	Vac-Pla	%	Vac-Pla	%
1953	295,756	.2294	40,859	.4501	85,019	.2465	108,099	.2313	64,071	.2589	24,708	.1780
1954	226,732	.2083	15,739	.1882	67,438	.2436	77,142	.2103	46,367	.2233	20,046	.1307
1955	279,397	.2266	27,612	.2899	16,940	.0786	89,891	.1997	51,989	.2467	29,570	.1697
1956	378,549	.2656	22,610	.2480	115,366	.3134	126,539	.2393	85,613	.3205	38,430	.2130
1957	241,834	.2161	13,881	.1894	71,692	.2498	78,971	.1932	52,902	.2467	24,489	.1800
1958	154,510	.1553	8,051	.1249	34,588	.1485	55,315	.1535	41,682	.2015	15,884	.1177
1959	189,743	.1614	9,524	.1192	44,741	.1574	70,100	.1640	105,403	.4505	19,994	.1329
1960	170,622	.1511	9,769	.1011	44,021	.1486	60,741	.1589	38,414	.1784	17,377	.1255
1961	185,791	.1423	10,872	.1031	60,141	.1652	72,776	.1558	35,503	.1552	6,499	.0463
1962	219,404	.1411	9,156	.0839	66,029	.1504	88,517	.1512	39,331	.1528	15,371	.0937
1963	267,853	.1852	12,584	.1302	75,621	.1813	95,243	.1832	66,086	.2620	18,319	.1144
1964	319,699	.2048	17,881	.1644	87,191	.1963	112,934	.2052	76,314	.2754	25,379	.1406
1965	307,805	.2268	19,666	.1725	106,297	.2416	150,281	.2589	70,246	.2304	24,590	.1255

Source:.. Canada Department of Labour: Labour Gazette

Table D-1

TABLE 3

## UNEMPLOYMENT AS A PERCENTAGE OF TOTAL LABOUR FORCE BY REGION

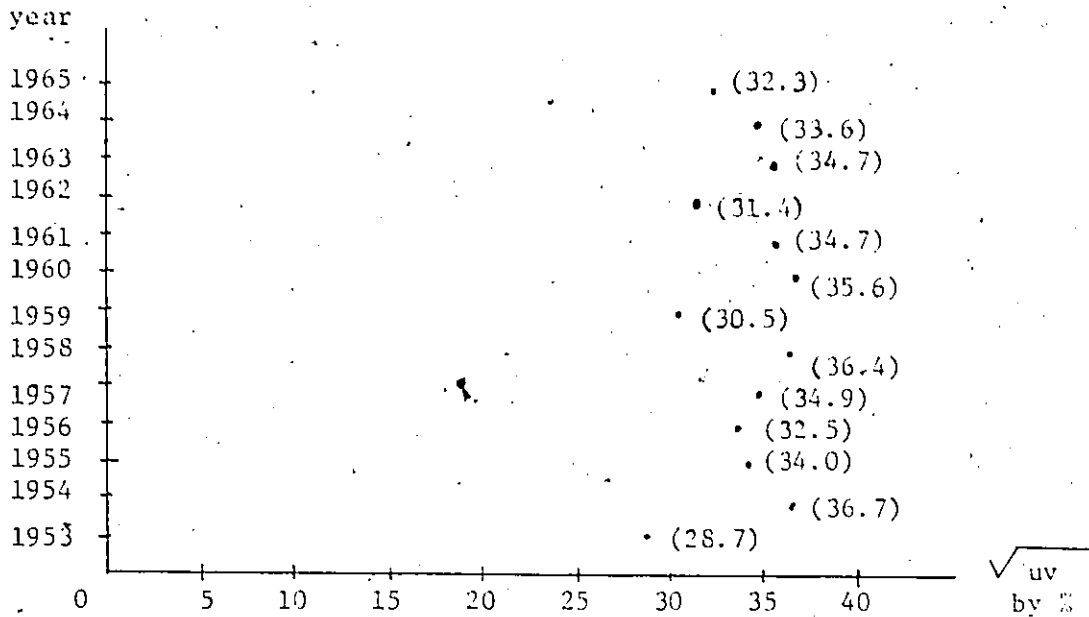
Year	CANADA		ATLANTIC		QUEBEC		ONTARIO		PRAIRIE		B.C.		PRAIRIE-B.C.		ONT.-QUE.	
	Unemp	%	Unemp	%	Unemp	%	Unemp	%	Unemp	%	Unemp	%	Unemp	%	Unemp	%
1953	1,981	.3597	346	.0628	723	.1312	496	.0900	213	.0386	215	.0390	428	.0777	1,219	.221
1954	3,547	.6469	402	.0733	1,160	.1212	956	.1743	326	.0594	290	.0528	616	.1123	2,116	.385
1955	2,876	.5105	408	.0724	1,148	.2037	766	.1359	360	.0639	207	.0367	567	.1006	1,914	.339
1956	2,290	.3966	359	.0621	925	.1602	600	.1039	231	.0400	157	.0271	388	.0672	1,525	.264
1957	3,429	.5669	563	.0930	1,248	.2063	953	.1575	328	.0542	333	.0550	661	.1092	2,201	.363
1958	5,252	.8527	819	.1329	1,875	.3044	1,472	.2389	513	.0832	-736	.1194	1,249	.2027	3,347	.543
1959	3,629	.5768	663	.1053	1,634	.2581	1,216	.1932	424	.0673	422	.0670	846	.1344	2,840	.394
1960	5,439	.8401	703	.1085	1,978	.3055	1,570	.2425	580	.0895	598	.0923	1,178	.1819	3,548	.548
1961	5,528	.8455	774	.1183	1,985	.3036	1,553	.2375	658	.1006	572	.0874	1,230	.1881	3,538	.541
1962	4,657	.7043	749	.1132	1,658	.2507	1,242	.1878	533	.0806	470	.0717	1,003	.1516	2,900	.438
1963	4,441	.6531	656	.0964	1,690	.2485	1,115	.1639	518	.0761	469	.0689	987	.1451	2,805	.412
1964	3,869	.5564	555	.0798	1,471	.2115	994	.1429	445	.0640	407	.0585	852	.1225	2,465	.354
1965	3,308	.4620	521	.0727	1,299	.1814	787	.1099	365	.0258	333	.0465	698	.0974	2,086	.291

Unemployment in 1000's

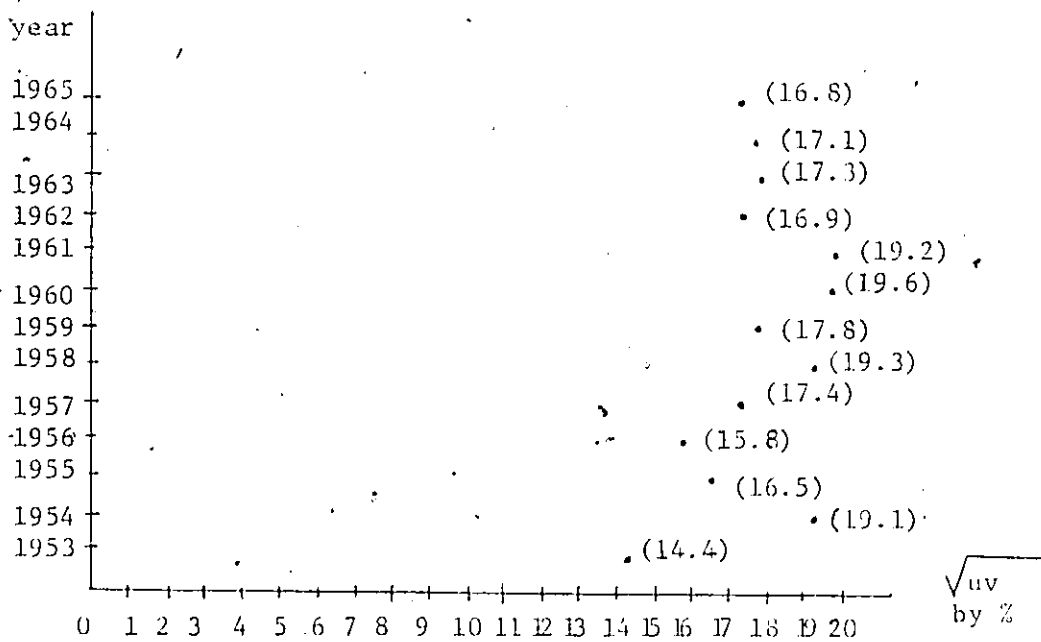
Sources: 1. Canada Department of Labour: Labour Gazette Table D-3  
 2. Statistics Canada: Seasonally Adjusted Labour Force Statistics Cat. No. 71-201  
 3. Data is seasonally Adjusted.

GRAPH OF OBSERVATIONS

CANADA

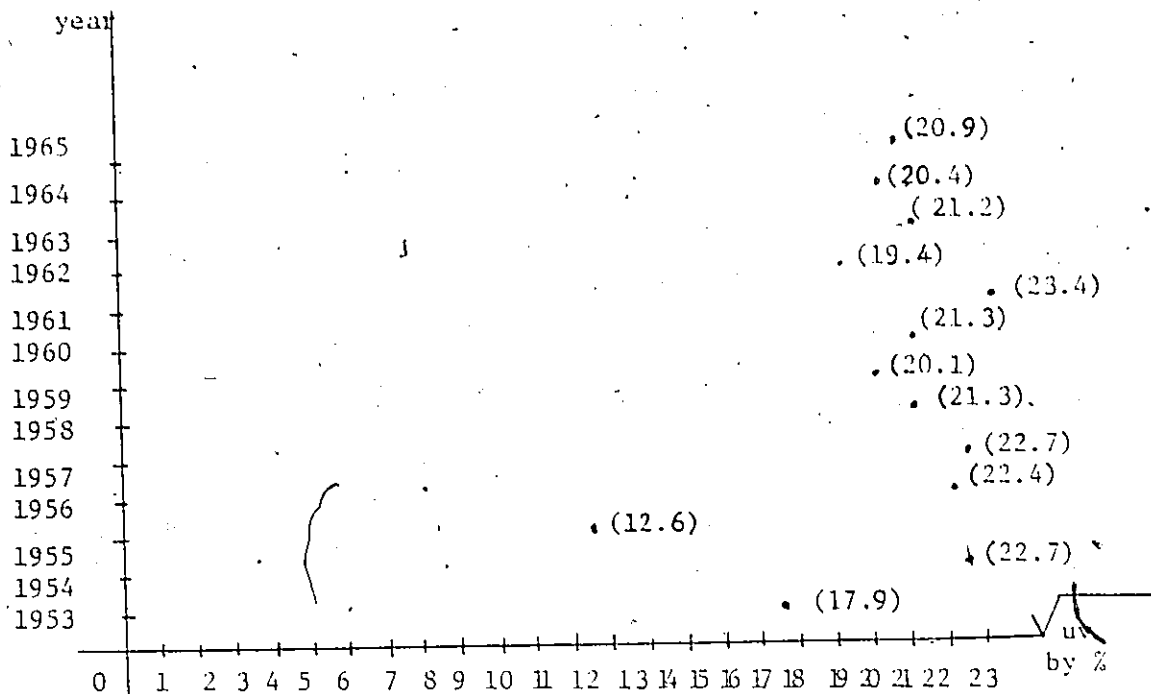


ONTARIO

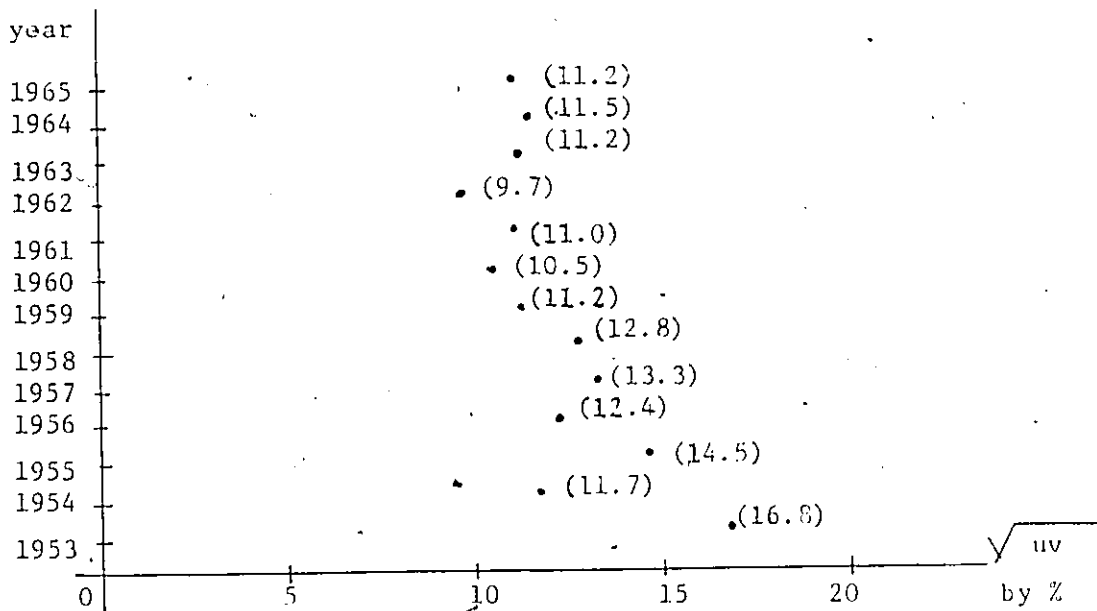


GRAPH OF OBSERVATIONS

QUEBEC

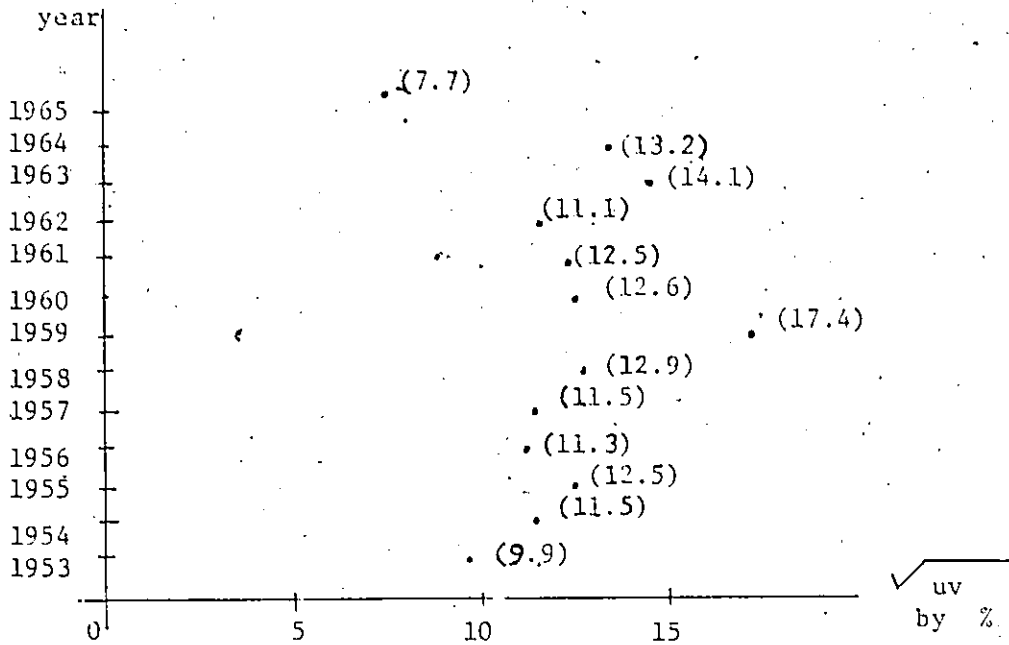


ATLANTIC

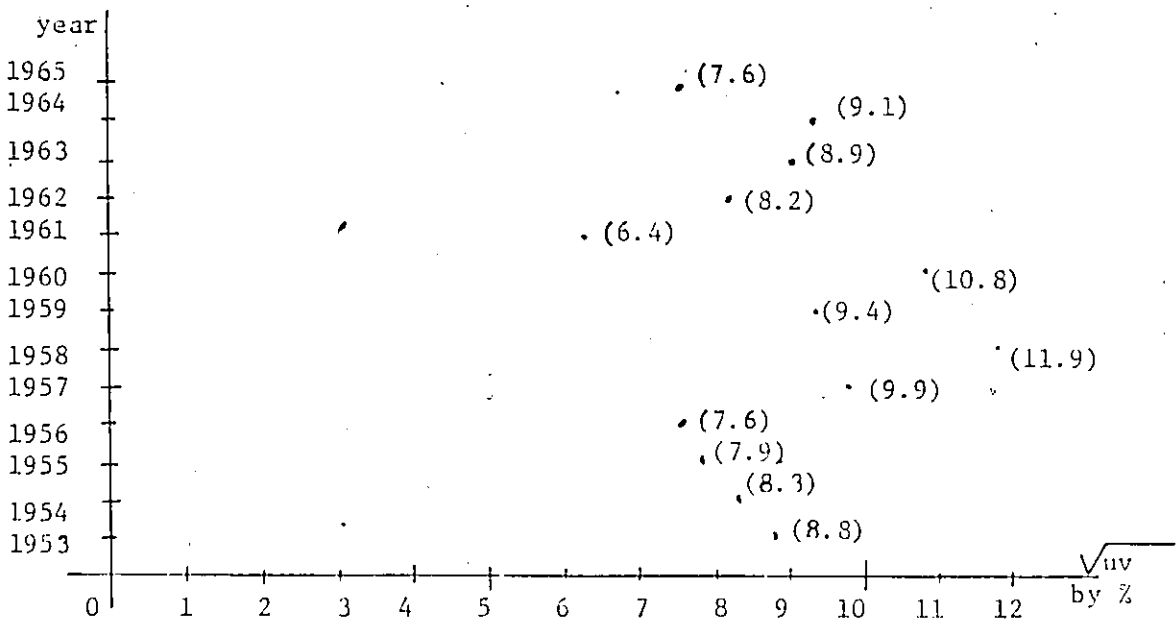


GRAPH OF OBSERVATIONS

PRAIRIE



BRITISH COLUMBIA



relatively low, and the slope of the regression equation is somewhat flatter than those for Ontario or Canada. It was found that the unemployment figures were always in excess of the vacancy figures for this region. But, when the percentage of unfilled vacancies to total unemployment (Table 2) was compared to the percentage of unemployment to total labour force figures (Table 3, page 29), it was observed that in nine of the thirteen observations the vacancy level exceeded the unemployment level. However, the 't' test value (-3.7057) indicated a 99 % confidence interval.

The other three economic areas--Quebec (.40), Prairie (.16) and British Columbia (.46)--all had low correlation coefficients. However, a 't' test for the confidence interval for Quebec and British Columbia districts indicated a ninety nine percent degree of confidence. The 't' test for the Prairie region indicated only a seventy-five to eighty percent degree of confidence.

As a possible alternative to the five basic economic areas of Canada, the Prairie and Mountain or British Columbia regions were grouped together as a single economic unit. Similarly, Ontario and Quebec were integrated to create another economic unit. The object of this experiment was to see if these four economic regions, three of which possessed low correlation coefficients when examined separately, would yield a more meaningful result if they were grouped to create two new, and perhaps more realistic economic units.

The following results were obtained using the new



groupings:

Ontario-Quebec	$u=0.6716 - 1.4700 v$	$R^2=.44$	1:7
	(0.5010)		
Prairie-British Columbia	$u=0.2225 - 0.5103 v$	$R^2=.46$	1:8
	(0.1652)		

It is interesting to note that the new correlation coefficient in (1:7) is an improvement over Quebec's in (1:4). It is however, lower than Ontario's in (1:3). However, the 't' test now indicated a ninety eight to ninety-nine percent confidence interval. Such results do not confirm of course that Ontario and Quebec operate substantially as an integrated economic unit as far as the labour market is concerned, but they do tend to indicate some degree of integration.

Another interesting result of the above combination is that the slope of (1:7) is much steeper than those for the Ontario equation (1:3) or for the Quebec equation (1:4). The data revealed that out of the thirteen observations, only five of the unemployment figures were greater than the vacancy figures. This steeper slope could be indicative of some inelasticity in the labour market. If Ontario and Quebec operated substantially as one economic unit, then an increase in job vacancies in Ontario would have caused the unemployed from Quebec to seek employment in Ontario; giving a lower unemployment rate for Quebec, and thus a lower slope in the regression analysis. Perhaps the language difference between the two areas is at least a partial explanation for the inelasticity in the Ontario/Quebec labour market.

In the case of the Prairie-British Columbia combination,

the correlation coefficient is still a rather low .46 (1:8)<sup>35</sup>, but is the same as that of B.C. alone (1:1). A 't' test for the new unit indicated a ninety-nine percent confidence interval.

In this combination, the slope of (1:8) is relatively shallow, but it is steeper than the slopes of the Prairie equation (1:2) and the British Columbia equation (1:1). It seems evident therefore, that the Prairie region workers were seeking employment opportunities in the British Columbia region when jobs were difficult to obtain in the Prairie. British Columbia labour may also move freely within the larger region, but, given the high diversity of job opportunities within the B.C. region itself, mobility outside of the region is seldom necessary. However, overall indications are that the Prairie and British Columbia regions do operate substantially as one labour market area.

Working on the assumption that a hyperbolic relationship exists between unemployment and the vacancy rate, the alternative method used to test for the presence of structural unemployment was as follows:

$$u_s = \sqrt{uv}$$

where  $u_s$  is structural unemployment,  $u$  is the unemployment rate and  $v$  is the vacancy rate. The results of this test are given in table 4.

The Canadian test revealed a positively sloped trend line. This would seem to indicate that structural unemployment increased in Canada during the years 1953 to 1965. The trend lines for Ontario and Quebec behave in a similar fashion.

TABLE 4

SQUARE ROOT OF VACANCY DATA TIMES UNEMPLOYMENT DATA  
 TAKEN BY ECONOMIC REGION FOR THE YEARS 1953 - 1965

YEAR	CANADA	ATLANTIC	QUEBEC	ONTARIO	PRAIRIE	BRITISH COLUMBIA	ONTARIO		PRAIRIE B.C.
							QUEBEC	QUEBEC	
1953	.2873	.1681	.1797	.1443	.0994	.0883	.2293	.1336	
1954	.3671	.1174	.2269	.1914	.1148	.0831	.2942	.1437	
1955	.3401	.1448	.1264	.1647	.1252	.0789	.1928	.1459	
1956	.3246	.1241	.2240	.1577	.1131	.0760	.2558	.1365	
1957	.3499	.1327	.2269	.1744	.1153	.0995	.2805	.1551	
1958	.3639	.1288	.2126	.1915	.1292	.1185	.2868	.1744	
1959	.3051	.1120	.2014	.1780	.1740	.0943	.2523	.0942	
1960	.3563	.1047	.2128	.1963	.1260	.1076	.2908	.1694	
1961	.3469	.1104	.2238	.1924	.1248	.0636	.2941	.1463	
1962	.3140	.1974	.1941	.1685	.1109	.0815	.2570	.1402	
1963	.3470	.1120	.2127	.1733	.1410	.0888	.2740	.1723	
1964	.3376	.1145	.2037	.1212	.1326	.0907	.2670	.1650	
1965	.3237	.1120	.2092	.1687	.0768	.0764	.2495	.1356	

The Prairie region displayed a relatively shallow, positively sloped trend line while the trend line for British Columbia was almost horizontal, indicating neither an increase nor a decrease in structural unemployment over the allotted time period. The Atlantic region, however, revealed a negatively sloped trend line, which would seem to indicate that structural unemployment decreased in that region.

Although two different testing methods were employed to examine the structural unemployment situation, the testing results were broadly similar, and in general they were in agreement with one another.

However, the non-linear approach tends to give a deeper insight into the structural unemployment situation even though the test "language" is couched in more general terms. Table 4 for example allows one to observe apparent changes in structural unemployment over the entire period under review, and perhaps to speculate as to the causes of such changes.

In the case of Quebec for instance an increase in structural unemployment is readily observable; reflecting in all probability a growing out-migration of industry and commerce with no comparable out-migration of labour.

Though the Ontario results indicate an increase in structural unemployment, the explanation is most likely quite different from that of Quebec. Ontario has long been generally accepted as the center of 'big business' and therefore, there has always tended to be an over abundance of jobs available in this region (as is indicated in Table 1

"Vacancy Rates By Region as Notified"). The explanation for the apparent increase in structural unemployment during the period in question probably lies in (1) an increasingly active labour market tending to promote increased frictional unemployment which (as stated previously) can show up as structural in a test, and (2) in-migration of workers (mostly unskilled) from other areas of Canada.

The Ontario labour market is very active, but at the same time, the region is also highly industrialized, and this tends to draw substantial numbers of unemployed people into the region seeking industrial employment. If Ontario could be subdivided so as to reveal the structural unemployment rate by cities, or even basic areas such as north, south, east and west, the results would most likely be quite varied and the highest rate would probably be found in the south western and south central sections where the concentration of big industry is the greatest.

When the Atlantic results were examined, the rate of structural unemployment was seen to have declined. Since this is unlikely to have been the result of improved general economic or labour-market conditions, it would seem to indicate an outflow of job applicants to the west, in particular, Ontario.

British Columbia and the Prairies seem to have experienced an increase in structural unemployment up to the year 1964 followed by a fall in 1965. Unfortunately a lack of data continuity prevented the test being applied to years

subsequent to 1965. However, the marked similarity of the test results of the B.C. and Prairie regions seem to confirm that the two areas did indeed comprise a single integrated labour market at least during the period under review.

## CHAPTER IV

### CONCLUSIONS

In order to determine the presence of structural unemployment in Canada as a whole, and in each of the five chosen regions, both linear and non linear tests were applied to the data for the years 1953 to 1965 inclusive. This data was further examined broken down into two time periods-- 1953 to 1959, and 1959 to 1965. Previous measurement models, devised by Lipsey, Berman, Dow Dicks--Mireaux and Penz were studied for possible application to the data.

The Lipsey model (which Vanderkamp also used) employed a time variable which assumed a different value for each quarter of the year (see p.11). This particular model would have proved cumbersome to employ in the testing of the regional data since it involved a search for three separate patterns of structural unemployment rather than measuring for a general presence of structural unemployment and possible increases in some. Similarly, the Berman "bottleneck" model seemed to be applicable only to a "whole economy" test procedure.

The Dow Dicks-Mireaux model was rejected since it assumed a hyperbolic shape for the unemployment-vacancy function, rather than establishing the shape via test procedure.

Penz, in his model, employed the concept of the

41

Dow Dicks-Mireaux model, without the prior assumption and he defined the concept of 'job vacancy' in a more precise fashion. Penz derived his vacancy estimate from a relationship between the duration of vacancies and the hiring rate. However, he assumed that the duration of vacancies within the economy was equal to the duration of the vacancies reported. He also used two different streams of information to obtain his hiring ratio.

This study followed the Penz general approach but the vacancy estimates and the placement estimates were obtained from a common source.

The Atlantic region results revealed an actual decrease in structural unemployment during the testing years 1953 to 1965. This was probably due to a marked degree of out migration to either Ontario or the Western provinces. When the tests were analysed under two distinct time periods, results from the period 1953 to 1959 showed a sharp drop in structural unemployment. Perhaps this was when out migration was at its peak. Tests performed on the period 1959 to 1965 revealed a steady level of structural unemployment. This level was fairly high, but it neither increased nor decreased. A further study of this region would be interesting, but is hindered by a lack of comparable recent data.

Testing performed on the Quebec region showed a marked degree of structural unemployment, with a steady increase from 1953 to 1965. The sharpest increase was observed from 1953 to 1959. Then from 1959 to 1965 the rate of increase in



structural unemployment slackened off.

Not surprisingly, the highly industrialized economic region of Ontario showed a marked degree of structural unemployment over the testing period. Although the situation was not as severe as that of Quebec, Ontario registered the second highest structural unemployment figures for the period under review. Both of the periods, 1953 to 1959 and 1959 to 1965 revealed some increase in the level of structural unemployment, but the sharpest increase was found to be in the years 1953 to 1959.

The Prairie region tested similarly to Quebec, although the actual structural unemployment rates were lower than those found in Quebec. The period bounded by the years 1953 to 1959 encompassed the sharpest increase in structural unemployment. This rate then fell slightly during the period 1959 to 1965, but the overall trend line showed a gradual increase in structural unemployment.

The British Columbia region was interesting because here the structural unemployment rate remained relatively steady from 1953 to 1965. There were small increases and decreases year to year, but these tended to average out over the period. The span 1953 to 1959 did reveal a slight general increase in the structural unemployment rate while the remaining interval (1959 to 1965) showed a variety of increases and decreases which averaged out to a 'hold even' position.

Thus, in each of the regions studied, structural unemployment was found to be present. In nearly every case,

43

the time interval 1953 to 1959 showed structural unemployment to be on the increase. Only in the Atlantic region was there an actual fall in structural unemployment during this period.

The span 1959 to 1965 presented more diversion. During this interval, in Quebec, Ontario and the Prairie, structural unemployment rose--though at significantly different rates in each area--while the Atlantic and British Columbia regions exhibited more or less steady levels of structural unemployment.

When the Canadian economy as a whole was examined, the variations seen in the regional tests tended to be absent. As a country Canada seems to have experienced a more or less steady increase in structural unemployment over the entire period 1953 - 1965, with only very slight evidence that the rate of increase was falling during the last five years of the total period under review.

FOOTNOTES

- 1 Richard Pearlman, Labor Theory (New York, 1969), p. 167.
- 2 G.P.Penz, Structural Unemployment Theory and Measurement (Program Development Service, Department of Manpower and Immigration, 1969), p. 12.
- 3 Ibid.
- 4 H.D. Woods, Sylvia Ostry, Labour Policy and Labour Economics in Canada (Toronto, 1962), pp. 337 - 338.
- 5 Richard Pearlman, Labor Theory, (New York, 1969), p. 168.
- 6 Belton M. Fleisher, Labor Economics Theory and Evidence (New Jersey, 1970), pp. 258,9.
- 7 Stephen G. Peitchinis, Canadian Labour Economics (Toronto, 1970), p. 254.
- 8 R.G. Lipsey, "Structural and Deficient-Demand Unemployment Reconsidered," The Labor Market, ed. B.J. McCormick and E.O. Smith, (Harmondsworth, 1968), pp. 249,50.
- 9 A.D. Butler, "Identifying Structural Unemployment", Industrial and Labor Relations Review, Vol. 20, No. 3, April 1967, p. 442.
- 10 Lowell E. Galloway, "Labor Mobility, Resource Allocation and Structural Unemployment", American Economic Review, Vol. 53, No. 4, Sept. 1963, p. 711.
- 11 R.A. Gordon, "Has Structural Unemployment Worsened?", Industrial Relations, Vol. 3, May 1964, pp. 55,6
- 12 Vladimir Stoikov, "Increasing Structural Unemployment Reexamined", Industrial and Labor Relations Review, Vol. 19, No. 3, April 1966, pp. 372,3.
- 13 R. Pearlman, op. cit., p. 168.
- 14 J. Vanderkamp, "Interregional Mobility in Canada", Canadian Journal of Economics, Vol. 1, No. 3, August 1968, p. 595.
- 15 Ibid., p. 598.

- 16 J. Vanderkamp, "The Effects of Out Migration on Regional Employment", The Canadian Journal of Economics, Vol. 3, 1970, pp. 541,2.
- 17 G.P.Penz, op. cit., p. 32.
- 18 R.G. Lipsey, "Structural and Defficient-Demand Unemployment Reconsidered", Employment Policy and the Labor Market, ed. A.M. Ross (Berkeley, 1968), p. 211.
- 19 Ibid., p. 212.
- 20 Ibid., p. 213.
- 21 Ibid., p. 214.
- 22 J. Vanderkamp, "An Application of Lipsey's Concept of Structural Unemployment", Review of Economic Studies, Vol. 33, No. 93, January 1966, p. 221.
- 23 Ibid.
- 24 Ibid.
- 25 Ibid.
- 26 Ibid., pp. 221,2.
- 27 Ibid., p. 222.
- 28 Ibid., p. 223.
- 29 Ibid., p. 224.
- 30 B. Berman, "Alternative Measure of Structural Unemployment", Employment Policy and the Labor Market, ed. A.M. Ross (Berkeley, 1965), p. 258.
- 31 Ibid., p. 259.
- 32 'Hard core' unemployment accounts for those persons who are between the ages of sixteen and sixty five, who for one reason or another cannot and will not find work of any sort.
- 33 G.P.Penz, op. cit., p. 22.
- 34 J.C.R. Dow and I.A. Dicks-Mireaux, "The Excess Demand for Labour: A Study of Conditions in Great Britain, 1946-1956", Oxford Economic Papers New Series, Vol. 10, No. 1, Feb. 1958, p. 22.
- 35 Penz, op. cit., p. 24.

36 J. Dow, I. Dicks-Mireaux, op. cit., p. 20.

37 Penz, loc. cit., p. 53.

38 Ibid., pp. 54, 57.

39 Ibid., p. 61.

40 Ibid., p. 70.

41 The vacancy estimate used for the purposes of testing was the unfilled vacancy estimate. To obtain this estimate, the labour placement figures as found in the Labour Gazette, table D-1 and Man. 751, Department of Manpower and Immigration for the years 1960 to 1965, were subtracted from the labour placement figures. The resultant from this calculation was my unfilled vacancy figure. This in turn was used as a percentage of total employment, which was found in the Labour Gazette in the actual tests.

42 The unemployment estimate used for the purposes of testing was obtained by using the seasonally adjusted unemployment figures, as found in Statistics Canada, catalogue no. 71-201, as a percentage of the total labour force as reported in the Labour Gazette.

## BIBLIOGRAPHY

- Berman, B. "Alternative Measure of Structural Unemployment", Employment Policy and the Labor Market. ed. A.M. Ross. Berkeley: University of California Press, 1965
- Butler, A.D. "Identifying Structural Unemployment," Industrial and Labor Relations Review. Vol. 20. No. 3. April 1967.
- Dow, J.C.R., Dicks-Mireaux, I.A. "The Excess Demand for Labour: A Study of Conditions in Great Britain, 1946-1956." Oxford Economic Papers. New Series. Vol. 10. No. 1. Feb. 1958.
- Fleisher, Belton M. Labor Economic Theory and Evidence. New Jersey: Prentice-Hall, Inc. 1970.
- Galloway, Lowell E. "Labor Mobility, Resource Allocation and Structural Unemployment". American Economic Review. Vol. 53. No. 4. Sept. 1963.
- Gordon, R.A. "Has Structural Unemployment Worsened?" Industrial Relations. Vol. 3. May 1964.
- Lipsey, R.G.. "Structural and Deficient-Demand Unemployment Reconsidered." The Labour Market. ed. B.J. McCormick, E.O. Smith. Harmondsworth: Penguin Books Ltd. 1968.
- \_\_\_\_\_. "Structural and Deficient-Demand Unemployment Reconsidered." Employment Policy and the Labor Market. Ed. A.M. Ross. Berkeley: University of California Press. 1968.
- Pearlman, Richard. Labour Theory. New York: John Wiley & Sons, Inc. 1969.
- Peitchinis, Stephen G. Canadian Labour Economics. Toronto: McGraw-Hill Company of Canada Limited. 1970.
- Penz, G.P. Structural Unemployment Theory and Measurement. Program Development Service. Department of Manpower and Immigration. 1969.
- Stoikov, Vladimir. "Increasing Structural Unemployment Reexamined." Industrial and Labor Relations Review. Vol. 19. No. 3. April 1966.

Vanderkamp, J. "Interregional Mobility in Canada." Canadian Journal of Economics. Vol. 1. No. 3. August 1968.

\_\_\_\_\_. "The Effects of Out Migration on Regional Employment." The Canadian Journal of Economics. Vol. 3. 1970.

\_\_\_\_\_. "An Application of Lipsey's Concept of Structural Unemployment." Review of Economic Studies. Vol. 33. No. 93. January 1966.

Woods, H.D., Ostry, Sylvia. Labour Policy and Labour Economics in Canada. Toronto: MacMillan of Canada. 1962...

### Vita Auctoris

- April 9, 1946 Born in Windsor to George and Pearl Orthner.
- September, 1952 to June, 1959 Attended D.M. Eagle grade school in St. Clair Beach.
- September, 1959 to June 1960 Moved to Riverside, and attended Colebourn grade school.
- September, 1960 to June 1966 Attended Riverside High School and graduated with Senior Matriculation.
- September 1966 Accepted at Canadian Bible College in Regina, Sask., and enrolled in Christian Education.
- September, 1968 Accepted at University of Windsor and enrolled in General Arts.
- May, 1970 Received Bachelor of Arts Degree in English at University of Windsor.
- August 22, 1970 Married to Robert Gordon Sagert.
- September, 1970 Accepted and enrolled at the University of Windsor for the Master of Arts in Economics.
- April, 1972 Completed course work at the University of Windsor.
- April, 1973 Completed oral comprehensives at the University of Windsor.
- June, 1973 Moved to Sarnia, Ontario.
- September 10, 1973 A daughter, Sonia Renee, was born.
- July 3, 1975 A son, Robert Bradford, was born.