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Structural Unemployement in Canada: 1971-1974. Did It Worsen?
Le chômage structurel au Canada

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See table of contents

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Cousineau, J.-M. & Green, C. (1978). Structural Unemployement in Canada: 1971-1974. Did It Worsen? *Relations industrielles / Industrial Relations*, *33*(2), 175–192. https://doi.org/10.7202/028860ar

Article abstract

The paper examines the question whether « structural » unemployment in Canada worsened during the period 1971-1974. Structural unemployment is here defined as a mis-match between the location and skill of job seekers and the location and skill requirements of available jobs (vacancies).

Structural Unemployment in Canada: 1971-1974
Did It Worsen?

Jean-Michel Cousineau
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The paper examines the question whether «structural» unemployment in Canada worsened during the period 1971-1974. Structural unemployment is here defined as a mismatch between the location and skill of job seekers and the location and skill requirements of available jobs (vacancies).

Structural unemployment has long been a topic of interest to Canadian economists. The hugeness of our country, the diversity of our industries and occupations, the variance in educational and skill attainments among our population, all these add up to a high probability of a mismatch, at any given point in time, between the location and skills of the unemployed and the location, and skill requirements of available jobs. Such a mismatch acts (at least temporarily) as a barrier to mobility preventing some of the unemployed from filling jobs that are vacant. For the purposes of this paper unemployment arising out of locational or occupational (skill) «mismatch» is termed «structural unemployment.»

Much of the research on structural unemployment was stimulated by the period of high unemployment between 1958 and 1963. Some economists, Killingsworth perhaps the most notable, had argued that the rise in unemployment rates in the late 1950's reflected changing job requirements (for skilled as opposed to unskilled workers) resulting from «automation,» and that simple demand stimulation was insufficient to deal with unemployment arising out of a change in economic structure. It would appear, however, that the fears about the effects of automation on employment were exaggerated. Subsequent research, and improving economic conditions in the mid 1960's,

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combined to more or less allay fears that structural unemployment had worsened. [1]

For Canada, Kaliski has investigated the geographic and occupational dimensions of structural unemployment. [2] On the geographic side, Kaliski proceeded from Denton's conclusion that the ranking and relative dispersion of regional unemployment rates remained quite stable over the business cycle, and that when national unemployment rates approached full employment, some regions experience « overfull » employment while others experience far above average, demand pressure resistant, unemployment rates. Using disaggregated, local data Kaliski reached conclusions qualitatively similar to those that Denton had reached using regional data, but found that « a classification by regions explains only about a third of the total variations among local areas in unemployment levels. »[3] Kaliski concluded that:

> « With amazingly few exceptions, the local areas participated in the Canadian expansion of 1960-1965-—. But some of the areas were, and remained, pockets of well above average unemployment relatively to their own region or to the country as a whole. It is in those areas, presumably, that one is most likely to find the 'structurally unemployed' when all aggregative demand unemployment has been eliminated and persistently favoured areas are short of many sorts of labour. »[4]

These local areas of high unemployment contained about 10 percent of the unemployed, leading Kaliski to observe that « if any large part of this constitutes structural unemployment, the geographic dimension of structural unemployment merits concern even if no (locational) structural unemployment is to be found elsewhere. »[5]

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[1] Lipsey has shown, however, that it is by no means a simple matter to either confirm or reject the structural hypothesis. Richard LIPSEY, « Structural and Deficient-Demand Unemployment Reconsidered » in A. Ross ed. *Employment Policy and Labor Market,* University of California Press, 1967. Note that our concept of structural unemployment excludes a rise in unemployment due simply to a technologically induced increase in labour productivity not matched by a commensurate increase in the derived demand for labour. In our framework this would be a form of deficient-demand unemployment.

[2] S. F. KALISKI, « Structural Unemployment in Canada: Towards a Definition of the Geographical Dimension » *Canadian Journal of Economics,* August 1968, pp. 551-65; S. F. KALISKI, « Structural Unemployment in Canada: The Occupational Dimension », *Canadian Journal of Economics,* May 1969, pp. 250-67.

[3] KALISKI, « Geographic Dimension » p. 557.

[4] *Ibid.,* p. 565.

[5] *Ibid.,* p. 564.

Kaliski tackled the occupational dimension of structural unemployment by employing an approach suggested by Barbara Bergmann.[6] Essentially, this involves determining whether shortages of workers with particular skills produce « bottlenecks » sufficiently serious to halt output expansion before other (presumably semi and unskilled) workers are fully employed. Those workers who remain unemployed after the output constraint is reached, are considered structurally unemployed. Since, as Kaliski noted, there is great diversity in both the level of, and variation in, unemployment rates among occupational groups in Canada, the bottleneck issue is not lacking in relevance. Nevertheless, the results of Kaliski's empirical investigation suggested « that expansions of the magnitude observed in the postwar period can take place without requiring additional highly skilled workers. »[7] However, this finding would not appear to rule out occupational (or skill) mismatch: only that it was not severe enough to halt output expansion.

In section I of the paper we describe a different method for distinguishing structural mismatch from other types of unemployment. In section II the model is applied to unemployment and vacancy data for the years 1971-74. In the third section limitations and shortcomings of the model are discussed. Conclusions are presented in section IV.

THE GORDON-MINCER UNEMPLOYMENT-VACANCY MODEL

Since the beginning of 1970, Canada's unemployment rate has continuously exceeded 5 percent in every quarter and 6 percent in most. The higher over-the-cycle unemployment rates experienced in the 1970's have rekindled interest in the question of whether structural unemployment has worsened in recent years. The importance of the issue has been heightened by evidence that the continued high unemployment experienced during the 1971-74 expansion cannot be explained in simple deficient aggregate demand terms.[8] One piece

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[6] KALISKI, « Occupational Dimension », pp. 251-53.

[7] *Ibid.*, p. 267. A study by Penz covering the period 1953-65 concluded that deficient demand was the chief contributor to unemployment in excess of 3 percent, although Penz' results do suggest a small increase in non-deficient demand (what Penz terms « structural ») unemployment in 1955-56. G. Peter PENZ, *Structural Unemployment: Theory and Measurement,* Program Development Service, Department of Manpower and Immigration, 1969, Ch. 4, 5.

[8] For the years 1971 to 1974, the overall Canadian unemployment rate was 6.4, 6.3, 5.6 and 5.4 percent, respectively. By 1973 the ratio of vacancies to unemployed exceeded the figure for 1966 when the unemployment rate was 3.6 percent.

of evidence that the role of non-deficient demand factors in the unemployment picture increased, was the large rise in the ratio of job vacancies to the number of unemployed persons, for any given rate of unemployment during the period 1971 to 1974. In terms of the Dow-Dicks-Mireaux unemployment-vacancy (U-V) model, there was a very large rightward shift, after 1971, in the negatively inclined U-V relation. [9] (Since 1975, the behaviour of the U-V relation indicates a substantial rise in deficient demand unemployment). The analytical problem is to find a method by which it is possible to distinguish between « structural » and other possible causes of the apparent rise in *non*-deficient demand unemployment.

About a decade ago, R.A. Gordon and J. Mincer suggested a method by which unemployment (U) and vacancy (V) data could be used to distinguish between structural and frictional unemployment. [10] Essentially, the Gordon-Mincer model builds upon the Dow-Dicks-Mireaux model by utilizing *cross section* data on U and V to test whether an observed shift in the *time series* U-V relation is attribuable to « structural » or « frictional » factors. The basic idea is as follows: changes in the efficiency of labour markets can be roughly ascribed to one of two sources: (1) those which influence the importance of labour market impediments or immobilities, and (2) those which influence the preferences (choices) of labour market participants. When immobilities are the source of the unemployment problem the resulting unemployment is termed « structural ». When the preferences, or choices, of labour force participants are the source of reported unemployment the unemployment is termed « frictional ».

The Gordon-Mincer model relating unemployment and vacancies is introduced in Figure 1. On the axes are vacancy rates and unemployment rates. Each U-V plot represents the unemployment rate-

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[9]   The derivation and presentation of the time series U-V relation for Canada is found in Christopher GREEN and J-M. COUSINEAU, *Unemployment in Canada: The Impact of Unemployment Insurance,* Economic Council of Canada, (Ottawa: Information Canada 1976) Ch. 4. Also J-M. COUSINEAU and C. GREEN. « Causes of High Unemployment in Canada: 1970-75 », paper presented at Canadian Economic Association meetings, Quebec City, May 31, 1976. Both studies make use of a model first suggested by J.C.R. DOW and L. A. DICKS-MIREAUX, « The Excess Demand for Labour: A Study of Conditions in Great Britain, 1946-56» *Oxford Economic Papers,* Feb. (1958), pp. 1-33.

[10]   R. A. GORDON, *The Goal of Full Employment,* (New York: Wiley, 1967) Ch. 3; Jacob MINCER, « Comment » in *The Measurement and Interpretation of Job Vacancies,* NBER (Columbia University Press, 1966) p. 126.

vacancy rate coordinate for a given occupation (or region). Rates rather than absolute magnitudes are used because labour markets, whether occupational or geographical, usually vary in size. The use of a rate effectively standardizes for scale differences. The denominator in the vacancy and unemployment rate can be (a) employment (E); (b) employment plus vacancies (E + V), or (c) the labour force (LF).

To illustrate the Gordon-Mincer method of distinguishing between structural and frictional unemployment two sets of points are plotted in figure 1. The negatively sloped U-V scatter represented by the crosses indicates that at a given time the ratio of vacancies to unemployment varies substantially among occupations (or regions). That is, in some markets the ratio of vacancies to unemployment is high relative to the U-V ratio in other markets. If over time labour markets are characterized by widely varying combinations of vacancy and unemployment rates, there is evidence of impediments of one sort or another between the flow of workers from those markets (locations, occupations, etc.) where the number of unemployed is high relative to vacancies to those markets where vacancies are high relative to the number of unemployed. *Thus, a negatively sloped U-V scatter is evidence for the existence of structural unemployment.* It suggests that if there were little or no deficient demand unemployment, unemployment beyond the minimum frictional level is largely of a structural (impediment to mobility) nature.

The positively sloped scatter of circles in Figure 1 suggests a different cause of unemployment. Here labour markets are characterized by similar vacancy-unemployment ratios. But in some cases *both* vacancy and unemployment rates are low and in others *both* vacancy and unemployment rates are high. The problem here evidently is *not* one of impediments to labour flows between labour markets since in each case there is more or less the same ratio of vacancies to unemployment. Rather the problem is that there must be some occupations (or regions) where labour turnover is relatively high and job attachment is relatively weak. These may be due to unattractive jobs, undesirable location, leisure preference, and/or good non-market work alternatives. Such conditions are largely matters of job seeker choice which can generate « frictions » in the labour market. Thus a positively correlated scatter suggests that individual preferences, rather than labour market impediments to mobility, are the chief cause of non-deficient demand unemployment.

When one applies the model just described to the « real world » he is not likely to find matters as cut and dry as those described above.

Instead of a nice negatively or positively sloped scatter of U-V plots he may find a more nondescript scatter reflecting the fact that in the « real world » there are both structural impediments to mobility, and choice-induced frictions, coexisting. However, this is not really a problem here since we are concerned with *changes* in the scatter. That is, our concern is with whether structural or frictional unemployment has worsened (or lessened) rather than with whether there exists any of either type of unemployment. Thus we want to compare the cross-section scatter of U-V plots for year t (say 1971) with the scatter for years t + 1, t + 2, etc.

As an example, we take the case of geographical (interregional) immobilities and consider the positions of Ontario and the Atlantic Provinces. Let us assume (realistically) that Ontario has a relatively high vacancy rate and a relatively low unemployment rate compared to the Atlantic Provinces, as shown in Figure 1. If this is a continuing

FIGURE 1

Cross Section Scatters Distinguishing Structural and Frictional Unemployment
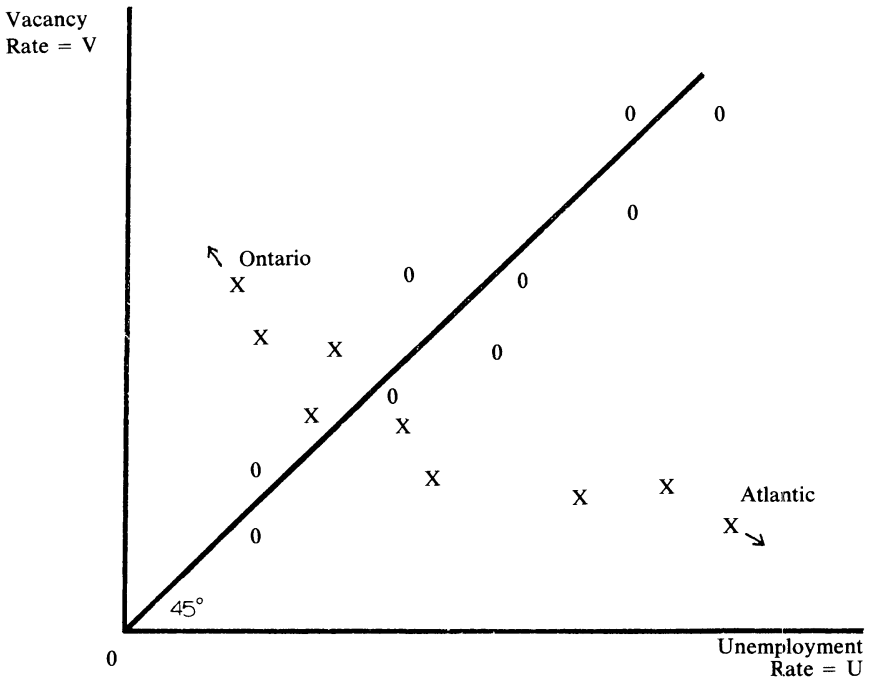
phenomenon, there is evidence of some geographical immobility, since
one would expect job seekers to move from regions with relatively
high (low) unemployment (vacancy) rates to regions with relatively
low (high) unemployment (vacancy) rates, thereby tending to reduce
the unemployment-vacancy rate differentials. The distance in Figure 1
between the Ontario and Atlantic Provinces vacancy-unemployment
rate coordinates is an ordinal indicator of the degree of structural
unemployment attributable to geographic immobility between the
Atlantic Provinces and Ontario. Should these coordinates move further
apart (toward the axes — as indicated by the arrows), we would say
that there is evidence of an increase (or worsening) in the geographical
dimension of structural unemployment. Instead of two regions, the
technique can be applied to as many regions as the data allow, which
in Canada is 5 regions. Should the coordinates thus plotted tend to
« stretch » toward the axes between two points in time, we would
conclude that the locational mismatch between job seekers and job
openings has increased. Similarly, if the crosses in Figure 1 cor-
responded to different occupations, say managerial and professional
on the one hand and labourers on the other, an increase in the
« spread » between their respective U-V coordinates would be an indi-
cation of an increase in the occupational (skill) dimension of structural
unemployment.

THE EMPIRICAL EVIDENCE

Figures 2 and 3 show the unemployment rate-vacancy rate com-
binations by region and occupation, respectively, for the years 1971-
74. The U-V plots for a given year are linked together by lines in order
to better observe the changes that occurred on a year-to-year basis
between 1971 and 1974. For the years 1971-73, Figure 2 does not
provide any evidence of an increase in the geographical dimension of
structural unemployment — at least not so far as broad regions are
concerned.[11] In 1974, there is some evidence of « spread » with the
points for the Atlantic Provinces and the Prairies moving toward the
opposing axes. However, 1974 falls outside the period (1971-72) when

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[11]   As the JVS began in mid-1970, it was not possible to begin the analysis
earlier than 1971. Since we are chiefly interested in the cause(s) of the U-V shift in
1972, starting the analysis in 1971 probably does no harm. However, the Denton *et al.*
vacancy series does allow one to examine *regional* unemployment vacancy plots for the
years since 1959, and doing so indicates some structural change during the mid-to-late
1960's. See F. DENTON, C. FEAVER and A. L. ROBB, *Patterns of Unemployment
Behaviour in Canada,* Economic Council of Canada Discussion Paper No. 36.

the aggregate U-V relation (not shown) experienced its big shift to the right. As Figure 2 shows, between 1971 and 1972 vacancy rates increased in every region with little change in any of the regional unemployment rates. [12]

FIGURE 2

Regional Unemployment Rate — Vacancy Rate Scatter; Canada 1971-74

$V_j = f_j{}_{LF_j}$ where V_j = job vacancies in J^{th} region   A = Atlantic
                                                                          Q = Québec
                          U_j = unemployment in J^{th} region   BC = British Columbia
                                                                          O = Ontario
$U_j = U_j/LF_j$ LF_j = labour force in J^{th} region   P = Prairies

What about the question of skill-mismatch or occupation immobility? Has the occupational dimension of structural unemployment worsened? A difficulty arises because, prior to 1973, the occupational classification of the unemployed was not consistent with the occupational classification of job vacancies. Fortunately, Statistics Canada

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[12]   Unfortunately, the regional categories for which both U and V data are available are so broad as to seriously limit the reliability of the exercise we carried out.

provided us with some unpublished cross tabulations of the unem-
ployed in 1973, by the « old » and « new » occupational classifications.
The method we used in estimating the number of unemployed (and
employed) persons in 1971 and 1972, by new occupational groupings,
is described in the Appendix.

FIGURE 3

Vacancy-Unemployment Rate Scatter, by Occupation: Canada 1971-1974

M = Managerial, administrative, ...   S = Sales   T = Transportation
C = Clerical   E = Services   P = Primary
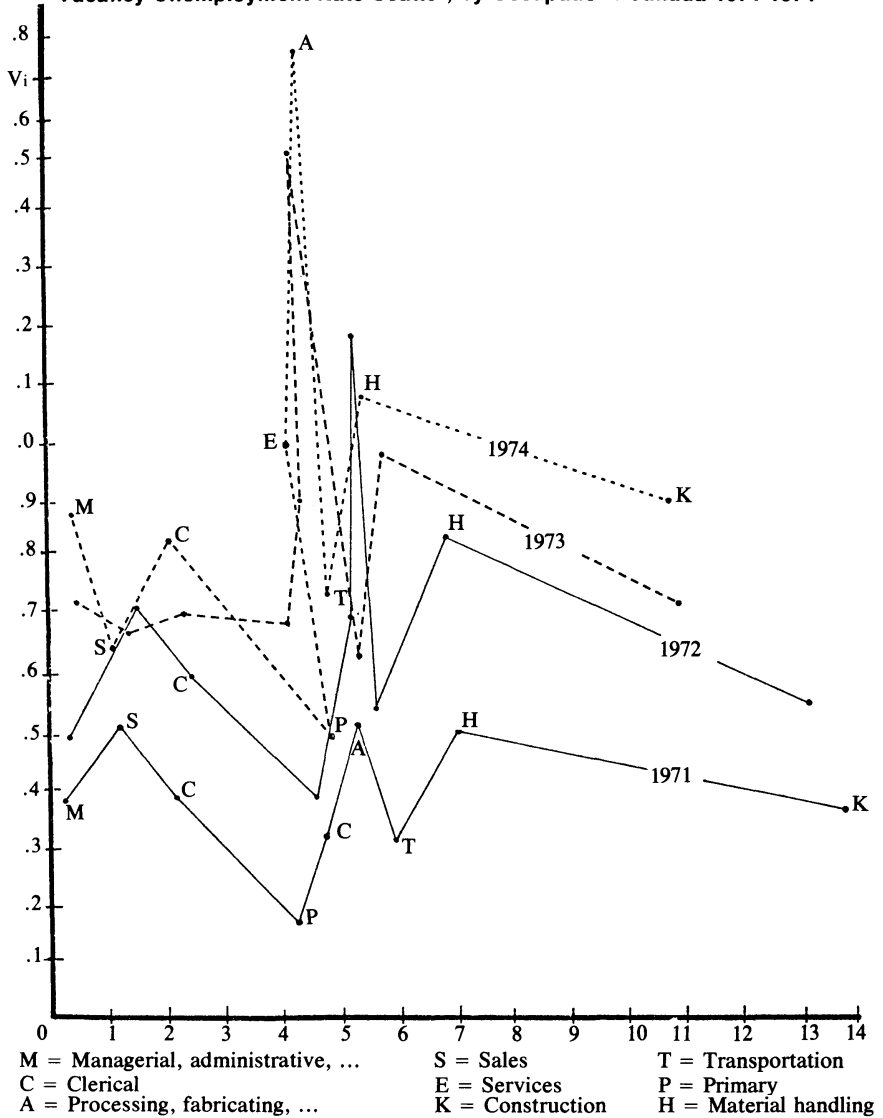A = Processing, fabricating, ...   K = Construction   H = Material handling

Figure 3 presents the cross-sections. of U-V plots for 1971-1974. It is clear from Figure 3 that the cross-sections shifted markedly upward in 1972 and showed a tendency to « squeeze » upward over the whole period. This is not the sort of result which one would predict if skill mismatch had *worsened* over the period. If anything, Figure 3 suggests that the occupational dimension of structural unemployment may have lessened in the early 1970's. That skill mismatch did not appear to worsen is indicated by a direct examination of the data on job vacancies by occupation.[13] Table 1 shows full-time job vacancies for 18 occupational categories for the years 1971 to 1975. The annual growth rate in these job vacancies are shown on the right-hand side of the same table. Had there been a worsening in the occupational (skill) dimension of structural unemployment, either (a) job vacancies would have shown a substantial rise in some occupations and a drop in others, or (b) the growth rates would have differed greatly between occupations. In fact, vacancies rose in every occupation between 1971 and 1972, and while there are evident differences in the rates of growth, they provide little support for the worsening skill mismatch hypothesis. The highest growth rates emerge in those occupations with relatively low skill requirements, while the lowest rates of job vacancy growth are in occupations with relatively high skill requirements. For example, in 1972, the most rapid growth in the number of job vacancies occurred in semi-skilled occupations such as processing, machining, product fabricating and assembling, and forestry and logging. The slowest growth in job vacancies occurred in such « skilled » occupations as medicine and health, teaching, and other white collar professional occupations. During 1973, the number of job vacancies continued to rise sharply in the semi-skilled occupations and rose more rapidly, than in 1972, in the professional groups. The job vacancy growth rates, in 1974, were remarkably similar over the 18 occupational categories. The sharp decline in job vacancies, in 1975, spread to almost every occupational group, which indicates to us that the rise in unemployment, in 1975, was of the deficient demand sort and was not due to a worsening in structural factors.

One check on the evidence derived from applying the Gordon-Mincer variant of the U-V model is provided by indexes of unemploy-

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[13]   We also have data on job vacancies and unemployment for 6 broad industry classes. A comparable analysis produced results similar to those for the occupational breakdown. We have not included these data in the paper because we are somewhat doubtful as to the origin of industrial immobilities that are independent of occupation or location, although they may exist as a result of « man-made » barriers such as licensing and union restrictions.

ment dispersion. An unemployment dispersion index is calculated by summing over the absolute differences between the unemployment share and the labour force share of each region, industry, occupation or demographic group. The assumption is that the greater the dispersion in group unemployment rates around the aggregate (or average) rate, the greater is the probable mismatch between jobs and job seekers. [14] For occupational and industry breakdowns the unemployment dispersion indexes have declined substantially since 1961, when data first became available. The decline has been particularly marked since 1969. On the other hand, there has been no clear trend in the regional unemployment dispersion index, and that for age-sex groups has clearly risen.* [15] One is left with the impression, then, that the apparent increase in non-deficient demand unemployment in Canada in the early 1970's was associated with factors which tended to increase the « choosiness » of labour market participants (e.g., the increasing relative importance of multi-earner families and a much more generous and liberally administered unemployment insurance system), rather than with factors which would have tended to increase geographic and occupational immobilities.

LIMITATIONS OF THE CROSS SECTION U-V MODEL

Any interpretation of the findings of this paper must take into consideration some important limitations of the Gordon-Mincer method of distinguishing between structural and frictional unemployment, and especially changes therein. Four limitations are briefly discussed below.

1. The model obviously depends heavily on the validity of the job vacancy concept, and, more important, on the availability and reliability of job vacancy data. More than one economist has noted that, in principle, vacancies have a price (i.e., wage) dimension which is overlooked in calculating the number (stock) of job vacancies. Conceptual questions aside, job vacancy data, especially of a disaggregated sort, has only recently become available in Canada (and is still nonexistent

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[14]   For a discussion of the meaning and use of unemployment dispersion indexes see R. A. Gordon, *op. cit.,* Ch. 4. The dispersion index, Du, is equal to $\sum \left| \frac{U_i}{U} - \frac{L_i}{L} \right|$; where U = Unemployment, L = Labour Force, and i = ith sub group.

[15]   See Keith NEWTON, Lilian BUCHANAN, Marilyn READ, and Alister SMITH « Structural and Frictional Elements in Canadian Unemployment », Economic Council of Canada Discussion Paper No. 46, January 1976, pp. 16-19. Also see Economic Council of Canada, *People and Jobs: A Study of the Canadian Labour Market,* Ottawa: Information Canada, 1976, pp. 197-99.

in the U.S.). While Statistics Canada's Job Vacancy Survey, inaugurated in 1970, has greatly increased the availability and quality of vacancy data in Canada, doubts remain about the reliability of the data. Are there employer response biases? Are there biases across occupations or regions which would influence cross section results? Do employers reporting job vacancies offer « competitive » wages? Here we have some information: The Economic Council of Canada in its study, *People and Jobs,* reports that, in general, the average hiring rates for job vacancies available to unskilled and semi-skilled workers, in 1974, were 15 to 25 percent below the going rate for those occupations.[17] Of course, this might reflect the entry-level nature of many job vacancies, but one can't be sure. The ECC also questioned whether the vacancy statistics give an accurate portrayal of the long-term demand for skills since the disproportionate number were semi-skilled and unskilled jobs.[18] However, if the characteristics of the unemployed tend to match the characteristics of the jobs available this last point is not of particularly great importance to the study of structural unemployment. Also while it is easy to find fault with the job vacancy data, they nevertheless provide a new source of useful information on labour demand. It is also heartening that movements in the Job Vacancy Survey statistics appear to be in harmony with movements in the Help Wanted Index.[19]

2.   The Gordon-Mincer model is a relatively crude means of distinguishing between structural and frictional unemployment, relying heavily on what the eye sees. Given the advances made in the application of statistical tools to economic questions, one can legitimately argue that a more sophisticated statistical technique might yield more and better information. There is, of course, no question that the U-V model, used in this paper is incapable of reliably picking up subtle changes in the operation of labour markets. However, one advantage of a crude model is that findings of substance may be more credible just because they yield to a simple procedure. Moreover, the *time series* U-V relation indicates that the change in labour market performance in the early 1970's was substantial.

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[16]   See GREEN and COUSINEAU, *op. cit.,* Ch. 3, 5. Another factor affecting labour market choices, which is sometimes mentioned, is an alleged increase in the aspiration levels of today's youth. Also employers today may be choosier, as rising labour costs and more binding job security provisions make it rational to prefer persons with experience and stable employment behaviour. In addition, it is possible that job content is increasingly less interesting in the face of a more educated labour force.

[17]   Economic Council of Canada, *op. cit.,* pp. 102-13.

[18]   *Ibid.,* pp. 103-104.

[19]   GREEN and COUSINEAU, *op. cit.,* Table 1-2, p. 5 and pp. 47-51.

TABLE 1

Full Time Job Vacancies by Occupation, Canada 1971-1975

		Annual Average Full Time Vacancies					Percentage Change				
	Occupation	1971	1972	1973	1974	1975 [1]	1971-1972	1972-1973	1973-1974	1974-1975	1971-1974
1.	Managerial, administrative and related	1,100	2,000	2,900	3,450	3,300	81.8	45.0	19.0	−4.3	213.6
2.	Natural sciences, engineering, and mathematics	1,600	2,275	4,225	6,250	3,700	42.3	85.7	47.9	−40.8	290.6
3.	Social sciences and related	500	575	850	1,075	1,100	15.0	47.8	26.5	+2.3	115.0
4.	Teaching	425	500	775	675	770	17.6	55.0	−12.9	+14.1	58.8
5.	Medicine and health	2,325	2,575	3,900	4,675	3,900	10.7	51.5	19.9	−16.6	101.1
6.	Other («white collar») professions	300	350	375	600	500	16.7	7.1	60.0	−16.7	100.0
7.	Clerical and related	5,300	8,225	10,525	13,100	10,400	55.2	28.0	24.5	−20.6	147.2
8.	Sales	4,475	6,525	6,550	6,650	4,300	45.8	.4	1.5	−35.3	48.6
9.	Service	3,225	7,125	9,725	11,275	8,300	120.9	36.5	15.9	−26.4	249.6
10.	Forestry and logging	600	1,775	3,200	1,775	500	195.8	80.3	−44.5	−71.8	195.8
11.	Mining and quarrying incl. oil. and gas	525	625	1,225	1,450	900	19.0	96.0	18.4	−37.9	176.2
12.	Processing	1,000	2,825	4,000	4,525	2,200	182.5	41.6	13.1	−51.4	352.5
13.	Machining and related	1,075	3,175	5,725	7,075	2,800	186.0	80.3	23.6	−60.4	558.1
14.	Product fabricating, assembling and related	5,000	11,200	13,250	15,650	8,800	124.0	18.3	18.1	−43.8	213.0
15.	Construction trades	2,200	3,425	4,650	6,100	4,400	55.7	35.8	31.2	−27.9	177.2
16.	Transport equipment operating	1,125	1,950	2,475	2,975	2,000	73.3	26.9	20.2	−32.8	164.4
17.	Material handling and related	1,000	1,950	2,425	2,475	1,200	95.0	24.3	2.1	−51.5	147.5
18.	Other («blue collar») professions	825	1,275	1,400	1,750	1,600	54.5	9.8	25.0	−8.6	112.1
	Total	32,575	58,350	78,175	91,500	60,700	79.1	34.0	17.0	−33.7	180.9

[1] Average of first three quarters of 1975.

Source   Calculated from Statistics Canada, *Quarterly Report on Job Vacancies*, 4Q 1974; 3Q 1975. Tables 2A, 2B, Cat. 71-002 also see David Gower «The Occupational Composition of Job Vacancies» *Canadian Statistical Review*, May 1973.

3. The various submarkets, occupational and regional, are implicitly given equal weights in the Gordon-Mincer model. This means, for example, that improvements in mobility between two relatively important regions or occupations may be « swamped » by a worsening mismatch between several relatively unimportant regions or occupations, even though the former is quantitatively more important than the latter. Moreover, the geographic breakdown is very broad, obscuring potential changes within these broad aggregates. The tendency of broad aggregates to obscure was, of course, one of Kaliski's important findings in his study of the geographical dimension of structural unemployment in the 1950's and 1960's.[20] Thus, our investigation of the geographical dimension of structural unemployment may hide important changes in the match between the unemployed and job vacancies *within* the 5 regions used in our U-V analysis.

4. Intertemporal movements in the U-V scatters may be partly or wholly attributable to differences in the cyclical responsiveness of subgroups, be they regions or occupations. That is, some movement in the U-V scatters for adjacent years is to be expected simply because some groups are more responsive to cyclical changes than are others. Thus, changes in the « spread » between U-V plots may not be wholly attributable to changes in structural mismatch. Kaliski's study of the occupational dimension of structural unemployment illustrated the substantial variations across occupations in the elasticity of employment with respect to changes in output.[21] Thus, part, or perhaps even all, of the obvious « squeeze » in the occupational cross-section U-V scatters for 1971-74 may be a reflection of the expansion phase of the business cycle, and may not reflect changes in the relative importance of structural mismatch among non-deficient demand causes of unemployment.

CONCLUSION

The high unemployment Canada has experienced in the 1970's cries out for explanation. Elsewhere we have shown that Canada's generous UI program is undoubtedly a part of the explanation; but it is by no means the whole story.[22] Another possible explanation is that structural unemployment has increased, reflected in a worsening « match » (or mismatch) between the location and skills of job seekers

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[20]   KALISKI, « Geographical Dimension », p. 565.
[21]   KALISKI, « Occupational Dimension », pp. 264-266.
[22]   GREEN and COUSINEAU, *op. cit.*

and the location and skill requirements of available jobs. To test the
structural hypothesis we used an unemployment-vacancy model sug-
gested by R. A. Gordon and J. Mincer which relies on cross section
unemployment and vacancy data to distinguish between « structural »
and « frictional » unemployment. The model was applied to Canadian
unemployment and vacancy data supplied by the Labour Force Survey
and the Job Vacancy Survey. Our findings, which are based on inter-
year comparisons (1971-74) of unemployment-vacancy rate scatters,
suggest that structural mismatch is not an important part of the ex-
planation of the higher over-the-cycle unemployment Canada has
experienced since 1970. If anything, our results indicate that the occu-
pational dimension of structural unemployment lessened between 1971
and 1974. If so, this finding would be in line with conclusions some
have drawn from the movement of unemployment dispersion indexes. [23]

Unfortunately, it is not possible to place much weight on our
specific findings. They depend heavily on the adequacy of the U-V
model we used and the reliability of newly available job vacancy data.
Among the more critical problems is the possibility that differences
in the cyclical responsiveness of labour market subgroups may be
confused with genuine changes in the match between the attributes of
job seekers and the requirements of job vacancies. Also the broad
geographical and occupational grouping may hide more than they tell.
Thus, neither the model nor the data are free enough of doubt to pass
a confidence test at a level which economic researchers have come to
expect in their applied work. Nevertheless, we believe it would err on
the side of caution if economists simply ignored the potential that
vacancy data hold out as an independent source of information about
labour market (demand) conditions. Given the availability of dis-
aggregated unemployment and vacancy data, the Gordon-Mincer model
allows at least a crude, first approximation, test of some important
hypotheses about labour market behaviour. We conclude, therefore,
that the model and the results presented can neither be totally ignored
nor confidently accepted, but we hope they will stimulate more re-
search into the interesting and important subject of structural unem-
ployment.

APPENDIX

In 1973, Statistics Canada changed its occupational classification of
labour force participants from the 1961 Census Classification of Occupations

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[23] E.C.C., *op. cit.*, p. 199.

to the 1971 Census Classification of Occupations. The latter, but not the former, is based on the Canadian Classification and Dictionary of Occupations (CCDO), the classification system used in classifying job vacancies. In April 1974 and July 1974 Statistics Canada reported in *The Labour Force* (cat. 71-001) the occupational breakdown of the unemployed in 1973 using respectively, the 1961 and 1971 Census Classification. However, no cross classification of the *unemployed* by 1961 and 1971 Census occupational groupings was published. Statistics Canada did publish in the August 1973 issue of *The Labour Force* a cross classification of employment by the « old » (1961) and « new » (CCDO) occupational classifications.

We were fortunate that Statistics Canada was able to provide us with an occupational cross classification of the unemployed in 1973 which we used in estimating the distribution of the unemployed in 1971 and 1972, by 1971 Census (CCDO) occupations, as follows:

Let $a_{i,j}$ = number of unemployed in 1973, in the ith occupation of the 1971 Census classification as a percent of the number of unemployed in 1973, in the jth occupation of the 1961 Census Classification $i = 1, 2, ..., 10$ and $j = 1, ..., 7$

Let $Y_{n,j}$ = number of unemployed in the nth year in the jth occupation of the 1961 Census Classification, n = 1971, 1972.

then, $X_{n,i}$ the estimated number of unemployed in the ith occupation in the nth year is given by:

$$X_{n,i} = \sum_{j=1}^{7} a_{i,i} \, Y_{n,j}$$

A similar procedure was used to transform the occupational classification of the employed from the 1961 Census Classification to the CCDO classification.

The estimated distribution of unemployed and employed persons by 1971 Census Classification of Occupations is presented in Table A-1 along with the published figures for 1973 and 1974 and the distribution of job vacancies, according to the JVS.

TABLE A-1

**Occupational Classification of Unemployed and Employed Persons,
Canada 1971-1974**

Year	Managerial Administrative Professional	Clerical	Sales	Service	Primary	Processing Product Fabricating Assembling	Construction	Transportation	Materials Handling	Never Worked
1971										
unemployed[a]	35	54	27	66	41	99	94	28	33	75
employed[a]	1606	1311	863	983	648	1355	594	356	361	—
1972										
unemployed[a]	39	60	30	72	41	102	95	28	33	62
employed[a]	1661	1359	894	999	622	1424	622	369	378	—
1973										
unemployed	40	62	31	66	38	91	82	28	29	54
employed	1762	1453	948	1054	631	1506	638	385	382	—
1974										
unemployed	42	60	30	66	43	97	84	26	28	49
employed	1855	1534	986	1105	637	1585	660	392	383	—

a) Estimates based on formula described in Appendix text.
b) The unemployed and employed figures include, but job vacancies exclude, persons engaged in agriculture, hunting and fishing.

Le chômage structurel au Canada

Le terme chômage structurel peut être compris de différentes façons. Nous l'étudions ici dans le sens d'une discordance entre les caractéristiques des emplois et celles des travailleurs. Deux caractéristiques particulières sont retenues. Il s'agit des caractéristiques régionales et professionnelles. Les emplois ou, de façon plus exacte dans ce contexte, les postes vacants, peuvent s'ouvrir dans certaines régions ou professions particulières, alors que les travailleurs ou, plus précisément, les travailleurs à la recherche d'emploi (chômeurs) sont dans des régions différentes ou sont qualifiés pour occuper des professions différentes. Ce type de chômage structurel est, de toute évidence, présent dans l'économie canadienne. Là n'est d'ailleurs pas l'objet de cet article, à savoir s'il y a ou non des problèmes de chômage structurel tel que défini plus haut. Nous cherchons plutôt à savoir si le chômage structurel s'est accru ou non entre 1971 et 1974.

Le choix de la période 1971-1974 a son importance, car, c'est entre 1971 et 1974 que la relation chômage-postes vacants s'est déplacée de façon marquée. Ce déplacement se décrit et s'interprète de la façon suivante. Au cours de la période 1971-1974, on a pu observer un nombre croissant de postes vacants alors que le nombre de chômeurs diminuait à peine. C'est dire qu'il s'offrait de plus en plus d'emplois mais que les chômeurs ne les comblaient pas.

Si les postes vacants se créaient dans des régions où il y avait peu de chômeurs ou pour des professions où il y avait peu de chômage, ceci pourrait expliquer pourquoi le nombre de postes vacants s'est accru alors que le chômage est demeuré sensiblement le même. On en conclurait alors en une détérioration du chômage structurel au cours de la période 1971-1974.

Les données sur les taux de postes vacants et les taux de chômage par profession et région nous ont permis d'appliquer une méthode graphique simple pour vérifier cette hypothèse et détecter les changements dans le chômage structurel de façon visuelle. Les résultats de cette application n'ont pas fait ressortir de détérioration marquée de problèmes structurels au niveau du chômage. Par ailleurs, la qualité et la nature très agrégée des données constituent une limite sérieuse à l'inférence qu'il est possible d'en tirer. Ce qui est étonnant toutefois, c'est la manifestation évidente, non pas de discordances accrues entre les travailleurs et les emplois, mais celle d'un problème plus aigu de nature frictionnelle. Enfin, cet exercice nous a permis de mieux connaître les limites de la méthode de vérification utilisée et d'espérer des développements qui sauront l'améliorer.