

A New Approach to Frictional Unemployment

An Application to Newfoundland and Canada

Harry H. Postner



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Economic Council of Canada

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The study itself is essentially based on data available as of November 1979; the addendum, however, is based on information that became available in February 1980.

1 Introduction

This study is one of several studies analysing the Newfoundland labour market that have been specially prepared for the Economic Council of Canada's Newfoundland Reference. Although it is essentially self-contained, the reader may wish to review further some of the references to the literature and other complementary studies. The introduction defines the basic approach and scope of this study. The approach is relatively simple, and it is hoped that the study can be understood by economists not specialized in labour economics. The study deals with frictional unemployment and its related problems in Newfoundland and Canada.

WHAT IS FRICTIONAL UNEMPLOYMENT?

Frictional unemployment is usually described as that accompanying the normal movement of new entrants and re-entrants into the labour market and the movement of workers from one job to another. Emphasis is placed on the normal transition time required for job search while a person is unemployed. Many writers believe that this type of unemployment has increased in recent years because of attitudinal, demographic, and institutional changes. Thus frictional unemployment is now a legitimate topic for economic research.

Before continuing, however, one might ask: Is it really necessary to become frictionally unemployed in order to find a job or to change jobs? The answer, of course, is NO! There is abundant evidence herein to support this answer. Nevertheless, there are many economic situations where a frictional phase of unemployment cannot be avoided. Some people only begin to seek employment when they are available for, and desire, work; this applies both to entrants and re-entrants into the labour market and to those who have left a job in search of a better one. There are always firms that reduce output and lay off or dismiss workers without notice. All these movements are essential to a dynamic, stochastic economy in which employment opportunities and job-seekers change over time. Frictional unemploy-

ment, carefully defined, is a necessary feature of a decentralized economic system.

It has already been mentioned that there is reason to believe that frictional unemployment has increased in recent years. Some of the factors involved are discussed in the course of this study. Since aggregate unemployment rates in Canada, and particularly in Newfoundland, are now relatively high, it seems natural to suspect that an increasing incidence of frictional unemployment may be partly responsible for this state of affairs. Certainly economic policies to reduce aggregate unemployment must reflect the particular types of unemployment involved. It was also mentioned, however, that frictional unemployment, even if increasing, is an essential (and perhaps healthy) feature of a growing economy. Indeed, a significant reduction in true frictional unemployment could introduce distortions into the economy, and the net economic welfare gain would be small, if not negative. In any event it seems clear that economic research should provide appropriate measurements of the importance of the frictional type of unemployment in the commonly used aggregate unemployment rates. But, before plunging into such research, our description of frictional unemployment must be made more precise and operational.

First, it is evident that frictional unemployment involves *short-duration* spells of unemployment. But what is considered "short-duration"? Most writers on this topic seem to regard unemployment spells of "three months or less" as qualifying for the frictional label. Our strategy though is to work with alternative short-duration spells. Moreover, our preferred duration is not chosen in a vacuum; it depends critically on other aspects of the particular labour market.

Second, frictional unemployment is also concerned with *complete* spells of unemployment—spells with a beginning and an end. This may seem like a trivial point, but it just so happens that conventional sources of unemployment-duration data measure incomplete unemployment spells and are

subject to other biases as well. This somewhat technical point plays a key role in the study.

Third, frictional unemployment spells must not only be relatively short and complete, but they must terminate with *employment*. An unemployment spell terminated by exit from the labour force is *not* regarded as frictional in this study. After all, unemployed people are supposed to be in the frictional phase in order to search for a job. If a job is found and accepted after a reasonably short period, then the unemployment spell qualifies as frictional; otherwise, the spell could be part of "hidden unemployment" (withdrawal from the labour force) or cyclical and secular unemployment (spells of relatively long duration). In this study we shall be on the alert for unemployment spells that terminate with labour force withdrawal rather than employment.

The above three criteria, then, define our approach to frictional unemployment. It is easy to "pick holes" in this definition and to give examples of unemployment (possibly combined with a spell out of the labour force) that are probably frictional but yet do not satisfy our definition. Such examples are exceptions to the rule and are at the risk of being precise! Our task is to provide a definition suitably operational for an economic research study of this nature – *not* a tabular questionnaire for census interviewing purposes. Despite the simplicity of the above definition, however, there are still formidable problems involved in its implementation.

The reader acquainted with labour market literature will probably note that this *direct* approach to defining frictional unemployment is somewhat different from that used in most other studies. The essence of this study is to "break open" the very structure of aggregate unemployment, as experienced by the various unemployed over the course of a year. There is no way that one can truly measure frictional unemployment by merely looking at time series of aggregate unemployment rates, no matter how sophisticated the supporting theoretical framework. Nor does disaggregation by demographic groups help much either.

Unfortunately, much of the traditional work in the area of frictional unemployment has been the subject of "less than clear" thinking; for example, it is often implicitly assumed that since the average duration of unemployment spells is short, then it follows that most unemployment is of the frictional variety. Aside from the problem of making sure that complete spells are indeed measured and that these spells are terminated by movement into employ-

ment, there is a simple *arithmetical fallacy* to the above inference.

Consider, for example, a labour market over time characterized by a certain number of unemployment spells of one month's duration and an *equal* number of five months' duration. Then, 50 per cent of unemployment spells would be frictional, but these short-duration spells would account for only about 15 per cent of the total unemployment experienced over the relevant time period. This occurs even though the simple average duration of all unemployment spells is exactly three months – which would seemingly qualify as frictional. In fact, only about 15 per cent of total unemployment experienced is frictional! Thus it is essential to look behind the simple averages or to formulate reasonable hypotheses as to how the averages were generated. In effect, we should be concerned with the *distribution length* of complete unemployment spells that terminate with employment. Considerations of this nature (and more) are becoming known as *dynamic unemployment accounting*, and this is the basic approach adopted in the study. The interpretation given to the above highly simplified example could easily be extended to cases where individuals experience multi-spells of unemployment or even mixtures of short-duration (one-month) and long-duration (five-month) unemployment spells over time.

Labour market literature recognizes that frictional unemployment has important *policy implications*. If most unemployment is of the purely frictional type, this means that it is typically of a transitory nature and that jobs are available for the unemployed (after a short search). Still higher aggregate rates of unemployment could merely reflect more short spells of unemployment; jobs may still be available.¹ For the person experiencing long-term unemployment over a year, there could also be jobs (not necessarily stable jobs) if he or she were willing to experience multiple spells of short-term duration. Thus it is important to distinguish between frictional unemployment and unemployment characterized by spells of relatively long duration or by spells that typically end with labour force withdrawal. The policy implications of the two situations are obviously different.² In the latter, we suspect that suitable jobs, with respect to quantity or quality, are *not* available to the job seeker. Again, there is no way of telling what the true situation is unless the unemployment experience structure is carefully dissected.

THE RULES OF THE GAME

This study is primarily concerned with unemployment in Newfoundland, particularly in recent years.

Data limitations preclude any kind of time series analysis, and our attention is focused on the Newfoundland unemployment structure for either 1976, 1977, or 1978, depending upon data availability and the particular analysis. Though the results for Newfoundland, at least to some extent, stand on their own, it is useful to have some standard for comparison; therefore all the analytical results are compared with corresponding results for Canada. This procedure permits us to break away from certain data limitations, since some important labour force disaggregations and structural characteristics can only be measured for Canada as a whole. Using the Canadian results, together with measurable indications of Canada/Newfoundland differences, we have some basis for conjecturing about Newfoundland unemployment characteristics that cannot be otherwise measured. This procedure, however, is an imperfect substitute for the required data on Newfoundland, which are so sadly lacking at the present time.

So it turns out that this study produces more *solid* analytical results for Canada than for Newfoundland, even though our prime interest is in the latter. Readers primarily interested in recent Canadian unemployment conditions and the existence of frictional unemployment in Canada may therefore benefit from this study. It turns out though that, even for Canada, there are data limitations; so here we employ a recent American labour market study to fill in some of the statistical gaps. There is no doubt that much more remains to be done with regard to both Newfoundland and Canada if we are to have a definitive analysis of frictional unemployment. This study could be regarded as a first substantive *introduction* to the subject, from a Canadian and regional viewpoint.

Because of the somewhat introductory nature of the study, the development is kept essentially non-technical. Mathematics is avoided wherever possible. The emphasis is on deriving and presenting the empirical results; analytical interpretation is separate. This aspect is important, since the reader may wish to form his or her own interpretation after learning the derivation of, and examining, the main

tables. Note that all the main tables except two are based on unpublished data specially obtained for this study.

The statistical data sources are varied, and some data are independent of others. It is therefore important to reconcile the various data sources and to check whether the derived results are mutually consistent. It will be found that the results are reasonably (and sometimes remarkably) consistent and tell a coherent story. There are no contradictions, even though some data are statistically independent and cover different years. Moreover, the Canada/Newfoundland comparisons performed throughout this study exhibit large and profound differences that cannot be attributed to supposed "sampling error" considerations.³ Nevertheless, the reader interested in statistical theory may wish to interpret the absolute and differential results as (quasi) maximum likelihood estimates. In cases where statistical differences are relatively small, we do *not* consider them to be real differences (and the reader is usually notified). It is recognized, however, that if this study is to be extended to analyse frictional unemployment in all Canadian provinces, *then* statistical differences between, say, New Brunswick and Nova Scotia or between Alberta and Saskatchewan should be subject to statistical testing.

Finally, it is emphasized that this study represents only *one view* of unemployment in Newfoundland and Canada. Even within the confines of frictional unemployment, there are considerable descriptive and institutional background aspects that are missing from this study. For more detail, the reader is advised to follow up some of the complementary references that appear in the bibliography. But there are some theoretical aspects missing. These too could be followed up to complement the empirical orientation of the study. Chapter 6, however, does attempt to relate our main empirical findings to the theoretical literature. Then, in the Addendum, the study concludes with some thoughts as to the direction that labour market theory might take in order to better reflect Newfoundland reality, as revealed by the empirical results.

2 The Stock Picture of Newfoundland Unemployment

The main purpose of this chapter is to provide some important background material for succeeding chapters. The data sources are of the conventional type; our calculations are based on the results of Statistics Canada's monthly labour force survey. Emphasis, however, is given to the detailed aspects of this survey, which are often overlooked and which are most relevant to the frictional components of unemployment. All of the analysis pertains to the year 1978, mainly because some of the data used are only available for that year; but there is no reason to suppose that the results would be significantly different for other recent years. For a description of Newfoundland/Canada unemployment, 1976-78, see Economic Council (1980), Chapter 1. In this, as in subsequent chapters, the unemployment picture in Newfoundland is compared with that in Canada.

THE STRUCTURE OF UNEMPLOYMENT

The structure of unemployment in both Newfoundland and Canada is now examined to determine possible sources of frictional unemployment. The theoretical aspects of frictional unemployment are presented in Reder (1969), and some applications are made in a paper by Hall (1970). For an excellent summary of literature related to frictional unemployment, see Ostry and Zaidi (1979), pp. 150-52. These serve as starting points for the following analysis. Note that all data pertain to the annual average monthly unemployment picture for the year 1978, as presented in Statistics Canada (1979b).

During 1978, the official overall unemployment rate for Newfoundland was approximately double that for Canada - 16.4 per cent and 8.4 per cent, respectively. If one considers the disaggregated components of the unemployment rate by age, sex, or education, the picture remains essentially the same. Most of the important Newfoundland components are *also* about double the corresponding national unemployment rate. Overall unemploy-

ment, however, is affected by the relative weight (proportion of total labour force) attached to each of the components. For example, it is often claimed that unemployment in the 15-24 age group reflects a large frictional element, since the labour force experience of this group is dominated by new entry and re-entry into the labour force, job-hopping and job-shopping phases, and so on. It turns out that youths comprise a larger percentage of the labour force in Newfoundland than in Canada as a whole; and, of course, youth unemployment is exceptionally high in both Newfoundland and Canada.

	Proportion of labour force		Unemployment rate	
	Canada	Newfoundland	Canada	Newfoundland
	(Per cent)			
Age group:				
15-19	0.11	0.13	17.9	29.6
20-24	0.16	0.19	12.2	21.8

The reader might wonder how much of the difference (8.0 per cent) between the overall unemployment rates in Newfoundland and Canada could be explained by demographic (age) factors with a presumably frictional orientation. An exercise to determine this has already been performed [Economic Council (1980)], and results show that the age structure of the labour force accounts for less than one percentage point of the 8.0 per cent unemployment rate difference.

A related exercise examines the sex composition of the labour force. Female unemployment is higher than average in both Canada and Newfoundland. Again, it is often stated that female unemployment contains a relatively large frictional element because of lack of attachment to the labour force and the possible dominance of secondary workers. Here are some facts:

	Proportion of labour force		Unemployment rate	
	Canada	Newfoundland	Canada	Newfoundland
			(Per cent)	
Men	0.61	0.66	7.6	16.3
Women	0.39	0.34	9.6	16.7

It is clear that sex composition (and related frictional orientation) does not help to explain Newfoundland's higher overall unemployment rate. Indeed, the above two exercises should ideally be combined into a study of the impact of demographic (age-sex cross-classification) influences on the Newfoundland/Canada unemployment rates. The evidence certainly seems to indicate that demography accounts for very little of the higher unemployment rate in Newfoundland. A more *direct* analysis of demographic influences on frictional unemployment indicators is attempted in the next chapter. Before continuing, it should also be stated that differences in the education structure of the unemployed in Newfoundland and Canada explain only a trivial amount of the overall unemployment rate difference.¹

One of the more interesting features of frictional unemployment is the emphasis often placed on temporary and part-time unemployment. Again, the theoretical aspects are discussed in Reder (1969), and an application can be found in a more recent paper by Hall (1978). Briefly, the idea is that unemployment while looking for temporary work (six months or less) or part-time work (30 hours per week or less) – as in the case of students and married women – may be indicative of frictional unemployment. For Newfoundland, in 1978, we find that 90.3 per cent of the unemployed were looking for permanent full-time work. In Canada, the corresponding figure was 80.5 per cent, so that this type of possible frictional unemployment seems to be relatively greater in Canada. This result is not surprising, since part-time employment is more popular in Canada as a whole than in Newfoundland. In Canada, 12.1 per cent of the employed work part-time; in Newfoundland, only 7.8 per cent. Even here, though, we find that almost 40 per cent of Newfoundland's part-time employed actually desire full-time work; in Canada, only 16 per cent do so. Note that this does not reveal the whole picture, since there are no data to distinguish between permanent and temporary *employment*. This fact is stressed in Hall (1978). Some further light will be thrown on this question in Chapter 5.

Statistics Canada (1979b) provides additional data that bring the analysis closer to the frictional

unemployment problem. First, one may examine the unemployed according to reason for leaving last job. In Canada, about 55 per cent of the unemployed had either lost their last job or were laid off; the corresponding figure for Newfoundland is 67 per cent. Of course, a certain proportion of the unemployed had never worked (or had not worked in the past five years). A more useful examination is to set out directly the *flows into unemployment*; here we find the following proportional breakdown of the Newfoundland and Canada unemployment structure in 1978:²

	Job losers	Job quitters	New entrants	Re-entrants
Canada	0.48	0.23	0.06	0.23
Newfoundland	0.58	0.15	0.06	0.21

When comparing Canada with Newfoundland, the major difference between the flows into unemployment is clearly that the Newfoundland unemployed are more likely to be job losers than job quitters (or leavers). Job quitting is often stated to be symptomatic of frictional unemployment, as is new entrant and re-entrant unemployment. Note that about 43 per cent of the Newfoundland re-entrants into unemployment had lost their last job;³ for Canada, the comparable figure is about 30 per cent. This is our first evidence that there is considerable movement from unemployment to outside the labour force and then back again into unemployment, especially in Newfoundland. The re-entrant category of unemployment is obviously important and will be further analysed in this study. At this point, the reader is simply warned that re-entrant unemployment *cannot* be simply categorized as frictional unemployment.

Finally, there are other aspects of unemployment and employment structure such as temporary layoffs, future starts, self-employment, and unpaid family workers, that are best discussed in another context; the reader is referred to Chapter 5.

DURATION OF UNEMPLOYMENT

So far in this chapter it has been evident that frictional unemployment is relatively no more important in Newfoundland than in Canada; indeed, it is probably less important. One must remember, however, that the aggregate unemployment rate in Newfoundland is about double the rate in Canada, so that frictional unemployment could well constitute more percentage points in Newfoundland than in Canada. To illustrate, consider the following pre-

liminary exercise. Using the data set out in the above tabulation of flows into unemployment, suppose we agree that job leavers, new entrants, and re-entrants who are not previous job losers can all be classed as having experienced frictional unemployment. One obvious basis for such a categorization is that their unemployment is, at least *initially*, voluntary. Then, for Canada, the total proportion of unemployment that is frictional equals $0.23 + 0.06 + 0.16$, or 0.45. For Newfoundland, the corresponding calculation is $0.15 + 0.06 + 0.12$, or 0.33. Thus the Canadian frictional unemployment rate equals (0.45)(8.4), or 3.8 per cent; the Newfoundland frictional unemployment rate is (0.33)(16.4), or 5.4 per cent.

Clearly this method is very crude; in fact, it is wrong. One reason is that job losers could also be experiencing frictional unemployment because of stochastic changes in demand at the firm or enterprise level; this would apply particularly to unemployment stemming from temporary layoff.⁴ But the main reason is that the above procedure takes no account of the *duration of unemployment*. It was stressed in Chapter 1 that frictional unemployment is defined as relatively short spells of unemployment. Even though unemployment may initially be voluntary, there is no guarantee that it will remain so when a spell or duration of unemployment becomes relatively long. Most labour market experts [see, for example, Freeman (1979), pp. 111-12] would agree that a spell of unemployment of one month or less should certainly be categorized as frictional. In fact, Statistics Canada (1979b) provides data on various classes of unemployment duration that *seemingly* could be used for our purposes.

In 1978, about 30 per cent of the Canadian unemployed were classified as having experienced four weeks or less of unemployment, according to labour force survey procedures. The corresponding figure for Newfoundland was 25 per cent. Therefore two preliminary estimates of frictional unemployment might be (0.30)(8.4), or 2.5 per cent, for Canada; and (0.25)(16.4), or 4.1 per cent, for Newfoundland. Now the question is: Is this method acceptable? Unfortunately, the answer is NO.

Survey procedures do not pick up completed spells of unemployment, but merely unfinished or *interrupted* spells.⁵ The reader will recall that frictional unemployment involves certain types of completed spells of unemployment. In fact, under reasonably stable economic conditions, spells of unemployment captured by monthly survey procedures are, on average, *halfway* through their complete duration. On the other hand, spells of unem-

ployment of longer-than-average duration are more likely to be in progress and to be picked up at the time of the labour force survey – introducing a bias in the opposite direction. It is not clear, when measuring the expected duration of all unemployment spells over a period of time, which bias predominates. In the exercise of the preceding paragraph, however, we were only concerned with unemployment duration of four weeks or less. The theoretical evidence suggests that the proportion of unemployment falling in this category is overestimated by conventional survey procedures – i.e. if we are really concerned with *completed* unemployment spells of four weeks or less. It is impossible without further direct evidence, however, to distinguish the probable overestimation bias in Canada from that in Newfoundland.

This is not the whole story! The reader should again recall that frictional unemployment is concerned not only with complete short spells of unemployment, but also with spells that “must” conclude with successful job search – i.e. employment. Clearly there is no guarantee that the short spells of unemployment measured in this section, adjusted or nonadjusted for survey bias, do in fact end with movement into employment. We have already introduced some evidence that unemployment could lead to labour force withdrawal, and much more will be said about this in the following section and the next chapter. There are, then, two reasons for suspecting that the frictional unemployment rate estimates given above may be overestimates. This is the prime reason for analysing the *conservative* “four weeks or less” category of this section.

MEASUREMENT OF TOTAL UNEMPLOYMENT

Anyone examining Newfoundland labour force data in depth is immediately struck by the suspicion that there is something “strange” going on. This suspicion is confirmed by the results of a special survey performed in March 1978 [see Statistics Canada (1978)].⁶ There it is found that a significant proportion of the Newfoundland population over age 15, not officially classified as being in the labour force – that is, neither employed nor unemployed and seeking work (with a few exceptions) – *want* work, and are *available* for work, but are not actively seeking employment. This proportion of the non-labour-force population equals 12.5 per cent in Newfoundland and only 3.9 per cent in Canada. To prove that this group is not just “daydreaming,” the great majority (78.4 per cent in Newfoundland) have experienced some employment during the past year and presumably are aware of labour market

conditions. The inference is that job search is not worthwhile – the “discouraged worker” effect. If this group is simply added to the official unemployment rate in March 1978, the Newfoundland revised rate becomes 28.8 per cent (up from 19.4 per cent); for Canada, the revision raises the unemployment rate to 11.9 from 9.7. Merely adding this group also tends to close the gap between Newfoundland’s official labour force participation rate and Canada’s; the gap narrows to (54.3 vs. 62.7) from (47.7 vs. 61.3) for March 1978.

But the March 1978 survey goes further. It is seen that the great majority in this “discouraged worker” group (about 70 per cent in both Canada and Newfoundland) expect to find work again within six months; and, particularly in Newfoundland, many expect to find work with a previous employer. Here the indication is that of a “seasonal-unemployment-type” phenomenon. These potential workers are not actively seeking employment (and so are not officially unemployed). At the same time, they are not officially on temporary layoff, awaiting recall, or subject to a future start within 30 days – in which cases they *would* be classified as unemployed even though not actively seeking employment. For further details, see Statistics Canada (1979d), p. 51. Since the officially measured seasonal-unemployment adjustment factor in Newfoundland has considerably decreased in magnitude over the past ten years, as is evident from Statistics Canada (1979a) and Wilson (1979), it appears that the true unemployment situation has been seriously underestimated. In fact, adding just those of the group who expect to find work with a previous employer revises the Newfoundland unemployment rate to 24.1 per cent (from 19.7 per cent in March). Nationally, the corresponding revision effect is negligible. It turns out that seasonal unemployment in Newfoundland shows up mostly as seasonal fluctuations in *employment* rather than unemployment. This means that potential policy operations designed to mitigate Newfoundland seasonal and nonseasonal unemployment may take a long time to show an impact on the official statistics and, in fact, may initially show up as *worsening* the situation.

All this provides background for subsequent chapters, where we shall be concerned with unemployment spells that terminate with labour force withdrawal rather than employment. Similarly, we shall analyse employment spells that terminate with labour force withdrawal rather than “official” unemployment. This subsequent analysis, however, will all be in terms of annual monthly averages, as was the description in the first two sections of this chapter.⁷ It would therefore be useful to translate

the above results, based on the March 1978 survey, into a corresponding annual-average monthly analysis for the year 1978. It is evident from knowledge of seasonal fluctuations in employment that the Newfoundland impact of the “discouraged worker” effect would be smaller in an August or September survey. Similarly, we should expect the annual average effect to be smaller than for March alone.

One way to translate the March result into an annual average is to use an indicator of possible “hidden unemployment” that is suitable and available for both March and the year 1978. This indicator is then *related* to the number of “persons who want work, and are available for work, but are not actively seeking employment” (as estimated in the March survey)⁸ by simple proportionality. The indicator being used in the following tabulation is “persons not in the labour force who have worked in the past five years and who lost, or were laid off from, their last job” [Statistics Canada (1979b), Table 42]. The data show:

	March 1978		Year 1978*	
	Canada	Newfoundland	Canada	Newfoundland
	(Thousands)			
Indicator	531	39	479	31
March survey	263	25	?	?

*The indicator data have been slightly adjusted to conform to the March 1978 population.

The two missing figures in the last two columns can be estimated from a proportionality assumption, as follows: 236, for Canada; and 19.7, for Newfoundland. Adding these figures to both labour force and official unemployment in Canada and Newfoundland for the year 1978 yields the following estimates for *total unemployment rates*:

	Canada	Newfoundland
	(Per cent)	
Official unemployment rate	8.4	16.4
Total unemployment rate	10.3	23.9

These estimates are checked by an alternative method of derivation in Chapter 4. It might be noted that other possible indicators were examined. The chosen indicator, the one used above, was best in terms of overall coverage and sensitivity to the seasonal factor. Also, there is reason to believe that it works particularly well for Newfoundland, which is our main concern; see Statistics Canada (1978), Table 10, for further details.

Table 2-1
Incipient Mobility of the Hidden Unemployed,
Newfoundland and Ontario, March 1978

	Proportion of unemployed who:	
	Would move	Would not move
Newfoundland	0.56	0.44
Men	0.69	0.31
Women	0.33	0.67
Persons aged 15-24	0.73	0.27
Persons aged 25+	0.47	0.53
Ontario	0.25	0.75
Men	0.42	0.58
Women	0.13	0.87
Persons aged 15-24	0.29	0.71
Persons aged 25+	0.22	0.78

SOURCE Based on data from Statistics Canada.

Before concluding this chapter, the reader might be interested in knowing something about the degree of incipient *mobility* among the labour market group that we have identified as "hidden unem-

ployed." Table 2-1 presents the results of the March 1978 survey with respect to a question concerning "willingness to move." The question was directed to those "persons who want work, and are available for work, but are not actively seeking employment." The table shows the proportions in Newfoundland and Ontario who "would move" or "would not move" to another location if a suitable job were offered. The results clearly show that discouraged workers in Newfoundland are potentially more mobile than those in Ontario (these particular survey results were not made available for Canada). Further results along these lines can be found in a related paper by Kovacs and Copithorne (1979). In fact, it would be interesting to know whether the officially unemployed are as mobile as the unofficially unemployed in Newfoundland and Ontario, or Canada.

Finally, some important aspects of the discouraged-worker problem are discussed in an Addendum to this study, based on survey evidence that became available after completion of this chapter.

3 The Flow Picture of Newfoundland Unemployment

Some of the most important results of this study are contained in this chapter – results that throw direct light on the problem of frictional unemployment. Our investigation, however, has been limited by the availability of statistical data, so that some indirect inferences have been necessary. We are able though at least to specify what additional data are needed for a complete analysis and what further specific calculations should be carried out under more ideal conditions. The results of this chapter pertain to 1976 and 1977 – the only two years for which the “minimum” data required are available (at time of writing). Detailed comparisons are again made, using data for Canada and Newfoundland.

GROSS LABOUR FLOW DATA

The results of the previous chapter were based on a stock or “snapshot” view of unemployment and the employment structure in Newfoundland. The data came directly from Statistics Canada’s monthly labour force survey, which each month provides a cross-sectional view of the labour force (with each month’s data being independent of those for any other month). It was already hinted in that chapter that this view of the labour force imposes restrictions on a frictional unemployment analysis. These restrictions can be *partly* removed by working with gross labour flow data.

Essentially, these data yield the movements (or flows) of the population aged 15 and over either into or out of any of the following three categories: 1/ employment, 2/ unemployment, and 3/ not in the labour force. All movements are with respect to *monthly pairs*; i.e. the data refer to population flows from a particular category in one month to another or the same category the following month. For the purpose of this chapter, all such specific flows for monthly pairs are totalled for the year and averaged, so that we shall be dealing with “typical”

monthly flow patterns. It should be clear that such data do not provide a complete picture of population flow patterns; there is no allowance for migration, aging, or death in this population flow framework. (In effect, the various flows are always interpreted in terms of the population in the initial month of the monthly pairs.) Moreover, the three categories could themselves be disaggregated for further analysis. For example, one could easily conceive of various unemployment states disaggregated by duration of unemployment (the need for this particular disaggregation will be discussed later), or “not in the labour force” disaggregated by “never have been in the labour force” and “others.” Data availability preclude such consideration at the present time.

It should also be evident that any analysis based on gross labour flow data will depend on the particular statistical methodology used to create such data. Gross flows in this study were estimated by the *matching method* – the records of individuals in consecutive months were compared, and their change of status was noted. This method can give rise to certain problems, as outlined in Bertrand (1975); but most difficulties now appear to be overcome [see Veevers (1979a)]. The matching method is also used for comparable U.S. gross flow data, to which reference is made in the following section. Finally, it should be noted that an earlier Canadian study by Denton et al. (1976) also employed gross labour flow data. Their statistical methodology was based, however, on the *recall method* (where respondents are asked about their activities the previous month at the time they are asked about their current activities) as well as on the old (unrevised) labour force survey framework, as explained in Statistics Canada (1977). Thus the Denton study and the results of this chapter are not comparable. To effect such a comparison would lead us significantly away from the main purpose of this study. For a comparison of the Denton results with those of a U.S. study by Clark and Summers (1978), however, see Kaliski (1979).

LABOUR FORCE TRANSITIONS

To introduce the use of gross labour flow data, consider the following exercise. First, the basic monthly data (averaged over the year, as explained above) are arranged in the form of a gross flow matrix. Let e represent employment; u , unemployment; and n , not in the labour force. The relevant matrix is:

$$\begin{array}{c}
 t+1 \\
 \left[\begin{array}{ccc}
 ee & eu & en \\
 ue & uu & un \\
 ne & nu & nn
 \end{array} \right]
 \end{array}$$

where, for example, ee denotes the number who were employed in both months t and $t+1$ (on the average); eu denotes the number who were employed in month t and unemployed in the next month $t+1$; ue is the number (in the relevant population) unemployed in month t and employed in month $t+1$; and so on. Reference is now made to Table 3-1. This table contains calculations based on gross labour flow data for Canada and Newfoundland, 1976 and 1977. (The actual matrix data are presented in the Appendix to this chapter.) The six flow categories shown in the table are calculated by the following six ratios:

- 1 $un/(un + ue)$
- 2 $nu/(nu + eu)$
- 3 $ne/(ne + ue)$
- 4 $en/(en + eu)$
- 5 $ne/(ne + nu)$
- 6 $un/(un + en)$

Clearly, the calculated ratios amount to comparing the relative sizes of off-diagonal elements from the basic gross flow matrix. All such comparisons are made either within a particular row of the matrix or a particular column. The reader should note that there are only six possible ratios (aside from their complements) that could be formed under these "rules." In fact, only five of the ratios are strictly independent; the sixth ratio is nonlinearly dependent on the other five. What do these ratios indicate?

The first ratio, as described in Table 3-1, represents the proportion of all flows out of unemployment that lead to withdrawal from the labour force. It is seen that for Canada about 44 per cent of all unemployment terminates with labour force withdrawal (or entrance into the "not in the labour force" category); for Newfoundland, the corresponding proportion is higher – at least 50 per cent. Thus the traditional picture of the unemployed exiting via successful job search – i.e. into the employment category – is incomplete. Unemployment spells, particularly in Newfoundland, often end in withdrawal from the labour force. This fact is of critical importance for this study and will be further analysed in the next section. Indeed, the second ratio shows that most of the newly unemployed come from outside the labour force – again, especially in Newfoundland. Thus the two states – unemployed and not in the labour force – are intimately related, and *this* flow relationship is typically more important than that between the unemployed and employed states. Any analysis of *unemployment* structure and fluctuations must take into account the role of labour force transitions.

The third and fourth ratios show that a similar conclusion holds with respect to *employment* structures and fluctuations. Most of the newly employed,

Table 3-1

Relative Flows into and out of the Labour Force, Canada and Newfoundland, 1976 and 1977

	Canada		Newfoundland	
	1976	1977	1976	1977
Proportion of flows: ¹				
1 Out of unemployment into NILF ²	0.445	0.444	0.551	0.504
2 Into unemployment from NILF	0.531	0.523	0.648	0.655
3 Into employment from NILF	0.586	0.547	0.570	0.529
4 Out of employment into NILF	0.653	0.623	0.680	0.645
5 Out of NILF into employment	0.609	0.574	0.473	0.458
6 Into NILF from unemployment	0.347	0.372	0.415	0.442

¹ See precise formulas in the text.

² "Not in Labour Force" category.

SOURCE Based on data from Statistics Canada.

in both Canada and Newfoundland, come directly from outside the labour force – i.e. without intervening unemployment.¹ Here again, the traditional picture of successful job search while unemployed is highly incomplete. Most successful job search or waiting occurs while not in the labour force! In addition, most employment terminates not with unemployment but with withdrawal from the labour force!

The remaining two ratios focus more on Canada/Newfoundland differences. From the fifth ratio it can be seen that the proportion of flows into the labour force that results in employment rather than unemployment is significantly higher in Canada than in Newfoundland. On the other hand, the proportion of flows out of the labour force from unemployment rather than employment is higher in Newfoundland than in Canada. These differences are again apparent in some of the related exercises described in the next section.

Before continuing, it should be noted that the first five ratios explained above were originally calculated in a study of the U.S. labour market for the period 1968-76 [see Clark and Summers (1978), Table 1].² Because both the theoretical and statistical methodologies used in the Clark-Summers study and this one are similar, it is interesting to note the U.S. results:

Flow category:	United States, 1968-76
1	0.454
2	0.473
3	0.696
4	0.705
5	0.723

The results for Canada and the United States reveal basic similarities (see Table 4-4 in next chapter),

Table 3-2

Relative Flows into and out of the Labour Force, Canada, by Age-Sex Group, 1977

	Total	Men		Women	
		15-24	25+	15-24	25+
Proportion of flows: ¹					
1 Out of unemployment into NILF ²	0.444	0.412	0.316	0.519	0.551
2 Into unemployment from NILF	0.523	0.479	0.369	0.671	0.612
3 Into employment from NILF	0.547	0.535	0.375	0.616	0.655
4 Out of employment into NILF	0.623	0.585	0.473	0.733	0.720
5 Out of NILF into employment	0.574	0.595	0.534	0.554	0.594
6 Into NILF from unemployment	0.372	0.368	0.366	0.383	0.366

¹ See precise formulas in the text.

² "Not in Labour Force" category.

SOURCE Based on data from Statistics Canada.

but there are also some interesting differences. It is beyond the scope of this study to attempt an analysis of these differences. We are concerned, however, with Canada/Newfoundland differences, and these warrant further analysis.

One possible explanation of the Canada/Newfoundland differences noted in Table 3-1 may be found in a comparison of the demographic structure in the two regions. Some calculations relating to demographic structure have already been carried out in the previous chapter. In effect, adjustments of the Newfoundland and Canadian results to account for demographic differences constitute what is known as a "shift-share analysis." It is recognized that shift-share analysis does not provide a true explanation of results, but merely an indication of the need for further work. First, we note the relevant age-sex composition of the Newfoundland and Canada labour forces in the year 1977:

Demographic group:	Proportion of labour force	
	Canada	Newfoundland
Men, 15-24	0.148	0.178
Men, 25+	0.472	0.487
Women, 15-24	0.122	0.141
Women, 25+	0.259	0.194

One might argue, then, that the difference in the Canada/Newfoundland ratios for flow category 2 (Table 3-1) merely reflects differences in the age-sex composition of the labour forces. A complete shift-share analysis would call for: 1/ gross labour flow data for Canada, for *each* of the major demographic groups; and 2/ gross labour flow data for Newfoundland – again, for *each* of the demographic groups. Unfortunately, only the first set of data are now available. In fact, Table 3-2 presents all of the ratio results, disaggregated by demographic groups, for Canada in 1977.³

It is easily shown that the ratio results in the total column of Table 3-2 (the same as those in column 2 of Table 3-1) are a weighted average of the ratio results for each of the major demographic groups. This, of course, holds for each flow category, row by row. The particular weights required by the various demographic groups, however, vary from row to row. In fact, the required weights can only be obtained from a knowledge of the disaggregated gross labour flow matrices. For this reason, one *cannot* apply Newfoundland weights to the Canadian disaggregated ratio results of Table 3-2 and then claim that the Canadian "total" results are *adjusted* to the Newfoundland demographic composition. The correct Newfoundland weights, as well as the demographically disaggregated Newfoundland ratio results, are simply not available! Nevertheless, it is still possible to proceed in a tentative manner.

We do know that the correct demographic group weights needed to form *total* results, as a weighted average of disaggregated ratio results, reflect, at least partly, the corresponding age-sex composition of the labour force (as shown in the tabulation above). The major difference between the Canadian and Newfoundland labour force demographic composition is that "men, 15-24" and "women, 15-24" are relatively more important in the latter, while "women, 25+" are much more important in the Canadian labour force. With this in mind, it becomes apparent that the major Canada/Newfoundland differences noted in the analysis of Table 3-1 probably (and, in some cases, certainly) do *not* reflect demographic structure. Indeed, in at least some important cases, the ratio differences would probably be *larger*, were it not for age-sex composition dissimilarities.

For example, the Canadian 1977 proportion of flows out of unemployment into NILF (category 1) is pushed up by the high ratio result for "women, 25+," which carries more weight in the case of Canada than that of Newfoundland. It is true that the demographic group "women, 15-24" would probably carry more weight in Newfoundland than Canada, but the ratio result for this particular group (0.519) is only slightly larger than the ratio result for the Newfoundland *total* in 1977 (0.504). Thus it is very doubtful whether the difference in ratio results between Canada and Newfoundland for flow category 1 can be traced to demographic structure. Similar reasoning can be applied to flow category 2. In the case of flow categories 5 and 6, the conclusions are completely unambiguous. The Newfoundland ratio result for flow category 5 (0.458) is smaller than *each* of the Canadian demographic

group results for that category. Similarly, in flow category 6, the Newfoundland total is larger than each of the Canadian disaggregated ratios.

Table 3-2 shows that relative flows and labour force transitions differ according to demographic groups across Canada. One might expect similar *differential patterns* for Newfoundland as well, but we cannot be sure until the disaggregated Newfoundland data are made available. This theme is taken up again in the next section, with particular emphasis on the question of frictional unemployment. Right now it is worth noting, from Table 3-2, that labour market experts who traditionally disregard the important role of labour force transitions (the exit from, and entrance into, the labour force) probably have in mind the demographic group "men, 25+." This particular group, however, is playing an increasingly *smaller* role in labour market dynamics in both Newfoundland and Canada.

DURATION OF COMPLETED SPELLS IN THE LABOUR FORCE

The results reported in this section were derived by manipulating the gross labour flow data used in the preceding section. The essential operation involves the translation of the familiar gross flow matrix into a 3 x 3 matrix of transition probabilities. Consider the first row of the original matrix presented at the beginning of the second section of this chapter. This row shows the number employed in month t who either: 1/ remained employed during the next month; 2/ became unemployed in month $t + 1$; or 3/ withdrew from the labour force the next month. The summation of this row equals the total number employed in the first month. Thus each element of this row may be divided by the summation of the row, yielding three *transition probabilities*: P_{ee} , the probability of being employed and remaining employed; P_{eu} , the probability of becoming unemployed next month after being employed this month; and P_{en} , the probability of withdrawing from the labour force after being employed in the current month. Similar operations can be performed on the other two rows, leading to the required matrix of transition probabilities:

$$\begin{bmatrix} P_{ee} & P_{eu} & P_{en} \\ P_{ue} & P_{uu} & P_{un} \\ P_{ne} & P_{nu} & P_{nn} \end{bmatrix}$$

Clearly, the summation of each row equals unity, and each probability element is a number ranging between zero and unity.

Table 3-3 presents the results of important calculations giving the average duration (in months) of completed spells in various labour categories for Canada and Newfoundland in 1976 and 1977. Before discussing the economic significance of these results, we show the specific calculations used to determine the results.⁴

1 Not in the labour force:

$$1/(1 - P_{nn}) .$$

2 Labour force:

$$1/(1 - P_{ll}) ,$$

where P_{ll} is the probability of being in the labour force and remaining in the labour force next month, derived by

$$\frac{(ee + eu + ue + uu)}{(ee + eu + ue + uu + en + un)}$$

Note that this formula takes into account transitions between the two possible states of the labour force - namely, employed and unemployed. Basically, the idea is a simple aggregation of the original gross labour flow matrix followed by the standard transformation into probability format.

3 Employment:

$$1/(1 - P_{ee}) .$$

4 Unemployment:

$$1/(1 - P_{uu}) .$$

5A Unemployment with no withdrawal (method A):

$$1/(1 - P_{uu} - P_{un}) .$$

The rationale of this formula is discussed below.

5B Unemployment with no withdrawal (method B):

$$1/(1 - P_{uu}^{**}) ,$$

where P_{uu}^{**} denotes a modified probability of being unemployed and remaining unemployed next month, derived by

$$P_{uu}^{**} = P_{uu}/(P_{uu} + P_{ue}) .$$

This is also discussed below.

6 Nonemployment:

$$1/(1 - P_{oo}) ,$$

where P_{oo} is the probability of not being employed and remaining out of a job next month, derived by

$$\frac{(uu + un + nu + nn)}{(uu + un + nu + nn + ue + ne)}$$

Thus this formula takes account of transitions between the two possible states of nonemployment⁵ - namely, unemployed and not in the labour force.

Table 3-3

Average Duration of Completed Spells, Canada and Newfoundland, 1976 and 1977

	Canada		Newfoundland	
	1976	1977	1976	1977
	(Months)			
Labour category:				
1 Not in labour force	15.19	15.53	14.49	13.63
2 Labour force	23.98	24.27	13.66	14.81
3 Employment	22.22	22.17	13.61	14.56
4 Unemployment	2.19	2.36	2.47	2.65
5A Unemployment with no withdrawal	3.95	4.24	5.49	5.35
5B Unemployment with no withdrawal ¹	3.15	3.44	4.27	4.34
6 Nonemployment	16.23	16.64	20.00	18.25

1 For the distinction between 5A and 5B, see the precise formulas in the text.

SOURCE Based on data from Statistics Canada.

To help interpret Table 3-3, it might be useful for the reader to know the monthly average unemployment rates and participation rates in Canada and Newfoundland for the two years concerned. The following data are from Statistics Canada's labour force survey:

	Unemployment		Participation	
	Canada	Newfoundland	Canada	Newfoundland
	(Per cent)			
1976	7.1	13.4	61.1	49.4
1977	8.1	15.6	61.5	50.7

Table 3-3 reveals some interesting contrast between Canada and Newfoundland. First, it is surprising to note that the duration of spells in the "not in the labour force" category is somewhat shorter in Newfoundland than in Canada. One might expect the opposite, since labour force participation is significantly less in the former. Realize, however, that Table 3-3 is concerned with the average duration of *completed* spells. There are considerable flows between the "not in the labour force" category and the other two, particularly in Newfoundland (as seen in the preceding section). Thus the population in Newfoundland over age 15 may remain out of the labour force more, on average, throughout the year; but the typical completed spell in this category is of shorter duration. Another outstanding contrast between Newfoundland and Canada is the mean duration of completed spells in the labour force. This category shows the duration of spells to be dramatically shorter in Newfoundland. The major reason⁶ can be traced to the results shown for labour category 3 (average duration of completed spells of employment) in Table 3-3. These spells were very short in Newfoundland in both years – only about 14 months, on average. Such results cast considerable doubt on the applicability of the job-search-theory approach to Newfoundland's labour market. The Newfoundland unemployed can hardly be said to spend many weeks "choosing the right job" when jobs and employment spells are typically so short to begin with. This topic will be pursued further, with additional evidence, in the following two chapters.

Lines 4, 5A, and 5B of Table 3-3 present some of the most important results of this study. First, it can be seen that the average duration of completed spells of unemployment is surprisingly short in *both* Canada and Newfoundland – about 2.5 months. This fact is often used by observers to "prove" that unemployment is largely frictional. There are certain logical fallacies to this "proof," as illustrated in Chapter 1. At this point, it is simply appropriate to

recall that unemployment spells often terminate with exit from the labour force rather than with entry into employment. Brief spells of unemployment may signify unsuccessful job search, followed by decisions to abandon search, rather than availability of employment. It should also be recalled that frictional unemployment involves brief spells of unemployment that lead to jobs, *not* to withdrawal from the labour force. Two additional calculations were therefore performed, the results of which are presented in Table 3-3.

Category 5A yields one set of results, showing the average duration of completed spells of unemployment *with no withdrawal*. The idea here (as with the specific calculation done earlier in this section) is to regard all labour gross flows from unemployment during one month to withdrawal from the labour force the next month as indistinguishable from those flows that involve remaining in the unemployment category. In effect, a worker who is unemployed to begin with is considered to remain unemployed unless he or she attains employment. This may seem like a drastic assumption, since withdrawal from the labour force may no longer indicate "desire for work" or "availability for work." It should be remembered, however, that this assumption is *only* made for those who were officially unemployed to begin with. There is *also* a considerable flow from employment into "not in the labour force" without intervening unemployment; but this may reflect discouraged workers, as was evident in the second and third sections of Chapter 2. Even potential new entrants to the labour force may be discouraged because of lack of job availability and may contribute to hidden unemployment. Thus the results of calculation 5A are not necessarily an overestimate of the "true" average duration of completed spells of unemployment. It is seen from the modified formula that duration estimates rise dramatically in both Canada and Newfoundland. The mean *total* duration of completed spells in the unemployed state is almost 5.5 months in Newfoundland. This is *not* an indication of frictional unemployment by the usual standards! For Canada, the results show the duration of completed spells of unemployment with no withdrawal to be averaging about four months – significantly shorter than for Newfoundland. The difference is accounted for mainly by the relatively greater importance of flows out of unemployment into NILF in Newfoundland than in Canada.

Labour category 5B of Table 3-3 presents an alternative duration calculation for unemployment spells with no withdrawal. Here the modified proba-

bility of remaining unemployed is described by a *conditional* probability calculation. The specific formula (given earlier in this section) considers the probability of remaining unemployed as being conditional upon the probability of not withdrawing from the labour force.⁷ In effect, *both* probabilities among the unemployed – those of finding a job or of remaining unemployed – are raised by the same proportion, such that the two probabilities sum to unity. This is a more conservative approach to abstracting from labour force transition effects in the sense that labour force withdrawals from unemployment are not all automatically classified as continued unemployment. Thus the incremental impact of calculation 5B is less than that of calculation 5A. It is seen that the duration of Newfoundland unemployment spells is, on average, about 4.3 months (up from 2.5 months, but shorter than the 5.5 months in calculation 5A). Even a completed spell of 4.3 months is outside the normal range of a frictional unemployment spell. This topic will be discussed further in the next chapter, where we compare the duration figures calculated above (and the consequences) with those derived from the annual monthly averages of Statistics Canada's labour force survey. From the evidence so far presented, however, it would appear that calculation 5A is a better estimate of the average duration of an unemployment spell with no withdrawal than calculation 5B – for Newfoundland but not for Canada.

Before presenting the results for disaggregated demographic groups, we merely list the completed-spell duration results of a corresponding study for the U.S. labour market [Clark and Summers (1978), Table 2].⁸

	United States, 1968-76
Labour category:	(Months)
1 Not in the labour force	14.67
2 Labour force	22.91
3 Employment	20.66
4 Unemployment	2.13
5 Unemployment with no withdrawal	3.91

Again, there are striking similarities between the U.S. results and the Canadian results shown in Table 3-3. See also the discussion of Table 4-4 in the following chapter.

Now let us turn to Table 3-4, which shows the average duration of completed spells for the major demographic groups in Canada, 1977. Once more, these disaggregated results are not available for Newfoundland, so our discussion will be brief. Table 3-4 can be used to trace the possible demographic "causes" of the duration differences between Canada and Newfoundland noted in Table 3-3. Such an analysis is completely parallel to the corresponding discussion of Tables 3-1 and 3-2 in the previous section; thus we shall not repeat the whole story. It can be shown that average duration of completed spells for the total population is a weighted average of the duration results for each of the demographic groups. The precise weights are somewhat complex; but ultimately they depend on the relative importance of each group in the labour force. We know that the Newfoundland labour force reflects greater weight in the "men, 15-24" and "women, 15-24" categories and significantly less weight in the "women, 25+" category. Can this

Table 3-4

Average Duration of Completed Spells, Canada, by Age-Sex Group, 1977

Labour category:	Total	Men		Women	
		15-24	25+	15-24	25+
					(Months)
1 Not in labour force	15.53	6.09	16.18	8.64	29.85
2 Labour force	24.27	13.85	60.24	11.90	20.41
3 Employment	22.17	10.94	43.29	12.29	21.50
4 Unemployment	2.36	2.32	2.58	2.25	2.26
5A Unemployment with no withdrawal	4.24	3.95	3.79	4.67	4.99
5B Unemployment with no withdrawal ¹	3.44	3.25	3.32	3.59	3.78
6 Nonemployment	16.64	7.36	13.60	11.42	34.72

¹ For the distinction between 5A and 5B, see the precise formulas in the text.

SOURCE Based on data from Statistics Canada.

explain the Newfoundland/Canada duration differences? Again, the answer is "probably not" (and, in some cases, "absolutely not"). The reader who followed the developments in the second section of this chapter can easily verify this without further help. For example, Table 3-3 shows dramatic differences between Canada and Newfoundland in the duration of employment spells. These differences can only be partly explained by the demographic structure results of Table 3-4 (line 3). Indeed, in 1977 the average duration of completed unemployment spells (*with* and *without* withdrawal) in Newfoundland was greater in each case than it was for *each* of the corresponding Canadian demographic groups that year. In fact, the evidence suggests that Canada/Newfoundland duration differences in the "unemployment with no withdrawal" category would be greater" after appropriate adjustment for

demographic structure (say, for example, through shift-share analysis).

No doubt, it would be most helpful if we could produce a table such as Table 3-4 for Newfoundland. All we can really say, however, is that the demographic *differential patterns* shown for Canada probably resemble those for Newfoundland. Once more it appears that labour market experts who stress the job-search-theory approach to unemployment probably have in mind the demographic group "men, 25+" where the duration of employment spells is very long and the difference between the duration of unemployment spells with withdrawal and without withdrawal from the labour force is relatively small. Unfortunately for labour market theory, this demographic group no longer dominates the actual labour market in either Newfoundland or Canada!

Appendix to Chapter 3

This appendix is intended for the reader who may want to do some checking or to do additional calculations. The basic data used in Chapter 3 were for the year 1977. Note that all figures are in thousands.

First, the Newfoundland gross labour flow matrix:

$$\begin{bmatrix} 149.9 & 3.9 & 7.2 \\ 5.6 & 18.7 & 5.7 \\ 6.3 & 7.4 & 173.3 \end{bmatrix}$$

Second, the Canadian gross labour flow matrix:

$$\begin{bmatrix} 9,314 & 166 & 274 \\ 203 & 496 & 162 \\ 245 & 182 & 6,206 \end{bmatrix}$$

Third, the Newfoundland gross labour flow matrix in transition probability form:¹

$$\begin{bmatrix} .9313 & .0244 & .0444 \\ .1869 & .6232 & .1899 \\ .0336 & .0398 & .9266 \end{bmatrix}$$

Fourth, the Canadian gross labour flow matrix in transition probability form:

$$\begin{bmatrix} .9549 & .0170 & .0281 \\ .2357 & .5759 & .1884 \\ .0370 & .0275 & .9356 \end{bmatrix}$$

4 Annual Work Patterns of the Unemployed in Newfoundland

This chapter provides a more longitudinal view of work and unemployment experience. Here the data limitations are most severe, and our analysis is restricted to one year, 1977. For this reason, comparisons are extended to cover Ontario as well as Canada and Newfoundland. It is impossible not to be concerned about data reliability or inconsistencies. Thus the chapter includes a reconciliation of the three basic sources of statistical data used in the study. Finally, we conclude with some important indirect inferences needed to overcome the limitations of data availability.

ANNUAL WORK EXPERIENCE DATA

In January 1978, respondents to the labour force survey were asked to recall their labour force experience and related activities during the preceding calendar year, 1977. To each month of that year was assigned a particular labour force activity or nonactivity, or appropriate combination of the two. This procedure yielded what is known as the annual work patterns of the labour force. Clearly, it was important that this special survey be carried out in a systematic manner and that the conceptual framework be reasonably consistent with that of the conventional labour force survey. These requirements appear to have been met in the survey used for this chapter [Veevers (1979b)], but further verification is still advisable. It should also be noted that similar annual work pattern surveys were conducted for Canada and major regions for other years [see Whittingham and Wilkinson (1967) for 1964, Ostry and Zaidi (1972) for 1968, and McIlveen and Sims (1978) for 1973], but the results are not strictly comparable to those in this study. Again, there are critical conceptual and methodological differences that preclude comparability. The important point is that the 1977 cross-sectional comparisons of Canada, Ontario, and Newfoundland that follow all stem from a common and consistent framework.

It would appear that rigorous use of annual work pattern survey data could yield the precise calcula-

tions of frictional unemployment needed for this study. After all, if these data are fully available, we should then be able to focus our attention on short (complete) spells of unemployment that lead to jobs—our definition of frictional unemployment. Conceptually, this is true; but unfortunately the data are not available in complete form. What we have is merely a *summary* of the main findings pertaining to the 1977 work pattern survey. Nevertheless, these data do permit some important calculations that throw direct light on the incidence of frictional unemployment in Newfoundland, as well as in Canada and Ontario. Indeed, for the first time in this study, we are able to go beyond the “annual averages” thus far discussed and to focus on questions of *unemployment distribution*—first mentioned in Chapter 1. It is also possible to combine the limited data available from the annual work pattern survey with data from other sources. This combination is particularly revealing and helps to overcome *some* of the data restrictions.

Finally, it should be noted that work pattern (or experience) surveys need not be limited to the scope of one calendar year. Such surveys can be conducted to cover multi-year intervals,¹ but these are usually called longitudinal labour force surveys. It will be seen that restriction to one year can lead to certain inconsistencies with other methods.

ANALYTICAL RESULTS OF ANNUAL WORK PATTERNS

Table 4-1 presents the key results of the annual work pattern survey for the year 1977. These results have been arranged to suit the purpose of this study. Some of them come directly from the survey; others require additional calculation, or synthesis with additional data. We shall first define each work experience category in Table 4-1. (We repeat, most of the data in the table came directly from the annual work pattern survey.) This will be followed by a discussion of the implications.

- 1 *The incidence of annual unemployment* – the ratio of the number of workers experiencing some unemployment during the year to the number who participated in the labour force at any time during the year (expressed as a percentage).
- 2 *Number of weeks of unemployment (per unemployed person)* – the ratio of the total weeks of unemployment experienced during the year by all who were unemployed to the number of persons experiencing some unemployment in 1977.
- 3 *Number of spells of unemployment (per unemployed person)* – the ratio of the total number of unemployment spells experienced during the year to the number of persons with some unemployment during the year. The numerator is approximated as $(nu + eu)12$, plus the number unemployed all year.² Although the number unemployed all year and the number unemployed at some time during the year came from the survey data, the main findings of the survey did not actually contain “total spells of unemployment” data.³
- 4 *Percentage of annual unemployment accounted for by those unemployed all year* – the ratio of the total weeks of unemployment experienced during the year by those unemployed all year to the total weeks of unemployment experienced during the year by all those unemployed at some time during the year (expressed as a percentage).
- 5 *Number of weeks of employment (per employed person)* – the ratio of the total weeks of employment experienced by the labour force during the year to the number of persons experiencing some employment in 1977.
- 6 *Number of spells of employment (per employed person)* – the ratio of the total number of employment spells experienced during the year to the number of persons with some employment during the year. The numerator is approximated as: $(ne + ue)12$, plus the number employed all year. Although the number employed all year and the number employed at some time during the year came from survey data, the main findings of the survey did not actually contain “total spells of employment” data. The rationale is completely analogous to that in category 3.
- 7 *Percentage of annual employment accounted for by those employed all year* – the ratio of the total weeks of employment experienced by those employed all year to the total weeks of employment experienced by those employed at some time during the year (expressed as a percentage).

The implications of Table 4-1 are interesting. First, we see that the incidence of unemployment is shared to a considerable extent over the year in both Canada and Newfoundland. The incidence indicator is much larger than the conventional monthly annual average unemployment rates in 1977 of 8.1 per cent and 15.6 per cent, respectively. (As a matter of interest, Ontario's rate was 7.0 per cent.) These differences require further analysis (see below). For now, we merely state that the typical participant in the Newfoundland labour force has a 35 per cent chance of being officially unemployed at some time during the year. This is not surprising; neither are the results in category 2 of Table 4-1. It should be remembered, however, that the average number of unemployment weeks (17.7 for Newfoundland) accumulates all unemployment spells per person throughout the year and must not be

Table 4-1
Annual Work Experience, Canada, Ontario, and Newfoundland, 1977

	Canada	Ontario	Newfoundland
Work experience category:			
1 The incidence of annual unemployment (as a percentage of annual labour force)	19.1	16.3	34.9
2 Number of weeks of unemployment (per unemployed person)	15.1	14.4	17.7
3 Number of spells of unemployment (per unemployed person)	1.85	1.87	1.69
4 Annual unemployment accounted for by those unemployed all year (as a percentage of annual unemployment)	6.6	7.8	10.8
5 Number of weeks of employment (per employed person)	43.3	44.2	37.4
6 Number of spells of employment (per employed person)	1.14	1.14	1.15
7 Annual employment accounted for by those employed all year (as a percentage of annual employment)	81.8	84.5	71.4

SOURCE Based on data from Statistics Canada.

confused with the "average duration of a completed unemployment spell" calculated in the previous chapter. This will be discussed further in the next section.

The results in category 3 may be surprising. It is seen that despite the significantly higher rate and incidence of unemployment in Newfoundland than in Canada, the typical unemployed person in Newfoundland experiences fewer (or at least no more)⁴ spells of unemployment than his counterpart in Canada (or Ontario). Here it should be recalled that frictional unemployment is described not only by short spells of unemployment, but by relatively *large* numbers of such short spells – at least when the aggregate unemployment rate is high. This certainly does not characterize the Newfoundland unemployment picture! Indeed, as seen in the next category, a considerable amount of all Newfoundland unemployment experienced during 1977 was accounted for by those unfortunate enough to be unemployed the whole year (10.8 per cent). True, this percentage is not high; but it must be realized that the officially unemployed normally do not maintain job search for very long continuous periods. It is more normal to withdraw from the labour force after a few months' search (as was evident in the special March 1978 survey discussed in the third section of Chapter 2). Nevertheless, unemployment, officially prolonged throughout the year, is of some importance in Newfoundland and represents one of our few direct pieces of evidence concerning the *distribution* of the unemployment burden in Newfoundland. At least we are sufficiently safe in claiming that this 10.8 per cent of all unemployment experienced is definitely *not* of the frictional variety!

The last three categories of Table 4-1 are discussed more briefly. The results in lines 5 and 7 are, again, not surprising, but work experience category 6 deserves some further mention. Reviewing the method used to approximate the "total number of employment spells experienced during the year," it is seen that the formula guarantees⁵ that if all the employed were in fact employed throughout the year, then the number of employment spells per employed person would be equal to *unity*. Thus we are not necessarily dealing with *complete* spells of employment in this section. The results show that the average number of employment spells is virtually the same in Canada, Ontario, and Newfoundland (there is nothing in the formula that "guarantees" this!) There is no evidence that there are relatively more short-term jobs available in Newfoundland – although, in some industries, if jobs are available at all, they are of the short-term variety only! This will be discussed again in Chapter 5.

Table 4-1 reveals some interesting Canada/Newfoundland total differences and similarities. Thus it is again relevant to determine whether these comparative results can be traced to demographic factors. Table 4-2 shows the 1977 annual work experience results for the Canadian major demographic groups. The relevant calculations are completely analogous to those explained earlier in this section. Once more, data limitations prevent us from presenting such a table for the Newfoundland demographic groups. Nevertheless, some probabilistic inferences are still possible. Note that the Newfoundland total unemployment incidence is larger than that for each of the Canadian demographic groups, but the Canada/Newfoundland difference (19.1 and 34.9) is probably due, to some extent, to demographic structure. On the other hand, the totals for "number of unemployment weeks" (15.1 and 17.7) might differ even more were it not for demographic factors, because Newfoundland's two young demographic groups, "men, 15-24" and "women, 15-24" carry relatively more weight. The situation with regard to "number of unemployment spells" is ambiguous; nothing more could be said without a formal "shift-share analysis" and corresponding data. It is reasonably clear, however, that the Canada/Newfoundland differences (6.6 and 10.8) with respect to work experience category 4 might be significantly greater were it not for the demographic structure. Thus one reason why *only* 10.8 per cent of Newfoundland's unemployment is accounted for by those unemployed all year stems from the relatively greater importance of youth among the unemployed, seeing that youths are rarely unemployed all year (at least based on Canadian evidence). Finally, we can now probably explain why the "number of employment spells" is so similar at the *total* Canada/Newfoundland levels. Again, youth employment is relatively more important in Newfoundland, and youths tend to experience greater numbers of employment spells. In spite of this, the total results are similar, so that we should expect *fewer* employment spells per employed person in Newfoundland than in Canada (and Ontario) *after* appropriate adjustments for demographic employment structure. This inference also casts doubt on the quantitative, relative importance of Canada/Newfoundland frictional unemployment differences.

To conclude this section, we return to the measurement of annual unemployment incidence. Data relating to annual work experience permit a measurable distinction between labour force participation *all* year and labour force participation *part* of the year. Indeed, for each of the two categories it is possible to calculate annual unemployment incidence,

Table 4-2

Annual Work Experience, Canada, by Age-Sex Group, 1977

	Total	Men		Women	
		15-24	25+	15-24	25+
Work experience category:					
1 The incidence of annual unemployment (as a percentage of annual labour force)	19.1	32.0	11.4	31.2	17.8
2 Number of weeks of unemployment (per unemployed person)	15.1	14.8	17.7	12.3	15.1
3 Number of spells of unemployment (per unemployed person)	1.85	1.94	1.86	1.74	1.82
4 Annual unemployment accounted for by those unemployed all year (as a percentage of annual unemployment)	6.6	4.6	7.8	4.2	9.1
5 Number of weeks of employment (per employed person)	43.3	35.7	48.1	35.5	43.5
6 Number of spells of employment (per employed person)	1.14	1.30	1.06	1.24	1.13
7 Annual employment accounted for by those employed all year (as a percentage of annual employment)	81.8	67.7	88.6	69.0	81.4

SOURCE Based on data from Statistics Canada.

using analogous procedures: the total annual unemployment incidence results originally shown in Table 4-1 (line 1) are merely weighted averages of the corresponding disaggregated results. Table 4-3 shows the incidence of unemployment by distinguishing between all-year and part-year participation in the labour force; it also provides a Canadian demographic breakdown. The relevant weights^a used to form aggregate results are:

	Proportion of the labour force	
	All year	Part of the year
	(Per cent)	
Canada	72.2	27.8
Ontario	74.8	25.2
Newfoundland	58.5	41.5

It is remarkable that the incidence of annual unemployment for *all*-year labour force participation is virtually the same as the corresponding conventional annual monthly average unemployment rate for Canada, Ontario, and Newfoundland. The aggregates of unemployment incidence are much higher than conventional unemployment rates because of the weight of unemployment stemming from *part*-year labour force participation. The weight impact is particularly large in Newfoundland and indicative

of hidden unemployment. *Relatively* speaking, however, the Canada/Newfoundland difference with respect to annual unemployment incidence for all-year participation (8.1 and 16.7) is greater than the difference stemming from part-year participation (47.5 and 61.2). Of course, it would be fascinating were it possible to work out the additional calculations of Table 4-1 (e.g. the number of unemployment and employment spells) for annual labour force participants according to all-year and part-year participation. Unfortunately, however, we have reached the limits of data availability.

Table 4-3

The Incidence of Annual Unemployment as a Percentage of Annual Labour Force, Canada, by Age-Sex Group, and Ontario and Newfoundland, 1977

	Labour force participation	
	All year	Part of the year
	(Per cent)	
Canada	8.1	47.5
Men, 15-24	17.4	49.3
Men, 25+	6.4	44.3
Women, 15-24	10.6	51.5
Women, 25+	6.4	44.9
Ontario	7.0	43.8
Newfoundland	16.7	61.2

SOURCE Based on data from Statistics Canada.

RECONCILIATION OF UNEMPLOYMENT DATA SOURCES⁷

Three basic data sources have been used so far in this study: 1/ conventional labour force survey "stock" data (used mostly in Chapter 2), 2/ gross labour flow data (from Chapter 3), and 3/ annual work pattern survey data (in this chapter). The time has now arrived to attempt the verification and reconciliation of these various sources. The reconciliation is performed for the one year, 1977, for which all data⁸ are available. Since this section contains no new results and since there are good references to the following reconciliation procedures, the development is kept brief.

First, it is possible to derive an annual monthly average unemployment rate from gross labour flow transition probabilities. Following Marston (1976), the conventional published unemployment rate, under reasonable steady-state economic conditions, can be expressed as:

$$u = \alpha / (\alpha + \beta),$$

where $\alpha = P_{eu} + (P_{en})(D_{nn})(P_{nu})$ and

$$\beta = P_{ue} + (P_{un})(D_{nn})(P_{ne}),$$

using the notation of Chapter 3 and letting

$$D_{nn} = 1 / (1 - P_{nn}).$$

Then from the transition data and duration calculations of the previous chapter we find, for Newfoundland in 1977, that:

$$\alpha = (.0244) + (.0444)(13.63)(.0398) \text{ and}$$

$$\beta = (.1869) + (.1899)(13.63)(.0336),$$

so that

$$u = \alpha / (\alpha + \beta) = 15.0$$

when expressed as a percentage.

For Canada in 1977:

$$\alpha = (.0170) + (.0281)(15.53)(.0275) \text{ and}$$

$$\beta = (.2357) + (.1884)(15.53)(.0370),$$

so that

$$u = \alpha / (\alpha + \beta) = 7.8 \text{ per cent.}$$

The actual unemployment rates from labour force survey data for Newfoundland and Canada are 15.6 per cent and 8.1 per cent, respectively. We conclude that the two sets of data are reasonably consistent.

Second, it is possible to check the procedures used in the preceding chapter to calculate "unemployment with no withdrawal" against the estimates of *total* unemployment rates (including hidden unemployment) in the third section of Chapter 2. Thus, on the basis of calculation 5A in Table 3-3, we would expect the *total* unemployment rate to approximate:

$$u^* = \alpha / (\alpha + \beta^*),$$

where $\alpha = P_{eu} + (P_{en})(D_{nn})(P_{nu})$, as before, and

$$\beta^* = P_{ue},$$

since, according to calculation 5A, the probability transition P_{un} equals zero; in effect, P_{un} is added to P_{uu} to form P_{uu}^* . Thus for Newfoundland in 1977 we find that:

$$u^* = (.0485) / [(.0485) + (.1869)] = 20.6 \text{ per cent.}$$

The impact of measuring the duration of completed unemployment spells with no withdrawal is to raise the estimated 1977 unemployment rate by the ratio:

$$u^*/u = (20.6) / (15.0) = 1.37.$$

From the special March survey data of "hidden unemployment," however, we found (using the same symbols) that:

$$u^*/u = (23.9) / (16.4) = 1.46,$$

at least from 1978 data. The two results are not far apart considering that the basic data pertain to different years.⁹ We conclude that there is some merit to the 5A-type calculation (Table 3-3) in the case of Newfoundland. For Canada in the year 1977, we find that:

$$u^* = (.0290) / [(.0290) + (.2357)] = 11.0 \text{ per cent,}$$

so that

$$u^*/u = (11.0) / (7.8) = 1.41;$$

but, from the special March 1978 survey results in the third section of Chapter 2, we found:

$$u^*/u = (10.3) / (8.4) = 1.23.$$

These two results are *not* reasonably consistent. Therefore, consider the alternative calculation 5B in Table 3-3. Now we should expect the *total* unemployment rate to approximate:

$$u^{**} = \alpha / (\alpha + \beta^{**}),$$

where α is the same as before and

$$\beta^{**} = P_{ue}^{**} = P_{ue} / (P_{ue} + P_{uu}),$$

recalling that, in calculation 5B, $P_{un} = 0$, and its magnitude is distributed proportionally to both

P_{ue}^{**} and P_{uu}^{**} (in effect, P_{ue}^{**} becomes a conditional probability). Then for Canada in 1977 we find that:

$u^{**} = (.0290)/[(.0290) + (.2904)] = 9.1$ per cent and the ratio

$$u^{**}/u = (9.1)/(7.8) = 1.17,$$

which is reasonably close to the ratio 1.23 yielded from the March 1978 survey data. Thus we conclude that calculation 5B of Table 3-3 better reflects Canadian reality than calculation 5A.

Third, the annual work pattern results can also be related to the traditional stock picture of unemployment. Following McIlveen and Sims (1978), the annual monthly average unemployment rate can be shown as:

$$u = (I)(w)/(L)$$

where I represents annual unemployment incidence (category 1 of Table 4-1);

w represents average number of unemployment weeks per unemployed person (category 2 of Table 4-1); and

L represents the average number of weeks of labour force activity experienced by those with some labour force participation at any time during the year (not shown in Table 4-1).

Then for Newfoundland in 1977 we have:

$$u = (34.9)(17.7)/(41.8) = 14.8 \text{ per cent,}$$

and for Canada in 1977 it is found that:

$$u = (19.1)(15.1)/(45.0) = 6.4 \text{ per cent.}$$

Clearly, these results, especially for Canada, do *not* compare reasonably well with the unemployment rates derived from the labour force survey – namely, 15.6 per cent and 8.1 per cent, respectively. Fortunately, it is not difficult to trace the probable source of the discrepancies. The annual work experience data are based on *recall* procedures (see the first section of this chapter). It is common to find the underestimation noted above. Of the ingredients that go into the above supposed identity, the numbers represented by w are most affected by underestimation recall errors. There is, however, an alternative method of estimating w , using the gross labour flow data calculations. Thus we could approximate:

$$w \simeq (D_{uu})(4.33)(S),$$

where D_{uu} represents the average duration of completed spells of unemployment (from category 4 of Table 3-3);

4.33 transforms monthly data into weekly data; and

S represents the number of unemployment spells per unemployed person (from category 3 of Table 4-1).¹⁰

For Newfoundland in 1977 we have:

$$w \simeq (2.65)(4.33)(1.69) = 19.4 \text{ weeks,}$$

and for Canada we derive:

$$w \simeq (2.36)(4.33)(1.85) = 18.9 \text{ weeks.}$$

Using these alternative estimates of w and noting that L also requires adjustment if w is changed, we end up with:

$$u = (34.9)(19.4)/(42.4) = 15.9 \text{ per cent}$$

for Newfoundland, and

$$u = (19.1)(18.9)/(45.8) = 7.9 \text{ per cent}$$

for Canada. These adjusted estimates are remarkably close to the 1977 official labour force survey unemployment rates.

WHERE DO WE GO FROM HERE?

We have now made maximum use of the limited data available. The various sources of data are reasonably consistent and tell a coherent story; but the story is incomplete. There are still important aspects of frictional unemployment in both Newfoundland and Canada that have yet to be measured (recall our discussion of frictional unemployment in Chapter 1). For instance, can we estimate specifically what proportion of the official unemployment experienced is of a frictional nature? Though further evidence is introduced in the next chapter, we anticipate the answer to be NO. The data are simply not available to provide specific measurements. Nevertheless, it is possible to use some indirect inferences and to argue by analogy – a crude and imperfect substitute, by necessity!

First, it is relevant to compare the average duration of unemployment spells calculated in Table 3-3 (transformed into weeks from months) with that obtained directly from the labour force survey “stock” data [Statistics Canada (1979b)]:

	Flow data		Stock data	
	Canada	Newfoundland	Canada	Newfoundland
	(Weeks)			
1976	9.5	10.7	13.9	17.2
1977	10.2	11.5	14.5	17.9

It is clear that traditional stock data do not provide a reliable measure of the average duration of completed unemployment spells and are typically biased upward, particularly for Newfoundland. This possible bias was mentioned in the second section of Chapter 2 and is analysed in the definitive paper by Salant (1977). The upward bias indicates that the probability of escape from unemployment declines as unemployment progresses. In this case, a disproportionately large amount of the unemployment experienced would be *concentrated* in unemployment spells of longer-than-average duration – again, particularly in Newfoundland. A concrete example of such concentration can be derived from the results of Table 4-1. In 1977, only about 1.5 per cent of the average Newfoundland labour force were unemployed throughout the year; yet these long-term extended unemployed accounted for 10.8 per cent of the total official unemployment experienced by all workers. (Unfortunately, data are not available to provide further concrete examples for Newfoundland.) To further pursue problems with the distinction between short-term and long-term completed unemployment spells requires either: 1/ gross labour flow data, with unemployment flows disaggregated by duration of unemployment (as mentioned in the first section of Chapter 3), or 2/ access to an annual-work-pattern-survey computer tape so that unemployment structural characteristics can be analysed in complete detail. So far, to this writer's knowledge, there has been only one publication that makes proper use of both sources of data and obtains direct results relevant to this study – namely, Clark and Summers (1979), referred to earlier. Can we make use of the

Clark-Summers results for the U.S. labour market to partly supplement our lack of available data?

Table 4-4 presents some of the key results from the Clark-Summers paper with respect to the United States in 1975. The corresponding Canadian and Newfoundland calculations are shown for the year 1977. (The latter are from previous tables and data.) There is a remarkable similarity between the Canadian and U.S. unemployment structural characteristics. Perhaps this is not too surprising, since the respective average annual unemployment rates (characteristic 1) are of the same magnitude. But it should be noted that similar aggregate unemployment rates can be generated by entirely different structures.¹¹ Nevertheless, the two structures, so far as commonly available data are concerned, retain very similar characteristics. Characteristic 8, however, is not available for Canada. Specifically this characteristic determines what proportion of all the official unemployment is represented by complete unemployment spells that terminate with employment – the duration of such spells being two months or less (or three months or less). Does this characteristic sound familiar? It should, because this characteristic satisfies all the requirements of *frictional unemployment* as defined in Chapter 1. The unemployment spells must 1/ be relatively brief (no more than two or three months), 2/ be complete, and 3/ end with a job. Table 4-4 shows that 23 per cent of U.S. unemployment in 1975 was of this type, using the “two months or less” criterion; the proportion was 30 per cent based on the “three months or less” criterion. The calculation used to obtain this result at least *partly* reflects the other unemploy-

Table 4-4
Unemployment Structure in the United States, 1975, Compared with That in Canada and Newfoundland, 1977

	1975	1977	
	United States	Canada	Newfoundland
Unemployment characteristics:			
1 Average annual unemployment rate (per cent)	8.5	8.1	15.6
2 Proportion of spells ending in withdrawal from labour force	0.46	0.44	0.51
3 Average duration of a completed spell (weeks)	9.6	10.2	11.5
4 Ratio of stock to flow estimates of unemployment duration	1.45	1.42	1.56
5 Average duration of a completed spell with no withdrawal (weeks)	18.2	(14.9, 18.4)	(18.8, 23.1)
6 Annual unemployment accounted for by those unemployed all year (as a percentage of annual unemployment)	6.3	6.6	10.8
7 The incidence of annual unemployment (as a percentage of annual labour force)	18.4	19.1	34.9
8 Proportion of unemployment ending in employment, by duration of spell			
Two months or less	0.23	?	?
Three months or less	0.30	?	?

SOURCE Based on Tables 3-1, 3-3, and 4-1; and Clark and Summers (1978) and (1979).

ment characteristics in the table, for which data are available in both Canada and the United States. Thus, arguing by analogy, we would expect the Canadian results for characteristic 8 to be of the same order of magnitude as the U.S. results.

Turn now to Newfoundland in Table 4-4; here, the situation is considerably different. Not only is the aggregate unemployment rate much higher, but the structural characteristics differ from those in the United States according to a *pattern* by which we would expect the unknown characteristic 8 to exhibit significantly lower proportions than for the United States. The calculations underlying this characteristic are particularly dependent on ratio characteristic 4 and the duration estimates 3 and 5. The U.S./Newfoundland differences for these known characteristics imply that the Newfoundland estimate for characteristic 8 should be small. The following estimates for Canada and Newfoundland must be regarded as preliminary, pending further research:¹²

	Canada	Newfoundland
	(Proportion)	
Characteristic no. 8		
Two months or less	0.23	0.15
Three months or less	0.30	0.20

This means that for the year 1977 we should expect frictional unemployment percentage rates to be of about the following magnitude:

	Canada	Newfoundland
	(Per cent)	
Criterion		
Two months or less	1.9	2.3
Three months or less	2.4	3.1

Two final remarks are in order. First, there is some reason to believe that the above magnitudes are overestimates. This is because the methodology is applied within the framework of official unemployment and does not recognize the fact that two spells of unemployment separated by withdrawal from the labour force may add up to a single long spell of unemployment even though the second official unemployment spell is brief *and* terminates with employment. Thus some spells of unemployment are classified as frictional, though not warranted according to an extended framework. But there are also biases working in the opposite direction, since an extended framework "permits" more overall unemployment (see the third section of Chapter 2). Second, the alternative criterion of "three months or less" is probably long enough to also embody some seasonal unemployment [see the estimates of Canadian and Newfoundland seasonal unemployment in Wilson (1979)]. Therefore frictional and seasonal unemployment rate estimates are not additive when the second of the two frictional rate criteria is applied. Both these remarks serve to reinforce our conclusion that frictional unemployment in Newfoundland is very low relative to the level of aggregate unemployment. This topic will be pursued once more in the final section of the next chapter.

5 Job Vacancies and Employment in Newfoundland

This chapter is added to provide an alternative and more balanced approach to the basic frictional unemployment problem. In effect, the previous three chapters were primarily concerned with the supply side structure of labour markets. Now we must look at the demand side as well. Indeed, this view permits the incorporation of certain unemployment aspects thus far overlooked and enables us to examine specifically the job tenure phenomenon in both Canada and Newfoundland.

FRICTIONAL UNEMPLOYMENT AND JOB VACANCIES

Frictional unemployment as defined in this study embodies the notion that short spells of unemployment terminate with successful job search.¹ This means that for workers experiencing true frictional unemployment, it is assumed that suitable job vacancies (both in quantity and quality, and at market wages) are available to match the unemployed after short spells of job search. The absolute number or stock of job vacancies need not be equal to the stock of frictional unemployment at all points in time, however, since we are implicitly dealing with dynamic variables affected by spell frequency and duration. Also, a great deal depends on our particular methodological measurements of unemployment and job vacancies (as discussed in the next section). Nevertheless, there is a close conceptual relationship between frictional unemployment and job vacancies.

On the other hand, structural unemployment is supposed to arise from basic shifts within the economy (such as product innovations, technological developments, resource discoveries or depletion, and changes in consumption patterns). These call for new skills in new locations, creating unemployment for workers without retraining and mobility. Here, job vacancies are assumed to be available in sufficient quantity for the unemployed, but the two categories do *not* match in terms of qualifications.

The relationship between structural unemployment and job vacancies is not so close.² Actually, where job vacancy data in sufficient detail are available, it is possible to measure empirically, and to distinguish between, frictional and structural unemployment *on this basis*. The labour market expert Mincer (1966) originally showed how this could be done from the conceptual viewpoint, and the work of Thirlwall (1975) could be regarded as an application of these ideas. This approach is not pursued in this study for a number of reasons: 1/ reliable job vacancy data in sufficient detail are *not* available, 2/ our interest is centred mainly on frictional unemployment, and 3/ it is believed that our direct approach to measuring frictional unemployment and related problems yields more interesting results.

Nevertheless, *some* job vacancy data are available, and it seems desirable to exploit these data for the purposes of this study. The main idea is to examine and compare aggregate unemployment/job-vacancy ratios, particularly *after* a series of appropriate data adjustments. If frictional and structural unemployment truly account for a relatively small part of aggregate unemployment, then we should expect (aggregate) unemployment/job-vacancy ratios to be relatively large. Of course, these crude ratios may reflect other factors, and this should be borne in mind. In any case, the ratios are best interpreted in comparison with each other.

THE COMPARABILITY OF UNEMPLOYMENT AND JOB VACANCY DATA

It is well known that the (official) Statistics Canada unemployment and job vacancy data are not conceptually or practically comparable. Thus one cannot simply regard unemployment data as a gross measure of excess labour supply to be compared with job vacancy data as a gross measure of excess labour demand (at the observed market wage level). The conceptual and empirical problems in

this regard have been well documented [see Ostry and Zaidi (1972), pp. 116-23; Statistics Canada (1973); OECD (1979); and Frumerman (1978)] and will not be repeated in this study. Nevertheless, labour market economists do go ahead and use crude unemployment/vacancy ratios in the belief that "there is nothing else." The purpose of this section is to attempt an adjustment reconciliation of the two data sets, at least insofar as such adjustments are possible on the basis of various sources of statistical data. Any further adjustments then become the subject of speculation.

Table 5-1 shows the basic data and adjustment steps carried out for Canada, Newfoundland, and three other provinces. The table pertains to the year 1978, the latest year for which such operations could be performed. We shall now list each of the adjustment operations, explain the rationale, and refer to the data source. The adjustments attempt to put unemployment and job vacancy data in the same universe.

- 1 *Number unemployed* – in each case, this is the official aggregate unemployment figure from Statistics Canada (1979b).
- 2 *Number of vacancies* – in each case, this is the official aggregate job vacancy survey figure from Statistics Canada (1979c).
- 4 *Number unemployed, adjusted for temporary layoffs* – these unemployed are subject to recall (or expect to return to former jobs). It is obvious that vacancies cannot exist to match these unemployed, since former jobs will not be *externally* filled; thus (official) temporary layoffs are subtracted from aggregate unemployment.
- 5 *Number unemployed, adjusted for agriculture, fishing, trapping, and domestic services* – job vacancy data do not cover these sectors; thus unemployment in those four sectors must be discarded to maintain comparability. Note that the unemployed in these sectors are rarely subject to temporary layoffs or future starts; there is no double counting. Data are from Statistics Canada (1979b), Tables 10, 16, and 31, as well as unpublished sources.
- 6 *Number of vacancies, adjusted for multiple job holders* – some unemployed may be looking for more than one job or competing with the employed looking for an additional job; therefore official job vacancies are reduced by the proportion of the labour force who are multiple job holders.⁴ Data are from Statistics Canada (1979b), Table 28.

Number unemployed, adjusted for future starts – these unemployed have new jobs with definite starting dates; thus official vacancies are irrelevant, and the unemployed are subtracted.

Data in both instances are from Statistics Canada (1979b), Table 34.

Number unemployed, adjusted for unpaid family workers, employers, and self-employed – job vacancy data only cover paid workers; thus unemployment among these groups should be discounted. Note that unemployed here can, and do, belong to the four sectors mentioned in the previous paragraph, so that only *additional* unemployment must be discarded to avoid double counting.³ The unemployment *rate* among the increment is assumed to be the same as the aggregate rate. Data are from Statistics Canada (1979b), Table 14.

Table 5-1

Unemployment/Vacancy Ratios and Adjustments, Canada, Newfoundland, and Other Selected Provinces, 1978

	Canada	Newfoundland	Ontario	Quebec	Alberta
1 Number unemployed (monthly average)	911,000	33,000	300,000	307,000	45,000
2 Number of vacancies (monthly average)	44,500	500	17,100	9,300	7,800
3 Crude unemployment/vacancy ratio	20.47	66.00	17.54	33.01	5.77
4 Number unemployed, adjusted for temporary layoffs and future starts	784,000	30,000	257,000	271,000	35,000
5 Number unemployed, fully adjusted ¹	701,000	25,000	229,000	247,000	31,000
6 Number of vacancies, fully adjusted ²	43,500	500	16,700	9,200	7,500
7 Adjusted unemployment/vacancy ratio	16.12	50.00	13.71	26.85	4.13
8 Adjusted ratio as a percentage of crude ratio	78.75	75.76	78.16	81.34	71.58

1 Adjusted for agriculture, fishing, trapping, domestic services, unpaid family workers, employers, and self-employed.

2 Adjusted for multiple job holders.

SOURCE Based on data from Statistics Canada, as explained in the text.

The results of Table 5-1 are largely self-evident. Line 3 shows that the crude unadjusted unemployment/vacancy ratio is highest in Newfoundland; and after all the adjustments are made (see line 7), this ratio remains by far the highest there. Indeed, it turns out that the proportional total adjustments (line 8) are not very far apart for the various provinces. This is the result of the different aspects of the adjustment processes balancing each other. For example, in Newfoundland the downward adjustment resulting from "temporary layoffs and future starts" is less important than that from "fishing, trapping, and self-employment." The situation is reversed nationally and for all other provinces shown. The results support the view that Newfoundland unemployment reflects true job scarcity and that frictional unemployment (and probably structural unemployment) is of relatively minor importance - i.e. relative to aggregate unemployment. This exercise was repeated for the year 1977 (though not tabulated) with similar conclusions.

Before considering an alternative set of data, one must comment on the absolute size of the unemployment/vacancy ratios. It is seen that even after a series of adjustments, the ratios remain much larger than unity - even in a supposedly "tight" labour market such as Alberta's. This phenomenon has been noted by other observers, and various explanations based on conceptual and statistical methodological arguments have been offered (see earlier references). One point has been overlooked, however. It is the considered opinion of this writer that Statistics Canada's job vacancy data are inherently biased downwards because of certain *logical* consequences. Briefly, a survey based on establishments can only capture vacancies in *existing* establishments. Such a survey cannot count vacancies in establishments that are in the process of being created; indeed, such establishments cannot exist *until* a certain minimum number of job vacancies are already filled! Small wonder that job vacancy counts based on an establishment survey always look "too small" (but, of course, this is not the whole story). Therefore, when comparing unemployment/vacancy ratios (hopefully adjusted), it may also be necessary to have some idea of the magnitude of the job-vacancy-count bias by examining the birth and death rates of the relevant establishments. Here, the records of the Statistics Canada Business Register Division could be studied - a task for future research. Again, note the asymmetry involved: the death of an establishment negates existing vacancies, but the birth of an establishment is logically unrecorded in job vacancy files until "too late."

Table 5-2 presents alternative data that throw light on unemployment/vacancy ratio comparisons and related questions. The conceptual apparatus here is different from that used so far in this study. The key data are based on monthly averages for the year and represent:

Total client registrations with Canada Manpower Centres (CMC), the great majority of which are regular unemployment insurance beneficiaries (in the active files at month end).

Job vacancies reported by employers to CMC, including casual vacancies of less than one week and deferred vacancies.

Referrals, who are clients referred to job vacancies by CMC, including temporary layoffs who are recalled.

Placements resulting from an employer hiring a client referred to him or her by CMC.

Table 5-2

Canada Manpower Centre Data,
Canada, Ontario, and Newfoundland, 1977-79

	Canada	Ontario	Newfoundland
1977			
Registration/vacancy ratio	13.9	11.5	23.0
Placements as a percentage of vacancies	75.4	70.6	93.1
Placements as a percentage of referrals	27.3	25.7	42.9
1978			
Registration/vacancy ratio	14.8	11.8	25.9
Placements as a percentage of vacancies	75.6	73.4	92.6
Placements as a percentage of referrals	26.5	25.9	42.4
1979 ¹			
Registration/vacancy ratio	12.9	10.1	27.4
Placements as a percentage of vacancies	74.4	72.3	89.3
Placements as a percentage of referrals	27.2	27.2	41.7

¹ Based on first eight months of 1979.

SOURCE Based on data from the Department of Manpower and Immigration.

It must be noted that "registrations" are only partly related to the official unemployment count of the labour force (household) survey; similarly "vacancies notified" are a crude proxy for the job vacancy (establishment) survey. The CMC data have an

administrative rather than an economic measurement purpose [see Economic Council of Canada (1976), pp. 130-32]. Nevertheless, because of the methodological problems involved in constructing comparability between official unemployment and job vacancy data, the results of Table 5-2 are of some interest. It is seen that registration/vacancy ratios are again by far the highest in Newfoundland, though all the ratios are somewhat lower than those in Table 5-1, even after adjustment. More important, we observe that "placements as a proportion of vacancies" are over 90 per cent in Newfoundland and are significantly higher than the proportions in Canada and Ontario. Thus CMC is able to provide workers for job vacancies reported, particularly in Newfoundland. Employers have no difficulty obtaining workers, but workers far outnumber the job opportunities available. Since job vacancies are so scarce in Newfoundland, it is also not surprising to find that "placements as a proportion of referrals" are again highest in that province. Workers referred to vacancies are more likely to accept job offers and effect placement when there are no other opportunities.

Finally, it must be added that the analysis of job vacancies in this section is seriously incomplete. We have merely "scratched the surface" of the subject in an attempt to provide a minimum balance with the other chapters of this study. In fact, one can easily envisage an additional study of *frictional vacancies* - that is, job vacancy spells that are: 1/ short and 2/ complete, and that 3/ terminate by being filled (not withdrawn). All the conceptual apparatus of the preceding chapters could be directly applied! Because of data limitations, however, this would be a subject for theoretical speculation rather than applied substance. On the basis of evidence so far introduced, however, we conjecture that labour market frictional vacancies in Newfoundland could represent a relatively *large* proportion of total job vacancy time officially spent over the course of a year. But there would be severe empirical and methodological problems to give this conjecture a really solid basis.

JOB TENURE AND ALL THAT

The concluding topic of this study pertains to job tenure and its relationship to both job vacancies and unemployment. We already know that the mean duration of completed *employment* spells is significantly lower in Newfoundland (about 14 months) than in Canada (about 22 months), and only a minor part of this difference can be explained by

demographic factors (see Chapter 3, especially the third section). This result has the important consequences of casting doubt on the job-search-theory approach to Newfoundland unemployment. It is of interest, therefore, to collect some distribution data to back the average-duration findings. Something like this is done in Table 5-3, but the data first require careful interpretation.

Table 5-3
Employment Distribution, by Job Tenure,
Canada and Newfoundland, 1977 and 1978

	Canada		Newfoundland	
	1977	1978	1977	1978
	(Per cent)			
Job tenure:				
One to six months	16.74	16.44	23.60	24.85
Seven to twelve months	8.76	8.65	9.32	9.09
One to five years	33.54	33.59	32.29	30.30
Six to ten years	16.48	16.91	14.90	15.76
Eleven to twenty years	14.08	14.24	11.80	12.12
Twenty or more years	10.39	10.15	8.07	7.88
Total	100.00	100.00	100.00	100.00

SOURCE Based on data from Statistics Canada.

Table 5-3 shows the distribution of employment, by *job tenure*, for Canada and Newfoundland, 1977 and 1978. These data would be related to the underlying distribution of employment (not jobs) *after* taking account of the proportions of employed workers who change jobs with no intervening unemployment.⁵ There is a critical problem with these data, however. The data (unpublished) are derived from the labour force survey (stock estimates), and therefore the figures represent interrupted spells of job tenure, where longer spells are more likely to be captured by survey procedures than shorter spells. (The reader is advised to review the discussion in the second section of Chapter 2.) Moreover, because the probability of leaving a job usually declines with tenure, we should expect the correct distribution of completed job tenure spells to lie considerably "to the left" of the distribution shown in Table 5-3. All we can really do is assume that this distribution bias affects Canada and Newfoundland in a fairly uniform manner. Fortunately, the Canada/Newfoundland differences shown in the table and noted below are large and probably invariant to reasonably uniform distribution bias.

The results show that the major difference between job tenure in Newfoundland and Canada stems from the greater significance of very short job tenure in Newfoundland (if and when jobs are avail-

able). It appears that unemployment is closely tied to the fact that many jobs "come to an end."⁶ Indeed, the relative scarcity of job vacancies combined with short job tenure (and the high probability of unemployment with job change) serve to *reinforce* the severe unemployment situation. Note that this picture is in dramatic contrast to that drawn by some labour economists who might explain high-unemployment/job-vacancy ratios by the longevity of job tenure (i.e. when job replacement vacancies are low). In Newfoundland, the unemployed get "hit" both ways! One might still regard short job tenure and short employment duration as the "efficient" outcome of the *balancing* of workers' and employers' interests as to length of jobs and wage levels. In fact, the economist R. Hall (1979) has formulated a model with these ingredients. Unfortunately the model does not incorporate the difference in bargaining powers between the two sides of the labour market. In this writer's opinion, the Newfoundland labour force has the characteristic of a "captive" labour force; there are very few options open in that province at this time (1978-79).

Table 5-4 traces the main results of the previous table to their industrial origin. (Note that the industrial categories shown are not complete and are limited by available data for Newfoundland.) Clearly, primary industries, manufacturing, and construction are largely responsible for the critical differences shown in Table 5-3. But the phenomenon of short-term job tenure also permeates trade and services in Newfoundland, though to a relatively small extent. All of these results have two important consequences.

Table 5-4
Short-Term Jobs¹ as a Percentage of Total Jobs,
Selected Industries, Canada and Newfoundland,
1977 and 1978

	Canada		Newfoundland	
	1977	1978	1977	1978
	(Per cent)			
Primary industries (other than agriculture)	20.9	20.3	33.3	41.7
Manufacturing	13.1	13.4	33.3	33.3
Construction	27.1	26.3	45.4	50.0
Trade	18.4	18.3	22.2	21.9
Services (other than public administration)	19.3	18.8	22.9	21.7

¹ Jobs of one to six months' duration.

SOURCE Based on data from Statistics Canada.

First, the short-term nature of average employment duration and job tenure⁷ in Newfoundland must be related to the criterion appropriate for measuring frictional unemployment. In the final section of the previous chapter, two alternative criteria were proposed: 1/ complete unemployment spells of "two months or less," and 2/ complete unemployment spells of "three months or less." Clearly, the former criterion should be more appropriate in a labour market environment characterized by employment and job tenure spells of relatively short duration. If job tenure is typically low, the investment returns to frictional job search while unemployed can also be expected to be low, since perceived job benefits will be brief. In this case, the strictly frictional phase of unemployment must be counted on the low side. Reviewing the estimates suggested in the previous chapter, we would now favour the following frictional unemployment rate approximations in Newfoundland and Canada for the year 1977:

	Canada	Newfoundland
	(Per cent)	
Frictional unemployment rate	2.4	2.3

The preferred frictional unemployment rates as a proportion of aggregate unemployment rates would then be of about the following magnitude:

	Canada	Newfoundland
Frictional as a proportion of aggregate unemployment rate	0.30	0.15

But there is a second consequence. Job tenure in both Canada and Newfoundland exhibits a *distribution* partly dependent on the industrial origin of jobs and employment; for example, construction jobs are particularly brief, while the tenure of service jobs is typically long. Therefore, the criterion for measuring frictional unemployment for industrial disaggregations of unemployment should depend on the industrial identification of the unemployed worker.

6 Conclusion

This chapter attempts to summarize the main results of the study from the viewpoint of possible policy implications. Here the approach is more theoretical (and perhaps speculative) in contrast to the empirical orientation of previous chapters. It should be clear that the main contribution of the study is its presentation of new empirical findings and their derivation. Most of the conclusions in this chapter relate to Newfoundland unemployment, since this is the prime, though not the only, interest of this study.

SUMMARY OF RESULTS AND THEORETICAL IMPLICATIONS

The study shows that employment experience and unemployment experience have complex and subtle internal structures. There are dramatic contrasts between both the employment and unemployment structural characteristics of Newfoundland and Canada. These characteristics differ in a way that cannot be revealed by merely looking at respective aggregate unemployment and participation rates.

In particular, the study shows that the average duration of all completed unemployment spells in Newfoundland over a period of time is surprisingly short – about 2.5 months. This estimate might lead one to believe that most unemployment experience in Newfoundland is characterized by relatively short spells of unemployment and that therefore most unemployment experience is transitory and terminates with employment. Further analysis, however, shows that even though most of the individual unemployment spells may be brief, these short-duration spells probably account for only a small proportion of Newfoundland's total unemployment experience over a period of time. This result is characteristic of unemployment spell *distributions* generated by labour markets in which the probability of escape from unemployment *falls* as unemployment duration progresses. Then a disproportionately large amount of the unemployment experienced would be concentrated among unemployment spells of longer-than-average duration. But that is not all! The study also shows that over 50 per cent of Newfoundland's

unemployment spells do not terminate with successful job search; most unemployment spells end with withdrawal from the labour force. This estimate alone is sufficient to raise Newfoundland's average duration of completed unemployment spells, with no withdrawal from the labour force, to a level about *double* that mentioned previously (i.e. to about five months).

In the light of this brief summary of the main unemployment results, it is not surprising then to learn that frictional unemployment in Newfoundland is low relative to the provincial aggregate unemployment rate. (The reader should recall that frictional unemployment is defined as short-term unemployment spells that are complete and that terminate with employment.) The study finds that frictional unemployment probably accounts for something like 15 per cent of all the official unemployment experienced in Newfoundland.¹ Moreover, most of the successful entries into the employed state do not appear to originate from unemployment. Instead, most of the newly employed come directly from outside the labour force.² This shows that either: 1/ successful job search typically occurs at a time when people are not yet available for employment (e.g. full-time students seeking full-time work), or 2/ employment is obtained after a possible previous period of job search followed by more recent periods of "waiting." Indeed, there is evidence that the latter explanation is particularly prevalent in Newfoundland (see the Addendum to this study). In this case, the initiative for employment is largely in the hands of the employer, and the worker is not officially unemployed at the time employment is finally obtained.

Before discussing policy implications, it might be appropriate to relate the empirical findings to the traditional job-search-theory approach to unemployment. Search theory describes unemployment as a kind of investment in future income. The unemployed only take a job when the returns expected from further search would be less than the income forgone from continued unemployment. Indeed, unemployment is largely regarded as a necessary

by-product of an efficient job market, and the initiative for terminating unemployment rests with the unemployed. Also, some extensions of search theory (related to the so-called "natural rate of unemployment") appear to regard high rates of unemployment as characteristic of labour markets from which the unemployed withhold their labour because of misinformation concerning average wages and prices. Does all of this provide a reasonable account of Newfoundland's unemployment experience? This writer does not think so, for the following reasons.

First, the plausibility of search theory depends on the unemployed obtaining an adequate return for their investment in job search time. The return will depend critically on the expected duration of job tenure. In Newfoundland we know that the average duration of completed unemployment spells (including the "waiting time" spent outside the labour force) is about five months; yet job tenure is typically low – on average, probably of no more than six or seven months' duration.³ Therefore it is difficult to interpret long-duration unemployment spent in search of a "better job" as an investment, when job tenure (on average) is only slightly longer than the search (including waiting) time. Second, the credibility of search theory *also* depends on the notion that employers with job vacancies often cannot attract workers, even in periods of officially high unemployment. The idea is that the unemployed turn down job offers that are considered unsuitable and continue to search for better jobs. This is not the situation in Newfoundland! There is direct evidence (Table 5-2) that employers with job vacancies in Newfoundland can readily obtain workers: placements as a proportion of vacancies are over 90 per cent in Newfoundland (compared with 70 to 75 per cent in Canada and Ontario). Third, the information (or, rather, misinformation) theory of unemployment, related to the search-theory approach, implicitly assumes that most unemployment spells are of short duration. Indeed, this is the only way misinformation on the part of labour market participants could persist and yet account for high unemployment rates. For Newfoundland, this requirement is clearly not met.

SOME POLICY IMPLICATIONS

Although the main purpose of this study is to provide empirical results, these results do have policy implications. For the reader's guidance, the remainder of this chapter is devoted to a brief account of such implications.

It has already been stated that frictional unemployment probably accounts for about 15 per cent of

the official unemployment experienced in Newfoundland. Thus it would appear that little is to be gained from improving (if possible) the efficiency of Newfoundland's labour market in matching the short-duration unemployed with available jobs. Two points must be remembered, however. The provincial aggregate unemployment rate is the highest in Canada (15.6 per cent in 1977). Thus even if frictional unemployment accounts for only a small proportion of aggregate unemployment, the magnitude of such unemployment is not necessarily insignificant (actually it is equivalent to about 2.3 per cent of the Newfoundland labour force). There are some gains to be made from reducing this type of unemployment. In fact, economic policies to stimulate aggregate demand and create new jobs can indirectly lower frictional unemployment by increasing the duration of job tenure and decreasing the prevalence of temporary employment.

On the other hand, there is no doubt that the major sources of Newfoundland unemployment lie elsewhere. The unemployed typically experience long-duration spells of unemployment and are required to wait many months before jobs become available. There are cyclical, seasonal, and structural elements at work, which together are much more important than the simple frictional characterization. But neither should we overlook the phenomenon of secular (chronic) unemployment – the relatively high unemployment rates and low participation rates that continue year after year. All this essentially means is that aggregate and selective stimulative policies have considerable *scope* to work successfully in Newfoundland. Such policies need not introduce distortions into the labour market because true and healthy frictional unemployment (recall our discussion in Chapter 1) is relatively small. The net economic welfare gains to be achieved from reducing Newfoundland unemployment are potentially large.

Finally, how does the job and labour market situation in Newfoundland compare with that in Canada as a whole? It turns out that frictional unemployment probably accounts for a sizable proportion of official Canadian unemployment – something like 30 per cent. In individual provinces such as Ontario, and especially Alberta, frictional unemployment may account for as much as 50 per cent of the unemployment experienced in recent years.⁴ Thus the methodology of this study is capable of discrimination. Frictional unemployment, carefully defined, has its time and place in Canada and some provinces. Frictional unemployment, however, does not really play an important role in the Newfoundland labour market picture at the present time.

Addendum

This study is essentially based on the statistical data available to the author as of November 1979. Three months after completion of the empirical work, however, Statistics Canada released the results of a special March 1979 survey, which focused attention on certain aspects of unemployment that are relevant to this study. It was decided, therefore, to include this Addendum to support the final revisions. It has been kept brief, since full details are now available in another widely circulated publication [Statistics Canada (1980), pp. 79-113].

The issue at hand concerns the topic discussed in the third section of Chapter 2. There it is found, on the basis of a special March 1978 survey (combined with an annual indicator exercise), that the official unemployment rates for Canada, and particularly Newfoundland, underestimate the total unemployment rates in the year 1978:

	Canada	Newfoundland
	(Per cent)	
Official unemployment rate	8.4	16.4
Total unemployment rate	10.3	23.9

Total unemployment includes the "hidden unemployed" – persons who want work and are available for work but are not actively seeking employment (during the survey reference period). One reason why this author concluded that these persons could be categorized as "hidden unemployed" was the stringent requirement of *availability* for employment used in the special March 1978 survey. Indeed, all persons who wanted work and were not actively seeking employment but yet responded positively to the question: "Was there *any* reason why you could not take a job last week?" were *excluded* from the survey. Thus they are *not* included in hidden unemployment. This limitation affected over 20 per cent of the relevant population for Canada in March 1978 [see Statistics Canada (1978), footnote 13 and supporting table, as well as Statistics Canada (1980)]. In fact, the strict requirement of

availability for employment needed to qualify for "hidden unemployment" is significantly more stringent than the availability concept used to measure "official unemployment" in the Statistics Canada labour force survey.

One other reason why this author accepted the notion of hidden unemployment stemmed from the fact that the survey evidence presented in Chapter 2 showed that the "hidden unemployed" were already acquainted with labour market conditions, particularly in Newfoundland. There is thus an indirect inference that formal job search was "not worthwhile." Unfortunately, it was impossible to be more precise on this important point, since the March 1978 survey did *not* specifically contain the question: "Why did you not look for work last week?" A very similar question was asked, however, in the more recent March 1979 survey, which was constructed for a purpose analogous to that of the March 1978 special survey. The existence of this additional evidence is the prime incentive for this Addendum. The March 1979 survey contained the question: "What was the *main* reason that you did not look for work last week?" The answers to this question are summarized in Table A-1, for Canada, Ontario, and Newfoundland.

Table A-1

Reasons Given by the Hidden Unemployed for Not Seeking Work, Canada, Ontario, and Newfoundland, March 1979

	Canada	Ontario	Newfoundland
	(Per cent)		
Reasons:			
Believe no work available	35.3	35.6	42.3
Waiting for recall or replies	36.6	23.2	35.5
No reason given	11.8	13.3	19.2
Other	16.1	27.9	3.1

SOURCE Based on data from Statistics Canada.

First, it should be noted that the percentages shown in the table have been adjusted so that the stringent availability requirement discussed above is maintained for the March 1979 survey (otherwise the two surveys would not be comparable). Also, where the Newfoundland sample size is too small to show an explicit number, the "residual" percentage is distributed to conform to the known and comparable Canadian "residual" percentage.¹ Now it is clear that the two main reasons why the designated "hidden unemployed" did not seek work during the reference week were: 1/ they believed there was no work available (at suitable skill level or location); and 2/ they were waiting for recall or replies. Indeed, the two categories together account for about 80 per cent of the Newfoundland population who want work, and are *strictly* available for work, but did not actively participate in job search during the labour force survey reference period. Almost all of the remaining 20 per cent give no explicit reason (possibly indicating some confusion or resentment at this line of questioning). It should also be noted that the survey question relates only to the *main* reason involved. In fact, the dividing line between "believe no work available" and "waiting" must be quite arbitrary for people who want work and are strictly available for work. The survey questionnaire does focus on some particular reasons for "waiting," but it is easy to infer that the great majority of the Newfoundland hidden unemployed are in a *general state of waiting*. This waiting aspect of Newfoundland unemployment probably accounted for as much as 35 per cent of the Newfoundland *total* unemployment picture in the year 1978 (applying the March 1979 special survey evidence to the 1978 annual estimates). On the other hand, for Canada, the general waiting aspect of unemployment was much less important that year, probably accounting for no more than 10 to 15 per cent of Canadian total unemployment.

In conclusion, one might attempt to consider briefly the type of theoretical model that could best describe this aspect of Newfoundland unemployment. It was already stated in the previous chapter that the traditional job-search-theory model does not appear to be helpful in this regard. Is there any alternative? Reviewing the structural characteristics of the Newfoundland job and labour markets exhibited by our empirical results, it is suggested that a *queuing model* might be a more appropriate reflection of at least one aspect of the Newfoundland unemployment problem: the unemployed (both official² and unofficial) typically know where the jobs may be and are *waiting* for them to become available. So far, the queuing model is largely undeveloped in a labour market theoretical context. To some extent, an application to the Newfoundland total unemployment problem would be a rather trivial queuing problem (nonstochastic and largely stationary) especially at the present secularly high unemployment rates with long-duration spells of unemployment. New "arrivals" of official unemployed, however, are probably dependent on queue size – i.e. the waiting time – and this facet is *not* a trivial queuing problem.³

If an appropriate queuing model can be constructed to describe Newfoundland unemployment, then it might be possible to extend the framework of this study to permit a fourth option (or state) thus far neglected: withdrawal from the Newfoundland population – i.e. migration (see the discussion in the first section of Chapter 3). Indeed, once gross flow matrices of the 4 x 4 type are available, we not only have an additional option – e.g. migration, if the waiting period is "too long" – but we also have the opportunity to *link up* the labour flow patterns of the various Canadian regions to the extended labour flow pattern of Newfoundland.

Notes

CHAPTER 1

- 1 Some writers claim that really "tight" labour markets may exhibit high aggregate unemployment rates!
- 2 The study's policy implications are discussed in Chapter 6, together with a summary of empirical results.
- 3 In fact one of the key tables in the study comes from census data.

CHAPTER 2

- 1 Here one might argue that the less educated are more prone to frictional unemployment and that Newfoundland's unemployed have less education than Canada's.
- 2 The analysis is subject to residual-rounding errors and an assumption that the new-entrant/re-entrant proportions for Newfoundland are similar to those for Canada, *after* accounting for the known job-loser and job-quitter proportions.
- 3 This is calculated by subtracting the proportion of job losers (which excludes re-entrants) from the proportion of those who had lost their last job or were laid off (which includes re-entrants) and then dividing by the proportion of unemployed who are re-entrants. For Newfoundland this yields $(0.67 - 0.58)/(0.21)$, or 0.43. Then $(1 - 0.43)(0.21)$, or 0.12, is the proportion of Newfoundland's total unemployed who are re-entrants *and* who are not previous job losers. The calculations for Canada are completely analogous.
- 4 See Chapter 5, although temporary layoff is considerably less important in Newfoundland than in Canada as a whole.
- 5 Here, we follow Salant (1977). The word "interrupted" means that the spell is examined prior to its completion. The full development of the following statements requires an excursion into advanced probability theory, which is outside the scope of the present study.

- 6 Note that we are now dealing with the unemployment structure for one month, March 1978.
- 7 This study is only incidentally concerned with seasonal fluctuations, which obviously require "monthly analysis" [see Wilson (1979)].
- 8 The total of the "discouraged worker" group is used and not just the part that appears to represent seasonal impacts. The latter makes up about one-half of the total group in Newfoundland and about one-third in Canada.

CHAPTER 3

- 1 This abstracts from extremely short-duration (and nonobserved) transition states [see discussion in Lockett (1979)].
- 2 The results are averaged monthly over the multi-year period 1968-76.
- 3 It is possible to present these results for Canada in 1976. We have chosen 1977 because other corresponding data in Chapter 4 are only available for that year. Also, the Newfoundland demographic data have not been released by Statistics Canada because the data at that level of disaggregation are considered to be statistically unreliable.
- 4 For proof that these calculations actually determine the "average duration of completed spells" under reasonable economic conditions, see Clark and Summers (1978), pp. 35-36. A simpler proof, however, could proceed as follows. Consider, for example, the average duration of completed spells of unemployment, D_{uu} . Then, under a steady state assumption, the flows into unemployment (or new spells of unemployment) equal the flows out of unemployment. This implies that

$$sL = U(P_{ue} + P_{un}),$$

where s represents the frequency of unemployment spells; L is the labour force; U is the number of unemployed; and P_{ue} and P_{un} are defined as in the text. But it is also known that

$$(U/L) = sD_{uu} .$$

By combining the two above relations we derive

$$s = sD_{uu} (P_{ue} + P_{un}).$$

However,

$$(P_{ue} + P_{un}) = 1 - P_{uu}$$

so that

$$D_{uu} = 1/(1 - P_{uu}).$$

- 5 The use of the term "nonemployment" in this study differs from that in Clark and Summers (1979).
- 6 It should be noted that completed spells in the labour force are *not* simply equal to the sum of completed spells in employment and unemployment. There is a dependence relationship, but that is all!
- 7 Clearly, $P_{uu}/(P_{uu} + P_{ue})$ is the required conditional probability.
- 8 This study does not appear to use calculation 5A, and calculation 6 (average duration of completed spells of nonemployment) is not performed.
- 9 This is because the "women, 25+" group carries more weight in Canada's case and exhibits the longest duration of completed spells of unemployment with no withdrawal.

Appendix to Chapter 3

- 1 These figures are derived from the original unrounded survey data,

CHAPTER 4

- 1 In Clark and Summers (1979), they report on a work experience survey covering four years.
- 2 The summation ($nu + eu$) uses the notation of the previous chapter and so is based on gross labour flow data. Multiplication by 12 is required to translate monthly annual average data into annual data. See Clark and Summers (1978) for a similar method.
- 3 Some "total spells per unemployed" data were separately obtained, but these data were evidently calculated by an arbitrary procedure and were found to be contradictory in some cases. We also need "spells of employment" data, which could not be obtained separately, except by the method explained in category 6.
- 4 We do *not* claim that Canada/Newfoundland differences in this category are significant.

- 5 Except for some minor approximation errors resulting from employment entrance (from either unemployment or outside the labour force) during the first month of the year.
- 6 These weights come from the same body of data used to produce Table 4-3.
- 7 This section could be omitted by nontechnical readers without loss of continuity.
- 8 There is one exception: the special March survey of "hidden unemployment" is available for 1978 only.
- 9 One might argue that "hidden unemployment" is somewhat magnified in 1978 compared with 1977, because the Newfoundland official unemployment rate was higher in the former year and because hidden unemployment is more than proportional to official unemployment.
- 10 It should be recalled that originally S was largely based on gross labour flow data. The approximation error arises from the use of *completed* spell duration calculations to estimate the number w , which includes both completed and incomplete spells of unemployment. But this error is small when analysing unemployment. The method *cannot* be used to analyse employment.
- 11 The reader could review the procedures in the previous section to see how this is possible.
- 12 Clark and Summers (1979), Table 1, clearly shows, at least from U.S. unemployment experience, that higher rates of unemployment are associated with lower proportion measures of characteristic 8. These variations were used to approximate the impact of Newfoundland's high unemployment rate, together with known unemployment structure, on the probable magnitude of the required characteristic 8.

CHAPTER 5

- 1 Actually, successful job search mostly occurs outside the labour force (or even on the job) so that the traditional job search theory is of limited value. We also know that the average duration of employment spells is short (more details further on in this chapter and in the concluding chapter).
- 2 The scope of structural unemployment can also be extended to include economic market and institutional rigidities [see U.S. Department of Labor (1979)].
- 3 For example, 90 per cent of those employed in fishing in Newfoundland are self-employed. Also, most of the unpaid Canadian family workers are in agriculture.

- 4 On the other hand, each job vacancy is assumed to be "searching" for one worker.
- 5 Job tenure duration equals employment duration multiplied by one, minus the proportion of workers who change jobs with no unemployment.
- 6 See again the proportions of unemployment attributable to job losers in Chapter 2. Also, demographic factors could only explain a minor part of the differences shown in Table 5-3.
- 7 Recall that the duration category distribution of job tenure in Table 5-2 is biased "to the right."

CHAPTER 6

- 1 This estimate is for the year 1977 and is based on unemployment spells of two months or less.
- 2 This particular result holds true for both Canada and Newfoundland.

- 3 This estimate is based on the assumption that the proportion of job changers who experience no unemployment ranges between 0.5 and 0.6.
- 4 These results have not been formally estimated but are indicated by indirect and related evidence. This study could be extended to obtain the frictional unemployment results for most Canadian provinces.

ADDENDUM

- 1 This very minor adjustment does not affect the significance of the results but is convenient (and reasonable) for discussion purposes.
- 2 Official unemployment, characterized by job search of long duration, does not exclude the phenomenon of "waiting," particularly when combined with periods of labour force withdrawal.
- 3 L. Copithorne, Director of the Newfoundland Reference, has also suggested the serious problem of "queue-jumping."

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