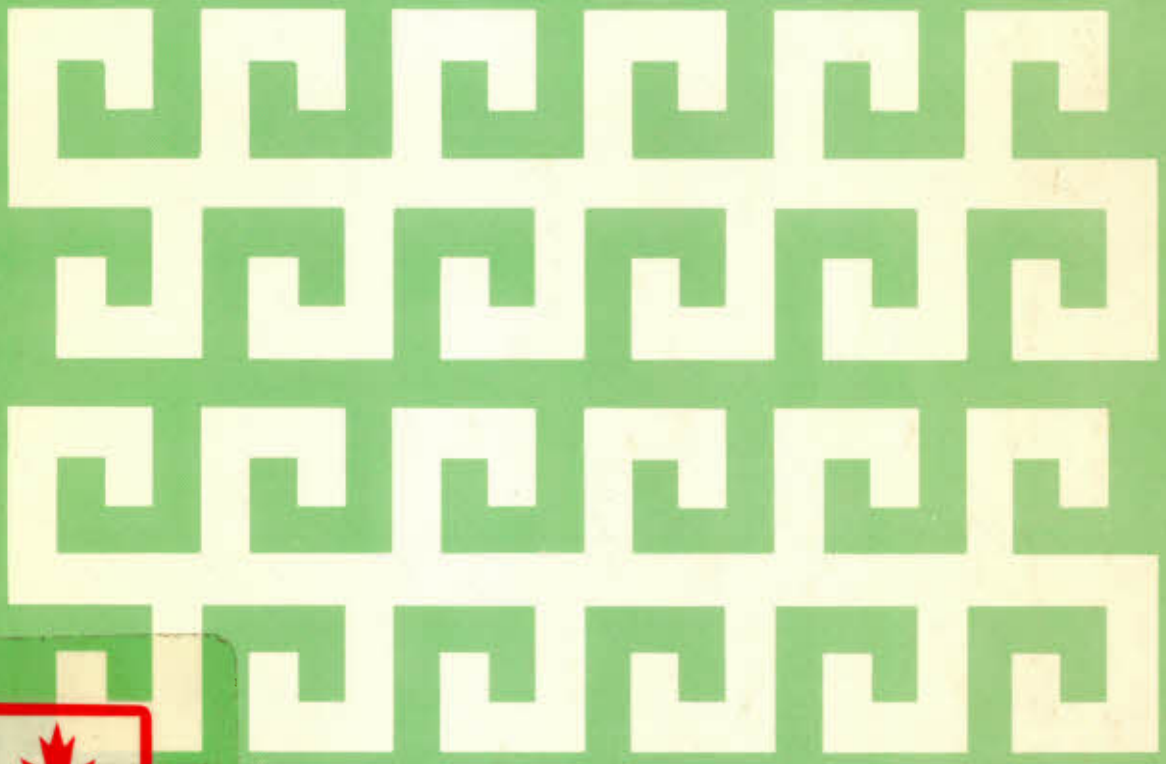
An Analysis of Turnover in Ontario Industrial Establishments

Norman Leckie
Gordon Betcherman
Keith Newton



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The findings of this Study are the personal responsibility of the authors and, as such, have not been endorsed by Members of the Economic Council of Canada.

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Preface

This study is an outgrowth of the research on the quality of working life, and labour market analysis, undertaken by the Social Indicators Group of the Economic Council. It owes its genesis to the consultation between members of that group and staff members of the Research Branch of the Ontario Ministry of Labour (OML) when the latter were designing their survey of turnover and absenteeism. Continued collaboration with OML's research branch raised the possibility of our attempting a more detailed analysis of the quit-rate data yielded by that survey, as a follow-up to the broader descriptive material contained in the OML publication by Robertson and Humphreys (1978). We were fortunate in obtaining access to OML's data and the co-operation and advice of its research staff.

Detailed critical comments from Richard Freeman of Harvard University, Robin Rowley of McGill University, James Price of the University of Iowa, and Tim Hazeldine of the Economic Council contributed greatly to the final version of this study. Two directors of the Research Branch of the Ontario Ministry of Labour — Mike Skolnik and, more latterly, Gerry Swartz — gave us support and encouragement. The staff of the Branch offered many useful comments and criticisms in a working seminar based on an initial proposal. We owe a special debt of gratitude to Gordon Robertson who collaborated closely with us and offered many helpful suggestions. Our colleagues in the Social Indicators Group offered critical advice. Rita Sunstrum and Jocelyne Parisien did the typing and proofreading. We thank them all, while absolving them from any responsibility for the shortcomings of the study.

An Analysis of Turnover in Ontario Industrial Establishments

1 Introduction

Turnover is an important natural concomitant of social and economic adjustment to the processes of growth and change. Its importance derives from its associated benefits and costs to individual workers, to employers, and to the economy as a whole. For individual workers, turnover may entail the relinquishment of a present job for the prospect of a superior set of social, psychological, and monetary returns elsewhere. For employers, excessive turnover may involve burdensome expenses of recruitment and training, while too little turnover may result in the accumulation of employees who have passed their productive peak. A more macroscopic approach might examine the significance of turnover in the trade-off between labour mobility and work-force stability: mobility, which is essential for the efficient allocation of society's resources, versus work-force stability which employers require for the efficient utilization and development of their own manpower.

It is apparent, then, that turnover is of concern to workers, employers, and policy-makers alike. Furthermore, it is a phenomenon that can be analysed from the standpoint of a number of social science disciplines. It may, for example, be viewed by sociologists, psychologists, or organization theorists as a reflection of dissatisfaction with conditions of work, and its implications for organizational health and profitability have led to its close scrutiny by personnel managers. In addition, the relationship of turnover to wages and indicators of cyclical activity has attracted the attention of economists. Despite these many approaches, however, most of the investigations up until now have been unidisciplinary in nature.

Another characteristic of past studies of turnover has been the lack of emphasis on establishment-level analysis. For the most part, researchers have focused upon the individual worker as the unit of observation. Any studies of a more macroscopic nature have tended to consider turnover within the setting of an industry or the economy as a whole. Certainly, these concentrations have been largely dictated by data considerations; as a consequence, however, there exists a lack of understanding regarding the impact of establishment (or organizational) factors upon turnover.

These past research deficiencies constitute a primary consideration in this study, which proposes and evaluates a model to explain variations in quit rates among a sample of private sector industrial establishments, in which the company is the unit of analysis. In the formulation of the model, particular attention has been paid to the examination of labour turnover from two of the perspectives mentioned above: that is, as a response to an unsatisfactory work environment *and* as the allocation of labour resources to their optimal place of work. While explicitly recognizing this dual aspect, the impact upon turnover rates of industry, labour market, and particularly organizational variables, is considered. In addition to proposing a more eclectic approach to turnover, it is hoped that, in utilizing data from the province of Ontario, the study will relieve, to some extent, the paucity of empirical research carried out in the Canadian context.[1]

Before proceeding to outline the structure of this paper, we shall briefly consider what constitutes turnover, both in a denotational sense as well as within the specific context of this study. Stated simply,

"turnover" is the movement of employees across the boundaries of organizations and/or labour market states. This movement includes both "hirings" and "separations," and the latter, in turn, can be classified as *involuntary* or *voluntary*. Involuntary separations are initiated by the employer and usually take the form of dismissals, layoffs, and retirements. On the other hand, voluntary separations or "quits," as they are commonly called, are employee-initiated.[2]

As Price (1977) points out, involuntary and voluntary separations are actually two quite distinct phenomena with different sets of determinants. For the purpose of analysis, then, these two types of separations cannot be considered simultaneously. In light of this, research on turnover has generally focused upon quits for the following reasons: first, most separations *are* voluntary; and, second, quits are more subject to control by organizations than are other types of separations. This convention of considering only voluntary separations in the analysis of turnover will be adhered to in this study.

The study is set up in the following manner. In the next chapter, existing relevant literature is reviewed, and it is argued that despite the fact that researchers concerned with turnover have emerged from a number of disciplines, there remains a need for multidisciplinary approaches to this subject. In striving for such a method, a diverse group of variables is included in our theoretical framework, which is described in Chapter 3. On the basis of this framework, our explanatory model of establishment quit rates and the operationalization of its variables are discussed in Chapter 4. The results of the empirical test of this model are described in Chapter 5. Finally, the conclusions of the study and suggestions for future research are presented in Chapter 6.

2 A Review of Previous Research

A great deal has been written on the subject of labour turnover,[1] and, as we have mentioned, this output has included a variety of approaches. The present chapter is by no means intended to provide a comprehensive review of the vast body of research. Rather, it is meant merely to impart the flavour of the main ingredients of the turnover literature. While the various approaches sometimes overlap, there may be heuristic value in categorizing them as psychological, managerial, and economic.

THE PSYCHOLOGICAL PERSPECTIVE

This perspective is primarily concerned with job satisfaction, its determinants, and its relationship to voluntary separations.[2] One of the earliest and most significant examples of this approach is the "employee participation" model of March and Simon (1958).[3] According to their framework, the likelihood of an individual to quit is partly dictated by what they have termed "the perceived desirability of leaving the organization," which is, in effect, job satisfaction. In a similar vein, Porter and Steers (1973) also emphasize the role of job satisfaction in the decision to quit. More specifically, they view job satisfaction, and hence voluntary turnover, as the product of the interaction between the employee's expectations and the actual conditions describing the job.

While the psychological perspective is certainly important in understanding turnover, it is not necessary for our purposes to review this portion of the literature in any detail. Individual perceptions and expectations are major considerations in this approach; but, as we shall see, this perspective cannot be effectively incorporated into our model, which employs the establishment, rather than the individual worker, as the unit of analysis.

THE MANAGERIAL PERSPECTIVE

Studies that can be placed within this category are primarily concerned with the extent to which the organization achieves its goals and therefore survives as a system. As it may not contribute to (and often impedes) goal attainment, turnover is accordingly viewed as dysfunctional. Since research carried out from this perspective is dominated by management and administration analysts, the usual focus is upon the costs of turnover and methods of reducing its frequency.

This kind of approach is typified by Peskin (1973) who argues that, for the company, the true cost of turnover is not limited to the tangible expenses related to the recruitment and training of new employees. In addition, the incidence of turnover results in less visible organizational costs, such as the break-up of work units, depressed morale, and decreased productivity. While Peskin offers advice on how the firm might design turnover reduction programs, he does not analytically consider the determinants of voluntary separations.

Hawk (1976) also approaches the subject of turnover from a managerial orientation. In contrast to Peskin, however, Hawk does attempt to explain the factors underlying turnover and concludes that job dissatisfaction and alternative employment opportunities will both have an effect on whether the worker will leave the job. Hawk argues that, in many cases, work withdrawal will initially take the form of absenteeism but eventually will result in separation from the job. When does absenteeism lead to turnover? Hawk does not explicitly consider this question, but one is left with the impression that the significant intervening variable is the existence of alternative employment opportunities.

A final example of research carried out from a managerial perspective is that of Knowles (1976), who also focuses upon the costs of turnover. Knowles' inquiry, however, differs from that of Peskin and of Hawk in the following ways: first, it is based upon primary empirical data, and, second, it examines turnover in the context of a comprehensive set of organizational variables. Specifically, Knowles analyses 14 sections of an engineering company with respect to performance, job satisfaction, and work withdrawal (including turnover) variables. While he makes no attempt to identify the occurrence of causality among these factors, Knowles does find that strong patterns of interrelationship exist; that is, sections with high labour turnover also tend to be characterized by high levels of anxiety, absenteeism and industrial unrest, inferior performance rates, and low levels of job satisfaction. Thus Knowles concludes that turnover sensitively reflects the extent of the deterioration of the work unit and therefore is a valuable indicator of organizational dysfunctioning.

THE ECONOMIC PERSPECTIVE

For the most part, research carried out from this perspective has focused upon the relationship of turnover to wages and also to the supply and demand characteristics of the labour market. The first issue, that of turnover and wages, considers the effects of variations in levels of pay and rates of pay increases on the movement of labour. The second, on the other hand, is concerned with the impact of the labour market structure, specifically regarding its degree of tightness, upon the separation rate.

WAGES

The classical wage model of the competitive labour market assumes that all workers will attempt to receive the highest possible income for their labour. Accordingly, individuals will be attracted to jobs offering superior material benefits of employment. Given this, it has been customary for economists studying turnover to hypothesize the existence of a strong negative relationship between wages and the separation rate.

In his codification of turnover findings, Price (1977) points out that previous studies have consistently identified pay as a determinant of separations.[4] Furthermore, he finds strong support for the suggestion that not only the level of pay but also changes in those levels have negative causal relationships with turnover. Hill (1962), in his analysis of the British coal-mining industry, also concludes that the incidence of turnover is responsive to the earnings factor. Generally, he found that average separation rates were approximately twice as high in collieries with very low wages as in those with very high wages. By means of regression analysis, however, Hill finds that while current establishment wage levels do influence separation rates, recent changes in these levels do not. MacKay et al. (1971) arrived at a similar conclusion following their longitudinal examination of turnover among manual workers in 66 engineering plants. The authors concluded that "plant quit rates (and separation rates) were a decreasing function of the *level* of plant earnings [but] were *not* systematically related to absolute or percentage *changes* in plant earnings" (p. 163).

Stoikov and Raimon (1968) also consider the relationship between wages and turnover in their study of quit-rate differences among 52 industries. In contrast to Hill and MacKay, however, they found that *both* the level of wages and the magnitude of recent wage changes were significant determinants of the quit rate.[5] While the impact of the former variable was greater than that of the latter, each had a regression coefficient that was statistically significant for both 1963 and 1966. It should also be noted that the direct effect of these monetary factors upon the quit rate was greater in 1966 when business conditions were good and unemployment was low than in 1963 when less favourable economic conditions existed. A possible explanation for this is that, as we shall see below, the competition for labour resources increases in a burgeoning economy and, accordingly, workers are more likely to be dissatisfied and eventually repelled by low material rewards.

Economic Conditions

This brings us, then, to the second major issue of turnover considered within the economic approach — that is, the impact upon quit rates of the prevailing economic conditions, specifically as they are manifested in the supply and demand characteristics of the labour market. In a period of economic expansion, the labour market generally tightens (that is, excess demand for labour begins to appear in certain markets), and voluntary turnover tends to rise. Conversely, as the economy contracts, the labour market becomes looser, and the incidence of quits can be expected to decrease. This influence of the prevailing economic conditions, as manifested in labour market tightness, has long been recognized by observers of turnover.[6]

The fundamental concepts embodied in the relationship between economic conditions and the incidence of voluntary separations are "alternate employment opportunities" and the "local labour market." The former is significant, since virtually all individuals quit their jobs with the intention of securing other work rather than leaving the labour force entirely.[7] Given this serial characteristic of employment spells, the availability of alternate employment opportunities becomes a significant factor in the decision to quit. The latter concept emerges when one considers that the job search area for most individuals is geographically limited.[8] Accordingly, in evaluating the extent of relevant job possibilities, it is logical to look at those conditions prevailing in the *local* labour market.[9]

An example of research that incorporates both of these concepts is the previously cited study of MacKay et al. Their analysis, which was limited to manual workers, covered an eight-year period and included plants located in five separate geographical areas. Thus the authors were able to observe the incidence of turnover under a variety of local labour market conditions. As would be expected, they found that quit rates were positively related to the ease with which alternative jobs could be obtained. MacKay and his associates also concluded that *current* employment conditions were the best determinants of quit rates; that is, there was very little evidence of a lagged relationship between the level of unemployment and voluntary separations. According to the authors, this finding could be expected as previous studies suggest that "job search is usually carried through quickly and that little notice is required, or given, of termination of employment" (p. 186).

Certainly, then, economic conditions have a major effect upon voluntary separation rates.[10] It is evident that the opportunity of finding alternate employment is the primary determinant underlying this relationship. Silcock notes, however, the existence of secondary factors. First, as the demand for labour decreases (that is, as unemployment rises and job vacancies drop), the pool of candidates for a position will generally increase. As a consequence, a better selection is possible and this, in turn, heightens the probability of a successful job/worker match that will be less susceptible to turnover in the subsequent cyclical upswing. The second factor to be mentioned follows from the fact that quit rates are inversely related to the length of service. New entrants to an organization have the highest rates of voluntary separation.[11] In recessionary

conditions, however, firms take on fewer additional workers; those with jobs endeavour to retain them; the size of the short-service (for example, from 0 up to 25 weeks) group diminishes; and the decreasing quit-rate potential is, *pari passu*, reinforced.

3 The Theoretical Framework

The different approaches outlined in the preceding chapter attest to the multidimensional charater of turnover.[1] As we have seen, the incidence of turnover has been viewed, by different researchers, as the product of a variety of factors ranging from the personal characteristics of the worker to the magnitude of excess demand in the labour market. In this chapter, we shall attempt to incorporate several of these determinants into an integrated framework to explain voluntary separation rates *in organizations*.

As a point of departure for establishing our own theoretical framework, it should be kept in mind that organizations are essentially collections of people. Consequently, the analysis of establishment quit rates requires an understanding of the factors dictating the *individual's* separation choice. Previous research shows that the personal decision to quit clearly hinges on two immediate determinants: the desirability of leaving one's existing job and the ease of finding alternate employment. Ideally, then, a framework to analyse *organization* turnover rates would also consider both a "desirability of movement" and an "ease of movement" component.

Unfortunately, difficulties emerge when we attempt to put into operation a model that strictly follows such a theoretical framework. Specifically, the major problem rests with the "desirability of movement" component, which essentially reflects the degree of job satisfaction. As we saw in the previous chapter, job satisfaction is a function of *both* the employee's expectations and the actual job conditions. Unfortunately, neither the scope of our organization-level study not the nature of data available to us permits the consideration of individual expectations.[2] On the other hand, the second determinant of job satisfaction — the conditions of work in the establishment — can be included. It is this latter factor, then, rather than the more encompassing "job satisfaction," that must constitute the central determinant of the "desirability of movement" component in our approach.[3]

A MODEL TO EXPLAIN ESTABLISHMENT QUIT RATES

Our model of organization quit rates is illustrated in Figure 3-1. The essential relationships can be set out in linear fashion, as follows:[4]

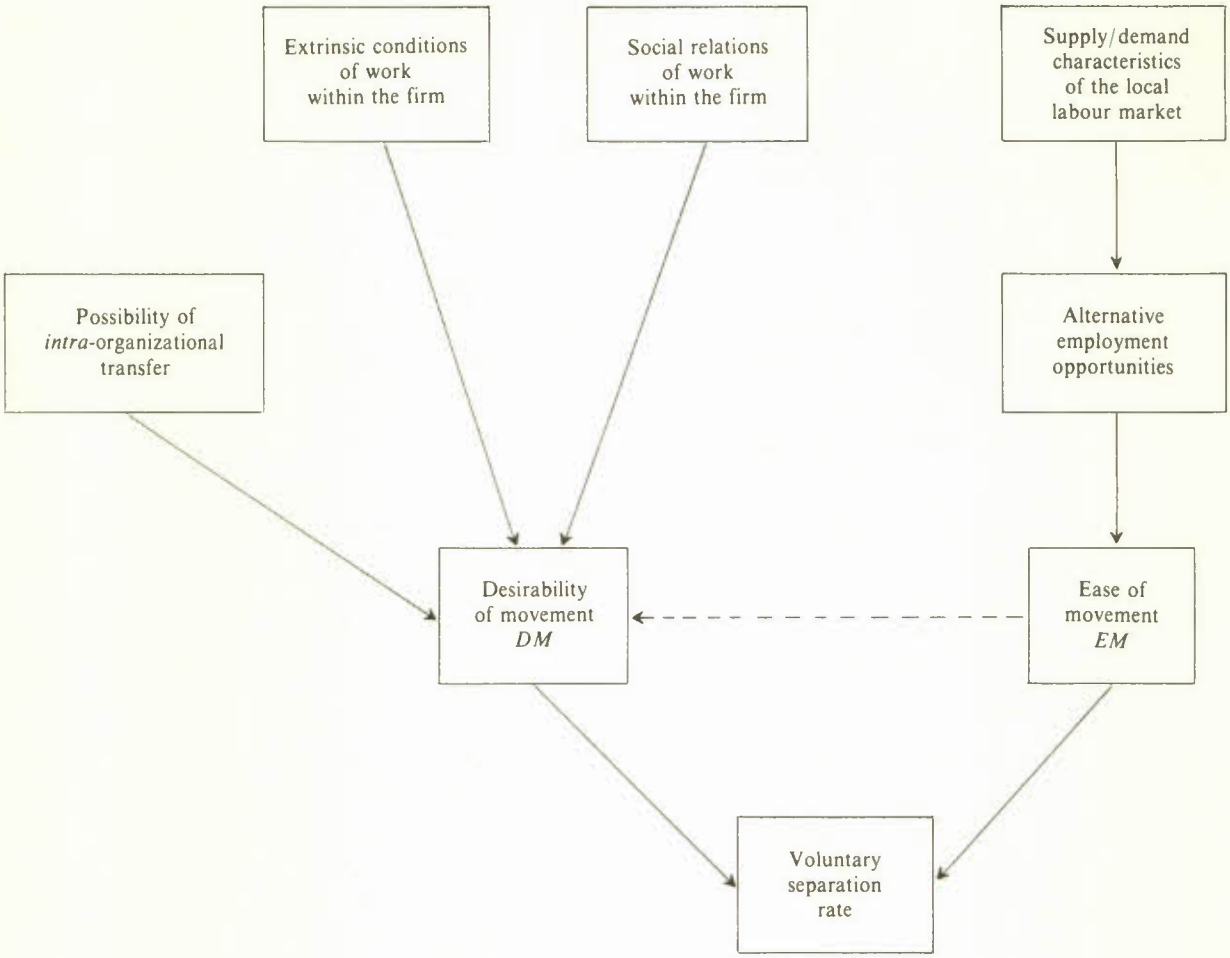
(1) Quit rate = f (desirability of movement, ease of movement).

In turn, the two components of this function may be specified further.

(2) Desirability of movement = f (extrinsic conditions of work, social relations of work, intra-organizational transfer possibilities).

(3) Ease of movement = f (local labour market conditions).

Figure 3-1
The Determinants of Voluntary Separation Rates in Organizations



Essentially, the "desirability of movement" (*DM*) component attempts to capture various aspects of the conditions of work (such as the quality of working life) within the establishment. In evaluating the work environment, this *DM* component considers the company's extrinsic conditions of work and the organization's social relations. Basically, the former factor consists of the material benefits of employment and working conditions within the firm. While extrinsic conditions are obviously important, they do not constitute the sole factor dictating the quality of working life. Accordingly, the determinant that we label "the social relations of work within the firm" has been included. It is intended that this factor will capture the company's overall social climate or, in other words, its nonmaterial conditions of employment. It is frequently asserted, for example, that size, bureaucratization, and alienation go hand in hand, so that one might expect workers in larger firms to have a higher propensity to quit.[5] In-plant social relations might also be expected to be affected by the age of the company, its financial success, the presence of a union, and the attitudes of its management.[6]

As Figure 3-1 shows, the desirability of movement can also be influenced by a secondary factor which, following March and Simon, we have labeled "the possibility of intra-organizational transfer." Technically, a separation is recorded only if the individual leaves the formally defined organization; therefore, a change of jobs within an organization is not classified as turnover. In light of this, the larger the organization, the

less the perceived desirability of leaving as employee dissatisfaction can be increasingly accommodated by intra-organizational transfer rather than separation.

The "ease of movement" factor is our other primary determinant of the voluntary separation rate. This component considers the effect of opportunities (in the local labour market) for alternative employment upon the firm's quit rate. As we have seen, the degree of market tightness generally has a significant influence on the incidence of turnover.

These determinants, which constitute the theoretical framework, as well as our associated hypotheses and the corresponding data are described in the following chapter.

4 Specification of the Model

Having developed a theoretical framework, we shall now turn to our quit-rate model in its estimable form. This chapter will begin with a few remarks concerning the collection of the requisite data, and then we shall present a detailed compendium of all the variables used.

COMPILATION OF THE DATA

As we have mentioned, relatively few previous studies have focused upon intercompany variations in turnover. Undoubtedly, the paucity of analysis at this level (and particularly in this country) has been largely attributable to a lack of available data. Fortunately, we gained access to the extensive turnover data base that emerged from the *Survey of Absenteeism, Turnover, Strikes, and Employment Trends* that was carried out by the Ontario Ministry of Labour (OML) in 1975. While the results of this survey constitute our principal information base, it was necessary to refer to several additional sources in order to adequately test the complete model; these included Statistics Canada's Establishment Survey and Labour Force Survey and a number of sources concerned with corporate financial data. The task of marrying these diverse inputs into a comprehensive data base appropriate to our needs involved much time, although we feel the uniqueness of the result warranted our efforts.

THE FINAL EQUATION

Following our theoretical framework and on the basis of data availability, our final equation appears as follows:

$$(1)\quad QUITR_i = b_0 + b_1 PAY_i + b_2 PAYINC_i + b_3 HOUR_i + b_4 SIZE_i + b_5 UNION_i + b_6 AGENEW_i + b_7 PGROW_i + b_8 TIGHT_i + u_i$$

where

$QUITR_i$ = the voluntary separation rate in 1975 for firm i;

PAY_i = the average *level* of earnings (per hour) in 1975 for those employed in the industry of firm i;

$PAYINC_i$ = the *growth* in weekly earnings during 1975 for those employed in the industry of firm i;

$HOUR_i$ = the average weekly "usual" hours in 1975 for those employed in the industry of firm i;

$SIZE_i$ = the number of workers employed in 1975 by firm i;

$UNION_i$ = a dichotomous variable taking the value *1* if at least 50 per cent of the employees of firm *i* are union members and 0 otherwise;

$AGENEW_i$ = a dichotomous variable taking the value *1* if the age of firm *i* is less than six years and 0 otherwise;

$PGROW_i$ = the average annual growth of profits from 1973 to 1975 of firm *i* (or its parent organization, if one existed); and

$TIGHT_i$ = the tightness of the regional labour market of firm *i*.

In order to conclude our description of the model, we shall now discuss each of these variables and explain their computation.[1]

The Dependent Variable

The dependent variable *QUITR* in equation (1) is the firm's voluntary separation rate. It is calculated as follows:

$$(2)\quad QUITR_i = \frac{QUIT_{i\,1975}}{SIZE_{i\,1975}} \cdot 100$$

where

$QUIT_{i\,1975}$ = the number of voluntary separations (quits) from firm *i* in 1975; and

$SIZE_{i\,1975}$ = the average size of the labour force of firm *i* in 1975.[2]

The information on establishment quits and size was obtained from the Ontario Ministry of Labour survey mentioned above.[3]

Variables Describing the Desirability of Movement (*DM*)

As we mentioned in the previous chapter, the *DM* component is essentially concerned with various aspects of the quality of working life within the establishment. The "desirability of movement," then, largely depends upon the nature of the "total employment package."[4] For present purposes, we focus on two major elements of that package: the extrinsic conditions of work and the social relations of work. The possibility of intra-organizational transfer is also included as a determinant of the *DM* component.

Extrinsic Conditions of Work

Our model includes two contextual aspects of the firm's extrinsic conditions of work: earnings and hours.[5] As a result of the inaccessibility of information on these variables for each company, we gathered these data at the industry level.[6]

Earnings — To measure the earnings factor, we utilize both a wage *level* variable (*PAY*) and a wage *growth* variable (*PAYINC*).

The wage level variable, *PAY*, is calculated as:

$$(3)\quad PAY_i = \frac{E_{i\,1975}}{HOURA_{i\,1975}}$$

where

$E_{i\,1975}$ = the average weekly earnings in 1975 for workers employed in the industry of firm i;[7] and

$HOURA_{i\,1975}$ = the average number of "actual" hours worked per week by employees in the industry of firm i.[8]

The *PAY* variable, then, measures the average hourly earnings for the industry of the company, and we would expect it to have a negative relationship with the firm's voluntary separation rate.

The second earnings variable is *PAYINC*, which is calculated as:

$$(4)\quad PAYINC_i = \frac{E_{i\,\text{Dec. }1975} - E_{i\,\text{Dec. }1974}}{E_{i\,\text{Dec. }1974}} \cdot 100$$

where

$E_{i\,\text{Dec. }1975}$ = the average weekly earnings in December, 1975 for workers employed in the industry of firm i; and

$E_{i\,\text{Dec. }1974}$ = the average weekly earnings in December, 1974 for workers employed in the industry of firm i.

This variable, then, measures the percentage rate of growth during 1975 of average weekly earnings for the industry of the company. We would expect a negative relationship to exist between *PAYINC* and *QUITR*.

Hours — The other job context variable considered is *HOUR*, which represents the average number of hours usually worked per week in each industry during 1975. By employing *usual* hours, then, we hope to capture the impact of the standard work week length on quit behaviour.[9] A classical interpretation of the "work-leisure" choice would lead us to expect that the greater the number of hours that one is obliged to work, the more likelihood of separation. Thus we would anticipate a positive relationship between *HOUR* and *QUITR*.

Social Relations of Work

The social climate within a firm may also have a significant effect upon the quit behaviour of its workers. We consider four different establishment characteristics in order to measure this factor, which we have labeled the "social relations of work."[10]

Establishment Size — The first of these characteristics is establishment size, which represents the average number of workers employed by the firm in 1975 (as calculated according to footnote 2).[11] Inconsistent conclusions have emerged from previous turnover research on the effects of size [Price (1977, p. 89)]. It is our contention that this lack of consensus is due to the plurality of ways in which this variable can affect the separation rate. From the aspect of social relations, however, we expect that *SIZE* and *QUITR* are positively related. Our argument here is that personal communication and integration may be inhibited in large firms; as a consequence, the employees would be more likely to experience impersonality and alienation and therefore to express their dissatisfaction by quitting.[12]

Union Status — Another "social relations" factor that is expected to influence the firm's voluntary separation rate is the existence of a union. Accordingly, we have introduced the dichotomous *UNION*

variable into our equation. We have considered an establishment to be "unionized" if at least 50 per cent of its employees were covered by a collective agreement in 1975.[13]

The anticipated effect of *UNION* upon *QUITR* follows the "exit-voice" approach employed by Freeman (1976).[14] He argues that two sets of behaviour are available to workers for the expression of dissatisfaction at the work place. They can *exit* — which takes the form of quits and related behaviour — or they can remain on the job and *voice* their demands for improvements. Only the latter mechanism requires the presence of a union; that is, exit behaviour can be carried out on an individual level, but voice can only be effective if it is expressed collectively. A union, then, can provide dissatisfied workers with an alternative to separation, and we would therefore expect a negative coefficient for the *UNION* variable.

Establishment Age — The influence of establishment age upon voluntary separation rates has not generally been considered in previous turnover research. To test the impact of this factor, however, we have employed the dichotomous (yes/no) variable *AGENEW*, which identifies "new" firms (in operation five years or less) from all others.[15] We hypothesize that these young firms will tend to have higher quit rates than their older counterparts. First, these newer companies may have less experience in dealing with human resource issues. In addition, they may be preoccupied with immediate survival and therefore pay less attention to the social problems of the work place. And, finally, these young firms must logically be staffed with relatively new employees; therefore, such establishments are susceptible to the high rates of separation that tend to accompany short lengths of service.

Financial Viability — The final social relations variable incorporated into our model is an indicator of the organization's financial viability. We hypothesize that firms that are experiencing monetary success will have relatively low rates of voluntary separation. First, workers employed in a growing and successful company may value their membership in a successful enterprise and may therefore have a positive sense of organizational identification. Second, financially healthy firms will have a greater capacity for personnel resources.

In order to obtain a measure of each respondent's performance in this area, we consulted the Financial Post's *Survey of Industrials* and *Survey of Mines*, Standard and Poor's *Standard Corporation Descriptions*, and *Moody's Industrial Manual*. As a result of the complexities of modern corporate ownership, however, the matching of these financial data to the Ministry of Labour's survey reporting units was occasionally problematic.[16]

Based on these data, the specific variable used as an indicator of the organization's financial health is *PGROW*, which is calculated as follows:

$$(5)\quad PGROW_i = 1/2 \left[\frac{P_{i\,1975} - P_{i\,1974}}{P_{i\,1974}} + \frac{P_{i\,1974} - P_{i\,1973}}{P_{i\,1973}} \right] \cdot 100$$

where

P_{it} = the profits (net income) in Canadian dollars for the fiscal year t for firm i (or its parent organization, if one existed).

PGROW, then, measures the average annual profit growth rate from 1973 to 1975 of the firm or its parent organization.[17] Our justification for considering the total organization where it exists is twofold: first, workers may tend to identify with the larger entreprise rather than with the local unit, since opportunities for advancement may be viewed in the larger perspective; and, second, the opportunities for generous and innovative personnel policies and practices may well be facilitated by the financial health of the overall organization.

The Possibility of Intra-organizational Transfer

The final determinant of the "desirability of movement" component is the possibility of intra-organizational transfer. As we have mentioned, this factor has been viewed primarily as a function of the company's size. Specifically, larger firms may offer greater opportunities for intra-organizational transfer, which in turn could be expected to inhibit the quit rate. In the event, transfer possibilities may well be a function of the level of employment, so that our dichotomous *SIZE* variable may pick up two influences. That is, the anticipated negative impact of size on turnover hypothesized on the basis of the "transfer possibilities" argument may militate against the anticipated effect of size hypothesized on the "social relations" argument discussed above.

Variable Describing Ease of Movement (*EM*)

The other major component of turnover is the "ease of movement," which considers the influence of employment opportunities in the labour market in which the firm operates. In order to capture this effect, information is required on the supply/demand characteristics (tightness) of the establishment's labour market.[18] Accordingly, we had to obtain statistics on unemployment and job vacancies. While local (municipal) rates might in some cases have been appropriate, these data are unavailable; as a consequence, we collected unemployment and job vacancy rates for ten regions of Ontario. The unemployment rates were gathered from Statistics Canada's Labour Force Survey, while the Ontario Ministry of Labour provided us with the job vacancy rates.[19] On the basis of location, then, the appropriate regional data were attributed to each of our sample's reporting units.

Generally, as employment opportunities in a particular labour market increase, voluntary separation rates can be expected to rise. A measure of the opportunities available is labour market *tightness*, which we compute as:

$$TIGHT_i = \frac{VR_i}{UR_i}$$

where

VR_i = the job vacancy rate in the regional labour market of firm i; and

UR_i = the unemployment rate in the regional labour market of firm i.

As the value of this variable increases, the firm's labour market becomes "tighter" in the sense that the relative accessibility of employment increases. It would be expected, then, that this *TIGHT* variable would be positively related to *QUITR*.[20]

5 Estimation of the Model

We now turn to the empirical test of the model, as it has been specified in the preceding chapter. As the tool of analysis, we have employed ordinary least squares (OLS) to regress our dependent variable (*QUITR*) upon our explanatory variables. The satisfactory application of the OLS procedure requires that certain criteria be met, and these are made explicit in the following section. Next, we present and discuss the actual estimates of our basic equation, along with several alternate specifications. In the final section, we examine our results in terms of their generalizability within the Canadian context.

ASSUMPTIONS OF THE MODEL

In order to carry out the estimation procedure, it has been necessary to make certain assumptions regarding the general nature of the model. First, we have assumed that the model, as it is represented in equation (1), is characterized by linear relationships. This implies that for each of the explanatory variables a unit change will be accompanied by a uniform change in the dependent variable.

In addition, we assume that the error term u_i in equation (1) will capture all those influences that we have failed to incorporate into our model. In order to apply OLS, this random component is expected to meet certain statistical requirements. First, it is assumed that the error term has an expected value of zero. Next, it must fulfil the two-faceted criterion of normality: that the random elements associated with each establishment display constant variance (homoscedasticity) and that they are uncorrelated pairwise so that omitted factors are not the source of hidden interactions among firms. Furthermore, these error terms must not be correlated with the included explanatory variables, in order to avoid confusing the effects of the included and omitted (unknown) variables on the quit rate.

A final requirement of the model is that there must be sufficient orthogonality (variation) among the regressors to enable precise estimation of the associated coefficients. While collinearity does not appear to be a problem in our model, there is a high degree of correlation between *PAY* and *HOUR*. This will be discussed in the next section.

RESULTS AND DISCUSSION

The empirical test of our model was carried out by applying the SPSS regression procedure to our 123-firm sample. The derived OLS estimates for the variable coefficients are presented in Table 5-1. The results of the test of the basic model in equation (1) are shown in the first column of this table, followed by the results for the alternate specifications.

Desirability of Movement (*DM*)

For the most part, the empirical analysis lends evidence to our theoretical interpretation of the relationships between the *DM* variables and voluntary separation rates.

In particular, the three extrinsic (job context) variables *PAY, PAYINC*, and *HOUR* appear to be significant determinants of the quit rate, and the influence of each upon the dependent variable is as anticipated. The results for *PAY* and *PAYINC* strongly suggest that company quit rates are inversely affected by *both* the level of earnings and the rate of recent wage increases across the industry. On the other hand, the entries in Table 5-1 show that the estimated coefficient for *HOUR* is consistently positive. This suggests that longer hours tend to generate higher voluntary separation rates. It should be noted, however, that the estimated coefficient for *HOUR* in the basic equation is significant only at the 10 per cent confidence level. Perhaps this indicates that for some workers longer hours would be desirable, presumably for the additional earnings that they bring.

Before continuing with our discussion of the estimation of the model, we should briefly note the collinearity of *PAY* and *HOUR* ($r = .85$).[1] Since "usual" hours include overtime on a routine basis, which, in turn, affects the hourly earning rate, this high degree of correlation is not unexpected. It is likely that this collinearity restricts the explanatory power of our model against the accurate sorting out of the relative importance of each of these factors.[2]

The results also suggest the significant explanatory power of two variables that affect quit behaviour through the social relations of work. Both of these variables, *AGENEW* and *PGROW*, influence *QUITR* in the expected manner. *AGENEW* identifies those firms in the sample that have been in operation for five years or less, and its estimated positive coefficient demonstrates that the incidence of voluntary separations tends to be higher in the newer establishments. In order to better understand the influence of organizational age upon quit rates, we also introduced this factor as a continuous variable (*AGE*). As column 3 of Table 5-1 indicates, however, the estimated coefficient for this variable has a low significance level. This would seem to suggest, then, that there is not a simple linear relationship between the age of an establishment and its voluntary separation rate. Our results, however, do support the hypothesis that young firms getting started will tend to have higher quit rates than their older and more established counterparts.

The estimated coefficient for the profit growth rate variable *PGROW* is also highly significant, and, as expected, it has a negative sign. This supports the contention that financial success inhibits the establishment's quit rate. An alternate measure of financial viability considered was the growth rate of the organization's sales revenue. As shown in column 4 of Table 5-1, however, the estimated coefficient of this variable (*SGROW*) is too insignificant to suggest that the sales growth rate will affect the incidence of quits in an organization.

The results shown in Table 5-1 indicate that establishment size does not have a major impact upon quit behaviour. It can be seen that the estimated coefficients for the continuous *SIZE* variable (columns 1, 3, 4, and 5) and the dichotomous *SIZE*2 and *SIZE*3 variables (column 2) are consistently insignificant. In light of our earlier discussion, this result is not entirely unexpected. As we mentioned in the preceding chapter, no consensus has emerged from past research on the impact of organizational size upon turnover, and it was our contention that this was probably due to the complex way in which this variable might operate on the decision to quit. Specifically, it was recognized that while greater size might increase the occurrence of anomie-like experiences — and hence the quit rate — it could also have on the other hand, a depressing influence upon the incidence of quits by heightening the possibility of the accommodation of dissatisfaction through intra-organizational transfer. From its insignificance in the empirical analysis, then, the overall effect of company size remains uncertain.

Table 5-1

Results of Regressing Establishment Quit Rates upon Selected Explanatory Variables[1]

	(1) Basic equation		(2) Alternative 1		(3) Alternative 2		(4) Alternative 3		(5) Alternative 4	
Variable	$\hat{b}$	*t*-statistic	$\hat{b}$	*t*-statistic	$\hat{b}$	*t*-statistic	$\hat{b}$	*t*-statistic	$\hat{b}$	*t*-statistic
PAY	− 7.03[2]	− 2.07	− 4.83	− 1.32	− 6.84[2]	− 1.99	− 7.11[2]	− 2.01	− 7.33[2]	− 2.12
PAYINC	− 1.28[2]	− 3.75	− 1.36[2]	− 4.00	− 1.20[2]	− 3.50	− 1.31[2]	− 3.66	− 1.32[2]	− 3.80
HOUR	4.34[3]	1.90	3.11	1.27	3.39	1.51	4.59[3]	1.92	4.79[2]	2.07
SIZE	− 0.00	− 0.54	...	...	− 0.00	− 0.20	− 0.00	− 0.52	− 0.00	− 0.57
UNION	7.02	1.36	6.79	1.33	9.79[3]	1.88	7.52	1.41	7.42	1.41
AGENEW	17.10[2]	2.33	16.49[2]	2.26	...	...	20.18[2]	2.67	17.76[2]	2.37
PGROW	− 0.11[2]	− 3.08	− 0.11[2]	− 3.09	− 0.12[2]	− 3.26	...	...	− 0.11[2]	− 3.07
TIGHT	112.07[2]	3.18	116.64[2]	3.32	121.31[2]	3.43	120.49[2]	3.25	...	...
SIZE 2	...	...	4.22	0.77	...	...	...	...	...	...
SIZE 3	...	...	− 7.46	− 1.18	...	...	...	...	...	...
AGE	...	...	...	...	−0.16	− 1.42	...	...	...	...
SGROW	...	...	...	...	...	...	− 0.06	− 0.66	...	...
UR	...	...	...	...	...	...	...	...	− 4.48[2]	− 2.34
Constant	− 93.02		− 57.85		− 54.86		− 102.21		− 66.78	
$\bar{R}^2$	.32		.33		.30		.27		.29	
F test	8.20		7.68		7.56		6.56		7.36	

1 Based on a sample of 123 establishments.
2 Significant at the 5 per cent level.
3 Significant at the 10 per cent level.
... Figure not applicable.

The final variable in the *DM* component is *UNION*. It should be remembered that, following the "exit-voice" model of workers' expression of dissatisfaction, we hypothesized that the presence of a union would have a negative effect upon the quit rate. As Table 5-1 indicates, however, the estimated coefficient for *UNION* is unexpectedly positive. Although in the basic model (column 1) this coefficient is significant only at the 20 per cent confidence level, this result would nevertheless lead us to fail to accept the "exit-voice" notion. Perhaps this unanticipated finding can be explained, at least in part, by the communication function carried out by unions. By providing their members with information regarding their existing working conditions and alternative employment opportunities, unions may, in effect, encourage worker mobility.

Ease of Movement (*EM*)

The *EM* component considers the effect of alternative employment opportunities upon voluntary separation rates. In order to estimate the availability of these opportunities, we entered the variable *TIGHT* into our linear function. As described earlier, *TIGHT* is the ratio of an economic region's job vacancy rate to its unemployment rate. As the value of this variable increases, the tightening labour market offers more employment opportunities, and we have therefore hypothesized that the incidence of quits would rise.

As can be seen from Table 5-1, the estimated coefficient for *TIGHT* is highly significant and has the anticipated positive sign. This suggests that, as the market tightens, the quit rate will tend to increase. As an alternate indicator of the labour market's supply/demand characteristics, we substituted the unemployment rate (*UR*) for the tightness ratio. As column 5 of Table 5-1 shows, the estimated *UR* coefficient supports the hypothesis that the unemployment rate will be negatively related to the incidence of voluntary separations.

The testing of the *EM* component variables, then, emphatically supports the anticipated relationship between labour market conditions and turnover. As the opportunity for alternate employment increases, the quit rate can also be expected to rise.

THE GENERALIZABILITY OF THE RESULTS

We conclude this chapter by noting briefly the applicability of our results to the Canadian private sector in general. The analysis of our sample within the context of a relevant universe offers us some insight into this issue. Accordingly, we have compared certain characteristics of our establishments with those of Ontario and Canadian commercial firms in general. The results of this exercise are presented in Table 5-2.

Table 5-2

The Representativeness of the Sample vis-à-vis Ontario and Canadian Commercial Establishments, 1975[1]

	Our sample	Ontario	Canada
Size (average number of employees per establishment)	538	93	87
Unionization (% of paid commercial employees who are union members)	40.8	28.0	30.5
Industrial Structure (% distribution of establishments by industry)			
Forestry	2.43	0.46	1.11
Mining	8.94	0.92	1.58
Manufacturing	41.46	30.68	28.49
Construction	—	8.59	9.05
Transportation, communications, other utilities	4.07	6.35	6.49
Trade	17.89	27.81	26.99
Finance, insurance, and real estate	21.14	7.34	7.99
Service	4.07	18.20	18.25
Total (approx.)	100.00	100.00	100.00

1 The Ontario and Canadian size and industrial structure data are for June 1976.
— Nil

SOURCES G. S. Bain, *Union Growth and Public Policy in Canada* (Ottawa: Labour Canada, 1978); and unpublished Statistics Canada and Labour Canada data.

As this table indicates, our sample consists of firms that are significantly larger than the Ontario and Canadian averages. This bias towards big establishments can be attributed to the sampling process. First, the original group of respondents, obtained from the Ontario Ministry of Labour survey, was taken from the Statistics Canada ES-1 inventory. This list is a census of "larger" firms, which generally excludes those establishments employing less than 20 workers. Furthermore, our use of the "listwise deletion" option of SPSS has excluded those firms in the OML sample which did not provide complete sets of data. Since small establishments tend to collect less comprehensive statistics, this has resulted in a further bias towards large firms.

Table 5-2 also indicates that employees of establishments in our sample have a slightly higher rate of union membership than Ontario and Canadian workers in general. Finally, our sample exhibits some biases regarding the distribution of establishments by industry. As Table 5-2 shows, manufacturing, mining, and transportation and communications are overrepresented in our sample. On the other hand, service and trade are underrepresented, while construction firms are excluded from the sample entirely.

6 Concluding Comments

The aim of this research study has been to design and evaluate a model to explain variations in company quit rates. In this final section, the essential findings of our study will be reviewed within the context of the development of a multidisciplinary theory of turnover in organizations.

Clearly, personal, organizational, and external economic factors all contribute to the explanation of the incidence of separations in establishments. Generally, however, practical considerations have resulted in a concentration of turnover research on the impact of personal and external economic variables and less emphasis on the influence of organizational variables. However, the Ontario establishment survey, which forms the basis of our data set, has provided us with a relatively unique opportunity to use the experiences of a substantial sample of firms to focus upon this third group of variables. From our results, it appears that the organizational component *does* play a major role in the incidence of quits. In fact, organizational variables explained almost one-third of the variation in voluntary separation rates among the establishments in our sample.[1] This would seem to suggest that the comparative neglect of factors at the organization level does represent a rather serious weakness in most earlier research efforts.

More specifically, our findings support two previously established relationships between organizational characteristics and quit behaviour. First, the analysis confirms the importance of the employment package as a determinant of turnover. In particular, we found that pay, pay increases, and fewer hours all had a negative impact on establishment separation rates. Second, by failing to demonstrate a significant relationship between the size variable and the incidence of quits, our results support those past findings that have suggested that company size has a complex and ambiguous effect upon the decision to quit.

In addition to supporting old theses, our analysis introduces two new organizational determinants of turnover. The first of these is the profit growth rate, which had a negative effect upon the dependent variable. This suggests that the propensity of employees to quit is reduced in financially successful organizations. A number of possible explanations and interrelationships may be advanced in this context. Perhaps it is the more viable firms that can "afford the luxury" of enlightened personnel practices; or, conversely, maybe the introduction of sound personnel policies serves to reduce turnover costs and increases productivity — with consequent profitability for the firms concerned. Second, our results establish a relationship between company age and turnover, as the relatively new firms (in operation five years or less) in our sample experienced significantly higher quit rates than their older counterparts. Perhaps this relationship results from the concentration of young establishments upon immediate financial survival and, also, their inexperience in dealing with human resource issues. Moreover, the workers in these firms will logically have short tenures of employment and are, therefore, characterized by a high likelihood of quitting.

In addition to these findings on organizational factors, our results once more confirm the demonstrated relationship between labour market conditions and turnover — the incidence of quits tends to grow as the number of employment opportunities increases.

Before closing, some additional observations would seem to be in order. We have emphasized the need for an interdisciplinary methodology and have attempted to suggest the possible interrelationships among different approaches to the subject of turnover. We retain, on balance, our conviction that a comprehensive treatment of turnover requires an investigation of personal job satisfaction variables along with variables concerning external economic conditions *and* variables relating to the characteristics of the organization. With respect to the latter, it seems that in addition to the standard components of the "employment package" — wages, hours, fringe benefits — it would be potentially useful to have some measures of physical conditions in the organization, including heat, light, ventilation, noise, exposure to hazard, accessibility of workmates, provision of comfort facilities, and so on. Next, it seems likely that a number of variables relating to the structure and context of the organization, of the type used in the studies of the Aston School[2], would prove to be useful in explanatory studies of turnover. Technology and the degree of specialization or formalization are possible examples of such factors. In this context, also, a more detailed analysis of the personnel policies of Canadian firms, in principle and in practice, might prove illuminating.[3]

Finally — and not, of course, unexpectedly in a study of this kind — we enter a plea for further research in this area. Several issues, inextricably related, seem to us appropriate foci for further work.[4] The determinants of turnover, first of all, require more attention within a multidisciplinary framework, and an attempt must be made to identify and emphasize those factors that are capable of treatment by policy action. Second, we need a careful theoretical treatment and empirical substantiation of the benefits and costs of labour turnover at the micro and macro levels, respectively. Third, the techniques for the treatment of turnover — from conventional personnel policies, through socio-technical design, to industrial democracy — must be analysed and evaluated.

Appendixes

A Characteristics of the Variables

In this appendix we present additional information on the variables employed in the analysis. A description of the essential features of these variables is presented in Table A-1. The correlation matrix of the variables included in the basic model is provided in Table A-2.

Table A-1

A Summary Description of QUITR and the Explanatory Variables[1]

Mnemonic	Short description	Level of observation	Unit of measurement	Mean[2,3]	Standard[2] deviation	Source
QUITR	Quit rate	firm	%	28.72	29.87	OML survey
PAY	Earnings per hour worked	industry	current $	5.70	1.29	StatCan
PAYINC	Growth in earnings during 1975	industry	%	17.30	7.28	StatCan
HOUR	Average weekly usual hours	industry	hours	38.46	2.08	StatCan
SIZE	Number of employees	firm	employees	537.54	2011.93	OML survey
AGENEW	Firm younger than six years	firm	dichotomous	0.13	0.33	OML survey
UNION	Firm more than half unionized	firm	dichotomous	0.42	0.50	OML/Labour Canada
PGROW	Growth in profits, 1973 to 1975	firm/parent	%	1.30	61.85	Financial Data Search
TIGHT	Labour market tightness	local market	ratio	0.11	0.07	StatCan/OML
SIZE 2	Firm size between 101 and 500	firm	dichotomous	0.37	0.49	OML survey
SIZE 3	Firm size greater than 500	firm	dichotomous	0.19	0.39	OML survey
AGE	Number of years old	firm	years	27.29	23.02	OML survey
SGROW	Growth in sales, 1973 to 1975	firm/parent	%	19.13	25.82	Financial Data Search
UR	Unemployment rate	local market	%	6.54	1.24	StatCan

1 Data are for 1975, unless otherwise indicated.

2 Based on 123 firms.

3 For the dichotomous variables, the mean represents the proportion of firms displaying the relevant characteristic.

SOURCES Ontario Ministry of Labour (OML), unpublished data; StatCan—Statistics Canada's Labour Force Survey and Establishment Survey; OML survey—Ontario Ministry of Labour Survey of Absenteeism, Turnover, Strikes and Employment Trends; and Financial Data Search—Financial Post's *Survey of Industrials* and *Survey of Mines*, *Moody's Industrial Manual*, and Standard and Poor's, *Standard Corporation Descriptions*.

Table A-2

The Correlation Matrix[1]

	QUITR	*PAY*	*PAYINC*	*HOUR*	*SIZE*	*AGENEW*	*UNION*	*PGROW*	*TIGHT*
QUITR	1.00								
PAY	–0.17	1.00							
PAYINC	–0.33	0.39	1.00						
HOUR	–0.04	0.85	0.37	1.00					
SIZE	–0.10	0.12	0.09	0.06	1.00				
AGENEW	0.25	–0.31	–0.04	–0.34	–0.08	1.00			
UNION	0.10	0.34	0.20	0.46	0.05	–0.04	1.00		
PGROW	–0.32	0.01	0.05	–0.02	0.01	–0.15	0.04	1.00	
TIGHT	0.33	0.10	–0.07	0.18	–0.01	0.08	0.05	–0.08	1.00

1 Based on a sample of 123 firms.

B Attenuation: Sensitivity to Changes in the Sample Size

As was mentioned in footnote 3 of Chapter 4, the Ontario Ministry of Labour survey elicited separation data for 230 firms. Our final sample, however, consists of only 123 of these establishments. The reason for this attenuation lies with the SPSS "listwise deletion" option, which automatically eliminated firms with missing values on *any* of the relevant variables mentioned in equation (1).

This loss of observations is not problematic if the data omissions are random. To investigate this issue, we employed two methods. First, we compared the central tendencies of our sample and the original, 230-firm sample, regarding the variables in the model. As Table B-1 demonstrates, the average characteristics of these two samples do not differ greatly. It should be noted, however, that this attenuation has resulted in a sample characterized by significantly larger firms than those in the original sample.

Second, we looked at the effects of the attenuation on the estimates of the variable coefficients. In order to do this, we compared the results from the test of our final model with those deriving from an alternate specification applied to a larger sample. This latter equation excludes the *PGROW* variable; as a consequence, with the "listwise deletion" option, we are able to test this specification for 195 establishments. Using the standard errors for each estimate, we constructed confidence intervals around the estimated coefficients for both samples and observed the extent to which the corresponding ranges overlap. Generally, there is a high degree of intersection between each pair of intervals. From this, we may conclude that the estimates are approximately equal and hence relatively insensitive to the attenuation in the sample size.

Table B-1

A Comparison of the Characteristics of Selected Variables Before and After Attenuation

	Final sample[1]		Original sample[2]	
Mnemonic	Mean	Standard deviation	Mean	Standard deviation
QUITR	28.72	29.87	29.45	35.78
PAY	5.70	1.29	5.44	1.42
PAYINC	17.30	7.28	16.12	7.63
HOUR	38.46	2.08	38.17	2.39
AGENEW	0.13	0.34	0.14	0.34
AGE	27.29	23.03	25.70	22.53
UNION	0.42	0.50	0.37	0.48
SIZE	537.54	2011.93	338.97	1491.33
PGROW	1.30	61.85	2.94	23.97
TIGHT	0.11	0.07	0.12	0.07

1 123 firms.
2 230 firms, except *AGE* and *AGENEW* (195), *UNION* (228), *PGROW* (145).

Table B-2

Sensitivity of Estimated Coefficients and *t*-Statistics to Changes in Sample Size

	123-firm sample		195-firm sample	
Mnemonic	$\hat{b}$	Standard error	$\hat{b}$	Standard error
PAY	–7.03	3.40	–5.43	3.51
PAYINC	–1.28	0.34	–0.85	0.35
HOUR	4.34	2.28	3.20	2.15
SIZE	–0.00	0.00	–0.00	0.00
AGENEW	17.10	7.34	22.27	6.95
UNION	7.02	5.15	1.07	5.51
TIGHT	112.07	35.28	75.88	38.03

C The Self-Generating Nature of Labour Turnover

It has been previously hypothesized by Hawk (1976) and Woodward (1976) that turnover has a self-generating nature, whereby a situation of labour instability may, in itself, be an impetus to further separations; that is, when a firm has experienced a period of labour volatility, such as high turnover, "(unfavourable) attitudes to work within the company and expectations about external jobs may become reinforced" [Woodward (1976, p. 29)]. High rates of turnover within an organization, then, may have the lagged effect of endorsing voluntary separation as a response to worker dissatisfaction.

In an attempt to capture this influence, we introduced a labour volatility variable into our quit-rate model. This variable, *STABLAG*, is computed as follows:

$$(1)\quad STABLAG_i = \frac{1/2\,(A_{i\,1974} + S_{i\,1974})}{S_{i\,1974}} \cdot 100$$

where

$A_{i\,1974}$ = the number of additions to firm i in 1974;

$S_{i\,1974}$ = the number of separations from firm i in 1974; and

$SIZE_{i\,1974}$ = the average size of the labour force of firm i in 1974.

The variable *STABLAG*, then, represents a lagged employee stability rate, and assuming workers can perceive the presence or absence of labour volatility, we expect a positive relationship between *STABLAG* and the quit rate.

The results of the test of our model with the labour volatility variable are presented in Table C-1. As expected, the coefficient for *STABLAG* is positive and significant at the 5 per cent confidence level.

These results would appear to support the self-generating thesis; however, they must be interpreted in a cautious manner. While the inclusion of the labour stability variable has increased the explanatory power of our model, we cannot state that this alteration has improved our understanding of quit behaviour. Rather than demonstrate the infectious nature of separations, the performance of *STABLAG* may merely indicate that firms have repeated patterns of turnover because the important structural characteristics of the establishment do not change significantly.

Certainly, the notion that turnover is an impetus to further separations seems plausible on theoretical grounds. While our empirical test gave us no reason to reject this thesis, we do not feel that the *STABLAG* variable is an adequate indicator of labour volatility. In order to adequately assess the "self-generating" hypothesis, one would have to utilize this concept in such a way as to be able to isolate labour volatility from other establishment characteristics.

Table C-1

Results of Regressing Establishment Quit Rates upon Selected Explanatory Variables, Including the Lagged Stability Rate[1]

	$\hat{b}$		*t*-statistic
PAY	– 2.48		– 0.51
PAYINC	– 1.53[2]		– 2.86
HOUR	4.30		1.34
SIZE	– 0.00		– 0.53
UNION	10.73		1.63
AGENEW	46.32[2]		3.91
PGROW	– 0.11[2]		– 2.99
STABLAG	0.14[2]		2.26
TIGHT	90.46[3]		1.80
Constant	– 120.72		. . .
$\bar{R}^2$		.55	
F test		9.18	

1 Based on a sample of 62 establishments.
2 Significant at the 5 per cent level.
3 Significant at the 10 per cent level.
. . . Figure not applicable.

Notes

Chapter 1

1 Since the Dominion Bureau of Statistics discontinued its Hirings and Separations Survey (series 72-006) in 1966, there has been no systematic collection of turnover information on a national basis. Undoubtedly, this lack of data has been partly responsible for the scarcity of turnover research in Canada. For two of the more notable studies carried out in recent years, see the Nova Scotia Departments of Labour and Development (1976), and Robertson and Humphreys (1978).

2 It should be mentioned that a clear distinction cannot always be made between voluntary and involuntary separations; for example, a worker may leave a firm in response to a threat of dismissal. Should this incident be classified as a voluntary or involuntary separation? While it would likely be recorded as the former, it could be argued that the separation was initiated by the employer and therefore was a case of involuntary turnover. Similarly, there can be incidences of turnover that are labeled "involuntary" where the initiative for separation might actually be traced to the employee.

Chapter 2

1 Pettman (1975) has compiled a very detailed bibliography of turnover literature. Also, see Armstrong (1975). Although this latter source is less extensive, it includes some Canadian references. It should also be noted that Price (1977) has provided an extremely valuable codification of the findings, that have emerged from existing research on turnover.

2 Price (1977) defines "satisfaction" as "the degree to which members of a social system have a positive affective orientation toward membership in the system" (p. 79).

3 This model, which will be discussed in the following chapter, has been adopted by more recent analysts. For example, see Pettman (1973).

4 For Price (1977), "pay" refers to all pecuniary benefits — that is, "the money, fringe benefits, and other commodities that have financial value which organizations give to employees in return for their services" (p. 68). He goes on to note that since the calculation of many of these benefits is quite complex, most researchers measure pay "by the amount of money directly received by the member" — that is, wages.

5 It should be noted that the MacKay study only included changes in wage levels over a six-month period while Stoikov and Raimon considered changes in the previous three years. It would appear likely that by using the longer time frame, the latter researchers had greater variability for this wage change variable and were better able to capture the actual trends that were occurring.

6 For example, see Silcock (1954).

7 In fact, the majority of voluntary leavers have already lined up another position before separating from their existing job. Hyman (1970) cites a British government survey, which found that 56.4 per cent of males leaving jobs had a new one to go to. Price (1977) quotes an American study, which estimated the corresponding figure at between 50 and 60 per cent.

8 This assumption of a limited job search area is based on the general inability of individuals to obtain information on job vacancies existing in other than local areas. In addition, the residence location of most workers can often be assumed to be somewhat fixed and, therefore, potential employment opportunities are limited by the journey to work. While these conditions may not prevail, for example, for highly specialized workers, they generally apply to most of the labour force.

9 Unfortunately, as Woodward (1976) points out, the local labour market "defies a precise empirical definition" (p. 20). Moreover, information on labour supply (unemployment rates) and demand (job vacancy rates) is often not available at the local level. Consequently, more aggregated data must sometimes be used.

10 For a list of studies that support this relationship, see Price (1977, pp. 81-82).

11 The classic study of length of service and turnover is that by Rice et al. (1950). They followed a cohort of entrants into a metal company and observed a high immediate quit rate, which accelerated through the first four weeks of employment. This initial period of uncertainty was termed "the induction crisis" by Rice and his colleagues.

Chapter 3

1 An alternative paradigm for the explanation of quit-rate behaviour is based upon the concept of specific training. It is contended that large amounts of specific training will, *ceteris paribus*, reduce quits, for two reasons. First, the specificity of the training means, precisely, that its applicability to other organizations is limited. Second, since the firm has an incentive to protect its investment in training, it pays a wage premium to its trained employees. See Becker (1964).

2 In order to collect such data, intensive observation of each employee would be needed. Obviously, this would be quite a formidable task in a study of a large number of firms employing tens of thousands of workers.

3 By focusing upon the conditions of work in the establishment and excluding personal expectations, we are implicitly assuming that the existence of individual differences is not significant enough to explain any intercompany variations in the quit rate.

4 To some extent, this model follows the theoretical formulation of March and Simon (1958), which was mentioned in the preceding chapter. In particular, their approach recognized that quits were immediately determined by the desirability and ease of movement. Since they focused upon the worker and his or her decision to quit, however, March and Simon labeled the two components of turnover "the *perceived* desirability of movement" and "the *perceived* ease of movement." Accordingly, their framework emphasizes *individual* roles, perceptions, and expectations.

5 See, for example, Gartrell (1976) and White (1977).

6 These relationships are discussed in Murray and Dimick (1976) and Portis (1976).

Chapter 4

1 For a summary table containing the level of observation, the unit of measurement, and the mean of all included variables, see Table A-1.

2 Throughout our analysis, this *SIZE* variable represents an average of the number of paid workers employed by the firm at the beginning of the calendar year and the number employed at the end.

3 The information from the OML survey included general data on the nature of each company's human resources problems and the statistical dimensions of the firms' absenteeism, turnover, and employment trends. This survey, which covered 1,600 establishments, elicited separation data for 230 firms. The sample for our model testing, however, included only 123 of these establishments. The reasons for, and the implications of, this attenuation are discussed in Appendix B.

4 See Newton and Leckie (1977).

5 Of course there are other contextual aspects of the employment package that likely affect the number of quits. One such feature that we did consider was the establishment's physical environment. As a proxy for this variable, we tried to employ the Comfort Index, calculated from the *Quality of Employment Survey* that was carried out by the Survey Research Centre of the University of Michigan. This index, calculated by industry, attempted to measure the "solid creature comfort" on the job. Unfortunately, certain weaknesses concerning this variable emerged. First, the Comfort Index suffers from the reliability uncertainties that accompany most attitude survey data; moreover, it has been calculated from relatively crude measurement techniques. Also, while most of the component parts of this index do relate to aspects of the physical work environment, it does include some elements that pertain to "*mental* (job) comfort." Consequently, the scope of the index extends slightly beyond our intention, which was to measure "*material* (job) comfort." For more details on this index, see Quinn and Shepard (1974).

6 Certainly company-level data would clearly have been superior, since the use of aggregate data suffers from theoretical and methodological shortcomings. First, there is the problem of the "ecological fallacy" (Price, 1977), which arises out of the fact that results based on industry variables do not *necessarily* apply to the associated establishments. The other difficulty is that the use of data aggregates artificially depresses the variance among units of analysis, thus distorting the picture somewhat. Despite these problems, however, we felt that these industry characteristics could reasonably be considered determinants of *company* turnover.

7 The total wage package — including fringe benefits — would probably be the best indicator of the monetary aspect of the firm's extrinsic conditions of work. Unfortunately, such data for 1975 were not available; as a consequence, we have only been able to consider earnings. The data on wages were based on unpublished information obtained from the Establishment Survey (ES) carried out by Statistics Canada. This information represents the average gross pay (in 1975 current dollars) of all wage-earners in Ontario for approximately 25 industry groupings (two-digit level of the Standard Industrial Classification).

8 The source of information on hours was the unpublished Statistics Canada Labour Force Survey data. The "actual hours" measure considers all time actually worked — that is, the standard work week and overtime, less any time off for sickness, vacations, holidays, strikes/lockouts, etc. For a more detailed discussion of the definitions of the various classes of working hours, see Leckie and Newton (1977).

9 It should be noted that this measure of "usual" hours differs from that of "actual" hours, which we employed in the specification of our *PAY* variable (see footnote 8). By excluding extraordinary overtime and time off, "usual" hours essentially indicate the duration of a standard work week. The source of the unpublished "usual hours" information is the Labour Force Survey, and we have organized these data into weekly hour averages for seven broad industry categories — naming mining; forestry; manufacturing; transportation and storage; trade; finance; and business and personal services.

10 In addition to these, there are certainly a number of other characteristics that might affect the social relations of work. Two of these which we did consider were "management attitude" and "labour volatility." Questions pertaining to management attitude were included in the OML survey. Despite this, the inclusion of this variable in our model was rejected because of possible biases in the data. First, the singular interpretation of the relevant responses was problematic, as it was difficult to isolate management attitude from the establishment's labour force experiences. Furthermore, possible biases arose out of the fact that the survey respondents were generally managers themselves. Labour volatility was similarly excluded for methodological reasons. Nevertheless, a theoretical and empirical discussion of this factor and its impact on turnover is presented in Appendix C.

11 To capture possible nonlinear influences, we also introduced this size factor into our model as three dichotomous variables: *SIZE*1 (100 employees or less), *SIZE*2 (101 to 500 employees), and *SIZE*3 (more than 500 employees). In order to avoid the problem of exact linear relationships, one of the dichotomous variables must be dropped from the equation (see Chapter 5). The omitted variable is usually the one with the highest frequency (*SIZE*1 in this case) and is termed the "reference dummy." In our model, then, the estimated coefficients should be treated as indicators of the *net effects* of the particular company size relative to the "benchmark" of firms with 100 employees or less. This alternative specification is presented in Table 5-1.

12 For a discussion of the relationship between size and working conditions (including job satisfaction and turnover) in Canadian industry, see Newton (1979).

13 The *UNION* variable data were obtained from searches through the collective agreement files of the Ontario Ministry of Labour and Labour Canada.

14 The exit/voice model was originally developed by Hirschman (1970) in the context of product demand. For a recent application to quality-of-working-life issues, see Newton (1978).

15 Establishment age was also introduced as a continuous variable, and the results of this alternate specification appear in Table 5-1.

16 The Ministry's reporting unit was the establishment — that is, the smallest industrial unit which operates separately and is capable of reporting all basic industrial statistics. Our resources for financial information, however, did not include statements for such disaggregated units but, rather, for entire organizations. Having disentangled the lines of ownership (using *Who Owns Whom, North America, 1976-77*) the financial data for the parent company were then attributed to the reporting unit.

17 An alternate indicator of financial effectiveness that we considered was *SGROW*, which measures the organization's annual sales growth rate from 1973 to 1975. This variable is calculated like *PGROW* in equation (5) except that sales data are substituted for profits. The results of inserting *SGROW* into our model are presented in Table 5-1.

18 There may be a distinct geographical dimension to quit-rate behaviour that is not entirely captured by the tightness of the local labour market. For example, in a labour market dominated by a single company, the absence of alternate employers would tend to inhibit the incidence of quits, regardless of the tightness of the labour market. Another geographical influence is the isolation of the labour market, which one would anticipate to have a positive effect on the quit rate. On the assumption that there is a relationship between industry and establishment location, we attempted to capture the geographical effect by including an industry variable in our model. The estimated coefficient of this variable, however, proved insignificant. Certainly, this result may be at least partly attributed to the many other influences that industry has upon turnover.

19 The unemployment rates apply to economic regions as defined by Statistics Canada, while the job vacancy rates were calculated by the Ontario Ministry of Labour for Canada Manpower Centre areas. These two geographical disaggregations are extremely similar and can therefore be considered identical for our purposes.

20 The unemployment rate (*UR*), itself, is often used as a measure of labour market tightness. Accordingly, we have tested an alternative specification of our model by substituting *UR* for *TIGHT*. The results of this modified equation appear in Table 5-1.

Chapter 5

1 A correlation matrix of all the variables considered in our model is presented in Table A-2.

2 In an attempt to circumvent this problem, we omitted *HOUR* from the specification. While this diminished the explanatory power of the model, it did demonstrate that the estimated coefficients of the other variables were relatively unaffected by this collinearity.

Chapter 6

1 The seven organizational variables in our model explained 31 per cent (unadjusted) of the total variance in the establishment quit rates. Moreover, one suspects that the explained variance accounted for by these variables would have been even greater had actual company data rather than industry proxies been used for the pay and hours variables.

2 See Pugh and Hickson (1976).

3 An attempt to address such questions is contained in Murray and Dimick (1976) and reviewed in Newton (1979).

4 Of course, further research requires improved data. Since the discontinuation of the DBS Hirings and Separations Survey in 1966, there has been no regular compilation of turnover information in this country. Also, with respect to analysing the determinants of turnover in organizations, the researcher faces a general paucity of establishment-level data. This lack can be largely attributed to the confidentiality restrictions pertaining to micro data. It should be noted, however, that statistical techniques are now available that can enable the researcher to analyse survey-type data without violating these restrictions. For one approach, see Boulet and Robillard (1977).

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