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Statistics Canada
Analytical Studies Branch

Research Paper Series

Canada

JOB TURNOVER IN CANADA'S MANUFACTURING SECTORS*

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No. 22

Analytical Studies Branch
Statistics Canada
Summer 1989

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* This paper is Chapter 3 from John R. Baldwin and Paul K. Gorecki, Structural change and Adjustment: Perspective on Job Change and Worker Turnover to be published jointly by the Economic Council of Canada and Statistics Canada. The views expressed in this paper are those of the authors alone and should not be construed to reflect those of either the Economic Council or Statistics Canada.

ABSTRACT

This paper measures job change in the Canadian manufacturing sector during the 1970s and early 1980s. Change in the Canadian economy constantly transfers resources from one use to another. Most previous studies have focused on the extent of interindustry relocation. This paper investigates the degree to which employment is redistributed between producing units in the Canadian manufacturing sector because some firms grow and others decline. In doing so, it examines both the job change that is associated with entry and exit and that which occurs as incumbent firms grow and decline. The associated redistribution of employment is the result of both interindustry and intraindustry shifts in relative firm size.

In investigating job or position change, the paper focuses on two issues. The first is the magnitude of the adjustment that the economy has absorbed in the past. By doing so, it provides a benchmark against which anticipated changes from such causes as trade liberalization can be measured in the future. The second issue is whether there is a pattern to the adjustment process. Several questions are examined. Is there a normal or usual rate of job turnover? Does adjustment come primarily on the contraction (job loss) or the expansion (job gain) side? How does the division between these two change during periods of recession? What is the difference between the amount of adjustment that occurs as a result of entry and exit, as opposed to growth and decline, in the continuing segment? How does the process differ in the short, as opposed to the long run? The answers to these questions are then used to characterize the nature of the adjustment process that is normally at work in the Canadian manufacturing sector.

JOB TURNOVER IN CANADA'S MANUFACTURING SECTOR

INTRODUCTION

Change in the Canadian economy constantly transfers resources from one use to another. Previous studies (Charette et. al., 1986) have examined the extent to which differences in industry growth rates caused shifts in the relative importance of broad sectors of the economy and individual industries within the manufacturing sector. This paper investigates the degree to which employment is reallocated between producing units in the Canadian manufacturing sector because some firms grow while others decline. The associated reallocation of employment is the result of both interindustry and intraindustry shifts in relative firm size.

In the broader context, firms decline or leave an industry because of management mistakes, better returns in another type of business, or changing market conditions. Employment fluctuates in response to these changes in firm fortunes, through the creation of new jobs and the loss of existing jobs. Job growth may originate from new plant creation or the expansion of existing plants. Job loss may occur because of plant closure or the decline of existing plants. Firms may also grow and decline as

the result of mergers, although in this instance jobs are transferred from one firm to another.

This paper focuses on the amount of firm-initiated employment change. It does so by measuring producer employment at two points in time. The difference is the number of jobs or positions that have been gained or lost as the result of producer growth and decline. These are the employment changes that are forced on workers directly because of the rise and fall of producers. In calculating measures of this change, this paper focuses on two issues. The first is the size of the adjustment that the economy has absorbed in the past. By doing so, it provides a benchmark against which anticipated changes arising in the future, such as from further trade liberalization, can be evaluated. The second is whether there is a pattern to the adjustment process. Several questions are examined here. Is there a normal or usual rate of job turnover? Typically does adjustment come primarily on the contraction (job loss) or the expansion (job gain) side? How does the division between these two change during periods of recession? What is the difference between the amount of adjustment that occurs as a result of entry and exit, as opposed to growth and decline, in the continuing segment? How does the process differ in the short, as opposed to the long run?

During the past decade, adjustment has been required of the Canadian economy for a number of reasons. Reductions in tariffs,

increasing competition from newly industrialized countries, the energy crisis, a major change in the value of the Canadian dollar, the collapse of commodity prices, and the recession of 1981-82, all have required firms to respond in a variety of ways. The future is never quite the same as the past. Nevertheless, if patterns of adjustment are found that are relatively stable, they may be used to predict the type of adjustment patterns and problems that will emerge.

JOB TURNOVER: PREVIOUS WORK

In an earlier study (Baldwin and Gorecki, 1983), the importance of firm and establishment entry and exit in the manufacturing sector for the 1970s was examined. The status of all establishments in the years 1970 and 1979 was compared in order to measure entry and exit over the decade. Although this study did not focus on job turnover, the underlying data from which it was derived can be used to shed light on this issue. While not intended to measure annual rates of change because of its long-term focus, the study nevertheless sheds light on the cumulative effects of entry and exit over a decade. Because of its comprehensive nature, it also places both the firm and the establishment entry and exit process in the context of other changes that were taking place.

Methodology

In the Baldwin and Gorecki (1983) study, establishments are classified as births (existing in 1979 but not 1970), exits (existing in 1970 but closed by 1979), acquired, divested, or continuing (existing in both 1970 and 1979).[1] Establishments are then aggregated into firms. A firm is defined to consist of all establishments at the 4-digit SIC industry level under common control. This classification, in turn, allows firms to be grouped into new firms, exiting firms, and continuing firms on the basis of the status of their plants. New firms are broken down into two groups: those that entered by acquiring an existing plant[2] and those that entered by creating a new plant.[3] Exiting firms are divided into those that did so by divesting themselves of a plant[4] and those that did so because they closed a plant.[5] Finally, the plants of continuing firms are broken down into those that were new, closed, or existed in both 1970 and 1979. This latter category was further divided into those plants that experienced ownership changes -- divested or acquired -- and those that did not.

Because of the classification scheme used, the plant creation and destruction process for continuing firms can be compared to that for the entering and exiting segment. Similarly, the merger process for continuing firms (horizontal) can be contrasted to that which brings new firms into an industry (diversified

mergers). This is done in Table 3-1. The importance of each category is measured first by the proportion of firms engaged in it and, second, by the relative proportion of the new, acquired, divested, and closed plants' shares of industry employment.[6] The numbers and percentages cited below are the mean levels across the 141 4-digit industries[7] in the manufacturing sector for which data are presented in Table 3-1.

Entry, Exit, and Job Turnover

Several features of the entry and exit data presented in Table 3-1 are salient for understanding the process of job turnover. First, the cumulative effect of entry and exit over the decade is large. As of 1979, firms that were new to the industry since 1970 accounted for, on average, 33 per cent of all firms and 29 per cent of employment. Firm exits over the decade accounted for, on average, 43 per cent of the number of firms in 1970 and 32 per cent of employment.

Second, a large portion of firm entry and exit involved plant births or deaths. If the number of firms is used, the entry process is dominated by new plant creation. In 1979, 27.4 per cent of enterprises were entrants since 1970 via plant birth. Only 5.9 per cent were entrants via merger. In contrast, when employment is used, entry by new plant creation and by diversified merger are more equally split -- accounting for some 16.5 and

12.8 per cent of 1979 employment, respectively. The difference in importance, using employment as compared to numbers, is the result of two factors. New plants created by new firms averaged 53.5 employees,[8] while plants acquired by firms new to an industry had 156.6 employees.[9] Moreover, the former enterprises rarely built more than one plant; the latter acquired, on average, 1.5 plants per firm.[10]

A third finding is that the importance of the firm exit processes (divestiture versus plant closure) differs, depending upon whether it is measured by the share of the number of firms or share of employment. In terms of numbers, exit via plant closure was more important. In terms of percentage of employment, exit via closure and via divestiture were about equally important. On average, smaller firms tended to die via closure, while larger firms were divested to other firms.

Fourth, the study shows that the new firm entry and the departing firm exit categories were much more important than the same categories for continuing firms. For example, the new plants of continuing firms accounted for only 4.4 per cent of employment in 1979, while the new plants of entering firms accounted for 16.5 per cent of employment in 1979. Diversified mergers were also more important than horizontal mergers. The employment share of plants acquired by firms in the same industry was, on average,

3.2 per cent as of 1979, but it was, on average, 12.8 per cent for plants acquired by firms outside the industry.

Together, these data show substantial turnover took place in jobs at the plant level during the decade. They also illustrate the need for careful distinctions to be made when measuring this phenomenon. Not all firm entry involves new plant creation. New plant creation occurs predominantly, but not exclusively, in the entering segment. Finally, horizontal mergers alone do not catch the extent to which jobs are transferred from one economic entity to another. For this phenomenon to be measured accurately, data on diversified mergers are needed as well.

No matter which concept is used to estimate job turnover associated with entry and exit, the data indicate that it was substantial. If plants exits are used, they encompassed, on average, 22.1 per cent of industry employment in 1970 for both exiting and continuing firms. Plants that were new over the decade accounted for 20.9 per cent of 1979 employment. On average, a further 15.7 per cent of industry employment in 1970 was in plants that were divested, while 16.0 per cent in 1979 was in plants that were acquired by new owners during the decade. Thus, 37.8 per cent of employment in 1970 was in plants that either exited or were divested; 36.9 per cent in 1979 was in plants that were either newly opened or acquired.

Since entry and exit are so important, the characteristics of the plants that enter and exit were examined. Size, diversity, productivity, and profitability were chosen. For 1979, new plants of both new firms and continuing firms were compared one to another and to an industry norm -- the continuing plants of continuing firms. Similarly, for 1970, exiting plants of both exiting firms and continuing firms were compared to one another and to the continuing plants of continuing firms. The means of the relative characteristics are presented in Table 3-2.

New plants of new firms were generally smaller and more specialized than both the new and continuing plants of the continuing firms segment. But they did not suffer a disadvantage with regards to either productivity or profitability vis-à-vis their compatriots. Indeed, they were more profitable than continuing plants of continuing firms. Plants that were closed by exiting firms were smaller, less profitable, and less productive than continuing plants of continuing firms.

The implications of this are important. Plant closure is a result of failure, as the evidence on productivity and profitability suggests. Moreover, while births via plant creation by new firms may suffer a size disadvantage, this does not relegate them to failure. Those that survived to 1979 managed a profitability and productivity record at least equal to that of the continuing plants of existing firms. The death and birth

process reallocates resources from the less to the more successful.

Adjustment Processes

There is still the question of how the birth and death process reallocates resources across industries in response to differential growth conditions. If exit rates are much higher in slow-growth industries than faster growing industries, but birth rates remain relatively constant, then adjustment comes from increasing the rate at which workers are forced to seek new jobs. If, on the other hand, exit rates are relatively constant and birth rates more variable, the adjustment process requires that workers who would normally be seeking jobs because of producer failure do so in industries where there are more new opportunities.

The data on entry and exit between 1970 and 1979 suggest the second characterization of the adjustment process is more appropriate. Entry rates respond more than exit rates to differential growth opportunities. Table 3-3 reports the average entry and exit rates (calculated as a percentage of the number of firms and of industry sales in 1970) for industries grouped into four categories -- those experiencing negative, slow, moderate, and fast real growth. If the differences in entry rates across industries with negative, slow, moderate, and fast growth rates

are compared, entry rates can be seen to respond monotonically to growth. This is not the case with exit rates. While exit rates are higher for declining industries, they are relatively constant for the different classes where positive growth occurs. The exit rate, as a percentage of number of firms in 1970, is 47 per cent for declining industries, but it is above 40 per cent in growing industries.

This has important implications for any study that measures the costs of adaptation. Exit is a manifestation of failure. The data from Table 3-3 suggest the probability of failure that is unrelated to growth is relatively high when accumulated over a decade. These failures can be referred to as "normal" or "typical" in the sense that the proportion of total resources involved does not vary much in response to changing economic conditions -- as long as the changes in macro-conditions are not too severe. Adaptation occurs on the entry side; that is, there is less entry than exit in declining industries and more in growing industries.

The data in Table 3-3 also show that one form of adjustment -- that which is associated with absolute decline in an industry -- does not come all from an increase in exits. In the slow-growth class, the impact of entry and exit on sales just about balances out. In the declining industries, there is a cumulative net effect of entry minus exit of about -12 per cent on 1970 sales.

Entry via plant birth added 12.3 per cent of 1970 sales; exits via plant closure led to a loss in sales equal to 23.9 per cent of 1970 sales. The net decline of employment in the declining sector relative to the slow-growth class was brought about by both a decline in entry and an increase in exits in the declining, relative to the slow-growth, sector. About 4 of the 11 percentage points of the net sales loss in the declining category, relative to the slow-growth category, result from a decline in births; about 7 from an increase in exits.[11]

JOB TURNOVER: NEW WORK

In the previous section, only one source of job creation and destruction -- the entry and exit process -- was dealt with. Job turnover will also occur as some continuing producers contract and others expand. A comprehensive examination of total job turnover requires information on both processes. The Baldwin/Gorecki (1983) study adopted a relatively long time frame for its reference. By focusing on the cumulative effects of entry and exit over a decade, it does not trace the short-run profile of changes that produced the long-term result. There is no inherent reason why the annual changes, when cumulated, must necessarily equal the long-term result. Therefore, long-term changes may be poor indicators of the amount of change in labour markets that occurs on a year-to-year basis because of producer growth and

decline. In the remainder of this paper, both deficiencies are rectified.

Methodology

The components of producer-initiated job or employment change may be measured by focusing on either changes in establishment or firm employment. An establishment or plant is generally an individual production unit.[12] A firm is an entity that may comprise only one or several establishments.[13] Measuring change with establishment, as opposed to firm, data yields inherently different information.

Change at the firm level can occur because new firms enter by building a new plant or by acquiring an existing plant; existing firms may expand or contract an existing plant, build or close a plant, acquire or divest a plant. Mergers affect firm size, but do not initially involve the creation or destruction of jobs. Therefore, change, when measured at the firm level, will not be the same as when it is measured at the establishment level (where the ownership of the unit is not considered).

If the establishment level is chosen as the unit of analysis, then entry is defined as the creation of a new establishment, death as the closure of an existing establishment. Part of the employment impact in each case will be the result of firms that

enter and exit from an industry by opening and closing plants;[14] part occurs as continuing firms open and close plants. When continuing establishments are used to examine the rate of growth and decline, the population consists of establishments that continue irrespective of whether or not there has been a change in ownership due to acquisition or divestiture. If the focus of a study is on producer-initiated changes in jobs, establishment data yield this information. For this reason, this section concentrates first on change at the establishment level.

To develop establishment and firm-related measures of job change, the Census of Manufactures is used to track the history of firms and their plants on a year-to-year basis from 1970 to the early 1980s. Two separate, though related, economic entities are considered: the plant or establishment and the firm.[15] The firm in this section is defined as all manufacturing establishments under common control, not just those in a particular manufacturing industry, as was the case in the earlier Baldwin/Gorecki (1983) work.[16] However, the concept of the plant or establishment does not differ between the previous and the new work.

Each establishment classified to the manufacturing sector is required to complete an Annual Census of Manufactures questionnaire. The birth (or entry) of an establishment in the manufacturing sector is dated by the year in which it first completes a form; and the exit or death of an establishment by the

last year in which it completes such a questionnaire.[17] A somewhat similar definition is used for entry and exit of a firm.[18]

As noted, two data bases were created: one using establishments and the other using firms. Establishments can enter and exit the manufacturing universe, even though the firm that owns the plants continues to exist. Hence, the establishment base and the firm base can be used to answer different questions. The establishment base covers all plant openings and closings for both continuing, new, and exiting firms. It measures the extent to which producer-initiated changes in employment are important. The firm base provides an opportunity to focus on new and exiting firms and to distinguish between plant openings and closings, as opposed to acquisitions and divestitures. It provides information on whether job growth comes from entering or existing firms.

Employment changes at the establishment and firm level may be calculated either by comparing the status of establishments between two adjacent years or between two years that are further apart. The first measures short-run change; the second captures long-run change. Long-run change may be quite different from short-run change, even when the former is corrected for the longer period covered. This will occur if an establishment or firm that continues over the longer period of comparison expands in one year and contracts in the next, but experiences little net change over

the entire period. It will also occur if most entrants exit almost immediately.

Estimates of longer run change more closely reflect structural adjustment within an industry. They net out short-run changes, especially in the continuing segment, that are the result of cyclical fluctuations that tend to be reversed in the longer run. On the other hand, they may not be reflective of the actual amount of labour turnover that is the result of changing producer fortunes. Short-run fluctuations in output and employment will better measure this phenomenon if the associated annual lay-offs move to other employers during temporary year-to-year declines in employment at the establishment level. Therefore, the components of employment change are calculated here both on a yearly basis (referred to as the short run) and for longer periods.

Job Turnover at the Establishment Level: Short Run

Establishment Entry and Exit

The importance of plant openings and closings using the establishment data base is presented in Table 3-4, which tabulates rates of change of establishment numbers and of employment affected for the years 1970-81. On average, 5.4 per cent of the sample of establishments exit annually; entrants add 4.1 per cent to the number of establishments annually. Because exiting

establishments are somewhat smaller than the average, the annual rate of job loss due to exits is lower than the plant closing rate -- with a mean annual rate of 1.9 per cent. While the average annual chance of a plant closing is 1 in 20, the probability of a job being in a plant that closes is only 1 in 50. Similarly, entering establishments are also smaller than the average, since new plants account for some 1.6 per cent of employment, on average.

Earlier, it was noted that exit rates over a decade, when calculated across a cross-section of industries, were remarkably stable -- except when industries declined in absolute terms. Entry rates tended to respond more than exit rates to changes in industry growth rates -- at least for those industries where positive growth occurred. However, where growth was negative, exit rates did increase.

One might then expect to see greater volatility in the yearly entry than in the exit rates, but only when growth was positive. This is the case. The variance of the entry rates is greater than that of exit rates for the period 1971-80. The difference is not significant when the recessions years after 1980 are included; however, in the more normal period prior to 1981, the differences are more significant.[19] Despite the inherently greater noise in

the annual entry and exit data due to measurement error, the earlier conclusions are verified by the annual data.

Continuing Establishment Growth and Decline

Entry and exit account for only part of producer-initiated job change. The other portion originates in the growth and decline of continuing establishments. In order to estimate the importance of the contribution that this segment makes to turnover, establishments were compared on successive years from 1970 to 1981. For each year, they were divided into those that grew, declined, or remained constant. Then the change in employment in each of the growing and declining sectors relative to total manufacturing employment in the previous year was used to measure growth and decline rates. These are presented in Table 3-5. For the purpose of comparison, summary establishment statistics for the change associated with entry and exit are also presented.

The amount of underlying change in jobs within continuing establishments in the manufacturing sector is considerably larger than net year-to-year employment change would indicate (Table 3-5). On average, net growth in continuing establishments between 1970 and 1981 was about 1 per cent per year. But this was accompanied by a 6.5 per cent average annual contraction rate from job loss in continuing but declining establishments, and a 7.6 per

cent average annual expansion rate from job gain in employment in growing establishments.

A measure of the churning in jobs that occurs because of the rise and fall of establishments is the sum of the employment growth and decline rates. It will be referred to here as the turnover rate. If it is assumed that the only workers to change positions are those who lose a position, and those who leave a job in a declining establishment do not overlap with those who gain a job in a growing establishment, the turnover rate measures the proportion of the workforce which is affected by the growth and decline of establishments.

The turnover rate for continuing sectors (column 4) was large relative to its employment change. An average net change in the continuing sector of 1 per cent of total employment was accompanied by a labour turnover rate of 14 per cent. Turnover was also large relative to net change in the entering and exiting segment. Net annual employment growth in the entering and exiting segment was -0.3 per cent, on average. Annual employment loss associated with exiting establishments was 1.9 per cent of total manufacturing employment, on average; employment gain associated with entering establishments was 1.6 per cent of total employment, on average. Turnover in this segment was 3.5 per cent. Together, total or gross job loss in declining but continuing establishments and exiting establishments averaged 8.4 per cent per year over the

period; total or gross job gain averaged 9.2 per cent per year. Total or gross turnover was 17.6 per cent annually.

A Comparison of Job Turnover from Entry and Exit with Growth and Decline

The data in Tables 3-4 and 3-5 shed light on the importance of employment changes associated with establishment entry and exit relative to employment changes connected with the expansion and contraction of existing or continuing establishments. Exit potentially involves higher adjustment costs because a complete unit is closed down, while contraction of existing units is likely to involve adaptation at the margin. Plant closure is more likely to affect workers with a wide range of ages, seniority, and firm-specific capital than plant decline, especially if the latter involves relatively few individuals. Most of the job loss, when measured on an annual basis, comes from the continuing sector (Table 3-5, columns 2 versus Table 3-4, column 2). The mean employment exit rate for the 1970-81 period is only 23 per cent of the mean total job loss rate caused by exits plus declining but continuing establishments.

Adjustment Processes

Exit and decline are manifestations of producer failure. Some instances of failure will be the result of ineptness; others will be the result of misfortune. That part which is generally

unrelated to economic conditions, except in the worst of circumstances, can be regarded as the "normal" rate of decline that continuously reallocates resources. The resources that are released as a result of this normal ongoing decline impose a cost that is an inherent part of a market economy that rewards success and penalizes failure. In the 1970s this was equal to the 8.4 per cent gross job loss rate. The lowest value of the sum of the contraction and exit rates has been used by the OECD (1987, p. 107) to provide an approximation to the minimum turnover that can be expected to occur when all cyclical elements are removed. It is 5.9 per cent (1972-73), compared to the mean annual gross job loss rate of 8.4 per cent over the entire period. One interpretation of these differences is that 70 per cent of the normal job loss is structural; the remainder cyclical.

The relative response of the components of job loss and job gain to economic conditions has important implications for the adjustment process, as discussed previously. It has already been noted that exit rates are less variable than entry rates. This does not apply to the decline and growth rates in the continuing sector. Here there is no significant difference between the variances in the two. Indeed, the standard error of the mean employment decline rate is larger, not smaller, than the growth rate. The implications of this finding will be addressed when the rates of adjustment in the longer run are discussed.

Focusing on the annual contraction and expansion rates, defined as the amount of employment change in each, relative to total manufacturing employment, may hide certain aspects that are important determinants of the costs of adjustment. The contraction rate depends upon the number of establishments that decline and the average annual rate of decline experienced by these plants. Variability in the contraction rate may be the result of more plants declining during recessions or greater rates of decline for those that reduce employment. If most of the variability occurs because of changes in the rate of decline, then the amount of adjustment per plant is highly unstable. To the extent that adjustment is borne by a relatively constant number of plants, adjustment is more costly because it is less likely to be marginal in nature. On the other hand, to the extent adjustment occurs by increasing the proportion of the total number of plants that decline, the actual decline in employment per establishment will be relatively constant.

In order to investigate the determinants of the relative volatility in declining and growing continuing establishments, the proportion of total establishments for each year that exit, increase, decrease, or maintain constant employment was calculated. These ratios are reported in Table 3-6. The data from Table 3-6 show that, over the economic cycle, a substantial proportion of continuing establishments shift from the declining to the growing category and vice-versa. For example, between

1976-77 and 1977-78, when the manufacturing sector moved from a net overall employment change of -1.6 per cent to 2.2 per cent, the percentage of establishments declining dropped by some 7.4 percentage points; the percentage of increasing employment jumped by 7.9 percentage points. In contrast, the exit rate fell by only 0.5 of one percentage point. The probability of having constant employment remained virtually unchanged.

The absolute decline (or growth) in employment for contracting (expanding) establishments is presented in Table 3-7. The average decline was 13.6 employees over the period; the average increase was 13.4 employees. There was no significant difference between the two averages. Where, then, does adjustment occur -- from shifting establishments from the growing to the declining category, or from changes in the average number of positions being lost? Clearly, it comes from both. However, the standard error of the mean number of plants in the declining category is about 300; for the mean number of positions lost in such plants, the standard error is less than 1. Therefore, generally, hundreds of plants shift from the growing to the declining category and vice-versa, but the <u>change</u> in the mean number of positions lost will generally be less than 2, with a mean of 13.6. Fluctuations in the amount of adjustment per establishment are not dramatic when viewed in this light.

Table 3-7 also contains the average size of an exiting establishment and of an entering establishment. In each case, the mean job change due to entry or exit is about twice as large as for continuing establishments that grow or decline. The absolute amount of change per unit, then, for the entering and exiting segment is large relative to the continuing segment.

In order to examine how the entry and exit process fluctuates over time relative to growth and decline in the continuing sector, the relative importance of entry to growing, as well as exiting to declining, establishments is calculated. This is done both in terms of the numbers and the employment change affected by both. The results are reported in Table 3-8. The number of exiting establishments is, on average, only 14.4 per cent of declining establishments; the number of entrants are only 12.2 per cent, on average, of growing establishments. However, employment in exits is 30.9 per cent, on average, of the employment decline in declining establishments; entry employment is equal to 22.7 per cent of the employment growth in growing establishments.

The annual exit to declining establishment ratio was correlated with economic activity (using the net employment change in the continuing segment), and a positive correlation which is significant was found -- when the importance of each was measured with employment change. This is the result of a significant decrease in the declining segment as economic activity picks up

with virtually no change in exits. There is a significant negative relationship between the ratio of entrant employment to growing firm employment change and economic activity.[20] Employment growth in the continuing sector responds more to changes in economic conditions than does increases in employment in entering firms. Both results then confirm the greater volatility, in the short run, of the continuing, as compared to the entering and exiting, sector.

Job Turnover at the Establishment Level: A Comparison of the Short and the Long Run

Continuing plant employment change dominates the entry and exit process in the short run. Whether it also does so in the longer run, as structural adjustment occurs, depends on several factors. The first is the extent to which the fortunes of continuing firms are reversed quite quickly. There is evidence to suggest substantial reversals occur.[21] Thus, longer run job changes calculated for the continuing segment will be smaller than when calculated over the shorter yearly periods.

The net effect of entry and exit may also be quite different in the short, as opposed to the long, run. If exits come almost entirely from entrants, then the cumulative exit rate for 1970 to 1971, for example, will be about the same as for 1970 to 1979 -- as it has been calculated here. This is because the exits from the 1970 population will all occur quite shortly thereafter. The

implicit annual rate for the 1970 to 1979 period would then be considerably below the annual rate derived from yearly exit data.

There is a second reason for differences between yearly and longer run entry and exit rates. The longer term entry rate, when measured in terms of employment but not numbers, for example, depends on the rate of growth of entrants subsequent to their creation, as well as the exit ratio of newly established plants. The long-run annualized entry rate will be higher than the short-run yearly rate, providing subsequent growth of entrants offsets the exit rate of new plants.[22]

In order to examine the relative importance of the sources of job loss change when calculated over longer periods, the rate of employment change was calculated by comparing the status of establishments in 1971 to 1976, in 1976 to 1981, and in 1971 to 1981. The rates of change calculated for entry, exit, and growing or declining establishments over the longer periods are reported in Table 3-9. Three sets of results are tabulated. The first set contains the cumulative rate of change obtained from comparing the status of plants at the beginning and end of the period. The second set contains the implicit annual rates derived from these cumulative rates of change. The third set contains the

average annual rates derived from the year-to-year changes over the periods 1971-76, 1976-81, and 1971-81.

The year-to-year expansion and contraction rates for continuing establishments are considerably greater than the rates calculated over the longer periods. For example, the yearly contraction rates were some 6 per cent in each of the five-year periods; the implicit annual long-run decline rate was only about 2 per cent for each of these periods. Substantial reversals in the fortunes of continuing establishments took place. By way of contrast, the implicit long-run exit and entry rates are quite similar to the short-run rates. On the entry side, this is consistent with the view that growth by entrants offsets the effect of high rates of exit by these groups.

The long-run job change either from exits and contraction, or entry and expansion is somewhat lower than that derived from yearly changes. This comes primarily from the lower long-run contraction and expansion rates in continuing establishments. Over the period from 1971-81, the sum of the annual exit rate and decline rate implied by the yearly changes is 8.3 per cent, but the long-run implicit annual rate for gross job loss from both sources was only 3.6 per cent -- somewhat less than half the yearly rate. Almost the same relationship holds for growth rates

calculated from a comparison of the status of establishments in 1971 and 1981 compared to the year-to-year changes.

While the annualized rates of change are lower in the long run, there is still a substantial percentage of initial employment affected. Gross job loss is some 20 per cent for each of the two five-year periods and 31 per cent for the decade 1971-81.

In the short run, the continuing segment dominated the job turnover process. The annual exit rate calculated from year-to-year change over 1971-81 (1.84) was only 28 per cent of the continuing establishment decline rate (6.46). In the longer run comparison, exit increase its relative importance. The ratio of the exit rate (2.05) to the continuing establishment job contraction rate (1.25) is 164 per cent over the period 1971-81. Entry too increases its importance in the longer run, but not by quite the same extent as exit. Since exit and entry are much more important in the long run, it is the characteristics of these processes that will begin to dominate those of total adjustment.

Job Turnover at the Firm Level

Entry and Exit in the Short Run

The data allow examination of the annual entry and exit rates of firms both as the result of plant openings and closings and as a

result of mergers. Table 3-10 contains the average of the annual firm entry and exit rates over the period 1971 to 1983. On average, 6.8 per cent of firms exited annually, affecting 3.4 per cent of employment. On the other hand, entry added 6.2 per cent to the stock of firms[23] and 2.3 per cent to the number of jobs.

Contrary to establishment entry and exit rates, the firm rate does not involve just the birth and death of plants. It also involves the transfer of plants from one firm to another via merger. The two processes are inherently different and have different implications for adjustment costs. Plant closure is likely to lead to forced movement for all of the labour force. Plant divestment is less likely to do so, providing the new management is successful in searching for new economic opportunities. Owners of capital may also be presumed to have a lower capital loss when their assets are purchased in comparison to the situation where they have to be liquidated or dismantled.[24]

For these reasons, it is important to separate the firm rates into those arising from plant creation and closure, and those arising from merger activity. This is done in Table 3-10. The predominant method of exit by firms leaving the manufacturing sector is via closure of plants rather than by divestiture, when measured by numbers of firms. Exit rates by merger averaged 1.2 per cent but 5.5 per cent by plant closing. While exits by closure are more numerous than exits by divestiture, the average

size of the typical firm that exited by plant closure was much smaller than that of the typical firm that exited by divestiture. As a result, merger exit rates, when calculated in terms of employment, are larger than plant closure rates (2.1 per cent, as opposed to 1.4 per cent). This suggests that care be used in interpreting studies of job turnover that use firm-based data on entry and exit that include the effect of mergers.

The averages in Table 3-10, however, conceal considerable fluctuations over time in the importance of the two components of firm entry and exit. For example, the firm exit rate associated with plant closing is much more stable than the merger rate. The latter reflects the well known tendency for mergers to occur in waves. In Figures 3-1, the relative importance of the merger component in entry over the period is graphed. Mergers varied considerably in importance, with an increase toward the end of the period. This is significant because it means that firm-based job creation studies that are unable to remove the merger component will be biased and the bias may vary considerably over time. Finally, the variability in the merger series will affect the relative volatility of both the entry and exit series and, therefore, submerge the underlying difference in the plant opening and closing series that was observed in the previous section.

Together, the firm and establishment data can be used to compare the plant exit and entry rates for firms that leave or enter, as

opposed to those that continue.[25] This is done in Table 3-11. Exiting firms account, on average, for two-thirds of the employment affected by plant closures; entering firms account for about the same percentage of employment affected by plant openings. Of interest is the fact that the volatility of the two exit rates is about the same. Both continuing and exiting firms appear to display a plant closure rate that is influenced to the same degree by economic conditions. This is not the case on the entry side. The plant opening rates by continuing firms are less, not more, volatile than their exit rates. They are also less volatile than the plant opening rates of new firms. Continuing firms then do not respond to upswings in the same fashion as do new firms, because they have the option of expanding production in existing plants. Thus, while adjustment overall appears to come more on the plant opening than on the plant closing side, this must be ascribed to entering and exiting firms and not to continuing firms.

CONCLUSION

Policy-makers are constantly forced to address the implications for employment of changes in government programs. For example, debates over the advantages of trade liberalization have long wrestled with the extent to which there are substantial costs to removing tariffs and other trade barriers. A central presumption of some is that there is little leeway for resource reallocation

without incurring substantial costs. While it has been recognized that some resources are constantly being reallocated in a market economy, few attempts have been made to measure this process. The data presented here shed light on the size and the pattern of the ongoing gross job loss due to establishment and firm decline and exit.

Each year, a large and relatively constant percentage of jobs in manufacturing are displaced as a result of establishment decline and exit. The amount of displacement differs, depending upon the time period used. In the short run, plant closure, by both exiting and continuing firms, displaced, on average, about 1.9 per cent of employment annually during the period 1970 to 1981. In addition, job loss in contracting establishments accounted for another 6.5 per cent of manufacturing employment annually. Together, the gross job loss resulting from both sources was more than 8 per cent, when measured on an annual basis. When calculated using end points five years apart, the implicit annual gross job loss rate was over 4 per cent; over the ten-year period, it was 3.6 per cent. In the latter case, this means the decline in jobs associated with producer contraction and exit amounted to some 30 per cent of the initial year employment over the decade.

Predictions of the impact on employment of policy changes, such as those associated with trade liberalization, require a benchmark against which they can be measured. This chapter provides two

such standards: the long run and the short run. In the long run, the release of employment due to contracting and exiting establishments provides an estimate of the effect of changing structure -- albeit at the level of the producing unit. It measures the net effect of the various forces affecting the fate of each production unit.

In the long run, employment loss is dominated by the exit process. Exit is part of a self-selection phenomenon. While numerous exogenous changes in the environment, from technological progress to changes in trade policy, affect firms in any industry, the aggregate failure rate over time is relatively constant. This suggests that it is not so much the exogenous shock that matters as the ability of management to adapt. In any population, there will be a relatively constant percentage who cannot do so in any one year and who will subsequently fail; but, over a decade, this accounts for about 20 per cent of initial year employment. The fact that the exit process is relatively unaffected by economic conditions means that there is a natural rate of adjustment that continually takes place. A certain percentage of resources would normally be expected to leave an industry each year because of firm decline.

The evidence also indicates that an industry's net employment rate differs over time primarily because of differences in yearly entry rates, not yearly exit rates; industries grow not so much by

reducing exit rates as by increasing entry rates. Adaptation then occurs in the growing segment because workers who would normally lose their jobs because of the dynamics of firm decline move to other firms that are growing.

In contrast to the long-run standard used above, the amount of employment change in the short run can also be used as a benchmark against which the effect of proposed policy changes like trade liberalization can be judged. If this standard is adopted, the degree of "normal" employment change increases dramatically. Gross job loss from contraction and exits of manufacturing establishments averaged some 8 per cent per year, when calculated annually. This is much larger than the implicit long-run rate of change because it is made up of both a structural and a cyclical component. The cyclical effect, when measured at the establishment level, is reversed in the long run. However, while it was reasonable to assume that employment decline measured over five- and ten-year periods is associated with worker reallocation, such is not necessarily the case for year-to-year changes which may involve only a temporary displacement of workers. Whether the short or longer run estimates of job loss more closely reflect the degree to which workers move will depend upon the extent to which workers, when separated from their jobs in the short run, move to new ones. This phenomenon is examined in an accompanying paper.

Notes

1 The Baldwin/Gorecki (1983) data base was developed by J. McVey at Statistics Canada to compare the status of establishments and firms between two end points -- 1970 and 1979. The firm was defined as all establishments under common ownership at the 4-digit SIC level -- the unconsolidated firm. Plants that filed a long form in 1979 but neither a long nor a short form in 1970, were classified as births; the reverse as deaths. Plants were defined as continuous if they existed in both years and were long-form in either year (for the definition of long-, as opposed to short-form, and the coverage of the Census of Manufactures, see Statistics Canada [1979]). Firms were classified in a similar fashion, based on the status of their plants. For more details on the methodology, see McVey (1981, esp. pp. 71-73).

2 That is, a plant that existed in 1970 and 1979.

3 That is, a plant that did not exist in the industry in 1970 but did in 1979. This category includes both plant openings and those that changed or switched their industry classification.

4 That is, plants that existed in 1970 and 1979.

5 That is, plants that existed in the industry in 1970 but not in 1979. This category includes both plant closures and those that changed or switched their industry classification.

6 Since a firm can be classified to more than one category (i.e., a firm may enter by both building and acquiring plants), the sum of the individual components in the entering, exiting, and continuing segments can be greater than the segment percentages, when considering the number, but not the employment.

7 See Note 1 to Table 1 as to the reason for excluding 26 of the 167 4-digit industries into which the manufacturing sector is divided by the 1970 SIC.

8 Baldwin and Gorecki (1983, Table 5, p. 19).

9 Baldwin and Gorecki (1983, Table 5, p. 19).

10 Baldwin and Gorecki (1983, Table 3, p. 15).

11 Subsequent work on employment loss and gain in declining and growing industries (with the same definitions as in Table 3-3) revealed similar results. For example, declining industries adjust employment to lower levels of output about half through reduced entry rates, and about half through increased exit

rates, compared with growing industries. (See, Economic Council of Canada, 1988c, Table 3, p. 14).

12 While the terms "establishment" or "plant" are used here interchangeably, this is not Statistics Canada's practice. The establishment is the smallest operating unit at which census of manufactures can be collected. In a small number of cases, this may involve the aggregation of separate operating units, commonly referred to as plants.

13 The level of aggregation may differ and therefore, firm data may not be the same in different situations. For more discussion, see Appendix B.

14 When an industry is defined at a fine level of aggregation (i.e., the 4-digit SIC), some entry will be the result of a reclassification of establishments as the product line shifts. This is less of a problem for this chapter, since the industry is defined as all of manufacturing. For further discussion, see footnote 17.

15 Appendix B, discusses the data bases in more detail.

16 While similar, the two concepts are not identical. In Baldwin and Gorecki (1983), entry could occur when firms that were already in manufacturing entered a 4-digit industry where they previously did not have a plant. This will not be firm entry. See Appendix B for more details on the data used here.

17 An establishment may switch its output composition such that it moves from one industry to another within manufacturing. While such interindustry movement would have been captured in the earlier Baldwin/Gorecki (1983) work, such interindustry movement is not recorded when looking at the manufacturing sector as a whole. Some preliminary work was done on this topic. It indicated it was not of great importance, in any event. Using the methodology in Appendix B, all those establishments classified as continuing in 1970-71 <u>and</u> 1978-79 were selected. The industry to which the establishment was assigned in 1979 was then examined to determine whether it was different from that in 1970. It was found that 91.3 per cent of continuing establishments did not change their industry classification, while 8.6 per cent did.

18 A firm is classified as an exit in a particular year if it owned no establishments in that year, but at least one in the previous year. A death of a firm is dated by either: (a) the last year in which all of the establishments owned by the firm completed an Annual Census of Manufactures questionnaire (in addition, the firm must not build a new plant or acquire another establishment in that year); or (b) the last year in which any plant or establishment that filed an Annual Census

of Manufactures questionnaire has the given firm code attached to its file. In case (a), the firm has exited by the closure of all of the plants it owns, while in case (b), the firm has exited the manufacturing sector by selling off its assets. While it is possible that a firm may exit by both methods, this occurs infrequently. The same can be said about the simultaneous use of both methods of entry. See Appendix B. Entry is defined using the same approach. A firm is classified as an entrant in the first year that it owns any plant that completes an Annual Census of Manufactures' questionnaire. The plant may either be a new plant (entry by building a new plant) or one that existed in the previous year (entry by acquisition).

19 The difference in the variances is significant at the 1 per cent level for rates measured in terms of numbers, and at the 7 per cent level for the rate in terms of employment.

20 The regression made allowance for the break in the series in 1975 because of the change in the decision of establishments between long and short form -- see Appendix B for a discussion of this issue.

21 Birch (1981, pp. 8-9), Hall (1987), and Leonard (1987).

22 This discussion implicitly assumes that the firm and plant population of the base year changes little over time in terms of employment. This need not be the case. For example, exits may come from the base year population and not from recent entrants and if recent entrants show positive growth rates the longer run annualized rate will again exceed the short run yearly rate.

23 That the firm rates are higher than the establishment rates means the acquisition or divestiture process by entering and exiting firms affects more firms than the plant birth and death process affects continuing firms.

24 If a firm goes bankrupt, is reorganized, and is run by a new set of owners, it would be classified as an exit via divestiture in the data base.

25 This is done by subtracting the new plant (exiting plant) firm rate from the establishment new plant (exiting plant) rate. Due to some differences in the way these two sets of data were assembled, the comparison is not exact. See Appendix B, for details.

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Table 3-1

Average Share of Number of Enterprises and of Employment Across 141 Canadian Manufacturing Industries[1] for Various Categories of Entry and Exit: 1970 and 1979

Firm category	Share of number of firms 1970	Share of number of firms 1979	Share of employment 1970	Share of employment 1979
	(Per cent)			
1 All firms	100.0	100.0	100.0	100.0
2 All entrants[2]	-	32.5	-	29.3
i Entry by birth	-	27.4	-	16.5
ii Entry by acquisition	-	5.9	-	12.8
3 All exits[3]	42.9	-	32.3	-
i Exit by divestiture	7.5	-	14.6	-
ii Exit by closing	36.3	-	17.7	-
4 All continuing firms[4]	57.1	67.4	67.7	70.7
i With continuing establishments	56.5	66.8	62.2	63.1
ii With divestiture	0.6	-	1.1	-
iii With acquisition	-	2.1	-	3.2
iv With plant births	-	3.9	-	4.4
v With plant closure	3.1	-	4.4	-

1 The sample corresponds to the 167 four-digit S.I.C. industries for which data existed in both 1970 and 1979, less those industries classified as miscellaneous or 141 industries in total.

2 Firms that entered between 1970 and 1979 by births and/or acquisitions. Note: a firm may enter by both methods so the sum of 2(i) and 2(ii) may be larger than 2.

3 Firms that exited between 1970 and 1979 by divestiture and/or closing. A firm may exit by both methods so the sum of 3(i) and 3(ii) may be larger than 3.

4 Firms that existed in both 1970 and 1979. As above, a continuing firm may fall into more than one subcategory. The shares of employment for categories 4(ii) - 4(v) refer to the plants of continuing enterprises that fall into these categories.

Source Special Tabulations, Statistics Canada.

Table 3-2

Means of Relative Plant Characteristics for Entering, Exiting, and Continuing Firms Across 141 Canadian Manufacturing Industries[2]

Plant comparison	Shipments	Productivity[3]	Profitability[4]	Diversity[5]
1 New plants of new firms/ continuing plants of continuing firms (1979)	.61[a] (.05)	1.05 (.04)	1.14[a] (.05)	1.15[a] (.03)
2 New plants of continuing firms/continuing plants of continuing firms (1979)	.97 (.07)	1.12[b] (.08)	1.08 (.07)	1.08[a] (.03)
3 New plants of new firms/ new plants of continuing firms (1979)	.72[a] (.07)	.98 (.08)	.96 (.16)	1.15[a] (.05)
4 Closed plant of exiting firms/continuing plant of continuing firms (1970)	.54[a] (.06)	.81[a] (.03)	.91[c] (.05)	1.07[a] (.03)
5 Closed plant of continuing firms/continuing plant of continuing firms (1970)	1.10 (.11)	.98 (.04)	.93 (.07)	1.06 (.04)
6 Closed plant of exiting firms/closed plant of continuing firms (1970)	1.06 (.20)	.98 (.05)	1.26 (.20)	1.09[c] (.05)

1 Standard error of mean in brackets.
   a) Significantly different from 1 at .005 per cent level.
   b) Significantly different from 1 at .01 per cent level.
   c) Significantly different from 1 at .05 per cent level.
2 While the relative plant characteristics were calculated for all 141 industries (the 167 4-digit SIC, less miscellaneous), the means were calculated only for the subset where non-zero observations existed. See Baldwin and Gorecki, 1983, for a discussion of the coverage in each category.
3 Productivity is defined as census value-added per employee.
4 Profitability is manufacturing value-added, minus wages, divided by value of sales.
5 Diversity is defined as the Herfindahl of the shares of each product produced per plant where products are defined at the 4-digit ICC level (see Baldwin and Gorecki, 1986b).

Source Special Tabulations, Statistics Canada.

Table 3-3

Average of Firm Entry and Exit Rates by Industry Growth Rate for 141[1] Canadian Manufacturing Industries, 1970-79

Entry/exit Indicator	Industry Growth rate[2]				Canadian Average
	Decline	Slow	Moderate	Fast	
	(1)	(2)	(3)	(4)	(5)
1 As a percentage of number of firms in industry in 1970[3]					
Entry[4]	26.6	31.9	35.9	46.5	36.1
via birth	19.0	25.0	27.9	37.1	28.1
via acquisition	7.9	7.3	9.8	11.3	9.2
Exit[4]	47.1	40.4	40.8	42.3	42.3
via plant closure	38.4	31.3	29.5	31.4	32.2
via divestiture	10.2	9.8	13.7	12.2	11.6
2 As a percentage of industry value of shipments, 1970					
Entry[4]	25.8	26.9	37.3	62.0	39.5
via birth	12.3	16.2	17.9	36.0	21.6
via acquisition	13.5	10.7	19.3	26.0	18.0
Exit[4]	40.7	28.0	28.7	28.6	30.7
via plant closure	23.9	16.5	11.6	15.4	16.2
via divestiture	16.8	11.6	17.1	13.2	14.5
3 Number of industries	26	36	39	40	141
4 Average number of firms per industry					
1970	53.7	98.3	69.2	119.7	88.1
1979	44.8	79.1	60.4	103.7	74.6
5 Average number of employees per industry					
1970	5,442	9,378	11,683	8,127	8,935
1979	4,744	9,238	13,222	10,528	9,874

1 Encompasses the 167 4-digit Canadian manufacturing industries using the 1970 SIC, less those of a miscellaneous nature.
2 Growth rates are for industry shipments using 1970 and 1979. Annual growth rates for four categories are as follows: Decline -2-0; Slow 0-2; Moderate 2-4; Fast 4 plus.
3 If entry rates are calculated with 1979 as the base, the conclusions still hold that they increase as industry growth rate increases.
4 As in Table 3-1, the sum of the sub-categories may be greater than the total because a firm may enter or exit in more than one fashion.

Source J. R. Baldwin and P. K. Gorecki (1983, Table 9, p. 30).

Table 3-4

Annual Establishment Entry and Exit Rates in the Manufacturing Sector, 1970-81

Year	Employment affected		Numbers of establishments	
	Entry I	Exit II	Entry III	Exit IV
	(Per cent)			
1970-71	2.12	1.80	2.31	4.91
1971-72	1.84	1.96	4.44	5.43
1972-73	1.80	1.59	4.67	4.40
1973-74	2.12	1.77	5.30	5.99
1974-75	2.13	1.88	6.52	5.29
1975-76	1.14	2.45	3.75	5.55
1976-77	0.90	2.09	2.22	5.45
1977-78	1.49	1.86	4.10	4.29
1978-79	1.14	1.42	3.46	4.53
1979-80	1.77	1.90	5.00	5.40
1980-81	1.27	2.61	3.42	7.97
Mean (1970-1982)	1.61	1.94	4.11	5.38

1 The manufacturing sector is defined using the 1970 SIC between 1970 and 1982 inclusive. See Appendix to Chapter 3 for greater details of the calculations contained herein.
2 Entry is defined as occurring in the year the establishment first filed an Annual Census of Manufactures questionnaire.
3 Exit is defined as occurring in the year the establishment last filed an Annual Census of Manufactures questionnaire.
4 All rates are calculated as a percentage of employment in the initial year.

Source Special Tabulations, Statistics Canada.

Table 3-5

The Annual Rate of Change in Employment[1] in the Canadian Manufacturing Sector in Continuing, Entering, and Exiting Establishments, 1970-82

	Continuing establishments[2]				New[3] and exiting[4] establishments	
	Growing I	Declining II	Net change[5] III	Turnover[6] IV	Net change[7] V	Turnover[8] VI
				(Per cent)		
1970-71	6.6	6.8	-0.2	13.4	0.32	3.9
1970-72	8.6	4.7	3.9	13.3	-0.12	3.8
1972-73	9.6	4.3	5.3	13.9	0.21	3.4
1973-74	7.8	5.8	2.0	13.6	0.35	3.9
1974-75	6.5	9.8	-3.3	16.3	0.25	4.0
1975-76	7.7	7.1	0.5	14.8	-1.31	3.6
1976-77	6.5	7.0	-0.4	13.5	-1.19	3.0
1977-78	8.3	5.7	2.6	14.0	-0.37	3.4
1978-79	8.8	5.7	3.0	14.5	-0.28	2.6
1979-80	6.6	7.8	-1.2	14.4	-0.13	3.7
1980-81	6.7	6.6	0.1	13.3	-1.34	3.9
Mean (1970-81)	7.6	6.5	1.1	14.1	-0.33	3.6
S.E. Mean	0.33	0.46	-	-	-	-

1 All rates are calculated as a percentage of initial year employment in manufacturing.
2 Continuing establishments existed in both of the years (e.g., in 1970 and 1971).
3 New establishment existed in the latter year but not the former (e.g., for 1970-71, in 1971, but not 1971).
4 Exiting establishments existed in the former year but not the latter year (e.g., for 1970-71, they existed in 1970 but not 1971).
5 Column III = column I + column II.
6 Column IV = column I - column II.
7 Column V = column I - column II, Table 3-4.
8 Column VI = column I + column II, Table 3-4.

Source Special Tabulations, Statistics Canada.

Table 3-6

The Annual Distribution of Establishments in the Canadian Manufacturing Sector by Growth Class, 1970-1981

Period	Continuing Establishments: Constant Employment I	Continuing Establishments: Declining Employment II	Continuing Establishments: Growing Employment III	Exits Rate IV	Net % Change in Continuing Establishments V
			(Per cent)		
1970-71	19.4	36.4	39.4	4.7	-0.27
1971-72	18.7	29.6	46.8	4.9	3.91
1972-73	17.8	28.1	50.2	4.0	5.33
1973-74	19.0	33.2	42.6	5.2	2.04
1974-75	12.6	41.3	41.5	4.6	-3.31
1975-76	15.1	37.4	42.6	4.9	0.59
1976-77	15.5	41.0	38.6	4.9	-0.48
1977-78	15.4	33.6	46.5	4.4	2.58
1978-79	14.3	35.6	45.7	4.4	3.03
1979-80	14.9	40.4	39.6	5.0	-1.17
1980-81	15.0	38.6	39.0	7.4	0.05
Mean	16.16	35.94	42.96	4.94	-
S.E. Mean	0.67	1.35	1.16	0.27	-
C. Var.	.0414	.0375	.0270	.0546	-

Notes There will be differences between the exit and entry rates reported previously and those reported here. These percentage are calculated relative to the total number of establishments in the base period (i.e., those continuing, plus those that exited. Thus the sum of constant, declining and exits should equal to 100 except for rounding. All establishments with zero employment are removed here from the calculations. No corrections are made for the 1978 change in coverage (see Appendix).

Source Special Tabulations, Statistics Canada.

Table 3-7

An Annual Comparision of Employment Size of Growing, Declining, Entering and Exiting Establishments in the Canadian Manufacturing Sector, 1970-1981

Period	Average size of declining establishment	Average size of growing establishment	Average decline	Average growth	Average size existing establishment	Average size entering establishment
			(No. of employees)			
1970-71	102.4	76.3	13.5	12.0	27.3	19.6
1971-72	93.8	79.6	11.1	12.9	27.3	20.4
1972-73	89.0	86.7	11.1	14.0	28.5	19.4
1973-74	93.9	93.1	13.1	13.8	22.8	20.7
1974-75	109.5	67.5	18.4	12.1	26.6	23.6
1975-76	97.2	79.9	14.2	13.6	33.2	29.4
1976-77	93.7	87.8	13.3	13.2	28.7	28.5
1977-78	98.7	88.2	13.6	14.3	33.0	26.1
1978-79	86.2	92.5	12.6	15.0	25.6	27.3
1979-80	102.4	83.6	15.5	13.4	29.4	27.9
1980-81	94.4	89.6	13.3	13.3	28.9	29.5
Mean	96.48	84.08	13.62	13.41	28.10	24.76
S.E. Mean	1.98	2.32	0.61	.27	0.91	1.24
C. Var.	.021	.028	.045	.020	.032	.050

Note Employees here as elsewhere in these tables includes both production and salaried workers.

Source Special Tabulations, Statistics Canada.

Table 3-8

The Annual Importance of Entering and Exiting Relative to Declining and Growing Establishments in the Canadian Manufacturing Sector, 1970-1982

Period	As a percentage of numbers		As a percentage of employment affected		Net of employment change, all continuing establishments (per cent)
	Exiting/ Declining I	Entering/ Growing II	Exiting/ Declining III	Entering/ Growing IV	V
1970-71	12.8	20.2	25.8	32.9	-0.27
1971-72	17.4	13.3	42.6	22.9	3.91
1972-73	15.1	13.3	38.8	20.4	5.33
1973-74	17.1	17.4	30.9	28.6	2.04
1974-75	12.2	15.0	18.3	31.4	-3.31
1975-76	14.2	8.6	34.3	18.6	0.59
1976-77	12.7	6.3	29.1	13.6	-0.48
1977-78	12.6	8.8	32.8	18.1	2.58
1978-79	12.4	10.4	25.2	19.0	3.03
1979-80	12.5	12.5	23.7	26.0	-1.17
1980-81	19.1	8.4	38.5	18.5	0.05
Mean	14.4	12.2	30.9	22.7	-
S.E. Mean	0.84	1.27	2.22	1.87	-

Note This table contains the corrections made to account for the 1978 coverage change. For details see Appendix B.

Source Special Tabulations, Statistics Canada.

Table 3-9

The Components of Job Gain and Loss for Establishments Measured Over Five and Ten Year Intervals in the Canadian Manufacturing Sector, 1970-1981

Period	Entry rate	Continuing establishment growth rate	Total job growth rate	Entry/ total growth rate	Exit rate	Continuing establishment decline rate	Total job decline rate	Exit/ total decline rate
				(Per cent)				
Cumulative change from comparing endpoints								
1971-76	9.24	16.50	25.74	35.9	10.28	9.95	20.23	50.8
1976-81	10.26	15.10	25.36	40.5	9.95	11.39	21.34	46.6
1971-81	19.19	21.10	40.29	47.6	18.73	11.89	30.62	61.2
Implicit annual rates of change from comparing endpoints								
1971-76	1.78	3.10	4.68	-	2.15	2.07	4.42	-
1976-81	1.97	2.81	4.62	-	2.07	2.39	4.69	-
1971-81	1.77	1.93	3.44	-	2.05	1.25	3.59	-
Implicit annual rates derived from the cumulative change based on year-to-year rates[1]								
1971-76	1.26	8.04	-	-	1.78	6.36	-	-
1976-81	1.74	7.38	-	-	1.90	6.56	-	
1971-81	1.50	7.70	-	-	1.84	6.46	-	-

1 It was not possible to make corrections for the 1978 census coverage change for the longer run rates. Therefore, for comparison purposes, the short run year-to-year rates used for comparison are the uncorrected rates reported in Appendix B.

Source Special Tabulations, Statistics Canada.

Table 3-10

Average Annual Enterprise Entry and Exit Rates, 1970-71 to 1982-83

Method of calculation	Total	By merger	By plant opening or closing
		(Per cent)	
1 Using Numbers			
Entry	6.24	0.66	5.58
Exit	6.75	1.22	5.53
2 Using Employment			
Entry	2.31	1.22	1.09
Exit	3.42	2.06	1.36

Source Special Tabulations, Statistics Canada.

Table 3-11

Comparison of the Source of Job Turnover from Plant Openings and Closings, 1970-71 to 1979-80

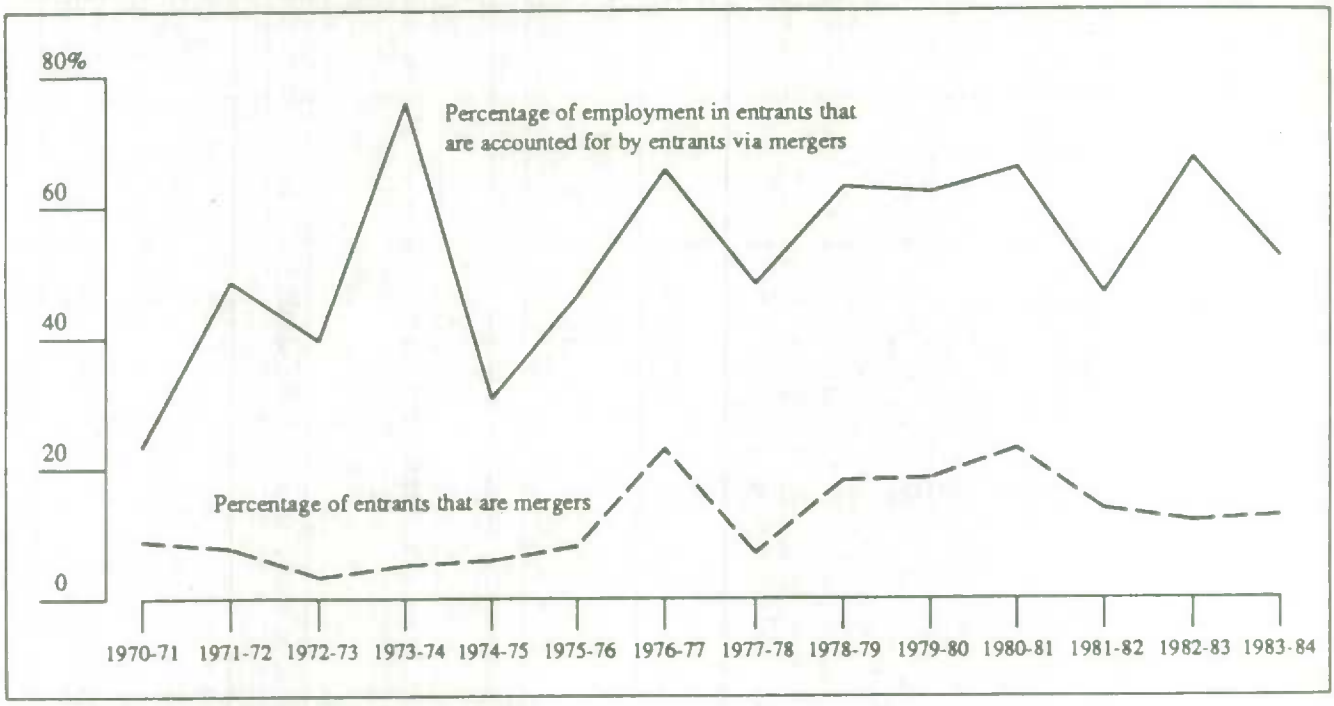
Source	Total plant job turnover rate I	Enterprise job turnover via new plant creation II	Continuing firm new plant rate III
		(Per cent)	
Entry	1.65	1.09	0.56
Exit	1.87	1.25	0.62

1 The continuing firm plant rate of job turnover is calculated as the difference between columns I and II.
2 These are calculated as the mean of the annual rates of employment change calculated on base year weights Modifications were made to both the enterprise and establishment entry and exit rates in accordance with the discussion in Appendix B.

Source Special Tabulations, Statistics Canada.

Chart 3-1

The Importance of Mergers in the Entry Process in the Manufacturing Industries, Canada, 1970-71 to 1983-84



SOURCE Special tabulations provided by Statistics Canada.

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