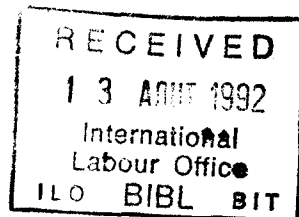


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Standardising employment growth rates of foreign multinationals and domestic firms in Canada: From shift-share to multifactor partitioning

by Michael Ray,
Carleton University, Ottawa,
Canada



Note:
Working papers on themes studied within the ILO
are intended to stimulate discussion and
critical comment.

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INTRODUCTION

Data on trends, such as employment growth in foreign-controlled multinational enterprises, should not be interpreted without first standardising the trends for differences in composition. The composition of foreign multinationals in Canada, the example used in this report, is different from Canadian-controlled firms in industry mix, regional location and the size distribution of firms. Each of these compositional differences proves to have an important, independent and intrinsic effect on employment growth. Hence conclusions about the contribution of multinational enterprises to employment growth that are based on data in which these compositional differences have not been partitioned out may be quite wrong. For example, employment in firms in Canada defined as foreign-controlled declined by 1.13 per cent from 1978 to 1986, while it grew by +18.36 per cent in Canadian-controlled firms. Apparently, then, foreign multinationals did much worse than Canadian firms in job creation over this period. But when the effects of industry mix, regional locational, and distribution of firm size, together with interaction and other effects, are all partitioned out, the results are reversed. The intrinsic, direct effect of foreign control of firms in Canada was an employment growth rate of +15.07 per cent compared with -3.59 per cent for Canadian control.

The interpretational problems of analysing composite data, and the need to standardise trends for compositional differences, are fully recognised by statisticians. Indeed, many cases have been documented in the statistical literature of Simpson's paradox - where the trend of the whole is contrary to the trends of the parts. Examples of Simpson's paradox can be found in employment growth of foreign- and Canadian-controlled firms in Canada. Recognition of these problems has led to the development and general use of standardised rates and indexes in many fields. Social scientists would be unlikely, for instance, to compare crude demographic rates without adjusting them for differences in age and sex composition.

The development of standardisation procedures for employment growth data, which had a promising start in the 1940s, has since lagged far behind policy needs. The shift-share technique, developed at that time, has been widely used, although it standardises data for only two factors - and both of those inaccurately, as is demonstrated in this report. Furthermore, a number of influential reviews of the shift-share technique reveal a basic misunderstanding of the purpose and use of standardisation procedures in general, as well as of this technique in particular.

The primary purpose of this report is to present a new, multifactor partitioning method of standardising growth rates. The method is a reformulation and extension of shift-share analysis. The results of the partitioning, though more detailed, are in a similar format and interpreted in the same manner. The methodology, developed in collaboration with statistical and subject-matter specialists at Statistics Canada, is applied to employment growth data specially tabulated at Statistics Canada, by the Small Business and Special Surveys Division. The Canadian data are of special interest because of the extent of foreign ownership and control of industry in Canada and concerns that the Canadian operations of such foreign multinational enterprises may be closed down or reduced during periods of recession before plants in the home country of the MNE are closed down or reduced. The period analysed, 1978-86, includes two years, 1981-82, and 1982-83, in which net employment in Canada actually decreased, and it decreased over the eight-year period for large firms (defined as having 100 or more employees in 1978), the size class in which multinational firms are concentrated.

FROM SHIFT-SHARE TO MULTIFACTOR PARTITIONING

1. Drawing the wrong conclusions: Simpson's paradox

The observed incidence of, or rate of change in, a characteristic in a given region is affected by the composition of the underlying population in the region. Crude death rates, for example, are affected by the age, sex, income, occupation and ethnic structure of the population. Inter-regional differences in observed incidences or rates are, therefore, affected by inter-regional differences in the composition of the populations, and may be quite misleading if these differences are large.

The failure to adjust regional rates for heterogeneity in regional composition confounds inter-regional differences in rates with inter-regional differences in composition. In the extreme case of Simpson's paradox, the adjusted rates may be the opposite of the crude rates (Simpson, 1951; Paik, 1985; Blyth, 1972; Cohen, 1986).

Three real examples are quoted from Cohen (1986) to illustrate the paradox. Every age-specific female death rate was higher in Costa Rica in 1960 than the corresponding figure for Sweden. Yet Costa Rica's crude death rate was lower than Sweden's, because Costa Rica's crude rate is biased by the concentration of its population in the younger age groups, where both countries' rates are low, and Sweden's by its concentration of older age groups, where both countries' rates are higher. A less obvious example of Simpson's paradox is provided by average family size in Canada. French-speaking families are bigger than English-speaking families in Quebec (1.80 versus 1.64 for the period 1971-76) and in the rest of Canada too (2.14 versus 1.97). But the Canada total shows that English-speaking families are larger (1.95 versus 1.85). The paradox arises because the French-speaking total is dominated by Quebec, where both figures are low, and the English-speaking by the rest of Canada, where both figures are higher. A third example quoted by Cohen is for income tax in the United States. Tax rates were lowered for each of the five income categories from 1974 to 1978, but the overall tax still increased as category creep edged a higher proportion of income into the upper tax rates.

Simpson's paradox is always a lurking threat in the analysis of composite data. It can recur whenever a new variable is introduced into the analysis. Each new stratification of the data can reverse the previous inequalities in the rates as long as substantial heterogeneity persists within the subgroups delimited. But complete homogeneity is no answer to the paradox either, for it can be achieved only at the cost of adding variables and categories to the point where individual cell values become too small for reliable analysis. An uneasy trade-off is needed. Analysts must use sufficient categorisation of the populations to achieve substantial homogeneity of individual cells, and to minimise the risk of a potential Simpson's paradox. On the other hand, the categories must be broad enough to produce robust cell values that withstand mathematical partitioning.

2. The basic concept of shift-share analysis

Shift-share analysis is a method of standardising growth rates when the differences in the rates and the effects of composition are both of interest. The technique has become widely used and generally accepted to determine the extent to which inter-regional differences in employment growth are due to differences in each region's mix of industries.

Shift-share analysis identifies three different components of change. One is the national component or the national growth rate effect. The national growth rate effect is the employment change which would have occurred in a region if total base year employment in that region had grown at the same rate as total employment in the nation as a whole. This effect provides a useful index of comparison. The difference between the actual growth rate in employment and the national growth rate for each region draws attention to how much better or worse the employment growth of each region has been, compared with the nation. Attention is then focused on trying to understand this deviation from the national performance level.

The key to shift-share analysis is the partitioning of the deviation of the region's growth rate from the national growth rate into two further components: an industry effect and a region effect. The industry effect is calculated first, and the region effect is then derived as a residual. Assume that each industry in every region grew at the national growth rate for that industry. Regional differences would then be determined solely by the mix of fast and slow growth industries in each region. Hence an "expected" employment growth can be calculated for each region using the national industry growth rates. The industry-mix effect on employment growth in a region then equals the difference between the national growth rate effect and the expected employment growth. A positive difference indicates a favourable balance of fast growth industries in the region: that is, a favourable industry-mix effect.

The regional effect is a residual component calculated as the difference between the actual employment growth and the expected growth. A positive regional effect for an industry in a region may be interpreted as indicating positive locational advantages possessed by that region for that industry - though it is important to note that non-locational factors can strongly influence regional employment growth rates.

In summary, shift-share analysis partitions employment growth into three components: a national growth rate effect, an industry effect and a regional effect. These components are derived by computing the growth that would have occurred in the region if it had grown at the national employment growth rate: the expected rate, if each industry in each region had grown at the national rate for that industry and the actual rate. The industry-mix effect is then the difference between the expected rate and the national growth rate, and the regional effect is the difference between the actual rate and the expected rate.

If the results of the partitioning are summed for every region in the analysis, then both the industry mix and regional effects go to zero. The employment for all regions combined equals the national growth. The industry mix for all regions combined is the national industry mix, and there is no industry-mix effect for the nation. And since the industry-mix effect is zero, there is no residual, and hence no regional effect at the national level.

3. The origins of shift-share analysis

The early applications of shift-share analysis are of particular interest because of the conflicting claims made about its origins, because mathematical errors in the procedure have persisted uncorrected for so long, and because of arguments as to the value and limitations of the technique.

Edgar Hoover wrote that "this approach was apparently first used by Daniel B. Creamer in 1942" (Hoover, 1971, p. 293). Harry Richardson changed this in his book to "Hoover points out that the technique was first used by Daniel B. Creamer in the early 1940s" (Richardson, 1978, p. 206). Hoover, in fact, based his statement on Perloff et al. (1960, p. 33) where Creamer is cited as an example of an early user, and on Ashby (1968, p. 423) where Creamer is cited as the first to use shift-share analysis in the United States. Actually, Armstrong and Taylor (1978, p. 300) are certainly nearer the truth when they write, "As far as we are aware, the shift-share technique was first used by J.H. Jones in 1940 (in an appendix to the Barlow Report on the Distribution of the Industrial Population)". However, in a thoughtful review of the concept, Stevens and Moore (1980, p. 419) cite Edgar S. Dunn in Perloff et al. (1960) as the originator. While it is true that Dunn was the first to use the now standard three-component approach described above, he had published the methodology in French a year earlier (Dunn, 1959). This reference has never, as far as I am aware, been cited in the English literature on shift-share, even though it was followed by a comment (Rosenfeld, 1959) demonstrating conclusively that the formulas could not be measuring what they were said to.

The extensive literature of shift-share commonly cites Creamer (1942) and Dunn (1960), and only very rarely is the work of Jones (1940) or Rosenfeld (1959) mentioned. It is possible that had these overlooked works been more widely studied, then the errors in the mathematical procedure might have been corrected much sooner.

(a) The Barlow Commission and Professor J. Harry Jones

The shift-share analysis was of central concern to the Barlow Commission. The Commission was concerned with the growing concentration of industrial population in the south-east of England. It recognised that economic considerations must determine the location of industry. Hence there was a need to know the economic impact of diverting industrial growth. The fundamental question was thus whether the growth of south-east England was due to the faster rate of growth of individual industries there than in the rest of the United Kingdom, or whether it merely reflected a favourable industry-mix effect of industries that could be expected to do about as well in other parts of the country.

Jones began by classifying industries into two classes: local and basic. Local industries, such as building and retailing, had to locate near the population they served, and could not be diverted. Basic industries, however, send their products to places outside the area in which they are situated, and are basic in the sense of determining the size of the local industry that is needed. Jones then further divided the basic industries into 23 that increased employment from 1927 to 1937, such as motor vehicles and electrical engineering, and those that declined in employment, including coalmining, textiles, shipbuilding and iron and steel.

To know how far regional employment reflected their industrial composition, Jones needed to calculate what their "fair share" of the national growth of each industry should be. But he was uncertain as to how to do this. A region's fair share of the national growth could be computed in two different ways, he noted (Jones, 1940, p. 269). The first was to allocate the growth on the basis of the regional employment in that particular industry. The second was to use the total employment in the region. After all, as Jones noted, "an area may have had more than its fair share of the growth even if the percentage rate of increase in the industry has been no higher, or indeed lower, than in the whole country, simply because a relatively high proportion of the insured workers in the area worked in that industry" (Jones, p. 269). Jones in fact went on to use the first method, as has everyone since, and his question as to whether the second approach was better has seldom been tested in the 50 years since the Barlow Report was published.

The results of his analysis using the first approach were so clear-cut that Jones probably did not feel the need to re-test them using the second. He calculated each region's fair share of industry growth, and subtracted this from the actual growth to obtain the regional shift. He defined a "shift" as the amount of employment by which the actual employment in an area exceeds or falls short of the "fair" share of the area in the national expansion of the industry (Jones, p. 273). The regional shares accounted for the bulk of the inter-regional employment differences. The south-east (London and the Home Counties), for example, had had a 42.7 per cent employment growth 1923-37. Their "fair share" was 40.2 per cent, so the regional shift was only 2.5 per cent. His conclusion was that London's growth was largely due to its concentration of expanding industries, and it did not appear to mean a change in the competitiveness of the London region (Jones, p. 279). Similarly, the rate of expansion of individual industries was, on balance, no greater in the more prosperous than in the more depressed areas (Jones, p. 273).

(b) Early applications in the United States

The first use of the shift-share approach in the United States was Creamer's analysis of shifts in manufacturing industry between 1929 and 1937. He gives no source for his methodology, and it is not clear whether or not he developed the methodology independently. He does use the same term "shift", defined in the same way as Jones, to mean the difference between the actual and expected employment growth. But Creamer's focus is on industries and why they shift location, not on regions and why their growth rates differ. He finds that the amount of locational shift is related to the amount of industry growth (positive or negative): that is, shifts are more likely to occur when industry is expanding and new plants are being opened, or when it is declining and plants must be closed. But in either case the shifts were small, and as in the United Kingdom analysis, regional growth rates for individual industries were close to their national rates.

Perloff, Dunn, Lampard and Muth (1960) cite the work of Creamer, but not Jones, in what still stands as the most detailed shift-share analysis yet undertaken. The analysis was the work of Edgar Dunn, and his contribution is properly described in the preface by the principal author as a remarkable feat. Dunn states that his methodology is an elaboration of the earlier work of Creamer, based on the contemporary work on the analysis of inter-state income differentials. Like Jones, he identifies two ways of doing the computations - the one a very time-consuming method using a complex weighted average of rates, and the second computing the regional effect as a residual in the way that Jones did.

Dunn (p. 67) identified the contributions of shift-share analysis. It usefully characterises regional economic structure. It highlights the extent to which employment growth in an industry is uniform across a nation, and the extent to which it involves shifts from some regions to others. It pinpoints the relatively stable and less stable elements in the economic structure of the nation and in the individual regions. Dunn also identified that regional shifts could result from residual heterogeneity in the industrial classification. Thus a region could grow because it contained the growing parts of a declining industry, for instance, the growing cattle industry in a declining agricultural sector.

Dunn's work, though an outstanding achievement in general, had two unfortunate results. First, he used a complicated terminology: "proportionality shift" for the industry effect - what Jones called the "share" or fair share and differential shift for the regional effect, what Jones and Creamer termed simply "shift". The confusion in terminology has persisted to the present, to the detriment of the technique (Stevens and Moore, p. 435).

More serious, the Dunn methodology, though incorrect, became the definitive procedure for shift-share analysis, emulated by Ashby (1965) in computations for the United States Government, and by Statistics Canada (then called the Dominion Bureau of Statistics) in 1967. And the range of applications has grown over the years. To give only a few examples, shift-share has been used to prepare projections of regional employment growth (Brown, 1969; Floyd and Sirmans, 1973; Hellman, 1976; Stevens and Moore, 1980; United Kingdom National Plan, 1964; Williamson, 1980), and examine regional unemployment rates (DeBoer and Seeborg, 1984). It has been used to test location theory (Chalmers and Beckhelm, 1976) and to examine broad centre-periphery patterns of development (Keeble, 1976; and Nguyen and Saldivar, 1979). It has been used to analyse labour productivity (Ledebur and Moomaw, 1983) and export opportunities (Green and Allaway, 1985). Moore and Rhodes (1973 and 1974) have used shift-share to evaluate regional development policy. It has been used to analyse population growth (Paris, 1970) and regional crime rates (Blair and Mabry, 1980).

4. Critiques and defences of shift-share

Fothergill and Gudgin (1979, p. 309) have remarked that shift-share fits the expectation that, when a technique is simple and apparently useful, it will be both widely used and heavily criticised. Shift-share has indeed been criticised many times on many points. Four of these points are pertinent to multifactor partitioning as well as shift-share, and are therefore worth reviewing. These four are (1) the difference between data standardisation and model building; (2) level of data disaggregation; (3) interaction; and (4) policy implications.

(a) Data standardisation versus model building

It is on this point that the misunderstanding of shift-share has been serious. Houston (1967), for instance, argued that there was a normative implication to the shift-share components: "Consider the first national growth component which implicitly asserts that every industry in a region should grow at the aggregate national rate" (Houston, p. 579). As Ashby replied (1967, pp. 423-424), there is no such implicit assertion in shift-share analysis, but only the belief that comparisons of the growth of individual industries in particular regions with the national aggregate

performance and with the national performance of the individual industries are both useful.

Standardisation of data does not require an underlying theory as to how the data trends should behave. Rather it provides data which may be used to test theories. This positive contribution is sometimes viewed negatively. Richardson (1978, p. 205) describes shift-share as "merely a standardisation technique permitting us to look at available data in a particular way that may generate a few insights into regional economic structure. It tells us nothing about the capacity of a region to retain growing industries or how to attract them in the first place". No, it does not, but it does identify which are the growing industries, and in which regions they are growing the fastest, and in which the slowest, and these are necessary prerequisites to answering the questions posed by Richardson.

(b) Level of data disaggregation

Most reviews of shift-share raise the fact that the finer the level of industry classification, the smaller will be the regional effect (Houston, 1967, answered by Ashby, 1967; Townroe, 1969, and Buck, 1970, answered by Stilwell, 1970; and Richardson, 1978, answered by Fothergill and Gudgin, 1979).

Any variation of the input data is likely to affect the results in any technique that is not insensitive to inputs (Ashby, p. 424, and Stilwell, p. 454). The fallacy is to argue that the finer the industrial classification, the more accurate are the results of the shift-share analysis (Stilwell, p. 454). Broad groupings may be more helpful as a general guide to the sectoral distribution of differential shifts.

Certainly Richardson (p. 205) overplays his hand on this point, noting that the region effect always goes to zero in the extreme case where each firm represents an industry. Single-firm industries are as meaningless in economics as if sociologists regarded every individual as constituting a single social class (Fothergill and Gudgin, p. 311), or as if geographers regarded every grid reference as constituting a separate region.

Industry classification has been recognised as a fundamental problem underlying much of economic analysis, since the seminal work of E.H. Chamberlin's Theory of monopolistic competition in 1933 (Hay and Morris, 1979). The theory of competition requires the acceptance of competing groups of firms in the same industry, as does in fact much of the theory of market structure, conduct and performance, which are the component parts of industrial economics. The problem with Richardson's industrial classification, which places each firm in its own industry, is that it destroys not only the underlying logic of shift-share analysis, but brings industrial economics crashing down with it. Acceptable classification is as essential to theory as it is to measurement and data standardisation.

(c) Industrial interaction

MacKay (1968) was particularly critical of the failure of shift-share analysis to take account of the knock-on effect of slow growth in one industry in a region with the industries that supplied it with inputs and services: "Thus if one region's economy is dominated by a group of declining industries while another region has a large share in expanding industries, this is likely to produce different rates of growth in other sectors of the regional economy" (MacKay, p. 142).

In fact one test, in which the region effects on employment growth in manufacturing were adjusted for multiplier effects, showed that the differences did not bias or substantially affect the results (Fothergill and Gudgin, p. 316). However, the authors were careful to point out that the multiplier effects were probably much more important in determining regional shifts in the service sector.

One reason why industrial interaction may not be as critical to regional shifts in employment has been suggested by Keeble (1976, p. 34). Keeble notes that input-output relationships are to some extent built into shift-share analysis through national-level linkages, which result in a common trend of national decline or growth in a certain industry. Shift-share analysis can be properly criticised for ignoring special industry relationships peculiar to certain regions over and above average national-scale links, he says, but most linkages are national scale rather than regional.

(d) Policy implications

Shift-share analysis was created to assist with a national policy issue (Barlow, 1940) and has been used in policy analysis ever since (for instance Creamer (1942), Hemming (1963), the United Kingdom National Plan (1964), Randall (1973) and Danson et al. (1980)). The criticism levelled is that the policy implications drawn from shift-share analysis have been too mechanical and too simplistic. At worst, regions with slow employment growth are categorised according to whether their problem is the industry effect (that is, a concentration of slow-growth industries), or whether their problem is the regional effect (that is, slower growth of individual industries in their regions than in the nation as a whole). The policy implications may then be seen as locating fast-growth industries in these regions in the first type, in order to improve the industry mix. In the second type, the policy implication is interpreted as infrastructure improvements to improve regional growth rates.

The problem with the above interpretation is that it confuses data standardisation with regional economic analysis, the effects of industrial structure with the reasons for industrial structure, and the measured causes of slow regional growth with the remedies. In particular, the data standardisation does not identify the reasons for the regional shifts in employment, and these reasons do need to be identified before policies are proposed. Randall (1973), in his study of west-central Scotland, identified: the degree of local ownership of industry and the consequent level of local research and local higher management positions; the general size, organisation and ownership of firms; and the local availability of venture capital. Buck (1970), in an examination of industries with large regional shifts, found that the contributing factors included firms attracted into his Merseyside study area by regional subsidies, and firms closed because of corporate reorganisation, as well as cases caused by faulty firm-classification or product heterogeneity. Data errors are a problem whatever analytic technique is used, but in shift-share analysis their effects are likely to end up in the regional shift, making this component trickier to interpret.

Finally, it needs to be remembered that when shift-share has been applied to a sequence of periods to assess the effectiveness of policy intervention (as in Moore and Rhodes, 1973 and 1974), the regional shifts of each period become part of the industry mix of the next. The industry mix is constantly changing. The crucial questions may well be, how did some regions build up a favourable industry mix while others were left with an unfavourable one, and why is the regional shift of employment out of certain regions and into others? That is shift-share focuses the policy issues that need to be

addressed. But data standardisation is no facile substitute for the detailed analysis which must follow.

5. Conceptual errors in the mathematics of shift-share

It is rather surprising that in all the searching reviews of the shift-share technique, the conceptual errors in the mathematics remained uncorrected, even though Jones (1940) pointed out the problem of defining a region's fair share of the national growth, and Rosenfeld (1959) had demonstrated mathematically the flaw in the formula for the region effect. However, Cunningham (1969) came very close to both identifying one of the problems, and to proposing a solution that points towards the multifactor partitioning presented in this paper. The discovery of them in this study was triggered by the extension of simple shift-share to include the effects of firm size and country of control of firm, as well as the industry and region effects. In the two-factor case, only one effect need be measured directly, and the other can then be considered to be equal to the residual. But when the data have to be decomposed to measure four main effects, the conceptual errors are compounded, and the need to rethink the mathematics becomes imperative.

The conceptual errors in the mathematics can be demonstrated definitively only by a mathematical analysis of the shift-share technique (see Mathematical Appendix). But it seems important to outline the problems to those who will not wish to work their way through the mathematical notation and equations.

(a) The problem of interwoven effects

The crux of the shift-share technique is to measure the expected employment growth of a region. The obvious answer is to calculate the expected growth as the actual employment in each industry in the region at the beginning of the period, multiplied by the growth rates of those industries in the nation as a whole. After all, the simplest expectation is that each industry would tend to grow at the same national rate, wherever it was located, with regional deviations from the national rate in fact reflecting regional factors. But Jones (1940) suspected that this result would be biased by the regional distribution of the labour force. And so it is. The problem is that the national growth rate for an industry is actually the weighted average of the regional rates. It can be calculated in several different ways, but it does equal the rate of growth in each region, weighted by the proportion of that industry's employment in each region. So the national rates of growth of each industry are affected by their regional mix.

Shift-share analysis acknowledges that regional growth is affected by the distribution of employment among the different industries in each region. Indeed, a prime purpose of the technique is to standardise for this industry-mix effect. What was overlooked was the equal need to standardise industry growth rate for their regional-mix effects.

Some analysts recognised this conceptual problem in shift-share analysis and explored possible solutions. Rosenfeld (1959) was the first. He wrote (p. 534) in a commentary on a preceding article by Edgar Dunn (1959) that what was called the differential shift (regional effect) was not entirely free of the proportional shift (industry-mix effect). Equally he found it difficult to accept that the regional effect formula expressed what it was supposed to. His mathematical approach was rather different than that in the Mathematical Appendix, but it rested on the same critical point. Rosenfeld found that the

formula for the regional effect could be partitioned to isolate a proportionality (industry-mix) effect embedded within it.

Cunningham (1969) was less dogmatic than Rosenfeld, to whom he does not refer, and noted only that a choice had to be made in applying this technique as to which weights to apply. He proposed using aggregate industry employment weights rather than the standard industry-specific weights (p. 123). The industry and regional effects obtained were different, he said, and both contained useful information. Ideally, a way should be found to combine the two sets of results, including his measure ψ (Ψ). Cunningham's ψ turns out to be precisely the "allocation" effect in multifactor partitioning.

The problem with Cunningham's very penetrating approach to shift-share was that he produced a partitioning of employment growth comprising an uncorrected industry-mix effect, the allocation effect, and a residual, which is hard to interpret. But he correctly diagnosed that the problem of selecting weights in calculating industry rates "makes it impossible to decompose a regional problem into two tidy and uniquely measurable elements".

Esteban-Marquillas (1972) did not refer to Cunningham's article, but did restate Rosenfeld's argument with great clarity. He noted (p. 250) that one would suppose that in the case of two regions with the same number of workers, and two industries with precisely the same growth rate, the regional effect would be identical with regard to that industry in the two regions. But this only happens if the proportions of workers in that industry are the same. This suggests that "the competitive effect, as it is normally formulated, does not reflect exactly what it pretends, but is influenced and interwoven with the industry-mix effect" (p. 250).

Esteban-Marquillas then came up with a new formula to correct this problem. Unfortunately he fell right back into the same trap, and far from purging the region effect of the industry-mix effect, his formula merely embeds the problem of interwoven effects deeper.

Esteban-Marquillas did recognise that any solution to the problem required recognition of an "allocation" effect which is separate and independent of the industry and region effects: "This component will show us if a region is specialised in those sectors in which it enjoys better competitive advantage". In fact, in the multifactor partitioning, this question is evaluated only for the country as a whole, and the allocative effect, like the national growth, is a constant ratio applied to each region.

Another very clear statement of the problem of interwoven effects (which is in fact the term they introduced) is an article by Herzog and Olsen (1977). They wrote: "The competitive position and industry-mix effects are interwoven; both depend on industrial structure. Therefore, the classical formulation of the competitive [region] effect does not measure what it is often described to measure ... the competitive position is an impure measure of regional competitive advantage or disadvantage" (p. 444).

Very sadly, Herzog and Olsen then followed Esteban-Marquillas, repeating the same mistake and embedding further into their calculations the problem of interwoven effects. And perhaps, not surprisingly, in another methodological argument Arcellus (1984), also referring back to Esteban-Marquillas, also makes the same mistake. And so, although the mistake was recognised, at least by the more thorough and careful practitioners, it remained uncorrected nearly half a century after the technique was first used.

(b) On the perpetuation of an error

How could a methodology so fundamentally flawed have continued, in widening use, uncorrected for so long - even when the originator (Jones, 1940) had spelled out so presciently his concerns with it? Part of the answer is the complete inadequacy of the references given in the early literature. Creamer (1942) gives no sources for the methodology. Dunn (1960) does not refer to Jones (1940), his own earlier paper (1959) or the Rosenfeld commentary which accompanied it. Cunningham (1969) has no references at all. Esteban-Marquillas (1972) does refer to Rosenfeld (1959) but missed Cunningham (1969). The demonstration of the flaw in shift-share by Esteban-Marquillas is incisive, but the suggested correction repeats precisely the same mistake. And it is the Esteban-Marquillas article, which is in English, not Rosenfeld's which is in French, that influences the course of the methodological debate, including Herzog and Olsen (1977) and Arcellus (1984). Klaasen and Paelink (1972) and Bishop and Simpson (1972) miss both Rosenfeld (1959) and Cunningham (1969).

A second problem was the confused perception that the methodological debate about appropriate weightings was a peripheral refinement. It was not recognised that standardisation procedures are fundamentally concerned with weights and that any questions about the validity of the weighting system used strikes at the heart of the methodology. So when Thirlwall replied to Cunningham's article, "There seems no a priori reason why one weighting system should be preferred to another" (Thirlwall, 1969, p. 129), he diverted the debate away from this crucial issue to the secondary questions raised by Houston (1967), and elaborated by Buck (1970) and others.

Discussions pointing out the flaws in the weightings used in shift-share were either forgotten or glossed over. The growing recognition of the need for some form of data standardisation produced a widening range of applications of this faulty technique, giving it an unstoppable momentum and diverting attention still further from the fundamental issues.

But it should be admitted that the effectiveness of the methodology papers was blunted by a total failure to agree on any standard notation (or even mathematical approach), or any standard terms for the various effects. Instead, readers were presented with a bewildering array of alternative equations and incomplete solutions. These incomplete solutions seemed to present as many problems as they solved. Shift-share analysis produced a few simple effects that had ready interpretations. Who could say that about Cunningham's solution, for instance? It is only when the residual bits and pieces of terms are grouped into an allocation and interaction effect that a simple comprehensive interpretation emerges.

Finally, it must be conceded that standardisation of one factor only, with the other derived as a residual, leaves too much leeway for error. It is only when the technique is pushed to the multifactor case that the cracks open wide and force a rigorous and painstaking review.

If there are any lessons to be learned from this unhappy story, one is the need for thorough bibliographic research and documentation, rather than the uncritical acceptance of what previous authors have said. Another is the requirement to study and understand a methodology before applying it. And perhaps most important is acceptance that the prerequisite to success and progress in methodological developments and applications is close team-work by both subject-matter specialists and mathematicians and statisticians who can see when the emperor is rather naked and can point it out very compellingly.

6. Multifactor partitioning

(a) The basic concept

Multifactor partitioning, like shift-share, is a method of standardising growth rates when the differences in the rates and the effects of composition are both of interest. It corrects the shift-share formulas so that the various effects do indeed measure what they say they do. And it extends shift-share to deal with two or more factors.

The number of effects identified in multifactor partitioning depends on the number of criteria of classification. In the standard two-factor region and industry classification, five effects are identified: the three as in shift-share and two more. The three effects comparable to shift-share are the national growth rate effect, the industry effect and the regional effect. The regional effect is separately measured in multifactor partitioning and is not a residual. These three effects are interpreted in the same way in multifactor partitioning as in shift-share. The national growth rate effect is the employment change in a region (or industry) that would have occurred if the region (or industry) had grown at the standardised national rate. The industry effect measures how much faster or slower the standardised growth rate of each industry is than the standardised growth rate of the nation. A region with a concentration of fast-growth industries will have a favourable, positive industry-mix effect. The region effect is similarly a comparative measure of how much faster or slower industries as a whole tend to grow in that region than in the nation as a whole. The region effect for any given region is the same for all industries in that region (unlike shift-share which produces a different region effect for each industry).

Multifactor partitioning identifies two further effects to avoid the problem of interwoven effects which occurs in shift-share. These two are the interaction effect and the allocation effect. The interaction effect is readily understandable. Each region has specific resource and locational attributes that have a differential value for each industry according to its needs. Agriculture and mining provide obvious examples. Hence there are industry-region interactions, specific to each industry-region combination, that occur over and above the region-wide industry effects, and the industry-wide regional effects.

The allocation effect is again readily understandable. Imagine that all industries are proportionately distributed among all regions. It is this distribution of employment that provides the basis of the definition of the standardised industry and national growth rates. The allocation effect is then the difference between the actual growth rate of employment in the nation and what it would have been had each industry been distributed in each region strictly in proportion to the regional total employment.

The number of growth effects identified in multifactor partitioning increases with the number of categories of classifications used. Three categories, say industry, region and size class, create nine effects, four more than for two factors. The extra effects are a size effect and three more interaction effects. The three extra interaction effects all involve aspects of economies of scale: industry-size interaction, which is internal economies of scale; region-size interaction, which is external economies of scale; and industry-size-region, which is a very specific agglomeration economy measure. With four factors, for example with country-of-control-of-firm added, 17 effects are created, including a country-of-control effect and six more interaction effects.

Although the number of effects increases rapidly, the main effects are easily interpreted. The interaction effects probably need to be grouped according to the purpose of the study.

(b) Calculations

The calculations for multifactor partitioning turn out to be surprisingly simple for all but the interaction effects. The same basic calculations are required as in shift-share analysis. In addition a set of standardised growth rates is needed. Standardised growth rates are based on assumptions of strict proportionality.

The essential difference between multifactor partitioning and shift-share is that multifactor partitioning treats the particular growth rates in each cell as the intrinsic rates, while shift-share treats the aggregate rates as the basic rates. So while shift-share focuses on national, industry and regional rates, and partitions these rates, multifactor partitioning adopts the reverse approach. It regards these aggregate rates as merely the weighted sums of the individual cell rates. Thus the industry rate for the nation is the weighted sum of the growth in each industry-region cell. But the weighted sums lock in the disproportionalities in the regional employment distributions. Once embedded in the aggregate rates, these distributional effects cannot be purged. Therefore, multifactor partitioning computes a whole new set of standardised weights, using not the actual employment distributions as in shift-share, but the strictly proportional distributions. Hence there is a residual, which is the difference between the actual and the standardised national growth rates. This residual is precisely the allocative effect early researchers sought. Then the true unbiased effects are calculated as the differences between appropriate standardised rates, and not actual rates as in shift-share.

For the user, it makes little obvious difference which set of rates has been used, except that standardised rates isolate additional interaction and allocation effects. For the analyst, an additional set of standardised rates has to be computed, each of which takes more calculations as more factors are added.

(c) Multifactor partitioning and shift-share:
Some common problems

Multifactor partitioning clearly solves a set of fundamental problems with the mathematical formulas used in shift-share. It provides the interaction effect lacking in shift-share. Multifactor partitioning is, however, no more than a correction and extension of that technique. The criticisms and defences of shift-share apply in much the same way to multifactor partitioning.

It is just a method of data standardisation, not an explanatory model based on a body of theory. There are no normative assumptions about the behaviour of the effects. The level of disaggregation is at least as important in multifactor partitioning as in shift-share. The addition of extra criteria of classification quickly divides cell values to the point where cell growth rates can become erratic. The criteria and number of classes used may, therefore, have to take account of the actual employment distributions as much as research ideals. Moreover, in multifactor partitioning, as in shift-share, the values obtained for the various effects are sensitive to the level of classification. Multifactor partitioning does nothing to help solve this problem.

Multifactor partitioning can help to answer questions about the effects of composition on growth rates. For example, did small firms grow faster in the 1980s because of their industry mix? Or did foreign MNEs grow as fast as domestic MNEs, correcting for industry-region-size differences? It can also provide an essential first step to policy analysis by providing standardised growth rates. But as with shift-share, there is no simple step from data standardisation to policy conclusions.

Multifactor partitioning may add some problems to data standardisation. Composition changes over time. Firms may change in size class, industry classification and country of control. As more factors are incorporated in the analysis, it may be that more thought must be given not only to the specific start and end years, but also to the length of the period. It may be, too, that the debate on the appropriate year at which to measure the composition in shift-share analysis needs to be addressed in multifactor partitioning. The case study that follows uses the initial-year weights only.

The essential point is to replace any application of shift-share with multifactor partitioning. Multifactor partitioning corrects the conceptual errors in the mathematical formulation of shift-share. The difficulties that remain are intrinsic data standardisation problems that confront the analyst whatever standardisation procedure is used.

EMPLOYMENT GROWTH AND FOREIGN FIRMS
IN CANADA: 1978-86

1. Canada as a case study

(a) Foreign control of industry

Canada is a good choice for a test application of multifactor partitioning of the effects of foreign control on employment growth. Employment in multinational manufacturing enterprises has grown in most countries in the post-Second World War period, and now accounts for about a third of the total in industrialised market economies (ILO, 1981, p. 1). But usually, as in the United States, the Federal Republic of Germany and the United Kingdom, it is domestic MNEs which dominate. Canada is exceptional in the extent of foreign ownership and control of its economy. Direct investment, as distinct from portfolio investment, began to grow in Canada in the inter-war period and accelerated after the Second World War, so that by the 1960s more of its production in mining and smelting, in mineral fuels and in manufacturing was owned and controlled by foreigners than by Canadian nationals. Canadians recognise the need for foreign investment to develop their economy and accept that direct investment provides convenient packages of capital, technology, product, management and marketing. The direct job creation is also very obvious. Less obvious are the backwash effects, as foreign investment increased in dominance, and the largest MNEs grew larger than some national economies (Todaro, 1977). Concern, both public and private, grew rapidly after the Second World War, leading to a sequence of government reports, increased data gathering on foreign firms, and the establishment of a monitoring agency (Dow and Kumar, forthcoming), and making Canada the best-documented case of the effects of foreign MNEs in the world (Dicken, p. 379).

The first official body to fix the question of foreign ownership on the political agenda was the Royal Commission on Canada's Economic Prospects (the Gordon Commission, 1956) which led to the Corporation and Labour Unions Return Act (CALURA) of 1962 (Dow and Kumar, forthcoming). CALURA required the collection (but not publication) of financial and other information - including country of ownership and control - of enterprises and labour unions operating in Canada.

The Gordon report also led to the establishment of a Privy Council Task Force on Foreign Ownership and the Structure of Industry (the Watkins Report, 1968), which was the first comprehensive study of the problems created by foreign investment. It brought to the fore many problems including "extraterritoriality", in which branch plants operate according to the laws not of the country in which they are located, but of the country in which their head office is located. Special studies, commissioned by the Task Force, also suggested other backwash effects. Thus, concentrated foreign investment in the Toronto region increased the wide regional disparities in income and employment levels across Canada which is itself a matter of serious policy concern (Ray, 1967 and 1971).

The Watkins report recommended the creation of a special agency to monitor foreign-owned firms. This recommendation was picked up in another Government of Canada report, Foreign Direct Investment in Canada (Gray, 1972) and the Foreign Investment Review Agency was established in 1974 to screen foreign investment. But the Agency was never popular with big business and with a change of Government its name and mandate had been changed by 1985 to Investment Canada in order to encourage, rather than to screen, foreign investment.

Meanwhile researchers continue to underline the problems caused by foreign investment. Britton and Gilmour (1978), in a study for the Science Council of Canada, noted the indirect job losses caused by the sourcing of components and parts in the United States and argued that foreign investment relegated Canada to a technologically backward branch-plant economy. The press, too, is quick to point out public concern with each new major foreign takeover bid, as in the recent case of the Canadian mining giant, Falconbridge (Crane, 1989).

(b) Longitudinal employment data

Appraisal of the costs and benefits of foreign direct investment in Canada have been hampered by lack of data, which is only now being overcome through the achievement, at Statistics Canada, of the linkage of records, both cross-sectionally and longitudinally from the microfiles on firms at Statistics Canada (including the Business Register and CALURA files), at Revenue Canada and at Employment and Immigration (McVey, 1987(a)). The first of these data have now been published (Statistics Canada, 1988, table 3, pp. 52-55). The tabulations presented in this report were specially undertaken from those files by the Small Business and Special Surveys Division of Statistics Canada.

The employment data are derived by tracking firms longitudinally from 1978 (or the year they began business if after 1978) to 1986. Firms are classified by size and location at the beginning of the period, and by country of control and Standard Industrial Classification (SIC) at the end of the period. Firms then retain this classification for the entire period, regardless of any changes that occur during it. McVey notes, for instance, that 302 large firms accounting for 5 per cent of the employment in large firms changed country of control between 1978 and 1985 (McVey, 1987(b)). Growth of employment in any industry-region size-control group can occur only through the net growth of firms in that group continuously throughout the entire period (or the part of it during which they are in business). None of the change in employment can occur because of the reclassification of a firm during the period.

All commercial firms, with paid employment, are included in the enumeration. Firms excluded are those in non-commercial services (education, health and religious organisations, SIC 801-831); public administration and defence (SIC 902-991) and unclassified (SIC 000). However, there are virtually no foreign firms in these excluded categories.

One difficulty with the Statistics Canada longitudinal files is that they contain no direct count of the number employed in each firm, but only the total annual payroll. An "average labour unit" (ALU) or job equivalent is obtained by dividing each firm's payroll by the average annual earnings of workers in the three-digit SIC-province group to which the firm belongs. It is not possible to determine the accuracy of this procedure in detail, but Statistics Canada has compared the aggregate results with two sample surveys: the monthly Labour Force Survey (LFS) and the monthly Survey of Employment, Payroll and Hours (SEPH). For 1984, Canada had 9,847,000 paid workers according to LFS, 9,885,000 ALUs and 9,928,000 according to SEPH (Statistics Canada, pp. 15-18). Furthermore, the ALU and LFS had parallel annual trends 1978-84. In any case, the differences between the three estimates need to be placed in the context of the considerable job turnover and churning that occur (Baldwin and Gorecki, forthcoming).

The ALU data indicate dramatically different employment growth rates according to country of control. The growth rate for foreign-controlled firms, 1978-86, was -1.13 per cent compared with +18.36 per cent for Canadian-controlled. This contrast must be of concern because unemployment levels rose from 8.3 per cent of the labour force in 1978 to 9.6 per cent in 1986 - both years of moderately low but not cyclically minimal unemployment (Gera and Rahman, 1989). The contrast might be interpreted at face value as an indication perhaps of the relocation of foreign-controlled manufacturing activity outside Canada. What is needed first, however, before looking for any explanations, is to standardise the data for differences in the composition of foreign and Canadian firms.

2. Disproportionalities in employment distribution

(a) Disproportionalities in industry structure

Just as the Barlow Commission found that regional differences in employment growth rates were largely due to regional differences in industry composition, so it might be supposed that differences in employment growth rates by country of control might be due to differences in their industry mix. In fact, although the differences in composition are considerable, these compositional differences contribute little to explaining the aggregate difference in growth rate.

Foreign investment in Canada has always been concentrated in the goods-producing sector, particularly mining and manufacturing, and in 1968 these industries accounted for 60 per cent of the labour force in foreign-controlled firms. The concentration was particularly high in secondary manufacturing (involving the production of finished goods) which alone accounted for a third of the foreign-firm labour force (table 1 and figure 1).

It is precisely the concentration of MNE activity in manufacturing which has caused labour organisations great concern, for these jobs are more easily moved from one country to another (ILO, 1981, p. 4). There are, of course, costs to closing plants (or "barriers to exit") and relocating production, but these costs are probably lower for MNEs than for domestic firms (Harrigan and Porter, 1983, Shapiro, 1983, MacLachlan, 1986, Baldwin and Gorecki, 1983).

Employment in foreign-controlled mining and manufacturing, as well as in the goods-producing industries generally, had dropped by 1986 (table 2 and figure 1). This decline, coupled with a growth in the service-producing industries, did produce a shift in the industry composition of foreign-controlled employment. But the shift was general, affecting both Canadian- and foreign-controlled firms. Hence the relative industry disproportionalities in employment by foreign-controlled firms remained much the same in 1986 as they had been in 1976.

MNE foreign investment is generally concentrated in fast-growth industries (ILO, 1981, p. 48). However, the Canadian sectors in which foreign investment was concentrated tended to do relatively poorly from 1978 to 1986. There is no significant correlation between level of foreign investment and growth at either the two- or three-digit level of the SIC. And, indeed, foreign-controlled firms had a worse employment-growth record than Canadian-controlled firms in every sector of the economy except transportation (which includes transportation, storage, communication and utilities) (table 3). Foreign-controlled goods-producing industries had a growth rate of -11.3, compared with the Canadian-controlled performance of +9.8. So although the

industry-composition of foreign firms was not favourable during this period, it cannot, by itself, explain their poor job-generation performance.

Table 1. Employment in Canadian- and foreign-controlled firms by industry: Canada, 1978

	Number employed (in '000)			Per cent distribution		
	Canadian-controlled	Foreign-controlled	All firms	Canadian-controlled	Foreign-controlled	All firms
<u>Goods-producing</u>						
Primary	86.6	4.3	90.8	1.5	0.3	1.3
Mines	98.7	58.1	156.8	1.7	4.3	2.2
Manufacturing I	658.1	284.1	942.2	11.6	21.1	13.5
Manufacturing II	626.9	465.8	1 092.7	11.1	34.7	15.6
Construction	405.9	41.6	447.6	7.2	3.1	6.4
Total	1 876.2	853.8	2 730.0	33.2	63.5	39.0
<u>Services-producing</u>						
Transportation	815.2	45.3	860.5	14.4	3.4	12.3
Wholesale trade	433.4	96.4	529.8	7.7	7.2	7.6
Retail trade	939.9	141.3	1 081.3	16.6	10.5	15.5
Finance	492.6	67.6	560.2	8.7	5.0	8.0
Services	1 092.6	139.9	1 232.5	19.3	11.4	17.6
Total	3 773.7	490.4	4 264.2	66.8	36.5	61.0
Total: Goods and services	5 649.9	1 344.3	6 994.2	100.0	100.0	100.0

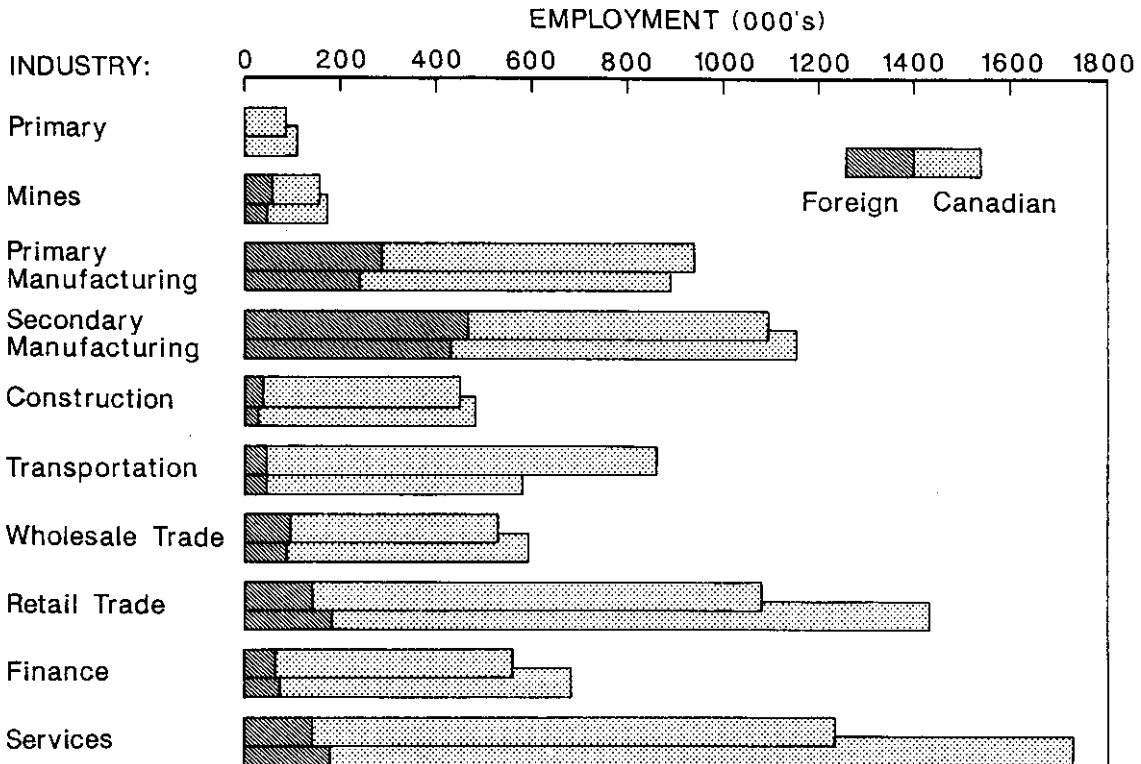
Note: Firms are classified by industry and control in 1978, or year defunct if before 1986, and tracked longitudinally. Number employed is based on job equivalents measured in ALUs (Average Labour Units).

Manufacturing I (primary manufacturing) includes Major Groups I, Food and beverages; 2 Tobacco; 3 Rubber and plastics; 4 Leather; 5 Textiles; 8 Wood industries; 10 Paper; 12 Primary metals; 17 Non-metallic mineral products; and 18 Petroleum and coal products.

Manufacturing II (secondary manufacturing) includes 6 Knitting mills; 7 Clothing; 11 Printing; 13 Metal fabricating; 14 Machinery; 15 Transportation equipment; 16 Electrical products; 19 Chemical products; 20 Miscellaneous manufacturing.

Source: Special tabulation by Small Business and Special Surveys, Statistics Canada.

Figure 1. Distribution of employment by industry and country of control: Canada 1978 and 1986



(b) Regional disproportionalities in foreign investment

Foreign investment in Canada has always shown marked regional concentrations, but it is not likely that these disproportionalities can help to explain the poor employment growth record of foreign firms. Foreign investment is concentrated in Ontario, particularly Toronto and the south-west, and the province accounts for more than half of the employment in foreign-controlled firms (table 4 and figure 2). The degree of concentration increased slightly between 1978 and 1986 as foreign-controlled employment made substantial gains only in Ontario, and declined absolutely in Manitoba, Quebec and the Atlantic Provinces. By contrast, Canadian-controlled employment was more evenly distributed and grew more evenly across the country, though growth rates were highest for Ontario and western regions (table 5 and figure 3).

Foreign firms have undoubtedly benefited from concentrating in Ontario. Ontario has long been Canada's highest income province, largest market, and, together with Quebec, contains the country's manufacturing belt. Ontario's per capita incomes were about 20 per cent above the national average in the 1960s, and 10 per cent above since the early 1970s. Inter-regional differences in per capita income are closely related to inter-regional differences in labour productivity which in turn is related to factors such as capital investment per worker, education levels, urbanisation economies and internal economies of scale. While foreign firms should have benefited from the locational advantages which Ontario offers, their concentration there has possibly contributed to regional disparities in the country.

Table 2. Employment in Canadian- and foreign-controlled firms by industry: Canada, 1986

	Number employed (in '000)			Per cent distribution		
	Canadian-controlled	Foreign-controlled	All firms	Canadian-controlled	Foreign-controlled	All firms
<u>Goods-producing</u>						
Primary	113.6	2.5	116.1	1.7	0.2	1.4
Mines	123.9	50.9	174.8	1.9	3.8	2.2
Manufacturing I	648.1	240.8	888.8	9.7	18.1	11.1
Manufacturing II	723.1	431.2	1 154.3	10.8	32.4	14.4
Construction	452.2	31.6	438.8	6.8	2.4	6.0
Total	2 061.0	757.0	2 817.9	30.8	57.0	35.2
<u>Services-producing</u>						
Transportation	735.9	45.6	781.5	11.0	3.4	9.7
Wholesale trade	495.3	92.6	587.9	7.4	7.0	7.3
Retail trade	1 232.4	183.9	1 416.3	18.4	13.8	17.7
Finance	605.9	75.3	681.1	9.1	5.7	8.5
Services	1 556.7	174.8	1 731.5	23.3	13.2	21.6
Total	4 626.2	572.2	5 198.4	69.2	43.0	64.8
Total: Goods and services	6 687.2	1 329.1	8 016.3	100.0	100.0	100.0

Source: Special tabulation by Small Business and Special Surveys, Statistics Canada.

Table 3. Employment growth in Canadian- and foreign-
controlled firms by industry: Canada, 1978-86

	Employment growth (in '000)			Growth rate		
	Canadian- controlled	Foreign- controlled	All firms	Canadian- controlled	Foreign- controlled	All firms
<u>Goods-producing</u>						
Primary	27.0	-1.8	25.3	31.2	-42.2	27.8
Mines	25.2	-7.1	18.0	25.5	-12.3	11.5
Manufacturing I	-10.0	-43.3	-53.3	-1.5	-15.2	-5.7
Manufacturing II	96.3	-34.6	61.7	15.4	-7.4	5.6
Construction	46.3	-10.1	36.3	11.4	-24.1	8.1
Total	184.8	-96.9	87.9	9.8	11.3	3.3
<u>Services-producing</u>						
Transportation	-79.3	0.3	-78.9	-9.7	0.7	-9.2
Wholesale trade	61.9	-3.8	58.1	14.3	-4.0	11.0
Retail trade	292.4	42.6	335.0	31.1	30.2	31.0
Finance	113.3	7.7	120.9	23.0	11.4	21.6
Services	464.1	34.9	499.0	42.5	25.0	40.5
Total	852.5	81.7	934.2	22.6	16.7	21.9
Total: Goods and services	1 037.2	-15.2	1 022.1	18.4	-1.1	14.6

Note: Growth rate is 1978-86 employment growth as a per cent of 1978 employment.

Source: Special tabulation by Small Business and Special Surveys, Statistics Canada.

Table 4. Regional distribution of employment in Canadian- and foreign-controlled firms: 1978 and 1986

	British Columbia ¹	Prairies ²	Ontario	Quebec	Atlantic	Canada
<u>1978</u>						
<u>Employment</u> <u>in '000</u>						
Canadian	649.2	978.6	2 144.7	1 473.8	403.6	5 649.9
Foreign	122.1	161.5	719.9	285.2	55.6	1 344.3
All firms	771.3	1 140.1	2 864.6	1 759.0	459.2	6 994.2
<u>Per cent in</u> <u>each region</u>						
Canadian	11.5	17.3	38.0	26.1	7.1	100.0
Foreign	9.1	12.0	53.6	21.2	4.1	100.0
All firms	11.0	16.3	41.0	25.1	6.6	100.0
<u>1986</u>						
<u>Employment</u> <u>in '000</u>						
Canadian	769.8	1 160.3	2 639.1	1 661.3	456.7	6 687.2
Foreign	118.0	162.1	758.8	237.5	52.7	1 329.1
All firms	887.8	1 322.4	3 397.9	1 898.8	509.4	8 016.3
<u>Per cent in</u> <u>each region</u>						
Canadian	11.5	17.4	39.5	24.8	6.8	100.0
Foreign	8.9	12.2	57.1	17.9	4.0	100.0
All firms	11.1	16.5	42.4	23.7	6.4	100.0

¹ Yukon is included in British Columbia.

² North-West Territories is included in the Prairies.

Source: Special tabulation by Small Business and Special Surveys, Statistics Canada.

Figure 2. Distribution of employment by province and country of control

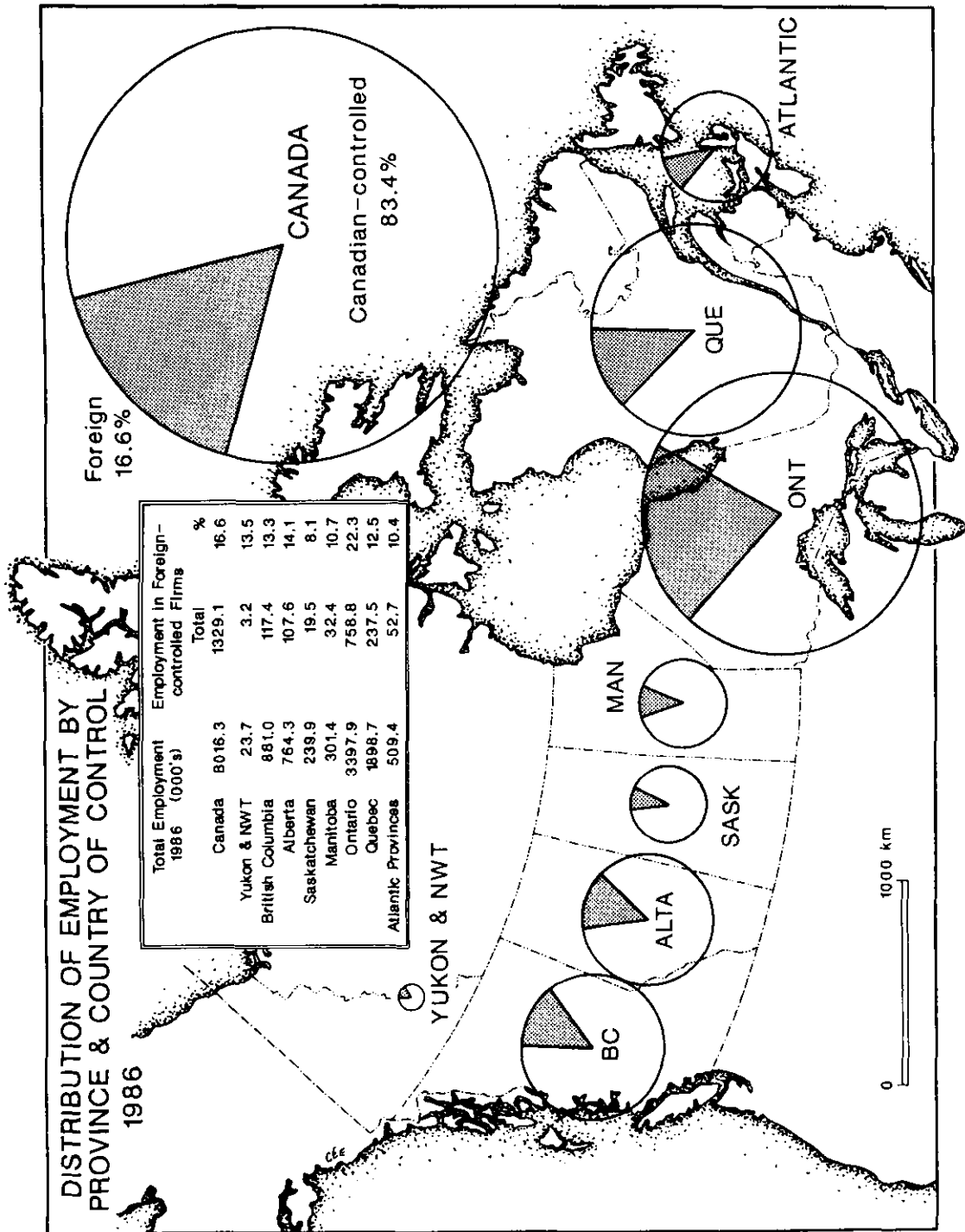


Table 5. Regional growth in employment in Canadian- and foreign-controlled firms: 1978 and 1986

	British Columbia	Prairies	Ontario	Quebec	Atlantic	Canada
<u>Growth in '000</u>						
Canadian	120.6	181.7	494.4	187.5	53.0	1 037.2
Foreign	-4.1	0.6	38.9	-47.8	-2.8	-15.2
All firms	116.4	182.4	533.3	139.7	50.2	1 022.0
<u>Growth rate</u>						
Canadian	18.6	18.6	23.1	12.7	13.2	18.4
Foreign	-3.4	0.4	5.4	-16.7	-5.5	-1.1
All firms	15.1	16.0	18.6	7.9	10.9	14.6

Note: Growth rate is increase in employment 1978-86 as a per cent of 1978 employment.

Source: Special tabulation by Small Business and Special Surveys, Statistics Canada.

Calculating the employment growth of foreign-controlled firms by region seems to increase the disparity with Canadian-controlled firms rather than helping to explain it. Foreign firms did worse in employment growth in all five regions in primary industries, mining, manufacturing, construction, finance and services (table 6). In Quebec they did worse in all nine sectors, and in the Prairie provinces in eight. Looked at in another way, Canadian-controlled firms scored absolute employment gains in all five regions in five of the nine sectors, the foreign-controlled in none. Canadian-controlled firms did not suffer employment losses in all five regions in any sector, but the foreign did in primary industries, manufacturing and construction.

The poor performance of foreign-controlled firms in job generation appears to be almost conclusively established. However, there is one more disproportionality that needs to be assessed - the effect of size class.

Figure 3. Distribution of employment by province and country of control: Canada, 1978 and 1986



(c) Size-class disproportionalities in foreign control

Disproportionalities in size-class composition have assumed great importance in recent decades as net employment growth has been increasingly accounted for by small firms. The contribution of small firms to growth first attracted widespread attention with the work of Birch (1979) in the United States and the Bolton Enquiry (1971) and the work of Fothergill and Gudgin (1979, 1982) and Lloyd and Dicken (1979) and others in the United Kingdom (Mason and Harrison, 1985). The methodology of Professor Birch was applied to measuring job creation by size class of firm to Canada (Canada, DREE, 1986(a)) and the finding corroborated in later analyses using the longitudinal Statistics Canada data (Canada, DREE, 1986(b), and CFIB 1986 and 1988). The precise results depend on the end years selected, but the general result is always the same: small firms account for a very small proportion of the total labour force, but for most of the job creation. Therefore, to compare employment growth for any groups of firms without considering differences in size distribution is likely to be misleading.

It is on size class that foreign-controlled firms are seriously disadvantaged. In 1978, almost all of their employment was in large firms (those with 100 or more employees) whereas the Canadian-controlled firms had large proportions in both small and medium (table 7 and figure 4). Between 1978 and 1986 there was a substantial redistribution of employment distribution between the three size classes, with the small firms increasing their share at the expense of both the medium and large. Foreign firms actually had a faster growth rate in the small class, but they were building on employment base in small firms of less than 1 per cent of the national labour force in 1978 (table 8). And even breaking down employment growth by size class shows they did worse than Canadian in the medium and large-size classes, which accounted for some 98 per cent of their employment. So even the size factor suggests a generally poor performance by foreign firms in job generation, with the exception of the small-size class.

Table 6. Employment growth rates in Canadian- and foreign-controlled firms by industry and region: 1978-86

	British Columbia ¹	Prairies ²	Ontario	Quebec	Atlantic	Canada
<u>Canadian firms</u>						
Primary	7.0	55.9	27.8	47.5	39.5	31.2
Mines	0.7	39.2	53.3	-6.7	-3.2	-25.5
Manufacturing	2.8	7.3	16.6	-3.7	3.5	6.7
Construction	-0.7	-14.1	33.2	14.3	1.0	11.4
Transportation	0.4	2.0	-16.5	-12.2	-5.3	-9.7
Wholesale trade	2.3	3.7	24.8	18.1	0.4	14.3
Retail trade	28.3	36.0	28.4	35.1	24.8	31.1
Finance	19.8	15.3	35.7	9.6	23.6	23.0
Services	52.4	38.4	46.7	36.7	33.2	42.5
<u>Foreign firms</u>						
Primary	-86.7	-48.9	-25.5	-35.3	-52.1	-42.2
Mines	11.0	10.9	-36.6	-44.8	-16.4	-12.3
Manufacturing	-27.7	-14.6	-4.9	-16.0	-27.3	-10.4
Construction	-28.4	-28.2	-21.7	-22.7	-11.8	-24.1
Transportation	12.0	4.8	-5.0	-18.1	36.0	0.7
Wholesale trade	-13.0	-6.6	13.9	-29.4	8.7	-4.0
Retail trade	94.8	15.4	41.2	-10.4	56.4	30.2
Finance	-9.9	0.3	29.2	-12.7	-1.4	11.4
Services	27.8	30.6	36.2	-6.3	1.5	25.0
<u>All firms</u>						
Primary	4.3	55.0	22.7	47.0	32.5	27.8
Mines	3.6	29.0	13.2	-20.7	-7.9	11.5
Manufacturing	-6.6	1.3	6.6	-7.1	-3.6	0.4
Construction	-2.9	-15.9	27.8	12.0	0.2	8.1
Transportation	2.4	2.0	-16.1	-12.5	-4.8	-9.2
Wholesale trade	-0.1	2.2	22.4	9.2	1.2	11.0
Retail trade	33.0	33.6	30.6	29.8	28.1	31.0
Finance	17.0	14.0	34.7	7.2	20.7	21.6
Services	49.8	37.7	45.1	32.8	30.8	40.5

¹ Yukon is included in British Columbia.

² North-West Territories is included in the Prairies.

Source: Special tabulation by Small Business and Special Surveys, Statistics Canada.

Table 7. Employment in Canadian- and foreign-controlled firms by size-class of firm: Canada, 1978 and 1986

Size class of firm	Employment (in '000): 1978			Employment (in '000): 1986		
	Canadian-controlled firms	Foreign-controlled firms	All firms	Canadian-controlled firms	Foreign-controlled firms	All firms
Small	1 478.6	18.2	1 496.7	2 505.7	44.2	2 550.1
Medium	1 191.6	91.9	1 283.5	1 291.2	96.0	1 387.1
Large	2 979.8	1 234.2	4 213.9	2 890.3	1 188.8	4 079.1
Total	5 649.9	1 344.3	6 994.2	6 687.2	1 329.1	8 016.3

Size class of firm	Per cent distribution of employment: 1978			Per cent distribution of employment: 1986		
	Canadian-controlled firms	Foreign-controlled firms	All firms	Canadian-controlled firms	Foreign-controlled firms	All firms
Small	21.1	0.3	21.4	31.3	0.6	31.8
Medium	17.0	1.3	18.4	16.1	1.2	17.3
Large	42.6	17.6	60.2	36.1	14.8	50.9
Total	80.8	19.2	100.0	83.4	16.6	100.0

Note: Small firms employed less than 20 in 1978, medium firms 20 to less than 100, large firms 100 or more.

Source: Special tabulation by Small Business and Special Surveys, Statistics Canada.

The analyst could be forgiven for arguing that the growth data presented, by industry, by region and by size add up to a formidable case against the employment creation performance of foreign firms. But there is one more step to go: the examination of employment growth by industry cross-tabulated by region and by size class, and it is at this detail that a different story begins to emerge. The furniture industry is presented as an example (table 9). In Ontario, Quebec and the Atlantic Provinces, as well as in Canada itself, foreign-controlled firms outperformed Canadian in every size class (in which they were represented), but in each of these cases, because of size-class disproportionalities, they did worse on total employment growth.

These are, of course, cases of Simpson's paradox (as explained earlier in section 1), and other examples at the national level occur in primary metals, retail trade and services. In a Simpson's paradox, aggregate trends are the opposite of each of the individual trends. It is the extreme case. But this example of the furniture industry serves as a warning that industry, region and size-disproportionality effects are simultaneously at work. Their effects cannot be identified separately. The proper answer to the effects of disproportionalities on employment growth requires multifactor partitioning.

Figure 4: Distribution of employment by size-class of country and country of control: Canada, 1978 and 1986

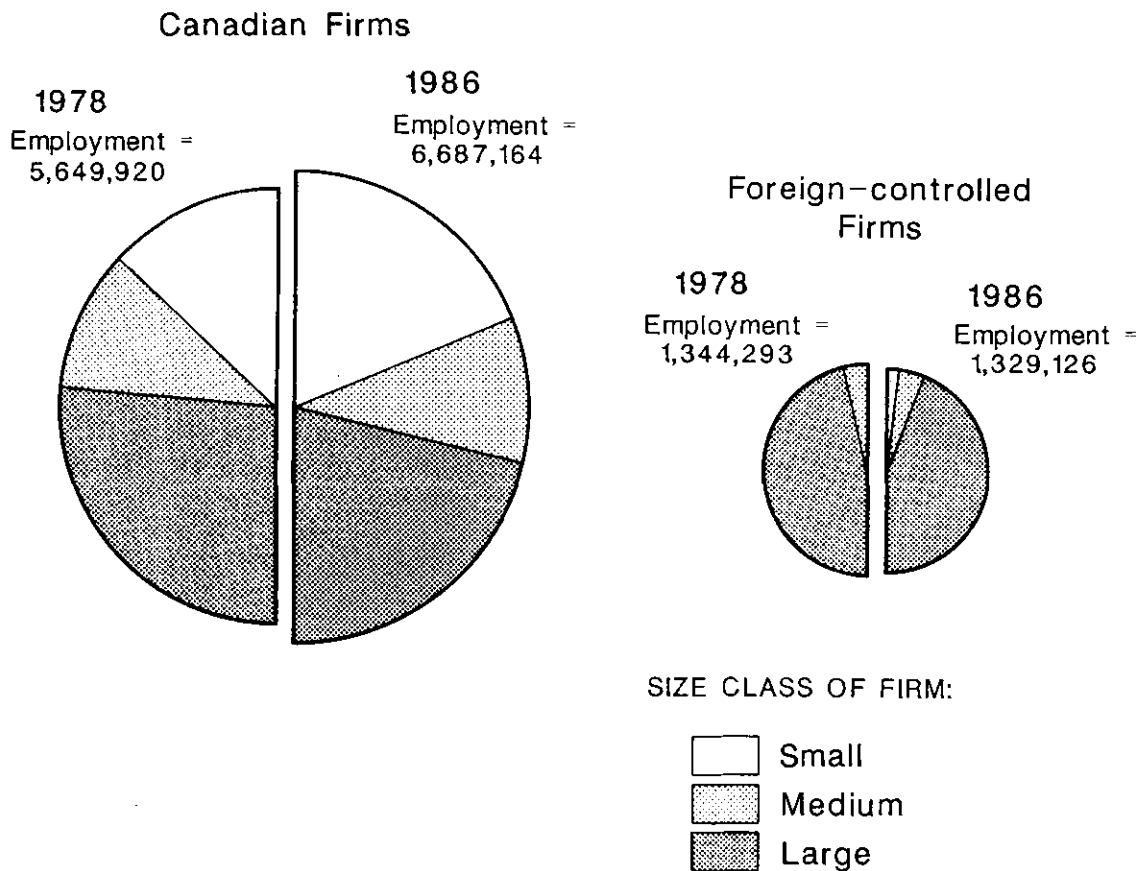


Table 8: Employment growth in Canadian- and foreign-controlled firms by size of firm: Canada, 1978-86

Size class of firm	Employment growth (in '000)			Growth rate		
	Canadian-controlled firms	Foreign-controlled firms	All firms	Canadian-controlled firms	Foreign-controlled firms	All firms
Small	1 027.2	26.2	1 053.4	69.5	144.2	70.4
Medium	99.6	4.0	103.6	8.4	4.4	8.1
Large	-89.5	-45.4	-134.9	-3.0	-3.7	-3.2
Total	1 037.2	-15.2	1 022.1	18.4	-1.1	14.6

Note: Growth rate is 1978-86 employment growth as a per cent of 1978 employment.

Source: Special tabulation by Small Business and Special Surveys, Statistics Canada.

Table 9. Employment growth rates in Canadian- and foreign-controlled firms in the furniture and fixtures industries¹ by region: 1978-86

Size class of firm	Per cent employment growth: 1978-86					
	British Columbia	Prairies	Ontario ²	Quebec ²	Atlantic ²	Canada ²
Small						
Canadian	85.7	1.0	170.4	111.7	93.2	130.6
Foreign	-	-	431.5	168.1	-	504.9
Medium						
Canadian	-1.1	-25.9	12.2	1.5	-37.6	3.4
Foreign	28.9	28.1	54.1	135.2	-10.8	69.5
Large						
Canadian	-19.7	30.8	0.1	-41.0	-51.7	-18.7
Foreign	-50.2	-55.4	13.0	-0.7	-33.6	2.6
Total						
Canadian	37.0	32.4	32.5	-2.0	-15.2	17.5
Foreign	-46.5	-36.1	22.4	-17.9	-30.6	14.6

¹ Manufacturing Major Group 9: Furniture and fixture industries includes Household furniture (SIC 261), Office furniture (SIC 264), Miscellaneous furniture and fixture (SIC 266) and Electric lamps and shades (SIC 268).

² The industry provides examples of Simpson's paradox. Foreign firms did better than Canadian in each size class in Canada, as well as the Ontario, Quebec and Atlantic regions. But Canadian firms did better than foreign in total. Other industry examples of Simpson's paradox are: Primary metal industries (Manufacturing Major Group 12), Retail trade (Trade Major Group 2) and Services to business management (Community and Other Services Major Group 5).

3. Multifactor partitioning of employment growth in Canada

(a) The standardised industry effect

To understand the impact of any one factor on employment growth, we need to remove from its crude growth rate the effects of the other factors. These effects arise both because of disproportionalities and interactions. Only when both sets of these effects have been removed can we be sure we have isolated the intrinsic standardised effect of the factor under consideration.

Thus, to compare the employment growth performance of foreign and Canadian firms, we need properly standardised industry growth rates. If foreign control affects employment growth, its effect will be strongest in those industries where foreign investment is concentrated and will bias their growth rates. If, on the contrary, it is the industry concentration which

strongly affects the aggregate performance of foreign firms, then the industry growth rates still need to be corrected for disproportionalities, including size and region, so that the employment growth can be fully partitioned and the foreign control and other effects fully accounted for.

The result of the multifactor partitioning is to produce standardised industry rates that are much different from the crude (table 10). This is so even allowing for the fact that the weighted sum of the standardised rates is zero, while the weighted sum of the crude rates is the national growth rate.

Table 10. The partitioned industry effect on industry growth rates: Canada, 1978-86

Industry	Actual growth rate 1978-86 ¹	Partitioned industry effect ²	
		Rate ¹	Number
Primary	27.8	-24.2	-22 024
Mines	11.5	20.4	32 035
Manufacturing	0.4	-4.3	-87 169
Construction	8.1	-33.1	-147 999
Transportation	-9.2	-13.0	-111 734
Wholesale trade	11.0	-11.3	-59 860
Retail trade	31.0	16.0	173 439
Finance	21.6	3.9	21 788
Services	40.5	16.4	201 525

¹ Rates are given as percentages. For instance, employment in primary industries would have declined by 24.2 per cent in the absence of other factors. The actual industry growth rate is from table 3.

² The partitioned industry effect is the corrected employment growth rate after removing the effects of regional distribution, size mix, country-of-control mix, interaction and other effects, and the national growth rate. The number of jobs attributed to the partitioned industry effect must, by mathematical definition, sum to zero.

Compare the rankings of the crude and partitioned rates. The ranking of industries on their employment growth is particularly affected within the goods-producing industries. Primary industry drops from third to eighth, while mining and manufacturing each rise in rank, in the case of mining to first. These changes, which presumably reflect the impact of size composition on crude industry rates, make the industrial concentration of foreign control in mining and manufacturing appear much less unfavourable. Indeed, when employment in foreign firms in each industry is multiplied by the 1978 employment base, the result is fairly neutral. The weighted, standardised industry growth rate is -0.27 per cent for foreign firms, and 0.06 per cent for Canadian. The industry mix of foreign firms can thus be attributed with producing 3,657 jobs less than if they had had the national industry mix. To place this industry effect into perspective, recall that there were 1,344,293 workers in foreign-controlled plants in 1978 (table 1). If foreign-controlled employment had grown at the national rate, it would have increased by 196,443. On the contrary, it fell by 15,167, leaving a shortfall of 211,610 jobs to be accounted for. Clearly, other effects were at work.

(b) The standardised region effect

Multifactor partitioning does not have any major effect on the regional rates: their growth-rate rank order remains the same. It does, however, emphasise the positive growth differential of Ontario, versus the negative differential region effects of all the other regions (figure 5). The partitioned effects thus emphasise a heartland-hinterland pattern of employment growth, with the Canadian heartland shrunk to within Ontario, rather than the east-to-west pattern of growth evident in the crude rates.

Foreign-controlled firms are concentrated in Ontario, and did benefit from this positive regional effect - but not by a great deal. Their regional mix contributed 1.79 per cent to their growth (compared with -0.43 per cent for Canadian-controlled firms) representing a 24,113 employment growth.

(c) The standardised size effect

It is the disproportionality in the size distribution of foreign firms that accounts for their very poor employment growth performance. The standardised growth rate of small firms was 74.71 per cent (compared with a crude rate of 70.4). Foreign firms are predominantly in the large size class. The size-mix effect is -20.88 per cent - almost the full-strength large-size class value.

The cost of the size factor to the employment growth of foreign firms was 279,828 jobs. The size-class mix is more than enough, by itself, then to account for the poor employment growth record of foreign-controlled firms in Canada from 1978 to 1986. Even adding in the industry-mix and regional-mix effects leaves an "over-accounting" for the three factors combined of 47,753 jobs (that is a growth of -211,611 to account for, and -279,820 allocated to the three effects).

(d) The standardised country-of-control effect

The intrinsic effect of foreign control turns out to be very different from the crude rate: +15.07 per cent instead of -1.13 per cent. It is thus almost as big as the size-mix effect, though opposite in sign, and it represents a growth of 202,550 jobs. Conversely, the Canadian country-of-control effect changes from a crude rate of +18.36 per cent to a partitioned rate of -1.13 per cent. None of the other crude rates show such a change, suggesting that greater disproportionalities among firms classified by country of control than by any other factor.

Of course, the result of the four factors combined is an expected change in employment of -56,822, compared with the national growth rate effect of +196,443. To complete the accounting, the interaction and disproportionality factors must be measured.

(e) Interactions

Two of the sets of interactions are presented here: industry-region and control-region. The interpretation is straightforward. Each region and each industry has a standardised effect. The growth of a particular industry in a particular region, controlling for all the other effects, might be expected to equal the sum of the two individual effects. Two examples illustrate why it usually does not. Primary industry had a standardised growth rate of -24.2 per cent and British Columbia -1.53 per cent. But the interaction

effect was to reduce growth by a further 33 per cent - the biggest interaction effect on the table (table 11). This poor result reflects a very low growth rate in British Columbia in primary industry (only 4.31 per cent) compared with Canada (27.8 per cent), even though British Columbia's aggregate growth (15.1 per cent) was higher than Canada's (14.61 per cent). The low growth rate in turn reflects British Columbia's reliance on forestry, which employs three-quarters of the primary labour force in the province, compared with 40 per cent in the country. The problems of the forestry industry in Canada in the 1970s and 1980s have been well documented (Hayter, 1988, and Cohen and Allen, 1988). The industry declined by 3.13 per cent in Canada 1978 to 1986, but in British Columbia it declined by 16.24 per cent. So the very large negative interaction largely reflects one industry, forestry, which did relatively badly in a sector and in a province both of which did relatively well.

Table 11. Industry-region interaction effects on employment growth rates: Canada, 1978-86

	British Columbia and Yukon	Prairies and North-West Territories	Ontario	Quebec	Atlantic
Primary	-33.0	-14.6	7.9	7.3	14.5
Mines	9.6	30.6	-8.3	-8.9	-6.3
Manufacturing	-8.2	-2.3	3.0	0.8	-2.5
Construction	-18.6	-14.7	8.8	3.9	-2.0
Transportation	-1.1	2.9	-5.5	-0.7	31.5
Wholesale trade	-18.4	6.6	-0.8	14.7	-3.9
Retail trade	24.7	6.5	-7.7	-0.1	-7.0
Finance	2.2	-11.4	8.8	-8.1	0.7
Services	7.5	6.6	-0.8	-3.7	-9.9

Note: Interactions are given in per cent. Thus employment in manufacturing in Ontario grew by 3 per cent more than the manufacturing effect plus the Ontario effect, even when all other effects are taken into account.

Similarly the very high positive interaction for MNEs in the Prairies is due largely to the role of the petroleum industry in Alberta. Petroleum was Canada's most rapidly growing mining industry - employment increasing by some 58 per cent from 1978 to 1986. This industry accounts for 42 per cent of the mining employment in the Prairies.

The second example, control-region interactions, indicates a strong east-west pattern of growth for foreign-controlled firms. It is not possible to detect this pattern in the raw employment data, nor to tell whether the west coast figure (+14.8 per cent) represents the employment growth consequence of largely Japanese capital compared with continuing United States influence in Ontario. What is rather surprising is the high negative interaction (-15.5 per cent) for Quebec (table 12).

Table 12. Control-region interaction effects on employment growth rates: Canada, 1978-86

	British Columbia	Prairies	Ontario	Quebec	Atlantic
Canadian-control	-3.5	-0.7	-1.3	3.7	1.7
Foreign control	14.8	3.0	5.5	-15.5	-7.3

4. The composite results of the multifactor partitioning

(a) Employment growth by industry and country of control

Just as each individual firm belongs to a particular industry, region, size class and country of control, so each possible group of firms will belong to a particular industry or industry mix; region or regional mix; size class or mix of size classes; and country of control or mix of control. And according to its composition, the growth rate will be the sum of each of these effects, or the weighted sum of the mix of these effects, together with the national growth rate effect, relevant interactions and disproportionality, or allocation effect.

Let us begin by grouping firms by industry and by country of control (table 13). The crude employment growth rates (column 1), repeated from table 3, with their disparities between Canadian- and foreign-controlled firms, are partitioned among the four main factors identified. The industry effect for each given industry remains the same for any group of firms drawn from that industry. Thus foreign-controlled and Canadian-controlled both have the same industry effect within any one industry. The industry effect cannot contribute at all to the differences between the growth rates of Canadian- and foreign-controlled firms in any one industry.

Foreign-controlled firms have a more favourable regional distribution than the Canadian in every single industry except transportation: hence their more favourable regional-mix effect. In every industry, however, the difference in the size-mix effects for Canadian- and foreign-controlled firms is greater than regional mix.

The other effects can be expected to be numerically large. They include the national growth-rate effect (14.61 per cent) and the disproportionality or allocation effect (7.83 per cent), together with the relevant interactions which vary by industry and by country of control. In nearly every case, these rates are lower for the foreign: the exception is retail trade.

The sum of all the effects for any industry-control group of firms is their crude employment growth (so column 1 equals the sum of the other columns in table 13). The individual effect of any factor can be converted from a rate to the actual number of jobs by multiplying the rate (in table 13) by the employment base (in table 1).

Table 13. Partitioned rates of employment growth by industry and country of control: Canada, 1978-86

	Employment growth 1978-86	Industry effect	Regional distribution effect	Size-mix effect	Control effect	Other
Primary						
Canadian	31.23	-24.24	-0.92	44.54	-3.59	15.44
Foreign	-42.17	-24.24	3.03	-14.73	15.07	-21.29
Total	27.80	-24.24	-0.73	41.76	-2.71	13.72
Mines						
Canadian	25.47	20.43	-2.29	-11.52	-3.59	22.43
Foreign	-12.31	20.43	-1.55	-20.90	15.07	-25.37
Total	11.48	20.43	-2.02	-14.99	3.32	4.73
Manufacturing						
Canadian	6.71	-4.28	-0.58	-9.52	-3.59	24.68
Foreign	-10.39	-4.28	2.60	-21.64	15.07	-2.13
Total	0.41	-4.28	0.59	-13.99	3.29	14.80
Construction						
Canadian	11.41	-33.07	0.50	25.05	-3.59	23.51
Foreign	-24.14	-33.07	0.27	-21.00	15.07	14.58
Total	8.10	-33.07	-0.42	20.76	-1.85	22.68
Transportation						
Canadian	-9.72	-12.99	-0.06	-13.43	-3.59	20.33
Foreign	0.73	-12.99	-0.10	-20.30	15.07	19.05
Total	-9.17	-12.99	-0.06	-13.79	-2.60	20.26
Wholesale						
Canadian	14.29	-11.30	-0.82	12.84	-3.59	17.14
Foreign	-3.95	-11.30	0.29	-13.57	15.07	5.56
Total	10.97	-11.30	-0.62	8.04	-0.19	15.03
Retail						
Canadian	31.11	16.04	-0.42	16.76	-3.59	2.31
Foreign	30.15	16.04	1.27	-21.91	15.07	19.67
Total	30.99	16.04	-0.20	11.71	-1.15	4.58
Finance						
Canadian	22.99	3.89	-0.05	-1.74	-3.58	24.48
Foreign	11.37	3.89	1.50	-19.72	15.07	10.62
Total	21.59	3.89	0.13	-3.91	-1.33	22.81
Services						
Canadian	42.47	16.35	-0.30	16.30	-3.59	13.71
Foreign	24.96	16.35	1.61	-21.05	15.07	12.97
Total	40.49	16.35	-0.08	12.06	-1.47	13.62

(b) Employment growth in manufacturing by region and country of control

A second example of how the partitioned rates are composed is given for manufacturing firms by region and country of control (table 14). The industry effect is not shown separately as it is -4.28 per cent for all subgroups regardless of location or country of control. The first effect shown is the region effect. The region effect for any one region is the same for all groups of firms in that region regardless of their other attributes. The region effect does not sum to zero for Canada because manufacturing firms are a subset of the total. It is in fact slightly positive reflecting the very favourable regional mix of foreign firms.

Table 14. Partitioned rates of employment growth in manufacturing by region and country of control: 1978-86

	Employment growth % 1978-86	Regional effect	Size-mix effect	Control effect	Control- region interaction effect	Other
B.C. & Yukon						
Canadian	2.78	-1.53	-8.29	-3.59	-3.51	19.70
Foreign	-27.67	-1.53	-21.83	15.07	14.77	-34.14
Total	-6.62	-1.53	-12.47	2.17	3.46	1.76
Prairies & NWT						
Canadian	7.32	-3.08	-6.27	-3.59	-0.72	20.98
Foreign	-14.56	-3.08	-21.50	15.07	3.03	-8.07
Total	1.26	-3.08	-10.49	1.58	0.32	12.93
Ontario						
Canadian	16.55	8.61	-9.88	-3.59	-1.31	22.71
Foreign	-4.85	8.61	-21.58	15.07	5.50	-12.46
Total	6.57	8.61	-15.34	5.12	1.87	6.30
Quebec						
Canadian	-3.71	-9.49	-9.84	-3.59	3.68	15.52
Foreign	-16.04	-9.49	-21.82	15.07	-15.49	15.69
Total	-7.14	-9.49	-13.17	1.60	-1.64	15.56
Atlantic						
Canadian	3.52	-7.13	-12.58	-3.59	1.74	25.08
Foreign	-27.27	-7.13	-21.56	15.07	-7.31	-6.34
Total	-3.60	-7.13	-14.66	0.73	-0.35	17.80
Canada						
Canadian	6.71	-0.58	-9.52	-3.59	0.39	20.01
Foreign	-10.39	2.60	-21.64	15.07	1.01	-7.42
Total	0.41	0.59	-13.99	3.29	0.62	9.90

Manufacturing firms tend to fall into the large size class and every subgroup of firms has a negative size-mix effect. The effect is almost the same (about 22 per cent) for all foreign firms. It is lower and more varied for Canadian firms.

The control-region interaction (given earlier in table 12) is always the same for any given region-ownership combination, regardless of size mix or industry. The total interaction effect for a province, however, is the weighted average of the proportions of base employment in the two groups. The mix effect is favourable for Ontario and Western Canada and unfavourable for Quebec and the Atlantic Provinces.

(c) Graphical presentation

Multifactor partitioning can be presented in graphical form as a series of effects operating on the base year employment (1978) to produce the end year employment (1986) (figure 5). The growth of large, foreign firms in mining and manufacturing in Canada serves as a worked example (figure 6). Employment in 1978 in foreign firms in the two industries in 1978 was 758,477. If they had grown at the national rate they would have added 110,837 workers. The industry-mix effect was negative, however: +11,107 in mining, -30,163 in manufacturing to give a net reduction of 19,056. The industries had a favourable regional mix (the proportion in each region multiplied by each region's effect), adding 17,428 to the growth in employment. The group is limited to large firms, and hence an unmitigated large firm effect of -173,538. Foreign control added 114,283 (base year employment times 15.07 per cent). Other effects cost 146,626. The net total of all these effects, added to the 1978 employment, yields the 1986 employment of 661,805.

The results on the effects of foreign control on employment growth are summarised in table 15 and figure 7. They underline the turbulence behind the net changes observed in the crude growth rates. Country of control is only one of many factors influencing growth, some of which are positive, others negative. When firms are grouped by country of control, the individual industry effects are partly netted out to leave a muted industry-mix effect. The same is true of the region effect. In the case of size, however, not only are the individual size-class effects very large, but foreign firms fall disproportionately in the large-size class. This effect emerges as the most important discriminant in their growth rates. The control effect is not mixed, and in its undiluted form emerges as the second largest discriminant between the two groups: its effect is positive for foreign firms, but it is not strong enough to offset the size-effect.

5. The effect of foreign investment on employment growth

The conclusions drawn about the effect of foreign investment on employment growth are dramatically changed once the growth rates are standardised. The employment growth performance of foreign firms appears to lag far behind Canadian firms when the crude rates are examined. Foreign firms grew slower than Canadian from 1978 to 1986 in eight out of the nine principal sectors, including both mining and manufacturing where foreign investment is concentrated. Foreign firms should have benefited from their regional concentration in Ontario. But when their performance is compared with Canadian firms, they did worse in all five Canadian regions and in six of the nine sectors. They did worse than Canadian firms in all nine sectors in Quebec, and worse in eight out of nine in the Prairies. Even the size breakdown is discouraging. Foreign firms grew more slowly in the medium- and large-size classes. And in aggregate their crude growth rate from 1978 to 1986 was -1.13 per cent, compared with a crude rate for Canadian firms of +18.36 per cent.

Figure 5. The partitioned effects on employment growth in Canada: 1978-86

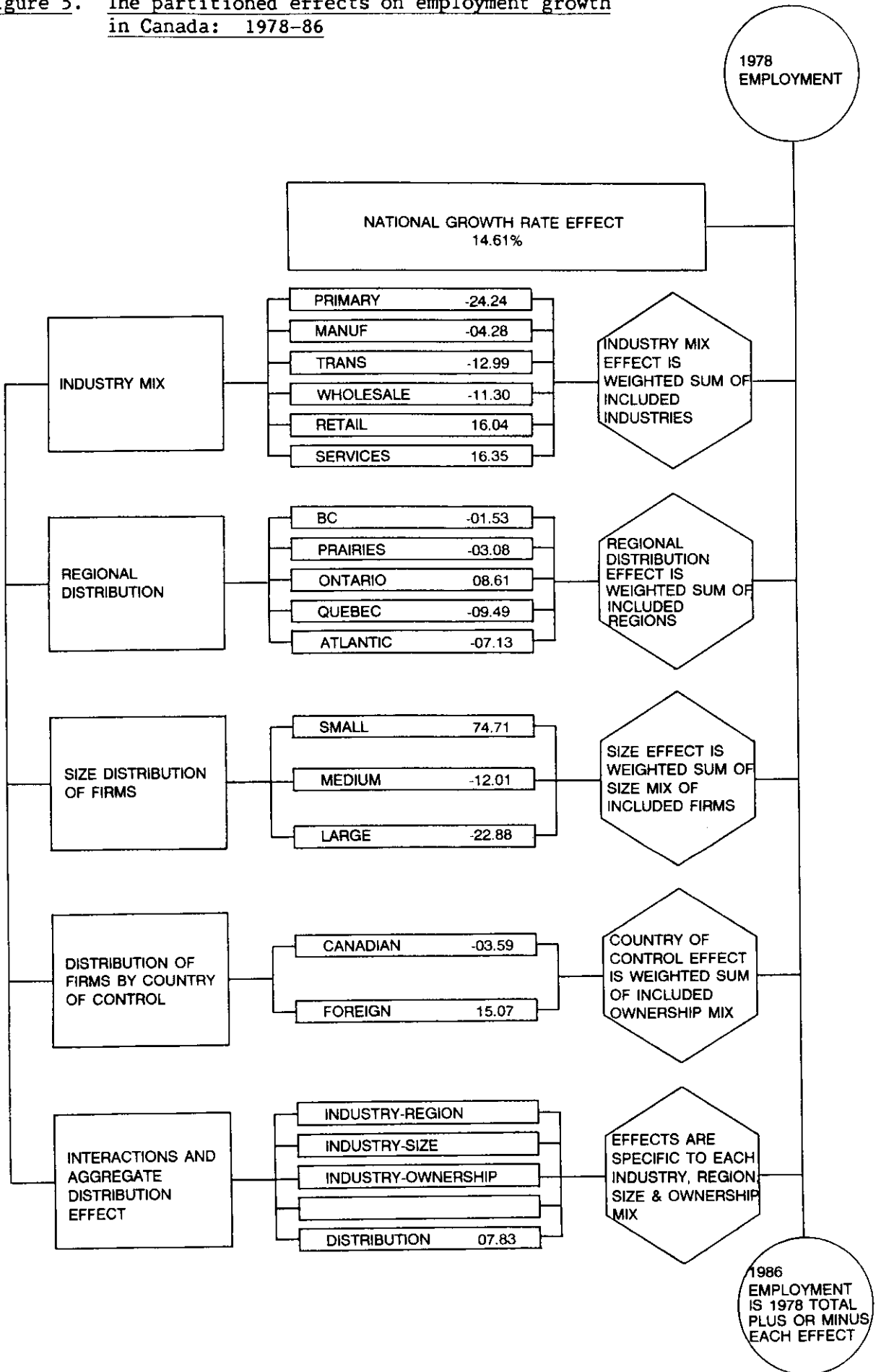


Table 15. Partitioned rates of employment growth in Canadian- and foreign-controlled firms: Canada, 1978-86

	Canadian-controlled firms	Foreign-controlled firms
Employment growth 1978-86	18.36	-1.13
National growth rate effect	14.61	14.61
Industry-mix effect	0.06	-0.27
Regional distribution effect	-0.43	1.79
Size-mix effect	4.95	-20.82
Control effect	-3.59	15.07
Industry-region interaction effect	0.17	0.89
Size-region interaction effect	-0.19	-0.58
Control-region interaction effect	0.06	1.06
Industry-size interaction effect	-2.33	-2.28
Other	5.05	-10.60

Note: "Other" includes other interaction effects and the disproportionality effect (which is a constant of 7.83 per cent).

Figure 6. Partitioning the growth of employment in large foreign-controlled firms in mining and manufacturing: Canada, 1978-86

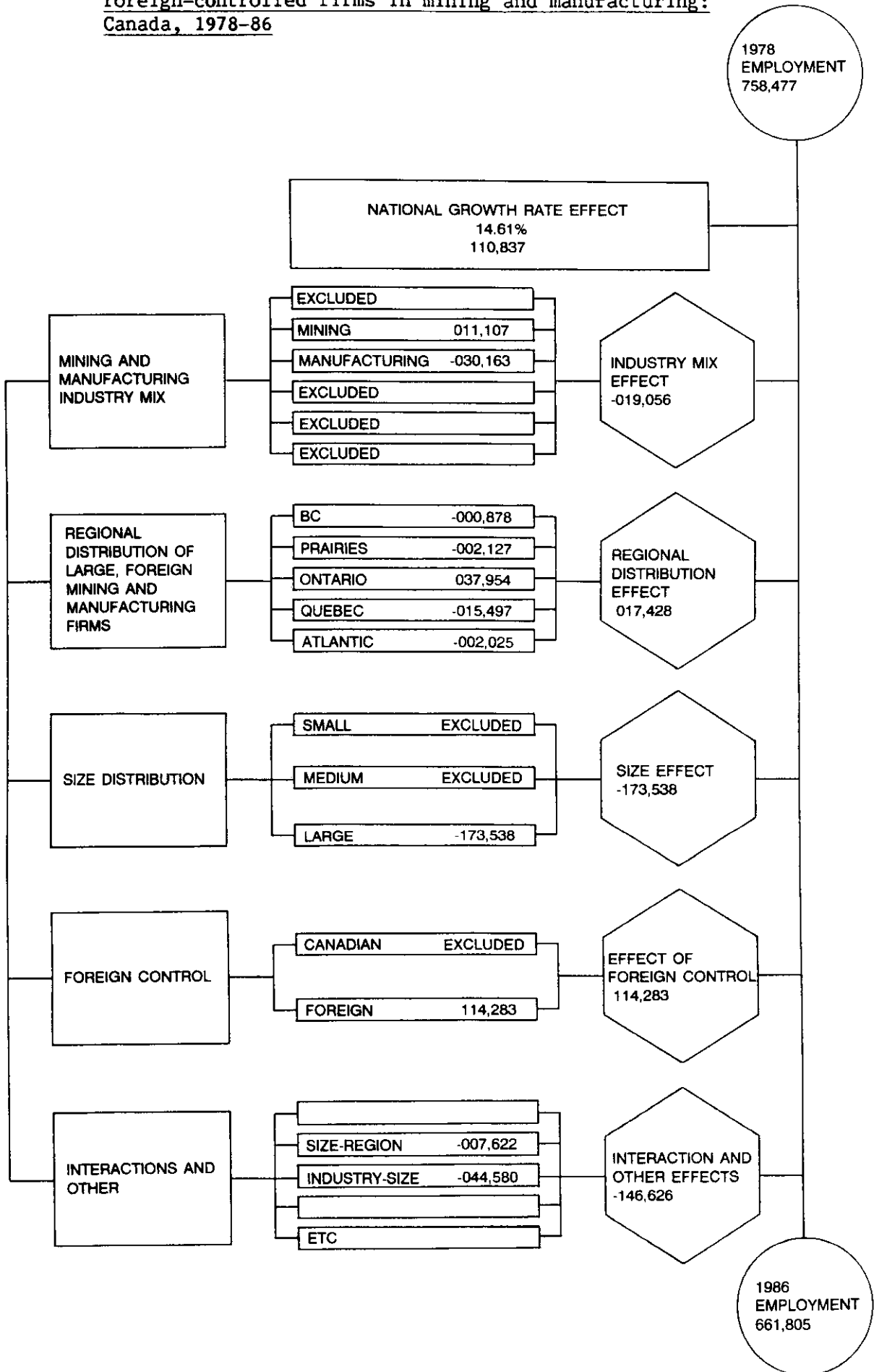
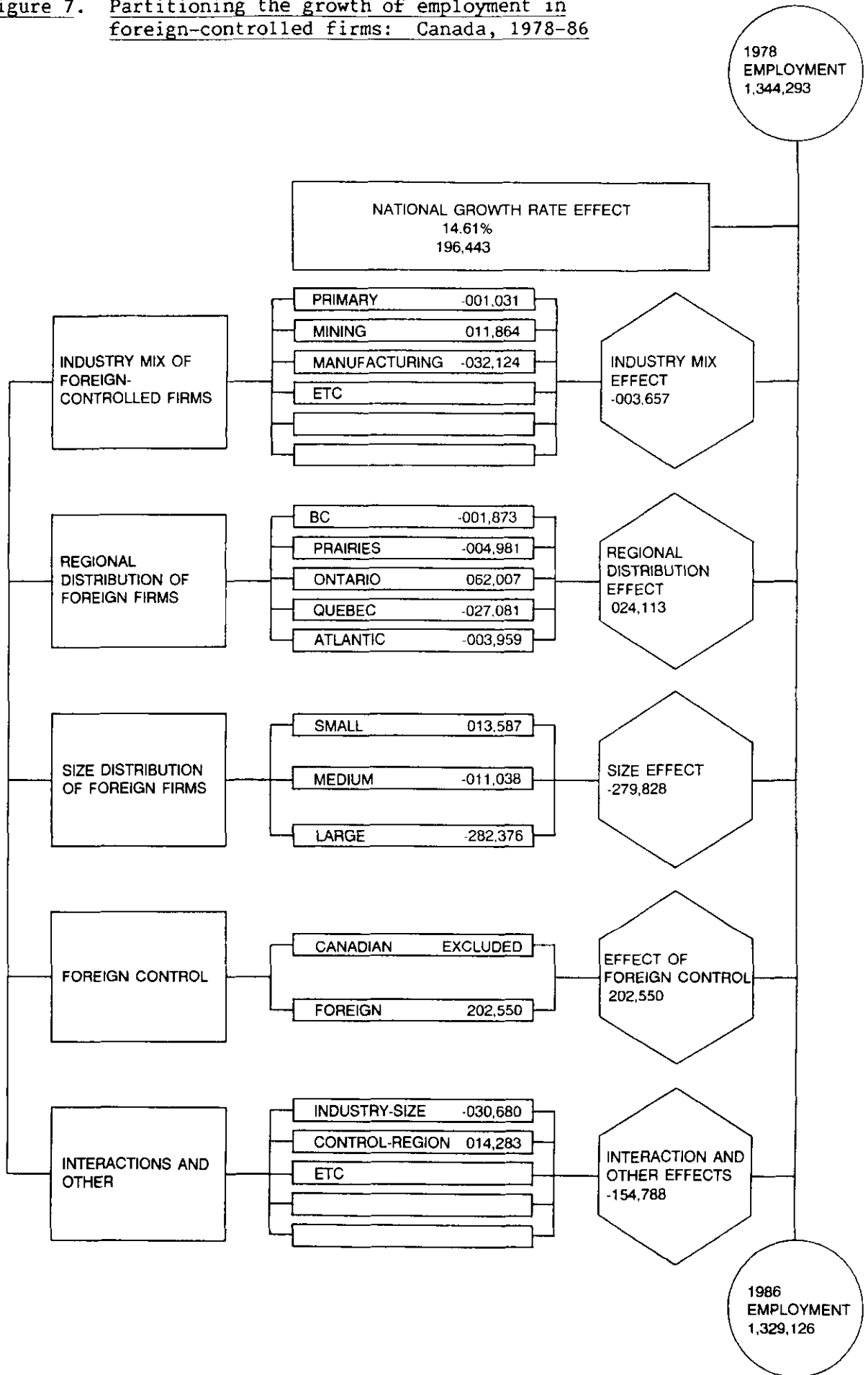


Figure 7. Partitioning the growth of employment in foreign-controlled firms: Canada, 1978-86



It is only when the employment figures are calculated by region, by industry and by size for Canadian and foreign firms that a different story emerges. The disproportionalities in the employment distribution of foreign firms are then shown to produce lower aggregate growth rates even when every subgroup has higher rates. These are nice examples of Simpson's paradox, and a clear warning to the policy analyst and decision-maker of the dangers of working with crude data. The sequential correction for individual effects does nothing to help. It requires a full, simultaneous, multifactor partitioning to sort out all the individual effects at work on the growth rates and to uncover the true, intrinsic effect of foreign ownership on employment growth. This standardised effect is the reverse of the crude effect. Not a rate of -1.13 per cent, but of +15.07, a result which is qualitatively as well as quantitatively different.

The multifactor partitioning does not turn an employment decline by foreign firms into an employment growth. It does not change the reality of the recession years of the early 1980s. It does refocus the questions which need to be answered, and it provides the standardised data that is needed in that inquiry. The key question is not: Why did large foreign firms do so poorly in job generation? It is: Why did large firms in general do so badly - and why, apparently, did Canadian MNEs do much worse than foreign MNEs? It has been noted that the employment growth of Canadian MNEs has probably been greater outside Canada than at home (ILO, 1981, p. 19). Is Canada an exception, then, to the rule that home country MNEs do not export large numbers of jobs (ILO, 1981, p. 95)? More data tabulations, further standardisation and analysis are needed, but an important start has been made.

SUMMARY AND CONCLUSIONS

1. Standardisation of data is essential to correct the effect of composition differences on rates and trends. Comparisons of unstandardised data confound differences in rates with differences in composition.
2. In the extreme case of Simpson's paradox, the standardised trends are the opposite of the crude trends. Moreover, the potential for recurring examples of Simpson's paradox remains as long as substantial compositional heterogeneity persists within categories of the data.
3. The accepted procedure over the past 50 years to standardise employment trends has been shift-share analysis. Shift-share analysis was first used by Professor J. Harry Jones in the Barlow Report (1940) to identify the extent to which inter-regional differences in employment growth rates were accounted for by inter-regional differences in industry mix. The procedure was refined by Dunn (Perloff et al., 1960). Both pointed to alternative computational procedures, but both settled for a simple procedure which has been used ever since.
4. A number of subsequent reviews have noted that the shift-share formulas fail to measure what they purport to, but none have succeeded in providing a partitioning which correctly isolates all the effects. The fundamental problem is that although shift-share attempts to standardise regional growth rates for their industry mix, it fails to standardise industry growth rates for their regional mix. It thus fails to partition out the effect of disproportionalities in the regional distribution of industry on industry growth, and consequently incorporates part of the regional effect in the measure of industry mix. It also fails to extract industry-region interaction effects, although the need to do so has long been identified (MacKay, 1968).
5. The mathematical problems in shift-share analysis become very apparent once additional effects (in this study, size-class of firm, and country-of-control of firm) are introduced. The deficiencies in shift-share standardisation have had to be corrected before a defensible procedure of multifactor partitioning could be developed.
6. A principal finding of this study is that the shift-share technique is mathematically flawed. It should not be used. In its place, multifactor partitioning should be used to standardise data, even where only two factors, such as region and industry, are involved.
7. Multifactor partitioning, the technique presented and tested in this report, builds on the same logic as shift-share analysis, and the results are to be interpreted in the same way. In the simple, two-factor case, five effects are isolated. The first is the national growth-rate effect. The second, the industry effect, corresponds with what is sometimes called in shift-share analysis the proportionality shift, the share or the structure component. The third, the regional effect, corresponds to the differential shift. Two additional effects are extracted: an industry-region interaction, and a disproportionality or allocation effect. The allocation effect measures the amount of employment growth attributable to the concentration of employment in faster-growth industries and in faster-growth regions. The allocation effect was first identified by Cunningham (1969).

8. Multifactor partitioning, like shift-share analysis, is no more than a standardisation technique. It does not explain trends, though it does isolate the trends that need to be explained. It is not a theory about the way in which growth occurs, though the results it provides are important for the quantitative analysis of any theory. There is no direct translation of the multifactor partitioning into policy implications, but failure to standardise data for all factors simultaneously can lead to entirely erroneous conclusions as to underlying trends and policy needs.

9. The final conclusion is thus very clear. Decision-makers who need to know employment growth trends, either by industry or region, or by size-class of firm or country of control, cannot obtain the results they need merely by tabulating the data on the one classification they require. The correct measurement of any one of these trends can be obtained only by simultaneously measuring and standardising each of the effects at work. Failure to do so can lead to the trap of Simpson's paradox.

II EMPLOYMENT GROWTH DEFINITIONS

The employment growth rate in industry i , region j is r_{ij}

$$r_{ij} = \frac{E_{ij}^T - E_{ij}^0}{E_{ij}^0}$$

The employment growth rate in industry i in the nation is $r_{i.}$

$$r_{i.} = \frac{E_{i.}^T - E_{i.}^0}{E_{i.}^0}$$

The employment growth rate in region j is $r_{.j}$

$$\begin{aligned} r_{.j} &= \frac{E_{.j}^T - E_{.j}^0}{E_{.j}^0} \\ &= \sum_i \frac{r_{ij} E_{ij}^0}{E_{.j}^0} \end{aligned}$$

The employment growth rate in the nation is $r_{..}$

$$\begin{aligned} r_{..} &= \frac{E_{..}^T - E_{..}^0}{E_{..}^0} \\ &= \sum_i \frac{r_{i.} E_{i.}^0}{E_{..}^0} \end{aligned}$$

Note that the growth in the number employed is the growth rate multiplied by the base year employment. Actual employment growth in region j is $E_{.j} r_{.j}$

III THE SHIFT-SHARE PARTITIONING OF EMPLOYMENT GROWTH

Shift-Share partitioning uses three calculations of regional employment growth, based on actual, national and expected growth rates.

Actual employment growth in region j is $r_{\cdot j} E_{\cdot j}$

National-rate employment growth would have been $r_{\cdot\cdot} E_{\cdot j}$

The expected employment growth is denoted as $r'_{\cdot j} E_{\cdot j}$ where

$$r'_{\cdot j} = \sum_i \frac{r_{i\cdot} E_{ij}}{E_{\cdot j}}$$

That is, the expected growth uses national rates of industry-specific growth, but regional weightings of industry-specific employment.

The three employment growth calculations permit growth to be partitioned thus:

$(r_{\cdot j} - r_{\cdot\cdot})$: the deviation of the regional employment growth rate from the national growth rate.

$(r_{\cdot j} - r'_{\cdot j})$: the deviation of regional from national employment growth rates, which is calculated on an industry-by industry basis. Hence this deviation may be called the region effect. (It is also called the differential shift in the shift share literature).

and $(r'_{\cdot j} - r_{\cdot\cdot})$: the deviation resulting from the difference in industry mix between the region and the nation. Hence this deviation may be termed the industry-mix effect. (It is also called the proportionality shift in the shift-share literature).

The three partitions are related thus:-

$$(r_{.j} - r_{..}) = (r_{.j} - r'_{.j}) + (r'_{.j} - r_{..}) \quad (1)$$

This equation says that the regional deviation from national employment growth rates is equal to the region effect plus the industry-mix effect.

The equation may be re-ordered thus:-

$$r_{.j} = r_{..} + (r_{.j} - r'_{.j}) + (r'_{.j} - r_{..}) \quad (2)$$

Equation (2) says that regional growth equals a national growth-rate effect, plus a region effect, plus an industry-mix effect.

Substituting earlier definitions of growth rates for $r_{.j}$ and $r'_{.j}$ in equation (1) and shortening E^o to E we have:

$$(r_{.j} - r_{..}) = \sum_i (r_{ij} - r_{i.}) \frac{E_{ij}}{E_{.j}} + \sum_i (r_{i.} - r_{..}) \frac{E_{ij}}{E_{.j}} \quad (3)$$

Equation (3) may also be written in the form:-

$$(r_{.j} - r_{..}) = \sum_i (r_{ij} - r_{i.}) \frac{E_{ij}}{E_{.j}} + \sum_i r_{i.} \left(\frac{E_{ij}}{E_{.j}} - \frac{E_{i.}}{E_{..}} \right) \quad (4)$$

Equation (4) is useful in that it makes clear that the region effect is fundamentally due to a difference in industry-specific growth rates $(r_{ij} - r_{i.})$ between the region and the nation, whereas the industry-mix effect is fundamentally due to differences in the employment composition of the region $(E_{ij}/E_{.j})$ and the nation $(E_{i.}/E_{..})$ in each industry.

Note that the growth in the number employed can be partitioned by multiplying the terms in the above equations by the employment in the base

year ($E_{.j}$). Hence, using equation (3):-

$$(r_{.j} - r_{..}) E_{.j} = \sum_i (r_{ij} - r_{i.}) E_{ij} + \sum_i (r_{i.} - r_{..}) E_{ij} \quad (5)$$

Equation (5) partitions the growth in employment in region j into the part which is attributed to the region effect and the part which is attributed to the industry-mix effect.

IV CONCEPTUAL ERRORS IN THE MATHEMATICS OF SHIFT-SHARE

The national growth rate of industry i is a weighted average of the regional growth rates of the industry. In shift-share,

$$r_{i.} = \sum_j \frac{r_{ij} E_{ij}}{E_{i.}}$$

A standardized national growth rate of industry i can be defined ($\hat{r}_{i.}$) using total regional employment weights instead of industry-specific weights. Thus:-

$$\hat{r}_{i.} = \sum_j \frac{r_{ij} E_{.j}}{E_{..}}$$

The region effect may now be partitioned using the two measures of industry growth $r_{i.}$ and $\hat{r}_{i.}$. Thus

$$(r_{ij} - r_{i.}) = (r_{ij} - \hat{r}_{i.}) + (\hat{r}_{i.} - r_{i.}) \quad (6)$$

but

$$(\hat{r}_{i.} - r_{i.}) = \sum_j r_{ij} \left(\frac{E_{.j}}{E_{..}} - \frac{E_{ij}}{E_{i.}} \right)$$

Comparing the above expression with the definition of industry-mix in equation (4) makes clear that disproportionalities in the distribution of industry bleed some of the industry-mix effect into the region-effect as it is defined in standard shift-share analysis.

To correct this problem and in order to extract the interaction effect, a new partitioning is proposed.

V MULTIFACTOR PARTITIONING : TWO VARIABLE CASE

Three further growth rates are calculated in addition to r_{ij} , r_i and $r_{..}$. These are $\hat{r}_{i..}$, $\hat{r}_{.j}$ and $\hat{r}_{..}$. The definition of $\hat{r}_{i..}$ has been given above -- it is the national growth rate of industry under strict proportionality.

The regional growth-rate under strict proportionality is

$$\hat{r}_{.j} = \sum_i \frac{r_{ij} E_i}{E_{..}}$$

The national growth rate under strict proportionality is

$$\hat{r}_{..} = \sum_j \frac{\hat{r}_{.j} E_{.j}}{E_{..}} = \sum_i \frac{\hat{r}_{i..} E_i}{E_{..}}$$

a) Aggregate partitioning

It will help to understand the procedure to begin with two aggregate partitionings, to identify the aggregate region and industry effects.

The regional growth deviation ($r_{.j} - r_{..}$) can be partitioned:

$$(r_{.j} - r_{..}) = (\hat{r}_{.j} - \hat{r}_{..}) + (r_{.j} - \hat{r}_{.j}) + (\hat{r}_{..} - r_{..}) \quad (6)$$

Note

$$(\hat{r}_{.j} - \hat{r}_{..}) = \sum_i (r_{ij} - \hat{r}_{i.}) \frac{E_{i.}}{E_{..}} \text{ true region effect} \quad 7(a)$$

$$(r_{.j} - \hat{r}_{.j}) = \sum_i r_{ij} \left(\frac{E_{ij}}{E_{.j}} - \frac{E_{i.}}{E_{..}} \right) \quad 7(b)$$

$$(\hat{r}_{..} - r_{..}) = \sum_i \sum_j r_{ij} \left(\frac{E_{i.} E_{.j}}{E_{..}^2} - \frac{E_{ij}}{E_{..}} \right) \quad 7(c)$$

Of the three right hand terms in equation 6, only the first (see 7 (a)) decomposes to a term involving differences in regional and national rates of growth. Hence 7(a) $(\hat{r}_{.j} - \hat{r}_{..})$ is the true region effect. The other two terms, 7(b) and 7(c), include the effects of disproportionalities.

In a similar way, we may partition the industry growth deviation

$$(r_{i.} - r_{..}) = (\hat{r}_{i.} - \hat{r}_{..}) + (r_{i.} - \hat{r}_{i.} + \hat{r}_{..} - r_{..})$$

where $(\hat{r}_{i.} - \hat{r}_{..})$ is the true industry effect, free from the effects of disproportionalities.

(c) Partitioning individual cell values.

The definitions of the true region and industry effect greatly facilitate the partitioning of growth for an individual cell r_{ij} . The growth of industry i in region j

$$r_{ij} = r_{..} \quad \text{national growth rate effect}$$

$$+ (\hat{r}_{.j} - \hat{r}_{..}) \quad \text{the region effect}$$

$$\begin{aligned}
 & + \left(\hat{r}_{i.} - \hat{r}_{..} \right) && \text{the industry effect} \\
 & + \left(r_{ij} - \hat{r}_{i.} - \hat{r}_{.j} + \hat{r}_{..} \right) && \text{the industry-region} \\
 & && \text{interaction effect} \\
 & + \left(\hat{r}_{..} - r_{..} \right) && \text{the disproportionalities} \\
 & && \text{in the distribution of} \\
 & && \text{industry } i \text{ across the} \\
 & && \text{R regions.} \quad (8) \\
 & && \text{(allocation effect)}
 \end{aligned}$$

These partitioned growth rate effects in equation 8 can be multiplied by the base year employment (E_{ij}) to obtain the employment effects. Thus:

$$\begin{aligned}
 r_{ij} E_{ij} = & r_{..} E_{ij} + (\hat{r}_{.j} - \hat{r}_{..}) E_{ij} + (\hat{r}_{i.} - \hat{r}_{..}) E_{ij} \\
 & + (r_{ij} - \hat{r}_{i.} - \hat{r}_{.j} + \hat{r}_{..}) E_{ij} + (\hat{r}_{..} - r_{..}) E_{ij} \quad (9)
 \end{aligned}$$

These values can be calculated for each industry in turn, in region j , and then summed, to give equation 10.

$$\begin{aligned}
 \sum_i r_{ij} E_{ij} = & r_{..} E_{.j} && \text{(the (aggregate) national} \\
 & && \text{growth rate effect)} \\
 & + \left(\hat{r}_{.j} - \hat{r}_{..} \right) E_{.j} && \text{(the (aggregate) region} \\
 & && \text{effect)} \\
 & + \sum_i \left(\hat{r}_{i.} - \hat{r}_{..} \right) E_{ij} && \text{(The industry-mix effect)} \\
 & + \sum_i \left(r_{ij} - \hat{r}_{.j} - \hat{r}_{i.} + \hat{r}_{..} \right) E_{ij} && \text{(composite interaction)} \\
 & + \left(\hat{r}_{..} - r_{..} \right) E_{.j} && \text{(disproportionality)} \quad (10) \\
 & && \text{(or allocation effect)}
 \end{aligned}$$

VI MULTIFACTOR PARTITIONING WITH MORE THAN TWO VARIABLES.

The extension to more than two variables is rather straightforward
The formulas for the standardized industry regional and national growth rates (under strict proportionality) for three and four variables are given below (Appendix Table 1)

APPENDIX TABLE 1

COMPUTATIONAL FORMULAS FOR STANDARDIZED GROWTH RATES

THREE VARIABLE

FOUR VARIABLE

$$\hat{r}_{i..} = \sum_j \sum_k r_{ijk} \frac{E_{.j.} E_{...k}}{(E_{...})^2}$$

$$\hat{r}_{i...} = \sum_j \sum_k \sum_l r_{ijkl} \frac{E_{.j..} E_{...k.} E_{...l.}}{(E_{....})^3}$$

$$\hat{r}_{.j.} = \sum_i \sum_k r_{ijk} \frac{E_{i..} E_{...k}}{(E_{...})^2}$$

$$\hat{r}_{.j..} = \sum_i \sum_k \sum_l r_{ijkl} \frac{E_{i...} E_{...k.} E_{...l.}}{(E_{....})^3}$$

$$\hat{r}_{...} = \sum_i \hat{r}_{i..} \frac{E_{i..}}{E_{...}}$$

$$\hat{r}_{....} = \sum_i \hat{r}_{i...} \frac{E_{i...}}{E_{....}}$$

The standardized growth rates for size class and country of control are similar. Note that two, three and four variable standardized rates calculated for a four-variable data set, successively collapsed to three and two variables are not equal (hence Simpson's Paradox).

$$\hat{r}_{i.} \neq \hat{r}_{i..} \neq \hat{r}_{i...}$$

Only the **crude** growth rate remains the same:-

$$r_{.} = r_{..} = r_{...}$$

The computation of the individual effects proceeds as with the two variable partitioning

APPENDIX TABLE 2

COMPUTATIONAL FORMULAS FOR MULTIFACTOR PARTITIONING
WITH TWO, THREE AND FOUR VARIABLES

	Two variable	Three variable	Four variable
National growth rate effect	$r_{..}$	$r_{...}$	$r_{....}$
region	$\hat{r}_{.j} - \hat{r}_{..}$	$\hat{r}_{.j.} - \hat{r}_{...}$	$\hat{r}_{.j..} - \hat{r}_{....}$
industry	$\hat{r}_{i.} - \hat{r}_{..}$	$\hat{r}_{i..} - \hat{r}_{...}$	$\hat{r}_{i...} - \hat{r}_{....}$
size	—	$\hat{r}_{..k} - \hat{r}_{...}$	$\hat{r}_{..k.} - \hat{r}_{....}$
country of control	—	—	$\hat{r}_{...l} - \hat{r}_{....}$
interaction	$(r_{ij} - \hat{r}_{i.} - \hat{r}_{.j} + \hat{r}_{..})$	$(r_{ijk} - \hat{r}_{i..} - \hat{r}_{.j.} - \hat{r}_{..k} + 2(\hat{r}_{...}))$	$(r_{ijke} - \hat{r}_{i...} - \hat{r}_{.j..} - \hat{r}_{..k.} - \hat{r}_{...l} + \hat{r}_{..k} + 3\hat{r}_{....})$
disproportionality	$\hat{r}_{i.} - r_{i.}$	$\hat{r}_{i..} - r_{i..}$	$\hat{r}_{i...} - r_{i...}$
TOTAL OF ABOVE EFFECTS	r_{ij}	r_{ijk}	r_{ijke}

Once employment growth has been partitioned for each individual cell, the various employment effects can be aggregated as needed. For instance, the size effect of size class k on the growth of foreign-controlled firms, e , in all industries in region j is equal to

$$\sum_i (\hat{r}_{\dots k.} - \hat{r}_{\dots}) E_{ijkl}$$

Similarly the effect of foreign-control, e , on employment growth in industry "i", in the nation, for all size classes is

$$\sum_j \sum_k (\hat{r}_{\dots e} - \hat{r}_{\dots}) E_{ijkl}$$

If all the effects are totaled, for all variables, then each of the main effects go to zero. Individual industries may have standardized growth rates above or below the standardized national growth rate, but the total for all industries is national employment, and this grows at the national rate. Regions too may grow faster or slower than the standardized national rate, but added together, they are the nation. Only three effects do not sum to zero: the national growth rate effect, the interaction effects and the disproportionality effect. For the nation, growth is at the national growth rate with the interaction effects and the disproportionality effect having equal absolute values, and opposite signs.

APPENDIX TABLE 3

Partitioned effects on employment growth in Canada by region,
industry, initial firm size and country of control (1978-86)

INDUSTRY BY INITIAL FIRM SIZE & CONTROL	ALU78 (1)	ALU86 (2)	TOTAL OBSERVED GROWTH (A)	MAIL GROWTH RATE EFFECT (B)	EFFECTS			SELECTED INTERACTIONS					RATE OF GROWTH (A)/(1)	
					TOTAL A-B	REGION	INDUSTRY	FIRM SIZE	CONTROL	INDUSTRY REGION	SIZE REGION	CNTL REGION		INDUSTRY SIZE
CANADA														
TOTAL DIVISIONS														
Total	6,994,213	8,016,290	1,022,077	1,022,071	0	0	0	0	0	0	0	0	0	0.1461
SMALL	1,496,747	2,550,118	1,053,372	218,721	834,649	-8,807	21,784	11,118,259	-50,266	21,459	-18,705	17,681	-162,348	-86,168
MEDIUM	1,283,527	1,587,150	303,623	187,563	85,971	-6,764	5,136	-184,121	-28,868	81	-7,592	-63	-21,775	-0,807
LARGE	4,213,939	4,079,022	-134,917	15,951	-750,578	15,571	-6,920	964,138	79,134	18,568	4,178	2,169	15,575	-54,404
CANADIAN	5,649,920	6,687,164	1,037,244	825,628	211,611	-24,112	3,657	279,828	-202,550	9,522	-10,871	3,598	13,166	-1,836
FOREIGN	1,344,293	1,359,136	-15,167	196,443	-211,611	24,112	-3,657	-279,828	202,550	11,927	-7,834	14,283	-30,680	-0,113
SMALL														
CANADIAN	1,478,561	2,505,711	1,027,150	216,064	811,085	-9,180	22,465	1,104,672	-53,006	-146	-7,853	-338	-85,002	-6,947
FOREIGN	18,186	44,407	26,221	2,657	23,564	374	-682	13,587	2,740	228	261	275	-1,166	1,4419
MEDIUM														
CANADIAN	1,191,598	1,291,167	99,569	174,129	-74,561	-8,270	7,751	-143,083	-42,719	1,746	-4,956	1,477	-19,704	0,836
FOREIGN	91,929	95,953	4,024	13,434	-9,410	1,506	-2,615	11,058	13,851	1,264	779	692	-2,071	0,438
LARGE	2,979,761	2,890,286	-89,475	435,435	-524,913	-6,661	-3,659	-681,761	106,825	7,932	1,939	2,259	-26,961	-0,300
CANADIAN	1,234,178	1,188,746	-45,412	180,352	-225,765	22,233	-2,832	-282,376	185,959	10,435	-8,874	13,316	-27,443	-0,368
FOREIGN														
PRIMARY														
Total	90,846	116,097	25,253	13,275	11,978	-667	-23,024	37,958	-2,464	-6,006	-886	-653	-19,332	-2,780
SMALL	58,195	90,888	32,694	8,504	24,190	-249	-14,109	45,479	-2,036	-3,020	-32	-327	-21,711	-5,618
MEDIUM	17,741	14,576	-3,166	2,593	-5,758	-319	-4,201	-2,130	-496	-1,544	-73	-73	543	-1,784
LARGE	14,907	10,633	-4,275	2,178	-4,453	-98	3,614	3,411	68	-1,442	139	-53	1,837	-2,867
CANADIAN	86,591	113,628	27,046	12,654	14,323	-795	-20,993	38,564	-3,104	-6,071	-624	-624	-19,852	-3,123
FOREIGN	4,255	2,459	-1,793	621	-2,414	129	-1,031	-826	64	65	-30	171	319	-4,217
SMALL														
CANADIAN	57,923	90,743	32,820	8,464	24,355	-245	-16,043	43,276	-2,077	-2,968	-926	-926	-21,610	-5,666
FOREIGN	271	125	-126	40	-166	-4	-66	203	41	-51	-3	22	-101	-4,445
MEDIUM														
CANADIAN	16,988	14,033	-2,945	2,683	-5,238	-329	-6,119	-2,040	-609	-1,694	-196	-112	520	-1,736
FOREIGN	753	532	-221	110	-331	9	-183	-90	113	-51	3	39	23	-2,933
LARGE	11,679	8,851	-2,828	1,707	-4,535	-221	-2,832	-2,672	-619	-1,609	166	-163	1,439	-2,422
CANADIAN	3,228	1,782	-1,446	672	-1,918	123	-783	-738	586	167	-27	110	398	-4,480
FOREIGN														
MINES														
Total	156,815	174,815	18,004	22,915	-4,911	-5,165	32,025	-23,506	5,211	16,589	1,551	134	-15,890	-1,148
SMALL	11,033	32,378	21,345	1,613	19,484	-184	8,247	-2,255	-235	1,747	-266	134	6,194	1,939
MEDIUM	14,710	18,746	4,037	2,150	1,887	-267	3,005	1,766	1,235	-2,278	-689	202	-2,257	-2,244
LARGE	131,063	123,733	7,330	19,152	-26,483	-2,714	-29,987	5,443	5,443	12,563	2,106	402	-19,727	-0,859
CANADIAN	98,733	123,887	25,152	14,428	-10,723	-2,266	20,171	-11,371	3,540	10,948	735	-171	-7,736	-2,647
FOREIGN	58,072	50,928	-7,148	8,687	-15,435	-899	11,864	-12,135	8,751	5,621	616	305	-8,154	-1,231
SMALL														
CANADIAN	10,174	26,589	16,415	1,487	14,928	-168	2,078	7,601	-365	1,584	-240	-54	5,709	1,6134
FOREIGN	864	5,747	4,882	126	4,756	-16	177	646	130	163	-26	31	485	5,6486
MEDIUM														
CANADIAN	11,868	16,398	4,530	1,734	2,796	-175	2,424	-1,425	-625	1,803	-391	-59	-1,901	-3,817
FOREIGN	2,842	2,349	-493	415	-909	-92	581	-341	428	476	-98	15	-455	-1,1756
LARGE	76,896	80,900	4,206	11,207	-7,001	-1,923	15,668	-17,547	-3,749	7,581	1,366	-57	-11,544	-0,568
CANADIAN	54,370	42,833	-11,537	7,945	-19,482	-791	11,107	-12,440	8,192	4,982	740	259	-8,184	-2,122
FOREIGN														
MANUFACTURING														
Total	2,036,812	2,063,176	26,364	26,364	-268,988	11,999	-67,169	-284,601	66,923	12,529	-9,102	12,598	-60,847	-0,041
SMALL	150,222	268,922	118,700	62,978	136,747	-321	6,435	1,212,235	-4,642	2,742	322	247	2,995	1,0564
MEDIUM	378,945	332,452	-46,493	46,493	-38,453	1,983	-3,536	-37,940	3,711	1,643	228	1,980	-2,775	-0,554
LARGE	1,568,619	1,400,768	-167,851	238,232	-197,076	16,203	-17,198	-358,896	75,098	10,623	-9,955	10,161	-31,082	-1,070
CANADIAN	1,284,927	1,371,184	86,257	167,768	-101,499	-7,469	-55,045	-122,298	44,045	8,842	-1,502	4,984	-64,895	-0,671
FOREIGN	799,879	671,978	-127,901	109,581	-187,483	19,468	-22,124	-152,503	112,988	8,695	-7,598	7,603	-35,998	-1,039
SMALL														
CANADIAN	165,274	297,182	131,908	21,229	130,479	-701	-6,223	108,538	-5,208	163	536	342	22,337	1,0657
FOREIGN	4,948	11,740	6,792	733	6,069	180	-212	3,697	746	65	98	106	757	1,3725
MEDIUM														
CANADIAN	275,141	282,218	7,077	60,207	-23,130	-2,952	-11,787	-33,038	-9,864	1,139	-427	1,643	-2,419	-0,621
FOREIGN	40,824	41,236	412	5,966	-5,223	1,669	-1,749	-4,902	6,151	524	666	337	-259	-0,108
LARGE	844,512	781,787	-62,725	136,332	-209,048	-5,816	-37,035	-197,798	-20,993	2,537	-1,603	3,001	-64,688	-0,957
CANADIAN	704,101	618,972	-85,129	102,892	-188,028	18,219	-20,163	-161,098	106,091	8,106	-8,262	7,160	-36,296	-1,209
FOREIGN														
CONSTRUCTION														
Total	447,571	483,836	36,263	65,404	-29,141	-1,902	-147,999	-92,222	-8,279	-8,583	-1,542	432	-18,869	-0,810

INDUSTRY BY INITIAL FIRM SIZE & CONTROL	ALU78 (1)	ALU86 (2)	TOTAL OBSERVED GROWTH (A)	NATL GROWTH RATE EFFECT (B)	EFFECTS			SELECTED INTERACTIONS				RATE OF GROWTH (A)/(1)		
					TOTAL A-B	REGION	INDUSTRY	FIRM SIZE	CONTROL	INDUSTRY REGION	SIZE REGION		CNTL REGION	INDUSTRY SIZE
CANADA														
CONSTRUCTION														
SMALL	186,794	286,650	99,857	27,296	-746	-61,767	139,558	-6,599	-3,407	-1,553	-68	-31,235	0,5346	
MEDIUM	119,839	98,725	-21,113	17,512	-635	-39,627	-14,330	-3,859	-2,449	-681	-96	6,235	-1,762	
LARGE	140,939	98,459	-42,480	20,596	-481	-46,605	-22,246	-2,149	-2,737	701	795	6,161	-2,304	
CANADIAN	405,932	452,248	46,316	59,316	-2,015	-134,231	101,647	-14,533	-7,288	-1,807	-353	-20,594	1,141	
FOREIGN	61,639	31,586	-10,052	6,085	114	-13,749	-8,745	6,274	-1,296	265	785	1,725	-2,414	
SMALL	186,271	286,084	99,813	27,220	-742	-61,595	139,188	-6,678	-3,404	-1,561	-66	-31,448	0,5359	
MEDIUM	522	566	44	76	-3	-173	390	79	-3	-2	-3	-1,487	0,842	
LARGE	117,334	97,199	-20,135	17,146	-672	-38,799	-14,089	-4,206	-2,452	-699	-106	6,095	-1,716	
CANADIAN	2,505	1,527	-978	366	17	-858	-301	377	3	18	11	150	-3,905	
FOREIGN	102,327	68,965	-33,362	14,953	-581	-33,837	-23,413	-3,668	-1,432	452	19	6,459	-3,360	
CANADIAN	38,612	29,494	-9,118	5,642	100	-12,768	-8,834	5,818	-1,296	249	776	1,882	-2,362	
FOREIGN	860,449	791,523	78,825	125,738	-524	-111,734	-118,660	-22,400	1,758	-1,117	2,550	-21,254	-0,917	
SMALL	72,261	121,420	49,169	10,560	-784	-9,383	53,988	-2,487	820	-486	-40	-1,502	6,804	
MEDIUM	70,705	77,637	7,132	10,332	-3,201	-9,181	-8,450	-1,643	316	-398	74	11,980	1,009	
LARGE	717,483	582,257	-135,226	104,847	873	-93,169	-164,158	-18,231	522	-32	2,126	-31,232	-1,885	
CANADIAN	815,163	735,908	-79,255	119,251	-477	-105,853	-109,445	-29,224	2,443	-1,192	2,146	-20,589	-0,972	
FOREIGN	45,285	45,615	6,618	6,618	-47	-5,880	-9,195	6,823	-685	77	2,114	-1,965	0,073	
SMALL	71,599	120,177	48,578	10,463	-775	-9,297	53,493	-2,557	828	-689	-42	-1,488	6,785	
MEDIUM	662	1,254	591	97	-9	-86	100	100	-8	3	2	-14	8,928	
LARGE	65,923	71,909	5,986	9,633	-588	-8,560	-7,916	-2,353	321	-370	63	11,170	0,908	
CANADIAN	4,782	5,928	1,146	699	-25	-621	-572	721	-4	-28	31	810	2,395	
FOREIGN	677,642	543,823	-133,819	99,025	886	-87,996	-155,043	-24,294	1,264	-135	125	-29,970	-1,975	
SMALL	59,841	38,434	-1,407	5,822	-13	-5,176	-9,115	6,003	-643	102	2,081	-1,762	-0,353	
MEDIUM	559,751	587,866	58,115	77,413	-274	-59,860	42,581	-1,018	-781	-232	199	-27,064	1,097	
LARGE	159,961	224,978	65,101	21,914	1,030	-16,905	112,040	-4,100	38	-55	228	5,669	5,669	
CANADIAN	169,468	142,964	-17,505	23,490	-337	-19,268	-1,816	1,139	-1,936	206	206	14,267	1,091	
FOREIGN	219,321	209,924	-9,397	22,050	-897	-24,782	-50,180	4,898	-1,841	855	-24	24,173	-0,428	
CANADIAN	433,390	495,308	61,918	83,332	-3,550	-48,932	55,695	-15,537	-1,235	-547	291	-31,555	1,429	
FOREIGN	96,261	92,558	-3,803	14,081	276	-10,868	-13,074	14,519	1,235	314	-92	4,1501	-0,935	
SMALL	143,118	223,405	80,287	20,914	-1,206	-16,122	106,927	-5,131	-90	-698	167	-37,097	5,610	
MEDIUM	6,843	11,573	4,730	1,000	176	-732	5,115	1,031	51	152	81	-1,774	5,911	
LARGE	159,263	123,245	-16,118	20,365	-1,604	-15,748	-16,736	-4,936	232	-680	281	-12,477	-1,157	
CANADIAN	21,105	19,718	-1,387	3,084	258	-2,585	-2,526	3,180	216	177	24	-1,890	-0,657	
FOREIGN	150,909	148,658	-2,252	23,053	-739	-17,052	-34,538	-5,414	-2,168	831	-227	18,009	-0,149	
SMALL	68,412	61,267	-7,146	9,997	-158	-7,720	-15,652	10,308	-307	15	-157	8,164	-1,1044	
MEDIUM	1,031,255	1,416,301	535,046	158,005	-2,172	173,439	126,586	-12,404	1,851	-2,531	602	-7,115	3,099	
LARGE	361,566	565,537	203,971	52,836	3,169	57,997	370,135	-12,812	3,058	-2,519	300	-7,768	5,641	
CANADIAN	194,200	219,071	24,871	28,379	-778	31,151	-23,319	-5,997	-35	-25	239	19,094	1,781	
FOREIGN	565,489	631,693	106,204	76,790	1,774	84,221	-20,231	6,375	-1,132	-70	20	19,746	2,021	
CANADIAN	939,936	1,232,379	292,443	137,554	-3,971	150,771	157,553	-32,697	4,589	-1,937	86	-11,652	3,111	
FOREIGN	151,319	183,922	42,603	20,651	1,799	22,668	20,947	21,232	-2,779	-532	514	4,1558	2,015	
SMALL	360,760	561,889	201,129	52,718	-3,183	57,868	269,533	-12,923	3,045	-2,523	267	-7,751	5,575	
MEDIUM	806	3,648	2,842	118	13	129	602	121	-7	4	13	-17	3,5279	
LARGE	188,863	211,922	23,059	27,599	-826	30,225	-22,678	-6,771	-32	38	170	-18,570	1,221	
CANADIAN	5,337	7,149	1,812	780	59	856	804	804	-2	19	69	-525	3,336	
FOREIGN	390,314	458,569	68,255	57,037	68	62,609	-89,303	-13,932	1,558	-517	-429	14,668	-1,249	
CANADIAN	135,176	173,124	37,949	19,753	1,727	21,683	-30,928	20,368	-2,720	-587	431	5,080	2,807	
FOREIGN	560,189	681,137	120,947	81,867	751	21,788	-21,908	-7,478	66	-891	128	4,952	2,159	
SMALL	101,739	164,948	63,209	14,867	-323	3,957	76,012	-3,329	-570	-68	-155	-27,966	6,213	

INDUSTRY BY INITIAL FIRM SIZE & CONTROL	ALU78 (1)	ALU86 (2)	TOTAL OBSERVED GROWTH (A)	NATL GROWTH RATE EFFECT (B)	EFFECTS				SELECTED INTERACTIONS				RATE OF GROWTH (A)/(1)		
					TOTAL A-B	REGION	INDUSTRY	FIRM SIZE	CONTROL	INDUSTRY REGION	SIZE REGION	CNTL REGION		INDUSTRY SIZE	
															INDUSTRY
CANADA															
FINANCE															
MEDIUM.....	64,131	78,047	13,915	9,372	4,544	-217	2,494	-1,492	-426	-388	-51	6,508	0,2170		
LARGE.....	394,319	438,142	43,823	57,622	-13,800	1,291	15,336	-90,219	1,024	-454	324	26,311	1,111		
CANADIAN.....	62,609	605,875	113,266	71,986	41,280	-265	19,159	-8,580	-1,120	-534	523	4,078	1,137		
FOREIGN.....	67,580	75,261	7,681	9,876	-2,194	1,016	2,628	13,329	1,166	-357	523	4,078	1,137		
SMALL															
CANADIAN.....	100,034	160,945	60,910	14,618	46,292	-337	3,891	74,738	-587	-71	180	-27,497	6,089		
FOREIGN.....	1,704	4,003	2,299	249	2,050	14	66	1,273	17	22	5	-468	1,5492		
MEDIUM															
CANADIAN.....	59,805	72,111	12,306	9,739	3,567	-249	2,326	-7,181	-468	-404	-5	6,069	2,058		
FOREIGN.....	4,327	5,926	1,609	632	977	32	168	520	42	16	-5	439	3,719		
LARGE															
CANADIAN.....	322,770	372,620	49,850	48,628	-8,159	320	12,943	-76,137	-65	-59	-199	22,204	-1,204		
FOREIGN.....	61,549	65,322	3,773	8,994	-5,221	971	2,394	-14,082	1,107	-395	523	4,107	0,613		
SERVICES															
Total.....	1,232,537	1,731,542	499,005	180,112	318,893	-1,047	201,525	148,638	-18,092	-3,654	1,790	3,191	-4,049		
SMALL.....	404,972	764,428	339,457	59,179	290,277	-1,781	66,214	302,565	-14,227	1,258	-284	13,666	-8,382		
MEDIUM.....	325,768	403,671	77,903	47,605	30,298	-695	53,264	-29,110	2,056	-1,781	-286	-8,456	-2,391		
LARGE.....	501,798	583,443	81,646	73,328	8,317	1,418	82,046	-114,810	6,050	712	-206	2,381	-2,070		
CANADIAN.....	1,032,635	1,556,725	464,089	159,668	304,421	-3,304	178,650	178,093	-39,171	3,522	-3,096	3,914	-4,247		
FOREIGN.....	139,902	174,818	34,916	20,444	-20,444	2,256	22,874	-29,445	434	-559	2,360	-724	-2,496		
SMALL															
CANADIAN.....	403,408	728,698	335,290	58,950	276,339	-1,803	65,959	301,397	-14,462	1,257	14	13,664	8,311		
FOREIGN.....	1,564	5,731	4,167	229	3,938	22	256	1,168	236	14	18	53	2,6644		
MEDIUM															
CANADIAN.....	316,314	322,123	75,809	46,223	29,586	-864	51,719	-37,982	1,938	-1,818	-456	-8,171	-2,397		
FOREIGN.....	9,454	11,548	2,094	1,882	712	180	1,546	-1,135	1,424	37	170	-245	2,237		
LARGE															
CANADIAN.....	372,914	425,904	52,990	54,494	-1,404	-636	60,973	-85,322	278	403	189	-1,538	-1,421		
FOREIGN.....	128,884	157,539	28,656	18,834	9,821	2,055	21,072	-29,488	434	-609	2,172	-552	-2,223		
ATLANTIC															
Total.....	459,194	509,415	50,221	67,103	-16,882	-32,727	-672	11,732	-6,100	-2,708	2,959	-12,471	1,094		
SMALL.....	170,419	173,939	6,520	16,136	47,334	-7,870	987	82,437	-3,856	-19,681	1,870	-7,337	-573		
MEDIUM.....	83,640	84,782	1,143	12,222	-11,080	-5,961	-491	-2,330	-2,330	1,535	1,155	-1,734	0,137		
LARGE.....	285,135	250,693	-14,442	28,744	-53,186	-18,896	-1,168	-60,662	136	6,773	11,523	-3,404	-0,545		
CANADIAN.....	433,642	456,666	53,025	58,985	-5,960	-1,758	23,695	-14,470	3,368	-5,076	7,018	-11,454	-1,314		
FOREIGN.....	55,553	52,749	-2,806	8,118	-10,922	-3,959	1,086	-11,815	8,370	2,356	-4,060	-1,037	-0,505		
SMALL															
CANADIAN.....	109,869	173,186	63,317	16,055	47,221	-7,830	990	82,086	-3,939	-19,158	1,910	-7,359	-578		
FOREIGN.....	550	753	203	80	123	-39	-3	411	-83	-88	-40	16	-362		
MEDIUM															
CANADIAN.....	80,326	81,444	1,118	11,720	-10,620	-5,725	-367	-9,645	-2,880	5,224	1,397	-1,666	-0,139		
FOREIGN.....	3,314	3,339	25	684	-459	-236	-124	-398	439	215	-242	-88	0,076		
LARGE															
CANADIAN.....	213,446	202,037	-11,410	31,191	-42,601	-15,212	-2,382	-48,836	7,652	9,285	3,711	-2,439	-0,543		
FOREIGN.....	51,689	48,657	-3,032	7,553	-10,586	-3,684	1,214	-11,826	7,788	2,248	-2,777	-965	-0,587		
PRIMARY															
Total.....	11,083	14,684	3,601	1,620	1,982	-790	-2,687	3,870	-239	1,604	116	-1,968	-3,249		
SMALL.....	6,336	10,747	4,412	926	3,486	-452	-1,536	4,733	-245	1,071	116	-2,364	-6964		
MEDIUM.....	2,044	1,817	-228	299,290	-526	146	-496	2,96	135	29	63	-1,113	33		
LARGE.....	2,703	2,120	-583	395	-978	-138	-655	-618	46	181	18	-2157	-333		
CANADIAN.....	10,236	14,279	4,043	1,654	2,547	-729	-2,482	4,044	1,481	-914	178	-2,060	-3,950		
FOREIGN.....	847	406	-442	124	-566	-60	-205	-174	128	35	-62	-5214	92		
SMALL															
CANADIAN.....	6,323	10,731	4,409	924	3,485	-451	-1,533	4,734	-237	915	110	-2,359	-6,972		
FOREIGN.....	13	16	3	2	1	-1	-3	170	2	-2	-1	-5	2,582		
MEDIUM															
CANADIAN.....	1,977	1,670	-307	289	-595	-141	-479	-237	286	129	34	60	-1,1550		
FOREIGN.....	67	146	79	10	69	-5	-16	-8	10	-5	2	1,1700	2		
LARGE															
CANADIAN.....	1,936	1,877	-59	283	-342	-138	-469	-443	280	84	34	239	-0,005		
FOREIGN.....	767	243	-524	112	-636	-176	-186	-176	111	33	-56	95	-6832		
MINES															
Total.....	14,945	13,761	-1,184	2,184	-3,368	-1,065	3,053	-2,854	461	-940	-223	-1,926	-0,792		
SMALL.....	468	1,131	663	68	594	-33	96	350	-9	-29	4	23	1,4160		

INDUSTRY BY INITIAL FIRM SIZE & CONTROL	ALU78 (1)	ALU86 (2)	TOTAL OBSERVED GROWTH (A)	NATL GROWTH RATE EFFECT (B)	EFFECTS				SELECTED INTERACTIONS				RATE OF GROWTH (A)/(1)					
					TOTAL A-B	REGION	INDUSTRY	FIRM SIZE	CONTROL	INDUSTRY REGION	SIZE REGION	CNTL REGION		INDUSTRY SIZE				
															INDUSTRY	INDUSTRY	INDUSTRY	INDUSTRY
ATLANTIC RINES																		
MEDIUM.....	999	1,525	536	166	-71	204	-120	-62	85	-19	65	-160	0.5271					
LARGE.....	13,479	11,106	-2,373	1,970	-4,343	2,754	-3,084	-848	586	-209	336	-2,039	-1.781					
CANADIAN.....	9,603	9,256	-307	1,403	-684	1,715	-344	-604	536	187	536	-1,137	-0.320					
FOREIGN.....	5,342	4,465	-877	781	-281	1,091	-1,139	-336	232	-390	232	-779	-1.662					
SMALL																		
CANADIAN.....	428	1,063	635	63	-20	87	320	-27	-76	7	240	1,4854	1.6780					
FOREIGN.....	40	68	27	6	-3	8	30	-27	-7	3	53	-6780						
MEDIUM																		
CANADIAN.....	592	987	395	87	-42	121	-71	-37	39	10	95	6666						
FOREIGN.....	406	528	122	59	-29	83	-69	-26	26	-30	85	3239						
LARGE																		
CANADIAN.....	8,583	7,266	-1,317	1,254	-612	1,753	-1,964	-540	373	149	213	-1,558	-1.558					
FOREIGN.....	4,896	3,860	-1,036	715	-349	1,000	-1,120	-308	213	-358	-732	-2,216						
MANUFACTURING																		
Total.....	107,413	103,568	-3,845	15,696	-7,555	-6,601	-15,743	-2,732	3,312	-380	2,732	-3,418	-0.360					
SMALL.....	7,494	13,721	6,227	1,095	-534	-221	5,599	-190	1,336	11	1,147	8309						
MEDIUM.....	13,978	14,302	325	2,093	-996	-599	-1,678	-355	909	152	133	8232						
LARGE.....	85,941	75,525	-10,416	12,559	-6,125	-3,682	-19,662	-2,186	3,738	-633	-4,442	-1212						
CANADIAN.....	82,571	85,481	2,911	12,056	-5,885	-3,537	-10,386	-2,960	2,254	1,436	-2,235	-0.352						
FOREIGN.....	24,862	18,067	-6,795	3,630	-1,771	-1,064	-5,357	-632	1,058	-1,815	-1,133	-2,727						
SMALL																		
CANADIAN.....	7,293	13,477	6,184	1,064	-519	-312	5,441	-185	-1,298	127	1,115	8505						
FOREIGN.....	211	244	33	31	-15	-9	158	-5	-38	-15	32	1560						
MEDIUM																		
CANADIAN.....	12,866	13,651	785	1,880	-917	-551	-1,545	-461	837	234	-113	-0.610						
FOREIGN.....	1,112	852	-660	162	-79	-48	-134	-28	72	-81	-10	-4.129						
LARGE																		
CANADIAN.....	62,422	58,354	-4,068	9,122	-4,449	-2,674	-14,282	-2,338	2,715	1,085	-3,227	-0.652						
FOREIGN.....	23,519	17,171	-6,348	3,437	-1,676	-1,008	-5,281	3,544	1,023	-1,719	-1,216	-2.699						
CONSTRUCTION																		
Total.....	36,566	36,617	51	5,341	-2,605	-12,085	8,011	-873	-1,605	633	-1,583	0.019						
SMALL.....	15,510	21,837	6,327	2,267	-1,705	-5,129	11,588	-550	-2,745	479	-2,584	4.079						
MEDIUM.....	11,369	7,802	-3,567	1,661	-5,128	-3,759	-1,365	-349	758	149	531	3.049						
LARGE.....	9,667	6,878	-2,789	1,413	-689	-4,202	-2,212	-196	421	421	-2.885							
CANADIAN.....	36,201	36,549	348	4,998	-2,437	-11,309	8,480	-1,226	1,706	595	-1,679	0.102						
FOREIGN.....	2,366	2,069	-277	343	-167	-776	-469	353	101	-171	98	-1.181						
SMALL																		
CANADIAN.....	15,476	21,834	6,358	2,262	-1,103	-5,117	11,563	-555	-314	-2,758	-4108	-2.588						
FOREIGN.....	34	34	-1	5	-2	-11	26	-1	-6	-3	6	-8947						
MEDIUM																		
CANADIAN.....	11,056	7,683	-3,373	1,616	-788	-3,656	-1,328	-396	719	192	574	3.051						
FOREIGN.....	313	219	-94	46	-22	-103	-38	47	20	-23	16	-2.995						
LARGE																		
CANADIAN.....	7,668	5,832	-1,836	1,121	-547	-2,536	-1,754	-275	334	133	334	3.428						
FOREIGN.....	1,999	1,846	-153	232	-142	-661	-457	301	87	-146	87	-0.784						
TRANSPORTATION																		
Total.....	60,415	57,513	-2,903	8,849	-4,306	-7,845	-7,415	-2,029	1,398	984	-1,485	-0.480						
SMALL.....	6,021	9,364	3,343	880	-329	-782	4,498	-213	-1,073	103	-156	5533						
MEDIUM.....	4,896	5,780	884	715	-169	-588	-126	-126	1,542	318	830	1.806						
LARGE.....	49,499	42,368	-7,131	7,233	-14,364	-6,428	-11,322	-1,691	15,595	2,153	800	-2,139						
CANADIAN.....	59,884	56,518	-3,366	8,732	-4,254	-7,290	-7,290	-2,140	1,364	1,038	-1,510	-0.520						
FOREIGN.....	751	995	243	107	-52	-95	-125	110	230	-53	25	3.597						
SMALL																		
CANADIAN.....	6,007	9,261	3,254	878	-428	-780	4,488	-215	1,893	104	-105	5.616						
FOREIGN.....	14	103	90	2	-11	-2	10	2	-2	0	6	6.5134						
MEDIUM																		
CANADIAN.....	4,628	5,353	724	676	-330	-601	-556	-166	301	80	784	15.65						
FOREIGN.....	268	427	160	39	-19	-35	-32	40	84	-20	35	5.987						
LARGE																		
CANADIAN.....	49,049	41,905	-7,144	7,168	-3,496	-6,269	-11,222	-1,758	15,452	2,134	833	-2,119						
FOREIGN.....	450	664	14	66	-52	-58	-103	68	142	-33	25	-0.303						
WHOLESALE TRADE																		
Total.....	55,995	56,418	423	5,260	-2,565	-4,067	2,936	-673	-464	326	-1,396	-0.117						
SMALL.....	10,223	14,528	4,305	1,494	-229	-1,155	7,628	-253	2,996	171	-2,650	-2.185						
MEDIUM.....	10,988	8,740	-2,248	1,606	-783	-1,242	-1,319	-272	715	132	-984	-2.204						

INDUSTRY BY INITIAL FIRM SIZE & CONTROL	ALU78 (1)	ALUB6 (2)	TOTAL OBSERVED GROWTH (A)	NATL GROWTH RATE EFFECT (B)	EFFECTS				SELECTED INTERACTIONS				RATE OF GROWTH (A)/(1)	
					TOTAL A-B	REGION	INDUSTRY	FIRM SIZE	CONTROL	INDUSTRY REGION	SIZE REGION	CNTL REGION		INDUSTRY SIZE
QUEBEC														
TOTAL DIVISIONS														
LARGE.....	1,037,766	912,159	-125,607	151,650	-98,530	-9,717	-237,638	11,433	-4,212	9,226	-11,750	-15,766	-0.1210	
CANADIAN.....	1,473,793	1,661,286	187,494	215,337	-139,828	-324	-57,903	-52,836	5	-2,718	54,303	-33,799	-1272	
FOREIGN.....	285,229	237,474	-47,755	41,681	-27,081	-1,235	-59,426	42,977	2,083	1,659	-64,170	-6,127	-1,674	
SMALL														
CANADIAN.....	368,253	634,943	266,690	55,813	-34,943	8,960	235,132	-13,202	1,710	925	13,569	-17,862	.7242	
FOREIGN.....	3,662	6,206	2,544	555	-348	-181	2,736	552	183	9	-567	-412	.6948	
MEDIUM														
CANADIAN.....	328,527	327,443	-1,084	48,008	-31,182	167	-29,448	-11,778	3,710	-10,551	12,105	-5,464	-0.0031	
FOREIGN.....	20,814	17,959	-2,855	3,022	-1,376	-747	-2,499	-668	697	-668	-3,233	-421	-1.1372	
LARGE														
CANADIAN.....	777,013	698,850	-78,163	113,566	-73,373	-9,350	-177,778	-37,856	-5,415	6,908	28,630	-10,471	-1.1006	
FOREIGN.....	260,754	213,309	-47,444	38,104	-24,757	-366	-59,660	39,289	1,203	2,318	-40,380	-5,234	-1.1820	
PRIMARY														
Total.....	13,067	19,204	6,136	1,910	-1,241	3,168	5,841	-452	954	-89	485	-2,766	.6696	
SMALL.....	8,120	14,959	6,839	1,107	-742	-1,869	6,067	-289	593	20	297	-3,030	.8422	
MEDIUM.....	3,737	3,068	-669	514	-352	-506	-449	-120	273	-120	123	114	-1.1846	
LARGE.....	1,210	1,197	-13	77	-166	-43	-577	44	88	11	44	149	-0.1013	
CANADIAN														
FOREIGN.....	12,979	19,167	6,187	1,879	-1,232	-3,147	5,844	-465	478	-86	478	-2,765	.6752	
SMALL.....	88	57	-31	13	-44	-21	-2	13	6	-2	-14	-1	-0.3529	
CANADIAN														
FOREIGN.....	8,111	14,956	6,845	1,185	-770	-1,966	6,060	-291	592	20	299	-3,026	.8440	
MEDIUM														
CANADIAN.....	10	3	-7	1	-8	-2	-7	1	1	0	-2	-4	-0.6748	
FOREIGN														
CANADIAN.....	3,660	2,994	-666	535	-368	-887	-440	-131	267	-118	155	112	-1.1821	
FOREIGN.....	77	54	-23	11	-7	-19	-9	12	6	-2	-12	2	-0.3021	
LARGE														
CANADIAN.....	1,208	1,197	-11	177	-115	-293	-276	-43	88	11	45	149	-0.0094	
FOREIGN.....	1	0	-1	0	-1	0	0	0	0	0	0	0	-1.0000	
MINES														
Total.....	26,025	20,657	-5,379	3,805	-2,472	5,319	-4,679	847	-2,307	162	-871	-3,121	-0.2066	
SMALL.....	1,162	3,823	2,662	2,515	-108	233	853	-33	-101	34	34	2,8495	64	
MEDIUM.....	1,507	1,728	231	270	-143	508	-181	1	-133	-48	-1	-22	-1,465	
LARGE.....	23,286	15,105	-8,281	3,417	-2,220	6,178	-5,251	880	-2,072	208	-904	-3,520	-0.2541	
CANADIAN														
FOREIGN.....	16,489	15,387	-1,102	2,410	-1,262	3,569	-2,568	1,438	-1,466	90	608	-1,712	-0.6668	
SMALL.....	9,566	5,270	-4,297	1,335	-366	1,250	-2,111	1,438	-846	73	-1,478	-1,409	-0.4680	
CANADIAN														
FOREIGN.....	1,099	3,790	2,691	161	-104	225	821	-39	-97	3	40	617	2.4487	
MEDIUM														
CANADIAN.....	43	53	10	6	-4	9	52	6	-4	0	-7	24	-0.2155	
FOREIGN														
CANADIAN.....	1,214	1,473	259	177	-115	248	-146	-64	-108	-99	45	-195	-0.3780	
FOREIGN.....	293	55	-238	43	-28	60	-55	44	-26	-26	-47	-818	-0.7158	
LARGE														
CANADIAN.....	14,176	9,924	-4,252	2,072	-1,346	2,886	-3,243	-508	-1,256	126	522	-2,134	-0.2999	
FOREIGN.....	9,210	5,181	-4,029	1,346	-874	1,882	-2,107	1,389	-816	82	-1,426	-1,386	-0.4175	
MANUFACTURING														
Total.....	590,058	547,943	-42,115	86,276	-56,023	-25,277	-77,687	9,422	4,824	318	-9,684	-16,205	-0.7145	
SMALL.....	46,163	90,556	44,393	16,494	-4,381	1,377	34,475	-1,512	377	116	1,554	1,082	.9647	
MEDIUM.....	112,989	106,825	-6,164	15,157	-10,728	-6,940	-15,567	-2,345	924	-3,669	2,410	-953	-0.721	
LARGE.....	430,926	352,642	-78,284	74,585	-40,714	-18,160	-98,595	13,279	3,523	3,821	-13,668	-22,275	-1.821	
CANADIAN														
FOREIGN.....	424,135	410,312	-13,823	65,772	-60,439	-16,255	-112,277	3,484	-7,59	15,701	-8,281	-0.3771	-0.3771	
SMALL.....	163,923	137,631	-26,292	23,744	-15,564	-7,022	-25,765	24,699	1,340	-1,078	-25,385	-7,1925	-1.1604	
CANADIAN														
FOREIGN.....	45,378	88,893	43,515	6,421	-4,508	-1,944	33,903	-1,627	371	114	1,672	6,946	.9589	
MEDIUM														
CANADIAN.....	785	1,763	998	6,112	-73	-53	571	115	6	2	-118	117	1.5051	
FOREIGN														
CANADIAN.....	103,846	96,420	-7,426	15,175	-9,860	-4,444	-12,469	-3,723	809	-3,335	3,826	-913	-0.7158	
FOREIGN.....	9,163	8,425	-738	1,336	-668	-352	-1,108	1,378	75	-294	-1,476	-80	-0.0786	
LARGE														
CANADIAN.....	276,911	226,998	-51,912	60,465	-26,291	-11,863	-53,356	-9,927	2,264	2,462	10,283	-14,314	-1.1875	
FOREIGN.....	154,015	127,443	-26,572	23,166	-14,623	-6,598	-25,228	23,206	1,259	1,269	-23,851	-7,961	-0.1725	
CONSTRUCTION														
Total.....	92,555	103,675	11,120	13,525	-8,768	-50,605	-2,406	14,966	-2,253	-413	2,315	-4,090	-1.201	
SMALL.....	39,486	67,349	27,863	3,749	-3,749	-15,057	29,504	-1,369	1,552	99	1,428	-6,662	-0.7056	
MEDIUM.....	23,984	19,943	-4,041	3,505	-2,477	-7,591	-2,890	943	-75	-770	607	1,246	-1.6685	
LARGE.....	29,086	16,583	-12,503	4,250	-2,762	-9,618	-6,165	-79	1,143	254	81	1,267	-0.4367	

INDUSTRY BY INITIAL FIRM SIZE & CONTROL	ALU78 (1)	ALU86 (2)	TOTAL OBSERVED GROWTH (A)	NATL GROWTH RATE EFFECT (B)	EFFECTS				SELECTED INTERACTIONS				RATE DF GROWTH (A)/(1)	
					TOTAL A-B	REGION	INDUSTRY	FIRM SIZE	CONTROL	INDUSTRY REGION	SIZE REGION	CNTL REGION		INDUSTRY SIZE
QUEBEC														
CONSTRUCTION														
CANADIAN.....	86,844	99,259	12,415	12,691	-8,245	-29,717	21,090	-3,113	3,414	-446	3,200	-4,312	0.1430	
FOREIGN.....	5,711	4,416	-1,295	835	-562	-1,889	-1,124	861	254	33	-884	222	-2268	
SMALL														
CANADIAN.....	39,344	67,130	27,786	5,749	-3,735	-13,010	29,395	-1,410	1,567	99	1,450	-6,579	.7062	
FOREIGN.....	142	219	77	21	-14	-47	106	21	6	0	-22	-24	.5413	
MEDIUM														
CANADIAN.....	23,581	19,786	-3,795	3,466	-2,239	-7,798	-2,832	-845	927	-757	869	1,225	-1.609	
FOREIGN.....	402	157	-246	59	-394	-133	-48	61	16	-13	-62	21	-1.6106	
LARGE														
CANADIAN.....	23,919	12,343	-11,576	3,495	-2,271	-7,909	-5,473	-857	940	213	881	1,042	-1.4840	
FOREIGN.....	5,167	4,040	-1,127	755	-1,882	-1,709	-1,182	779	203	45	-800	225	-2.181	
TRANSPORTATION														
Total.....	209,333	193,257	-16,076	30,590	-19,875	-27,183	-28,468	-5,928	-1,521	957	6,093	-6,754	-12.66	
SMALL.....	17,780	39,052	12,272	2,598	-1,688	-2,309	13,254	-57	-129	45	614	-3,70	6.902	
MEDIUM.....	19,288	15,540	-2,728	2,816	-1,829	-2,502	-2,314	-463	-140	-619	476	3,255	-14.16	
LARGE.....	172,285	156,664	-15,620	25,176	-16,357	-22,372	-39,418	-4,868	-1,252	1,552	5,003	-7,620	-2.068	
CANADIAN.....	200,882	175,339	-25,543	29,355	-33,858	-19,073	-26,085	-7,202	-1,439	7,402	-4,617	-1,222	-1.222	
FOREIGN.....	8,451	6,918	-1,533	1,235	-2,768	-802	-1,530	1,273	-61	24	-1,309	-108	-1.814	
SMALL														
CANADIAN.....	17,564	29,715	12,151	2,567	-1,668	-2,281	13,123	-630	-128	44	647	-365	-6.918	
FOREIGN.....	216	337	121	32	-20	-29	161	32	-2	1	-33	-4	.5617	
MEDIUM														
CANADIAN.....	18,047	15,397	-2,650	2,637	-1,713	-2,344	-2,167	-667	-131	-580	655	3,058	-1.488	
FOREIGN.....	1,221	1,143	-78	178	-116	-159	-147	184	-9	-39	-189	207	-0.637	
LARGE														
CANADIAN.....	165,271	131,227	-34,044	24,151	-15,692	-21,461	-37,814	-5,925	-1,201	1,449	6,090	-7,310	-2.060	
FOREIGN.....	7,014	5,437	-1,576	1,025	-2,601	-911	-1,605	1,057	-51	62	-1,086	-310	-22.68	
WHOLESALE TRADE														
Total.....	137,730	150,332	12,602	20,127	-13,077	-15,583	13,006	-86	20,231	-987	89	-8,776	.0915	
SMALL.....	40,307	60,461	20,155	5,890	-3,827	-4,555	30,114	-1,157	5,921	101	1,189	-10,448	.5000	
MEDIUM.....	47,661	37,119	-10,542	6,752	-4,525	-5,386	-5,723	-678	7,001	697	-67	2,251	4.777	
LARGE.....	49,762	52,752	2,990	7,272	-1,385	-5,633	-11,385	-1,797	7,310	422	-1,797	5,939	.0601	
CANADIAN.....	111,722	131,934	20,212	16,326	-3,916	-10,607	16,868	-4,005	16,411	-982	4,116	-10,142	-1.812	
FOREIGN.....	26,009	18,398	-7,610	3,801	-11,441	-2,449	-3,842	3,919	3,820	-5	-4,028	1,355	-29.38	
SMALL														
CANADIAN.....	38,762	58,714	19,952	5,664	-3,680	-4,380	28,960	-1,390	5,694	97	1,428	-10,047	.5147	
FOREIGN.....	1,545	1,748	203	226	-147	-175	1,154	233	227	4	-239	-400	.1312	
MEDIUM														
CANADIAN.....	42,137	32,948	-9,189	6,158	-4,001	-4,761	-5,060	-1,511	6,190	-1,355	1,553	-3,773	-2.181	
FOREIGN.....	5,524	4,171	-1,353	807	-524	-654	-683	832	811	-177	-855	-495	-2.649	
LARGE														
CANADIAN.....	30,822	40,302	9,480	4,504	-2,926	-3,483	-7,082	-1,105	4,528	274	1,156	3,678	.3076	
FOREIGN.....	18,940	12,450	-6,490	2,768	-1,798	-2,140	-4,333	2,854	2,782	168	-2,933	-2,260	-3.627	
RETAIL TRADE														
Total.....	261,325	339,167	77,842	39,654	-24,811	-41,918	38,615	-3,725	-1,856	-278	3,858	-2,418	-2.979	
SMALL.....	95,421	160,236	64,816	13,944	-9,060	-15,306	71,291	-3,395	-678	240	3,489	-2,050	.6793	
MEDIUM.....	48,585	54,766	6,181	7,100	-4,613	-5,834	-5,834	-1,532	-345	-1,560	1,574	-4,777	-1.272	
LARGE.....	117,319	124,165	6,846	17,144	-11,139	-18,189	-26,862	-1,043	8,33	1,043	-1,235	4,409	.0584	
CANADIAN.....	231,068	312,052	80,984	33,766	-21,939	-37,065	45,278	-1,641	8,294	-500	8,514	-3,394	.3505	
FOREIGN.....	30,257	27,115	-3,142	4,422	-2,873	-4,853	-6,663	4,559	-2,15	222	-4,686	976	-1.028	
SMALL														
CANADIAN.....	95,280	159,736	64,456	13,923	-9,046	-15,283	71,186	-3,416	-677	239	3,511	-2,047	.6765	
FOREIGN.....	141	500	359	21	-13	23	105	21	-1	0	-22	-3	2.5521	
MEDIUM														
CANADIAN.....	47,459	53,639	6,220	6,935	-4,506	-7,613	-5,699	-1,701	-337	-1,524	1,749	-4,666	.1313	
FOREIGN.....	1,126	1,077	-49	165	-107	-181	-135	170	-8	-36	-174	-111	-0.837	
LARGE														
CANADIAN.....	88,329	98,627	10,298	12,908	-8,386	-14,168	-20,209	-3,167	-627	785	3,255	3,319	.1166	
FOREIGN.....	28,991	25,539	-3,452	4,236	-2,753	-4,650	-6,633	4,368	-206	258	-4,489	1,089	-1.191	
FINANCE														
Total.....	137,130	146,958	9,829	20,039	-13,020	-5,333	15,343	-11,112	-11,166	372	2,171	-1,262	.0717	
SMALL.....	24,801	37,536	12,735	3,624	-2,355	-965	18,550	-802	-2,019	62	824	-6,817	.5154	
MEDIUM.....	16,812	17,851	1,039	2,457	-1,056	654	-2,019	-368	-1,359	-540	378	1,706	.0618	
LARGE.....	95,517	91,523	-3,994	13,958	-9,063	-3,715	-21,854	942	-7,778	849	-968	6,373	-0.418	
CANADIAN.....	122,096	133,828	11,732	17,842	-11,592	-4,749	-2,498	-4,377	-9,942	232	4,499	3,75	.0961	

INDUSTRY BY INITIAL FIRM SIZE & CONTROL	ALU78 (1)	ALU86 (2)	TOTAL OBSERVED GROWTH (A)	NATL GROWTH RATE EFFECT (B)	EFFECTS				SELECTED INTERACTIONS				RATE OF GROWTH (A)/(1)		
					TOTAL A-B	REGION	INDUSTRY	FIRM SIZE	CONTROL	INDUSTRY REGION	SIZE REGION	CNTL REGION		INDUSTRY SIZE	
QUEBEC															
FINANCE	15,034	13,131	-1,903	2,197	-4,100	-1,427	585	-2,845	2,265	-1,224	79	-2,328	887	-0.1266	
SMALL FOREIGN.....															
CANADIAN.....	24,332	36,898	12,566	3,556	9,011	-2,310	946	18,179	-872	-1,981	61	897	-6,488	.5165	
FOREIGN.....	469	686	217		148	-45	18	351	71	-38				.4621	
MEDIUM															
CANADIAN.....	15,553	16,648	1,165	2,273	-1,128	-1,677	605	-1,868	-558	-1,237	-500	573	1,578	.0736	
FOREIGN.....	1,258	1,152	-106	184	-290	-119	49	-151	190	-102	-40	-155	128	-0.0840	
LARGE															
CANADIAN.....	82,210	80,031	-2,179	12,003	-13,993	-7,805	3,197	-18,809	-2,947	-6,184	731	3,029	5,486	-.0241	
FOREIGN.....	11,292	11,292	-2,015	1,944	-3,959	-1,263	518	-3,044	2,005	-1,084	118	-2,1061	868	-1.1514	
SERVICES															
Total.....	291,788	387,567	95,779	42,639	53,140	-27,704	67,709	37,711	-5,572	-10,710	-1,102	5,777	914	.3682	
SMALL.....	98,716	176,927	78,212	14,425	32,886	-9,372	16,140	33,753	-3,472	-3,632	298	5,754	3,359	.7852	
MEDIUM.....	74,797	89,613	14,816	10,930	3,886	-7,102	12,230	-8,981	-2,351	-2,725	-2	2,417	-1,957	-.1981	
LARGE.....	118,276	121,927	3,652	11,230	-13,632	-11,230	19,379	-27,061	2,521	-9,372	1,021	2,64	-488	-.0309	
CANADIAN.....	265,578	362,939	97,420	38,480	58,611	-25,215	43,423	43,191	-9,521	-9,728	-1,221	9,785	1,048	.3668	
FOREIGN.....	26,210	24,568	-1,641	3,850	-5,671	-2,468	4,285	-5,481	3,949	-982	158	-4,1059	-134	-0.0626	
SMALL															
CANADIAN.....	98,384	175,111	76,727	14,377	62,350	-9,341	16,086	73,505	-3,527	-3,611	247	3,625	3,327	.7799	
FOREIGN.....	332	917	585	48	577	-51	54	248	50	-12	1	11		1.7640	
MEDIUM															
CANADIAN.....	73,028	87,888	14,860	10,672	4,188	-6,934	11,940	-8,769	-2,618	-2,680	-2,335	2,691	-1,891	.2035	
FOREIGN.....	1,769	1,725	-44	259	-503	-168	289	-212	267	-65	-57	-274	-46	-0.2650	
LARGE															
CANADIAN.....	94,167	109,001	5,834	13,761	-7,927	-8,941	15,397	-31,545	-3,376	-3,486	837	3,470	-368	.0620	
FOREIGN.....	24,109	21,927	-2,182	3,523	-5,705	-2,289	3,942	-5,516	3,633	-885	214	-3,733	-99	-0.0905	
ONTARIO															
Total.....	2,864,588	3,397,910	533,313	418,467	114,704	264,733	-4,619	-81,031	31,584	6,357	-9,535	11,529	-65,180	.1862	
SMALL.....	534,887	949,834	414,947	78,164	336,784	46,071	8,039	39,628	-7,521	-1,990	24,671	-6,322	-29,594	.7758	
MEDIUM.....	481,717	586,566	104,850	70,330	41,556	15,971	3,577	-37,824	59,136	1,294	-2,932	-2,932	-8,436	.2177	
LARGE.....	1,847,994	1,861,510	13,515	270,049	-26,635	159,691	-16,037	-42,846	-77,800	5,239	57,537	20,862	-26,881	.0073	
CANADIAN.....	2,144,691	2,639,117	494,426	313,404	181,018	182,726	57,685	18,685	-76,889	3,684	8,240	-28,065	-47,285	.2305	
FOREIGN.....	719,906	758,793	38,887	105,201	-66,515	82,001	-4,567	-169,717	108,471	10,021	-17,775	39,593	-17,917	.0540	
SMALL															
CANADIAN.....	524,940	925,439	400,698	76,710	323,988	65,214	8,691	392,197	-18,819	-288	24,212	-6,869	-29,174	.7633	
FOREIGN.....	9,946	24,196	14,250	1,423	12,796	857	-453	7,421	1,493	98	459	547	-749	1.4226	
MEDIUM															
CANADIAN.....	633,070	531,102	98,032	63,295	34,767	37,301	4,986	-52,002	-15,526	670	20,975	-5,667	-7,402	.2264	
FOREIGN.....	48,667	55,464	6,818	7,109	-291	4,190	-1,612	-5,184	7,330	625	2,556	2,675	-1,054	.1401	
LARGE															
CANADIAN.....	1,186,481	1,182,376	-4,306	173,411	-177,716	102,211	-13,529	-231,509	-62,543	-4,005	-36,947	-15,529	-10,687	-.0036	
FOREIGN.....	661,313	679,133	17,820	98,628	-28,619	36,960	-2,502	151,307	93,663	9,298	-20,590	36,371	-18,135	.0269	
PRIMARY															
Total.....	25,895	31,781	5,886	3,794	2,102	2,070	-6,278	12,289	-468	2,041	907	-171	-6,214	.2273	
SMALL.....	18,257	23,746	5,489	2,695	2,892	1,570	-4,421	13,826	-648	1,437	861	-236	-6,804	.3032	
MEDIUM.....	3,819	4,201	382	598	606	1,521	185	323	-79	301	301	-29	117	.1263	
LARGE.....	3,819	3,713	-106	501	-68	303	-65	-65	250	302	-119	94	473	.0326	
CANADIAN.....	23,328	29,964	6,536	3,424	3,092	2,018	-5,680	12,788	-840	1,486	956	-307	-6,474	.2781	
FOREIGN.....	2,466	1,836	-629	360	-950	212	-358	-499	371	194	-50	136	259	-.2552	
SMALL															
CANADIAN.....	18,206	23,752	5,546	2,660	2,886	1,568	-4,614	13,664	-652	1,435	840	-288	-6,792	.3046	
FOREIGN.....	32	14	-17	5	-22	3	-8	204	5	2	2	2	-12	-.5475	
MEDIUM															
CANADIAN.....	3,508	4,018	510	513	-73	302	-850	-421	-126	276	170	-46	107	.1454	
FOREIGN.....	311	283	-28	45	27	27	-75	47	24	24	15	17	10	-.0889	
LARGE															
CANADIAN.....	1,715	2,125	409	168	-209	168	-616	-392	-61	135	-53	-22	211	.2677	
FOREIGN.....	2,123	1,559	-564	310	89	183	-515	-486	320	167	-66	117	262	-.2752	
MINES															
Total.....	31,425	35,791	4,166	4,621	2,724	2,724	6,461	-5,025	1,500	-2,634	-624	547	-3,381	.1317	
SMALL.....	1,972	2,029	288	288	1,776	1,770	403	1,475	-49	-164	91	-18	1,108	1.0460	
MEDIUM.....	2,612	2,951	339	382	-142	325	533	-314	-49	-217	156	-18	-418	-.1200	
LARGE.....	27,840	28,891	1,051	3,951	-2,170	2,329	5,954	-6,187	1,598	-2,252	-842	583	-4,070	.0851	
CANADIAN.....	17,507	26,837	9,330	2,558	-6,772	1,508	3,576	-1,934	-628	-1,458	-213	-229	-1,335	.5329	

INDUSTRY BY INITIAL FIRM SIZE & CONTROL	ALU78 (1)				ALU86 (2)				TOTAL OBSERVED GROWTH (A)				NATL GROWTH RATE EFFECT (B)				EFFECTS				SELECTED INTERACTIONS				RATE OF GROWTH (A)/(1)		
	INDUSTRY	FIRM SIZE	CONTROL	REGION	INDUSTRY	FIRM SIZE	CONTROL	REGION	TOTAL A-B	INDUSTRY	FIRM SIZE	CONTROL	REGION	INDUSTRY	FIRM SIZE	CONTROL	REGION	INDUSTRY	FIRM SIZE	CONTROL	REGION	INDUSTRY	FIRM SIZE	CONTROL		REGION	INDUSTRY
ONTARIO	14,119	8,955	-5,164	2,063	-7,227	1,216	2,884	-3,092	2,127	-1,176	-611	776	-2,045	-0,3658													
MINES	FOREIGN.....																										
SMALL																											
CANADIAN.....	3,844	1,985	1,859	272	1,714	160	380	1,389	-67	-155	86	-24	1,0681														
FOREIGN.....	115	195	80	17	63	10	24	86	17	-10	6	65	1,6901														
MEDIUM																											
CANADIAN.....	2,370	2,847	476	346	130	204	484	-285	-85	-197	115	-31	2,009														
FOREIGN.....	241	104	-137	35	-172	21	49	-29	36	-20	12	13	-5671														
LARGE																											
CANADIAN.....	13,278	20,146	6,868	1,940	4,928	1,144	2,712	-3,038	-476	-1,106	-613	-174	-1,998														
FOREIGN.....	13,762	8,455	-5,107	2,011	-7,118	1,185	2,812	3,149	2,074	-1,146	-628	757	-3711														
MANUFACTURING																											
Total.....	975,565	1,053,632	64,067	142,560	-78,494	84,027	-41,792	-149,626	49,924	29,332	-15,283	18,223	-22,367														
SMALL	60,849	133,432	78,583	8,482	69,691	5,241	-2,607	45,462	-1,567	1,829	2,807	-572	9,314														
MEDIUM	130,576	159,565	28,989	19,081	9,908	11,247	-5,594	3,926	5,152	3,926	2,807	-8	1,148														
LARGE	784,140	740,635	-43,505	114,887	-158,093	67,539	-33,592	-179,409	51,515	23,577	-24,414	18,804	-40,533														
CANADIAN.....	520,406	606,552	86,146	76,067	10,098	44,823	-22,294	-51,615	-18,657	-3,353	6,810	-10,583	-0,555														
FOREIGN.....	455,159	433,080	-22,079	66,513	-88,592	39,204	-19,499	-98,211	68,581	13,685	-11,930	25,033	-0,485														
SMALL																											
CANADIAN.....	57,557	131,062	73,505	8,411	65,094	4,957	-2,566	43,002	-2,063	1,731	2,655	-753	8,810														
FOREIGN.....	3,292	8,371	5,079	481	4,598	284	-141	2,459	496	99	152	181	1,5427														
MEDIUM																											
CANADIAN.....	105,603	132,271	26,668	15,432	11,236	9,096	-4,524	-12,680	-3,786	3,175	5,115	-1,382	-2525														
FOREIGN.....	24,973	27,294	2,321	3,669	-1,328	2,151	-1,070	-2,999	3,763	751	1,210	1,373	-0,929														
LARGE																											
CANADIAN.....	357,246	343,219	-14,027	52,205	-66,232	30,770	-15,304	-81,737	-12,807	10,741	-11,123	-4,675	-0,593														
FOREIGN.....	426,895	397,479	-29,419	62,283	-91,861	36,769	-18,288	-67,672	64,322	12,836	-15,291	23,467	-22,067														
CONSTRUCTION																											
Total.....	158,660	202,817	44,157	23,185	20,972	13,666	-52,464	33,231	-2,818	13,935	3,507	-1,028	-6,784														
SMALL	66,628	112,986	46,357	9,736	36,621	5,739	-22,032	49,780	-2,353	5,852	3,073	-859	6,958														
MEDIUM	41,465	44,183	2,718	6,059	3,362	3,571	-13,711	-4,979	1,279	3,662	2,008	2,154	0,655														
LARGE	50,566	45,648	-4,918	7,389	-12,307	4,355	-16,721	-11,569	814	4,441	-1,574	297	-0,973														
CANADIAN.....	143,271	190,772	47,501	20,936	26,565	12,340	-47,376	36,445	-5,136	12,583	3,883	-7,423	3,315														
FOREIGN.....	15,389	12,045	-3,344	2,249	-5,353	1,325	-5,089	-3,214	2,319	1,351	-376	846	-2,173														
SMALL																											
CANADIAN.....	66,438	112,825	46,387	9,709	36,678	5,722	-21,969	49,637	-2,382	5,835	3,064	-869	-11,110														
FOREIGN.....	191	161	-30	28	-58	16	-63	142	29	17	10	10	-1,561														
MEDIUM																											
CANADIAN.....	40,352	43,307	2,955	5,897	-2,941	3,476	-13,543	-4,845	-1,447	3,544	1,954	-528	2,096														
FOREIGN.....	1,114	876	-237	143	-600	96	-368	-134	168	98	54	61	58														
LARGE																											
CANADIAN.....	36,482	34,641	-1,841	5,331	-7,172	3,142	-12,064	-8,347	-1,308	3,204	-1,136	-677	1,590														
FOREIGN.....	14,084	11,008	-3,077	2,058	-5,135	1,213	-4,657	-3,222	2,122	1,237	-439	775	614														
TRANSPORTATION																											
Total.....	344,471	289,127	-55,344	50,338	-105,683	29,670	-44,731	-54,058	-9,714	-18,797	7,040	-3,546	-9,508														
SMALL	24,858	40,968	18,310	3,311	14,999	1,952	-2,942	16,928	-772	1,236	1,045	-283	-471														
MEDIUM	24,318	32,733	8,416	3,554	4,862	2,095	-3,158	2,920	-555	1,178	203	4,120	3,661														
LARGE	297,496	215,426	-82,070	43,473	-125,543	25,624	-38,631	-68,066	-1,884	-16,234	-9,750	-3,060	-13,157														
CANADIAN.....	330,341	275,701	-54,640	48,273	-102,913	28,453	-42,897	-1,207	-11,842	-8,026	-6,725	-4,323	-9,251														
FOREIGN.....	14,130	13,426	-704	2,065	-2,769	1,217	-1,835	-2,850	2,129	-1,771	-289	-777	-0,498														
SMALL																											
CANADIAN.....	22,455	40,379	17,923	3,281	14,642	1,934	-2,916	16,777	-805	-1,225	1,036	-294	-667														
FOREIGN.....	203	589	386	30	357	17	-26	152	31	9	11	11	1,9048														
MEDIUM																											
CANADIAN.....	22,620	30,542	7,923	3,305	4,617	1,948	-2,937	-2,716	-811	-1,234	1,096	-296	3,833														
FOREIGN.....	1,698	2,190	493	248	-245	146	-220	-204	256	82	93	288	-2,902														
LARGE																											
CANADIAN.....	285,246	204,686	-80,486	41,686	-132,173	24,570	-37,043	-65,268	-10,227	-15,567	-8,882	-3,732	-12,617														
FOREIGN.....	12,230	10,646	-1,584	1,787	-3,371	1,053	-1,588	-2,798	1,843	-1,667	-381	673	-541														
WHOLESALE TRADE																											
Total.....	191,557	234,444	42,886	27,992	14,894	16,499	-21,645	15,193	949	-1,530	2,850	347	-9,762														
SMALL	53,975	92,161	38,186	7,887	50,299	4,649	-6,999	40,326	-1,169	-2,489	-427	2,489	-13,990														
MEDIUM	58,366	58,025	-341	8,549	-8,870	5,027	-7,008	-7,008	-81	-466	2,827	-29	-5,226														
LARGE	79,217	84,258	5,041	11,576	6,823	6,823	-8,951	-18,125	2,199	-2,666	803	-9,455	-0,636														
CANADIAN.....	149,650	186,729	37,079	21,869	15,210	12,890	-16,910	19,598	-5,365	-1,195	-2,979	-1,958	-10,955														
FOREIGN.....	41,907	47,715	5,808	6,124	-316	3,609	-4,735	-4,406	6,314	-335	-129	2,305	-1,193														

INDUSTRY BY INITIAL FIRM SIZE & CONTROL	ALU78 (1)	ALU86 (2)	TOTAL OBSERVED GROWTH (A)	NATL GROWTH RATE EFFECT (B)	EFFECTS			SELECTED INTERACTIONS				RATE OF GROWTH (A)/(1)	
					REGION	INDUSTRY	FIRM SIZE	CONTROL	INDUSTRY REGION	SIZE REGION	CNTL REGION		INDUSTRY SIZE
ONTARIO													
WHOLESALE TRADE													
SMALL													
CANADIAN.....	49,866	84,728	36,863	7,287	4,295	37,566	-1,798	-5,535	-998	2,300	-653	-12,925	0.6991
FOREIGN.....	4,109	7,432	3,323	600	354	3,070	619	-464	-33	190	226	-1,065	0.8088
MEDIUM													
CANADIAN.....	46,862	66,580	20,718	6,953	4,088	20,730	-1,706	-5,376	-380	2,304	-623	-4,260	-0.1555
FOREIGN.....	10,785	11,183	398	1,576	325	1,178	1,625	-1,219	-86	522	593	-966	0.5659
LARGE													
CANADIAN.....	52,204	55,159	2,955	7,629	4,674	11,944	-1,872	-5,899	-617	-1,625	-683	6,230	0.5666
FOREIGN.....	27,013	29,039	2,026	3,947	1,867	6,180	4,070	-3,052	-216	841	1,484	3,224	0.7772
RETAIL TRADE													
TOTAL.....	423,141	552,497	129,357	61,834	36,446	67,522	-1,897	67,874	-22,494	2,407	-693	-1,606	0.3057
SMALL	124,920	190,480	65,770	18,255	10,760	47,505	-9,530	20,038	-9,530	5,762	-1,607	-2,684	0.5264
MEDIUM	74,529	87,233	12,723	10,891	6,419	11,953	-8,949	11,953	-8,949	3,610	-804	-7,328	0.1709
LARGE	223,691	274,584	50,863	32,688	18,175	35,981	-4,706	17,467	-17,178	6,965	1,718	8,406	0.4016
CANADIAN.....	351,985	452,025	100,040	51,438	30,317	56,460	-12,619	48,807	-27,030	6,950	-4,606	3,913	0.2843
FOREIGN.....	71,155	100,452	29,277	10,356	6,129	11,414	-15,605	10,721	-5,464	-1,983	3,913	2,307	0.4115
SMALL	124,509	188,808	64,299	18,195	10,724	46,105	-6,464	19,972	-9,562	5,743	-1,629	-2,675	0.5164
FOREIGN.....	411	1,872	1,461	60	35	1,401	62	66	-32	19	23	-9	0.5555
MEDIUM	72,010	83,762	11,752	10,523	6,202	11,551	-2,582	11,551	-5,530	3,488	-942	-7,080	0.1632
CANADIAN.....	2,520	3,501	981	368	217	613	380	404	-192	122	139	-248	0.3994
FOREIGN.....	155,466	179,264	24,028	22,718	13,391	24,839	-11,929	24,839	-11,929	1,484	-2,054	5,842	0.1546
LARGE	68,225	95,060	26,825	9,970	16,865	5,876	10,280	-5,239	-2,124	3,752	2,564	1,933	0.3953
FINANCE													
TOTAL.....	230,577	310,684	80,107	33,694	19,860	9,968	-1,721	20,256	-2,372	628	-628	3,462	0.3474
SMALL	37,360	57,060	19,720	5,460	3,218	27,913	-1,188	3,298	3,298	1,723	-434	-10,270	0.7955
MEDIUM	24,158	35,592	11,436	3,527	7,844	2,079	-679	939	1,169	-175	2,449	2,449	0.3293
LARGE	159,079	208,026	39,010	24,707	14,563	6,576	-38,665	-54	14,927	-5,264	-20	11,282	0.2529
CANADIAN.....	195,687	283,334	67,866	28,567	16,838	7,603	-7,008	17,559	-1,507	1,507	-2,558	1,525	0.3574
FOREIGN.....	35,050	45,331	10,241	5,128	3,022	1,365	-7,013	5,287	3,098	-865	1,930	2,137	0.2918
SMALL	36,551	64,876	28,285	5,341	3,148	1,622	-1,310	27,508	3,222	1,686	-478	-10,067	0.7739
FOREIGN.....	809	2,244	1,425	118	70	1,317	122	31	71	37	65	-222	1.7728
MEDIUM	22,055	31,914	9,849	3,224	1,900	858	-2,791	858	1,948	1,069	-289	2,239	0.4664
FOREIGN.....	2,075	3,595	1,522	303	179	81	-249	312	183	100	114	210	0.7241
LARGE	136,871	168,803	31,732	20,001	11,789	5,233	-4,907	12,084	-4,261	1,791	-1,791	9,133	0.2318
CANADIAN.....	32,208	35,492	7,294	4,707	2,578	1,223	-7,369	6,853	-1,003	1,771	2,149	2,262	0.2362
FOREIGN.....	483,106	701,137	218,031	70,597	41,611	28,990	-4,171	47,424	-3,851	6,114	-1,522	980	0.4513
TOTAL.....	148,283	278,222	130,437	21,669	12,772	22,545	-5,170	110,788	-5,170	1,887	-1,887	5,015	0.8796
SMALL	121,855	182,056	40,162	17,893	10,499	19,920	-14,827	3,450	3,904	1,259	-1,259	3,156	0.3293
MEDIUM	212,927	260,378	47,452	31,115	16,356	18,360	-48,717	6,624	-1,629	1,629	-6,878	2,529	0.2529
LARGE	412,1615	605,164	192,539	60,796	32,533	35,539	-14,792	5,289	-5,289	7,855	-5,289	1,249	0.4667
CANADIAN.....	70,491	95,973	25,482	10,301	6,072	11,526	-14,826	10,621	-5,62	-1,742	3,877	-368	0.3615
FOREIGN.....	147,500	275,405	127,905	21,554	12,704	24,117	-5,288	110,201	-1,176	6,802	-1,930	4,989	0.8672
SMALL	785	3,317	2,533	115	68	1,288	318	586	-6	36	42	27	0.2269
MEDIUM	116,962	155,999	38,637	17,082	10,074	19,124	-4,193	806	-932	5,665	-1,531	3,029	0.3303
FOREIGN.....	4,932	6,437	1,505	721	625	1,592	743	-39	239	271	-271	-128	0.3051
LARGE	148,152	174,160	26,008	21,650	12,761	25,224	-33,897	-5,311	-1,181	-4,613	-1,929	-611	0.1755
CANADIAN.....	64,774	86,218	11,464	9,466	5,579	10,591	-14,820	9,740	-514	-2,017	3,562	-267	0.3311
FOREIGN.....	1,140,083	1,322,424	182,351	166,601	-55,162	7,229	-10,748	12,329	-4,448	-4,448	4,448	-2,930	0.0078
TOTAL DIVISIONS	279,975	465,457	182,482	40,913	-8,635	1,485	209,176	9,625	-1,231	-11,868	-1,933	-17,270	0.1599
SMALL	223,720	218,678	-5,062	32,662	-6,900	1,953	-874	1,874	874	-15,429	-1,181	-3,528	-0.0235
MEDIUM	638,388	641,929	4,910	92,956	-89,086	3,802	145,604	4,758	12,579	23,959	956	-4,765	0.0777
LARGE	978,573	1,160,316	181,737	143,001	-30,181	4,046	70,256	-35,082	6,629	-8,796	-7,046	-3,032	0.0077
CANADIAN.....	161,504	162,118	614	23,601	-4,981	3,193	54,324	5,403	4,448	4,448	4,888	-2,930	0.0078
FOREIGN.....													

PRATIERS & WINT

INDUSTRY BY INITIAL FIRM SIZE & CONTROL	ALU78 (1)	ALU86 (2)	TOTAL OBSERVED GROWTH (A)	NATL GROWTH RATE EFFECT (B)	EFFECTS				SELECTED INTERACTIONS				RATE OF GROWTH (A7/11)						
					TOTAL A-B	REGION	INDUSTRY	FIRM SIZE	CONTROL	INDUSTRY REGION	SIZE REGION	CNTL REGION		INDUSTRY SIZE					
PRAIRIES & MNT CONSTRUCTION	SMALL																		
	CANADIAN.....	41,862	51,987	10,126	6,117	4,008	-1,291	-13,862	31,276	-1,501	-6,157	-1,775	-301	-7,000	0,2619				
	FOREIGN.....	98	148	50	14	36	-3	-32	73	15	-14	-4	3	-16	.5151				
	MEDIUM																		
	CANADIAN.....	30,389	18,186	-12,203	4,438	-16,161	-97	-10,062	-3,667	-1,089	-4,467	-2,096	-219	1,578	-6,018				
	FOREIGN.....	555	124	-432	81	-513	-184	-67	84	-88	-62	-28	17	29	-7,776				
	LARGE																		
	CANADIAN.....	24,556	12,983	-11,553	3,585	-15,119	-757	-8,113	-5,614	-880	-3,609	885	-177	1,069	-4,709				
	FOREIGN.....	13,783	10,080	-3,683	2,011	-5,694	-424	-4,151	-3,169	2,074	-2,924	497	417	800	-2,676				
	TRANSPORTATION																		
Total.....	144,220	147,162	2,943	21,075	-18,133	-4,468	-18,728	-10,722	-4,303	6,337	2,799	-864	-3,668	.0204					
SMALL.....	14,351	25,410	9,060	2,097	-8,983	-443	-1,853	17,620	-600	-3,001	431	-709	-800	-928					
MEDIUM.....	12,159	12,793	633	1,777	-1,123	-839	-1,460	-349	3,509	3,777	4,247	859	2,860	.8313					
LARGE.....	117,710	110,959	-6,750	17,201	-23,952	-15,285	-26,922	-3,509	-3,707	4,247	-705	2,905	5,668	.0521					
CANADIAN.....	139,572	142,293	2,721	20,396	-17,675	-4,305	-18,124	-16,764	-3,004	4,004	2,117	-1,025	-3,602	-1,073					
FOREIGN.....	4,648	4,869	221	679	-458	-143	-804	-906	700	133	82	141	-42	.0476					
SMALL																			
CANADIAN.....	14,274	23,346	9,072	2,086	6,986	-440	-1,854	10,665	-512	409	-605	-163	-297	.6355					
FOREIGN.....	76	64	-12	11	-23	-2	-10	57	11	2	-3	2	-2	-1,562					
MEDIUM																			
CANADIAN.....	11,400	11,551	151	1,666	-1,515	-352	-1,480	-1,369	-609	327	-287	-82	1,932	.0132					
FOREIGN.....	759	1,242	483	111	-91	-23	-99	114	114	22	-52	23	129	.6354					
LARGE																			
CANADIAN.....	113,898	107,396	-6,501	16,644	-23,145	-3,513	-14,790	-26,059	-4,083	3,647	6,109	-820	-5,037	-1,612					
FOREIGN.....	3,812	3,563	-249	557	-806	-118	-495	-872	374	109	139	115	-169	-.0854					
WHOLESALE TRADE																			
Total.....	105,737	105,993	2,256	15,159	-11,722	-3,199	-11,107	5,901	-798	-6,881	1,120	-177	-3,406	.0218					
SMALL.....	40,439	40,439	0	4,018	8,922	-868	-2,545	-2,545	-683	1,924	1,166	-177	-1,128	.4706					
MEDIUM.....	25,728	23,196	-2,532	3,761	-4,333	-794	-2,908	-3,080	-2,545	1,207	1,374	677	-2,304	-.0988					
LARGE.....	50,500	42,358	-8,142	7,380	-15,523	-1,557	-5,706	-11,554	5,66	3,250	1,824	114	6,027	-.1612					
CANADIAN.....	88,078	91,361	3,284	12,871	-9,853	-8,686	-9,853	8,686	-3,159	-5,622	-1,363	-374	-4,571	.0373					
FOREIGN.....	15,659	14,632	-1,027	2,288	-3,315	-483	-1,769	-2,785	2,359	1,038	273	474	1,165	-.0856					
SMALL																			
CANADIAN.....	26,946	39,169	12,224	3,928	8,286	-831	-3,045	20,132	-956	-1,787	-1,142	-194	-6,984	.4536					
FOREIGN.....	553	1,270	716	81	656	-17	-63	414	83	-37	-23	17	-143	1,2945					
MEDIUM																			
CANADIAN.....	23,371	21,066	-2,305	3,415	-5,750	-721	-2,641	-2,806	-828	-1,550	-1,613	-168	-2,092	-.0986					
FOREIGN.....	2,367	2,110	-237	346	-582	-73	-367	-284	557	-157	-163	72	-212	-.1001					
LARGE																			
CANADIAN.....	37,761	31,126	-6,635	5,518	-12,153	-1,165	-4,267	-8,640	-1,564	-2,505	1,362	-272	4,506	-.1757					
FOREIGN.....	12,739	11,232	-1,507	1,862	-3,368	-393	-1,439	-2,915	1,919	-843	460	386	1,520	-.1183					
RETAIL TRADE																			
Total.....	191,889	256,310	64,421	28,041	36,380	-5,918	30,780	24,379	-2,356	12,501	-1,681	-533	-1,106	.3357					
SMALL.....	66,255	101,117	34,863	9,682	41,450	-2,063	10,428	6,801	-2,554	2,316	-2,809	-473	-1,624	.5362					
MEDIUM.....	32,404	34,807	2,403	4,735	-2,399	-499	-2,908	-3,080	-2,545	1,207	1,374	677	-2,304	-.0988					
LARGE.....	93,230	120,385	27,155	13,624	-13,551	-2,875	-5,706	-11,554	5,66	3,250	1,824	114	6,027	-.1612					
CANADIAN.....	169,239	230,163	60,923	24,713	36,112	-5,220	27,127	23,571	-6,067	11,026	-2,609	-1,219	-1,846	.3400					
FOREIGN.....	22,650	26,148	3,498	3,310	-6,188	-699	-3,653	-4,892	5,413	1,475	727	685	740	.1544					
SMALL																			
CANADIAN.....	66,146	100,685	34,539	9,666	24,873	-2,040	10,610	49,619	-2,371	4,309	-2,804	-476	-1,621	.5222					
FOREIGN.....	109	433	326	16	308	-3	18	82	82	-5	-5	3	-2	2,9675					
MEDIUM																			
CANADIAN.....	31,631	33,672	2,041	4,622	-2,582	-976	5,074	-3,798	-1,134	2,061	-2,183	-228	-3,110	.0845					
FOREIGN.....	773	1,155	383	113	250	-24	124	-93	116	50	-53	23	-76	.4692					
LARGE																			
CANADIAN.....	71,462	95,806	24,344	10,443	-13,901	-2,904	11,643	-16,350	-2,562	4,456	2,578	-515	2,686	.3407					
FOREIGN.....	21,768	24,579	2,811	3,181	-370	-671	3,492	-4,280	3,280	1,418	785	659	818	.1291					
FINANCE																			
Total.....	95,186	108,543	13,357	13,910	-6,633	-3,366	3,702	11,452	-1,985	10,842	625	-999	124	1,403					
SMALL.....	19,469	28,583	9,113	2,902	-5,448	-600	14,356	-2,218	-664	-2,218	-841	-133	-5,352	.4681					
MEDIUM.....	15,192	10,809	-4,383	1,792	-2,591	-376	-474	-1,464	-586	-841	-72	-72	1,237	-.1134					
LARGE.....	65,525	69,151	3,626	9,216	-3,615	-1,65	2,772	-14,534	-965	2,926	2,926	-194	4,239	.0886					
CANADIAN.....	87,533	100,967	13,434	12,771	-6,543	-2,700	5,604	-9,971	-3,138	-9,971	409	-339	-1,523	.1523					
FOREIGN.....	7,653	7,576	-77	1,118	-1,089	-236	298	-1,524	1,153	-872	216	232	463	.0020					

INDUSTRY BY INITIAL FIRM SIZE & CONTROL	ALU78 (1)	ALUB6 (2)	TOTAL OBSERVED GROWTH (A)	NATL GROWTH RATE EFFECT (B)	EFFECTS					SELECTED INTERACTIONS					RATE OF GROWTH (A)/(1)
					TOTAL A-B	REGION	INDUSTRY	FIRM SIZE	CONTROL	INDUSTRY REGION	SIZE REGION	CNTL REGION	INDUSTRY SIZE		
PRAIRIES & NMT FINANCE SMALL CANADIAN..... FOREIGN..... MEDIUM CANADIAN..... FOREIGN..... LARGE CANADIAN..... FOREIGN..... SERVICES Total..... SMALL CANADIAN..... FOREIGN..... MEDIUM CANADIAN..... FOREIGN..... LARGE CANADIAN..... FOREIGN..... SMALL CANADIAN..... FOREIGN..... MEDIUM CANADIAN..... FOREIGN..... LARGE CANADIAN..... FOREIGN.....	19,285	28,372	9,087	2,818	-595	750	14,409	-691	-2,197	-818	-139	-5,301	0.4712		
	184	211	27	27	-6	7	137	28	-21	-8	6	-51	1.458		
	11,759	10,373	-1,385	1,718	-383	457	-1,412	-422	-1,339	-811	-85	1,193	-1.1178		
	433	436	3	63	-13	17	-52	65	-49	-30	13	44	-0.0058		
	56,489	62,121	5,633	8,255	-1,742	2,197	-12,924	-2,025	-6,435	2,038	-407	3,769	-0.997		
	7,036	7,030	-6	1,028	-217	274	-1,610	1,060	-801	254	213	469	-0.0009		
	229,366	315,795	86,430	33,517	7,074	37,502	-4,184	-4,184	15,082	-4,439	-841	300	3768		
	71,588	159,837	68,249	10,461	-2,035	11,705	-3,485	-2,528	4,707	-3,035	-508	2,421	9534		
	67,526	74,209	6,683	9,868	-2,083	11,041	-8,108	-2,106	4,440	-4,660	-423	-1,749	0.990		
	90,252	101,749	11,497	13,189	-2,073	14,571	-20,649	483	5,935	3,256	90	372	-1.274		
	207,725	287,526	79,801	30,355	-6,467	33,964	29,426	-7,447	13,659	-5,026	-1,486	419	3942		
	21,640	28,269	6,629	3,162	-667	3,158	-4,158	3,261	1,423	587	655	-118	3,063		
	71,384	138,779	67,395	10,431	-2,202	11,672	53,333	-2,553	4,694	-3,026	-514	2,414	9,441		
	204	1,058	854	30	-6	33	153	31	13	-9	6	7	4,1834		
	65,837	72,561	6,724	9,621	-2,031	10,765	-7,905	-2,360	4,329	-4,543	-474	-1,705	1.021		
1,689	1,648	-41	247	-52	276	-202	255	111	-117	51	-44	-0.0242			
70,595	76,186	5,681	10,303	-2,174	11,528	-16,131	-2,528	4,636	2,544	-508	-291	0.8006			
19,747	25,563	5,816	2,886	-609	3,229	-4,518	2,975	1,299	712	598	-81	2,945			
BC & YUKON TOTAL DIVISIONS Total..... SMALL CANADIAN..... FOREIGN..... MEDIUM CANADIAN..... FOREIGN..... LARGE CANADIAN..... FOREIGN..... SMALL CANADIAN..... FOREIGN..... MEDIUM CANADIAN..... FOREIGN..... LARGE CANADIAN..... FOREIGN..... PRIMARY Total..... SMALL CANADIAN..... FOREIGN..... MEDIUM CANADIAN..... FOREIGN..... LARGE CANADIAN..... FOREIGN..... SMALL CANADIAN..... FOREIGN..... MEDIUM CANADIAN..... FOREIGN..... LARGE CANADIAN..... FOREIGN..... MINES Total..... SMALL CANADIAN..... FOREIGN..... MEDIUM CANADIAN..... FOREIGN..... LARGE CANADIAN..... FOREIGN.....	771,316	887,770	116,455	112,713	-11,835	-430	34,048	-4,877	-627	-1,053	-4,780	-18,807	1.1510		
	199,551	322,739	123,187	29,161	-3,062	2,496	149,090	-6,815	2,167	-1,647	-6,680	-13,367	0.6173		
	145,109	151,641	6,531	21,205	-2,226	881	-17,424	-3,769	-1,254	-6,290	-3,680	-1,732	0.450		
	425,655	413,391	-13,264	63,248	6,546	-3,806	-97,617	5,707	-2,046	6,884	5,584	-3,688	-0.311		
	649,215	769,778	120,563	94,871	9,916	1,645	59,376	-23,274	2,993	2,522	-22,812	-16,139	1.857		
	122,100	117,992	-4,108	17,843	-1,873	-2,075	-25,328	18,397	-3,620	1,469	18,032	-2,668	-0.326		
	197,735	317,845	120,110	28,995	-3,034	2,570	147,733	-7,089	2,809	-1,632	-6,948	-13,233	0.6074		
	1,816	4,893	3,077	265	-28	-74	1,357	274	-136	-15	268	-144	1.6938		
	137,826	143,815	6,389	20,082	-2,109	1,090	-16,502	-4,927	-868	-5,957	-4,829	-1,699	0.4665		
	7,683	7,825	142	1,123	-118	-210	-923	1,158	-385	-333	1,135	-94	0.1864		
	314,055	308,118	-5,937	45,993	-4,819	-2,015	-71,855	-11,259	1,053	5,067	-11,035	-1,217	-0.0189		
	112,600	105,274	-7,327	16,454	-1,728	-1,791	-25,763	16,966	-3,099	1,817	16,629	-2,430	-0.0651		
	25,280	26,369	1,089	3,594	-388	-6,129	6,857	-771	-8,342	-286	-756	-3,583	0.431		
	12,211	19,030	6,819	1,784	-187	-2,961	9,123	-413	-4,030	-101	-404	-4,556	0.5584		
	6,660	4,996	-1,664	973	-102	-1,615	-800	-191	-2,198	-289	-187	204	-3549		
6,409	3,043	-3,366	927	-98	-1,554	-1,466	-167	-2,115	103	-164	647	-5252			
24,554	26,272	1,719	3,588	-377	-5,953	6,866	-880	-8,102	-279	-833	-3,541	0.7000			
726	97	-630	106	-11	-176	-7	109	-240	-107	107	-1	-8670			
12,076	18,974	6,897	1,765	-185	-2,928	9,023	-433	-3,985	-100	-424	-4,506	0.5711			
135	56	-79	20	-2	-33	101	20	-44	-1	20	-50	-5841			
6,405	4,256	-2,149	936	-98	-1,553	-769	-230	-2,114	-278	-235	196	-3355			
255	41	-215	37	-4	-62	-31	38	-84	-11	38	8	-8412			
6,073	3,043	-3,030	887	-93	-1,472	-1,389	-218	-2,004	98	-213	748	-4,989			
336	0	-336	49	-5	-82	-77	51	-111	5	50	41	-1,0000			
15,829	16,399	570	2,313	-243	3,234	-2,370	255	1,520	158	250	-1,574	0.3660			
1,152	3,330	2,178	168	-18	2,616	-861	-19	-10	-10	-19	646	2.4116			
1,170	3,884	2,714	171	-18	2,335	-141	-11	112	-51	-11	-187	-1.592			
13,506	11,485	-2,021	1,974	-207	2,759	-3,090	285	218	279	-203	-1497	-0.073			
11,420	11,504	84	1,669	-175	2,333	-1,497	-409	1,097	93	-401	-934	0.0073			
4,408	4,895	487	1,644	-68	-1,58	-873	664	423	58	651	-580	-1.104			

INDUSTRY BY INITIAL FIRM SIZE & CONTROL	ALU78 (1)	ALU86 (2)	TOTAL OBSERVED GROWTH (A)	NATL GROWTH RATE EFFECT (B)	EFFECTS			SELECTED INTERACTIONS					RATE OF GROWTH (A)/(1)			
					REGION	INDUSTRY	FIRM SIZE	CONTROL	INDUSTRY REGION	SIZE REGION	CNTRL REGION	INDUSTRY SIZE				
														TOTAL A-B		
BC & YUKON MINES																
SMALL																
CANADIAN.....	1,032	2,908	1,876	151	-16	211	771	-37	99	-9	-36	579	1,8183			
FOREIGN.....	120	1,022	902	18	-2	25	90	18	12	-1	18	67	7,5106			
MEDIUM																
CANADIAN.....	1,005	722	-283	147	-15	205	-121	-36	97	-44	-35	-26	-2816			
FOREIGN.....	165	262	97	24	-3	34	-20	25	16	-7	24	-26	-5851			
LARGE																
CANADIAN.....	9,383	7,874	-1,510	1,371	-164	1,917	-2,167	-36	901	151	-370	-1,412	-1,609			
FOREIGN.....	4,122	5,671	-512	602	-83	842	-942	621	396	67	609	-821	-1,242			
MANUFACTURING																
Total	181,162	169,176	-11,987	26,473	-2,780	-7,761	-22,593	3,932	-14,785	1,002	3,854	-4,895	-0,662			
SMALL	16,476	29,976	13,500	2,408	-233	-706	12,309	-531	-1,345	-136	-420	2,527	8,194			
MEDIUM	25,549	22,869	-2,679	3,733	-32	-1,094	-3,068	-453	-2,085	-1,107	-225	-424	-1,029			
LARGE	159,138	116,331	-42,807	20,332	-43,140	-5,961	-31,854	4,916	-11,355	2,245	4,919	-7,192	-1,839			
CANADIAN.....	125,260	128,740	3,480	18,204	-1,922	5,366	-10,387	-4,491	-10,323	555	-4,401	-2,178	-0,378			
FOREIGN.....	55,902	40,435	-15,467	8,169	-858	-2,395	-12,206	8,423	-4,862	747	8,256	-2,717	-2,767			
SMALL																
CANADIAN.....	16,153	29,306	13,150	2,361	-248	-692	12,059	-579	-1,218	-133	-568	2,473	8,141			
FOREIGN.....	322	672	350	47	-5	-14	261	49	-26	-3	48	49	1,0853			
MEDIUM																
CANADIAN.....	23,068	21,227	-1,842	3,371	-354	-988	-2,770	-827	-1,883	-1,000	-811	-202	-0,798			
FOREIGN.....	2,480	1,643	-828	362	-38	-106	-298	374	-202	-108	366	-22	-3,377			
LARGE																
CANADIAN.....	86,039	78,210	-7,828	12,573	-1,320	-3,686	-19,485	-3,084	-4,332	1,388	-3,023	-6,447	-0,810			
FOREIGN.....	53,099	38,120	-14,979	7,759	-815	-2,275	-12,149	8,001	-7,842	857	7,842	-2,745	-2,821			
CONSTRUCTION																
Total	68,627	47,237	-21,390	7,106	-8,496	-16,080	12,840	-1,039	-9,061	-501	-1,018	-2,572	-0,286			
SMALL	23,210	32,343	9,134	3,292	356	-7,675	17,351	-821	-4,225	-192	-805	-3,861	3,875			
MEDIUM	12,096	8,408	-3,689	1,768	-5,456	-4,000	-1,452	-411	-2,454	-524	-403	-328	-3,629			
LARGE	13,321	6,486	-6,835	1,947	-204	-4,405	-3,068	194	-5,371	215	190	580	-5,171			
CANADIAN.....	44,850	44,532	-318	6,554	-6,872	-6,88	13,635	-1,608	-8,258	-553	-1,576	-2,826	-0,271			
FOREIGN.....	3,777	2,705	-1,072	552	-59	-1,249	-795	569	-704	52	556	153	-0,858			
SMALL																
CANADIAN.....	23,152	32,308	9,156	3,383	-355	-7,656	17,298	-830	-4,314	-191	-814	-3,871	3,855			
FOREIGN.....	157	35	-122	8	-1	-19	43	9	-11	0	8	-10	-3,950			
MEDIUM																
CANADIAN.....	11,976	8,257	-3,719	1,750	-184	-3,960	-1,428	-429	-2,332	-519	-421	622	-3,106			
FOREIGN.....	121	151	30	18	-2	-40	-14	18	-22	-5	18	6	-2,511			
LARGE																
CANADIAN.....	9,722	3,967	-5,755	1,421	-149	-3,215	-2,224	-349	-1,912	157	-342	424	-5,920			
FOREIGN.....	3,599	2,520	-1,080	526	-55	-1,190	-823	542	-871	58	532	157	-3,000			
TRANSPORTATION																
Total	102,009	104,464	2,455	14,907	-1,565	-13,246	-11,070	-625	-1,095	768	-617	-2,093	0,261			
SMALL	11,451	17,636	6,184	1,672	-176	-1,487	8,556	-382	-123	-65	-374	-328	5,400			
MEDIUM	10,064	9,990	-74	1,471	-154	-1,307	-1,208	-108	-108	-336	-201	1,705	-0,073			
LARGE	80,494	76,838	-3,656	11,765	-1,235	-10,453	-18,417	161	-864	1,299	159	-2,560	-0,560			
CANADIAN.....	84,684	85,056	372	12,375	-1,209	-10,997	-3,036	-909	-909	542	-2,376	-1,509	-0,624			
FOREIGN.....	17,325	19,408	2,083	2,532	-266	-2,250	-3,733	2,610	-186	226	2,559	-584	1,202			
SMALL																
CANADIAN.....	11,298	17,476	6,178	1,651	-173	-1,467	8,441	-405	-121	-93	-397	-235	5,649			
FOREIGN.....	154	160	6	22	-2	-20	115	23	-2	-1	23	-3	0,285			
MEDIUM																
CANADIAN.....	9,227	9,066	-162	1,248	-142	-1,198	-1,108	-331	-99	-600	-324	1,564	-0,175			
FOREIGN.....	836	945	88	122	-13	-109	-100	126	-9	-36	123	142	1,057			
LARGE																
CANADIAN.....	64,159	58,515	-5,644	9,376	-984	-8,331	-14,679	-689	-1,035	1,035	-2,354	-2,828	-0,880			
FOREIGN.....	16,335	18,244	1,989	2,387	-251	-2,121	-2,461	2,461	-175	264	2,412	-722	-1,217			
WHOLESALE TRADE																
Total	60,731	60,679	-52	8,875	-932	-6,862	5,456	-610	-11,186	512	-402	3,250	-0,009			
SMALL	17,957	27,415	9,458	2,624	-276	-2,029	13,416	-359	-3,308	-148	-328	-4,555	5,297			
MEDIUM	17,716	15,884	-1,832	2,589	-272	-2,002	-3,127	-304	-1,263	-76	-358	-1,586	-1,034			
LARGE	25,058	17,380	-7,678	3,662	-384	-2,881	-4,816	424	-4,816	404	424	-2,990	-3,664			
CANADIAN.....	51,256	52,425	1,179	7,490	-786	-5,752	6,982	-1,838	-5,752	545	-1,801	-3,797	-1,030			
FOREIGN.....	9,475	8,244	-1,231	1,385	-145	-1,107	-1,426	1,428	-1,745	33	1,399	547	-1,239			

INDUSTRY BY INITIAL FIRM SIZE & CONTROL	ALU78 (1)	ALU86 (2)	TOTAL OBSERVED GROWTH (A)	NATL GROWTH RATE EFFECT (B)	EFFECTS				SELECTED INTERACTIONS				RATE OF GROWTH (A)/(1)	
					TOTAL A-B	REGION	INDUSTRY	FIRM SIZE	CONTROL	INDUSTRY REGION	SIZE REGION	CNTL REGION		INDUSTRY SIZE
BC & YUKON														
WHOLESALE TRADE														
SMALL														
CANADIAN.....	17,395	26,415	9,020	2,542	-257	-1,966	12,986	-626	-3,204	-146	-611	-4,509	0,5185	
FOREIGN.....	562	1,000	439	82	-9	-53	420	85	-104	-5	83	-146	.7793	
MEDIUM														
CANADIAN.....	15,928	14,221	-1,717	2,329	-255	-1,801	-1,916	-571	-2,926	-891	-560	-1,427	-1,077	
FOREIGN.....	1,778	1,662	-114	260	-27	-201	-213	298	-327	-77	263	-159	-0.664	
LARGE														
CANADIAN.....	17,923	11,749	-6,174	2,619	-275	-2,025	-4,101	-643	-3,301	289	1,054	2,139	-3.417	
FOREIGN.....	7,135	5,581	-1,554	1,043	-109	-806	-1,633	1,075	-1,314	115	1,054	851	-2.178	
RETAIL TRADE														
SMALL														
CANADIAN.....	170,076	159,658	10,418	17,547	-1,842	19,251	18,732	-2,732	29,604	-407	-2,678	-994	3.297	
FOREIGN.....	55,010	57,422	2,412	9,577	-651	7,250	33,528	-1,572	11,077	-372	-1,565	-967	.4913	
MEDIUM														
CANADIAN.....	50,955	53,810	2,855	8,062	-322	3,561	-2,516	-825	5,166	-708	-613	-2,060	.1257	
FOREIGN.....	14,103	13,723	370	7,007	-830	6,797	-12,260	-309	13,340	873	-499	2,033	.2738	
LARGE														
CANADIAN.....	11,682	13,232	1,550	16,310	-1,713	17,908	20,501	-4,002	13,525	-301	-3,223	-1,214	.2830	
FOREIGN.....	8,432	18,426	7,994	1,232	-129	1,353	-1,169	1,270	2,079	94	1,245	220	.9480	
SMALL														
CANADIAN.....	44,921	66,349	21,428	6,564	-689	7,206	33,562	-1,610	11,075	-371	-1,578	-965	.4770	
FOREIGN.....	89	773	684	13	-1	14	67	13	22	-1	13	-2	.75581	
MEDIUM														
CANADIAN.....	20,280	22,682	2,402	2,964	-311	3,253	-2,435	-727	5,000	-879	-713	-1,994	.1184	
FOREIGN.....	674	928	254	99	-10	108	-81	102	166	-29	100	-96	.3786	
LARGE														
CANADIAN.....	46,661	54,202	7,541	6,786	-713	7,449	-10,426	-1,865	11,450	749	-1,432	1,745	.1871	
FOREIGN.....	7,669	14,722	7,056	1,121	-118	1,230	-1,755	1,155	1,891	124	1,133	288	.9201	
FINANCE														
TOTAL														
CANADIAN.....	67,607	79,116	11,510	9,879	-1,037	2,629	212	-1,336	1,495	332	-1,211	-379	.1702	
FOREIGN.....	15,952	22,816	7,865	2,214	-232	589	-305	-505	335	-125	-835	-4,165	.5125	
SMALL														
CANADIAN.....	8,320	10,042	1,722	1,201	-156	350	-987	-207	182	-356	-203	834	.2218	
FOREIGN.....	4,425	7,156	2,734	6,464	-679	1,720	-324	-224	378	714	-314	2,952	.0424	
MEDIUM														
CANADIAN.....	8,123	7,379	-744	8,464	-940	2,382	1,418	-2,935	1,354	183	-2,152	-750	.1982	
FOREIGN.....	6,567	5,738	-829	930	-98	248	-1,206	959	141	70	940	371	-.0989	
LARGE														
CANADIAN.....	14,947	22,083	7,136	2,184	-229	581	11,167	-536	331	-123	-525	-6,109	.4774	
FOREIGN.....	205	833	629	30	-3	8	153	31	5	-2	30	-56	3.0714	
MEDIUM														
CANADIAN.....	7,749	9,325	1,577	1,132	-119	301	-931	-278	171	-336	-272	786	.2935	
FOREIGN.....	471	717	246	69	-7	181	-57	71	10	-20	70	48	.5233	
LARGE														
CANADIAN.....	58,543	41,949	-16,594	5,632	-591	1,439	-8,819	-1,382	852	622	-1,354	2,572	.0889	
FOREIGN.....	5,692	4,187	-1,505	832	-87	221	-1,302	858	126	92	841	380	.2844	
SERVICES														
TOTAL														
CANADIAN.....	169,997	224,672	54,675	21,919	-2,302	24,525	25,882	-2,451	11,225	-1,507	-2,403	612	.4978	
FOREIGN.....	56,932	121,270	64,338	8,520	-874	9,309	42,535	-2,093	4,260	-1,870	-1,969	1,925	.7981	
SMALL														
CANADIAN.....	42,680	51,536	8,856	6,459	-655	6,978	6,155	-1,362	3,194	-1,850	-1,335	-1,105	.3017	
FOREIGN.....	50,584	86,749	36,165	7,363	-773	8,238	9,119	-324	3,771	813	901	-208	.3247	
MEDIUM														
CANADIAN.....	134,210	204,827	70,617	19,627	-2,061	21,960	29,206	-4,815	10,951	-1,702	-6,719	690	.5235	
FOREIGN.....	15,687	20,045	4,358	2,292	-251	2,565	-3,353	2,364	1,174	195	2,317	-78	.2778	
LARGE														
CANADIAN.....	56,760	102,029	45,268	8,294	-871	9,280	42,407	-2,035	4,248	-669	-1,994	1,920	.7975	
FOREIGN.....	172	342	170	25	-3	28	129	26	13	-1	25	6	.9888	
MEDIUM														
CANADIAN.....	41,777	54,060	12,283	6,105	-641	6,831	-5,016	-1,698	3,126	-1,811	-1,468	-1,082	.2940	
FOREIGN.....	903	1,496	593	132	-14	148	-108	136	68	-39	133	-23	.6554	
LARGE														
CANADIAN.....	35,773	48,540	12,767	5,227	-589	5,849	-8,185	-1,292	2,677	577	-1,257	-148	.3549	
FOREIGN.....	14,612	18,207	3,595	2,135	-256	2,389	-3,353	2,202	1,094	256	2,158	-60	.2480	

Note: AUJ78 (1) Average Labour Units in 1978.
AU86 (2) Average Labour Units in 1986.

(A) Total Observed Growth is (2) minus (1).

(B) National Growth Rate Effect is (1) multiplied by national growth rate 1978-86 (0.1461).

Effects: Total is (A) minus (B); total observed growth minus the national growth rate effect.

Effects: Region, industry, firm size and control effects are the computed effects of these factors on employment growth as described in text.

Selected interactions: The effect on employment of some of the two-way interactions is given and explained in the text.

Additional interaction effects occur which are not listed.

The allocation or disproportionality effect ($\hat{r} \dots r \dots$) is a constant proportion of the 1978 employment base and is not listed.

Source: Small Business and Special Surveys, Statistics Canada.
