

Industry Canada
Research Publications Program

**PERSPECTIVES ON
NORTH AMERICAN
FREE TRADE**

**THE CHANGING INDUSTRY
AND SKILL MIX OF CANADA'S
INTERNATIONAL TRADE**

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PERSPECTIVES ON NORTH AMERICAN FREE TRADE

THE CHANGING INDUSTRY AND SKILL MIX OF CANADA'S INTERNATIONAL TRADE

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PREFACE

Toward the mid-1980s, as international markets and production were becoming more global in scope and outlook, Canada was in danger of being pushed to the margin of the world economy. We were not equipped to expand our participation in global markets, and we were in danger of losing our own markets. Moreover, with over two-thirds of our exports destined for the United States and the share steadily climbing, we were highly exposed to rising U.S. protectionist sentiments. In essence, our past prosperity had made us complacent about the precarious position we faced as a trading nation.

It was in such a climate that the government undertook the steps necessary to renew and strengthen the economy, rather than resist the forces of global change. The government's approach was to make the private sector the driving force of this economic renewal. Policies were adopted to encourage and reward entrepreneurship and facilitate adaptation to the changing economic environment.

As a trading nation, getting our trade relations with the United States right was an obvious goal. It was decided that a free trade agreement was needed in order to forestall protectionist tendencies in the United States, enhance Canada's security of access to the American market and improve the predictability of trade relations with our neighbour to the south.

The Canada-United States Free Trade Agreement (FTA) was implemented in 1989. Five years later, in 1994, the North American Free Trade Agreement (NAFTA) came into effect and basically extended the FTA to the fast-growing Mexican market.

These free trade agreements were expected to increase prosperity in Canada by raising the efficiency and productivity of Canadian businesses. Such agreements are known to be mutually beneficial to the economies of the parties involved, and are particularly beneficial to the relatively small economies, such as that of Canada. They first expose domestically protected firms to international competition. Second, they reward innovative and productive firms by giving them access to larger markets. This increases trade flows between participating countries and improves the overall efficiency of their economies. The FTA and NAFTA were no exception; they were signed in the hope of obtaining those benefits for the Canadian economy after an initial adjustment period. Yet concomitantly, there were legitimate concerns about possible plant closures and job losses in Canada.

More than ten years have passed since the implementation of the FTA — enough time to reliably assess the implications of the agreement for the Canadian economy. In this context, the Micro-Economic Policy Analysis Branch has asked a group of experts to examine the Canadian economy in light of the FTA. The six papers coming out of this exercise are now being published under the general heading of *Perspectives on North American Free Trade*. These papers analyse a broad spectrum of issues ranging from the impact of the FTA on interprovincial trade flows to its impact on the productivity performance of the Canadian economy. In addition, the viability of the Canadian manufacturing sector is assessed, as is the relationship between outward foreign direct investment and trade flows. The papers also explore the implications of trade for the evolution of Canada's industrial structure and skill mix along with an assessment of Canada's migration patterns with the United States.

Peter Dungan and Steve Murphy set out to examine the changing industry and skill mix of Canadian exports and imports over the past three decades. The primary technique they use is input-output (I/O) analysis. This is supplemented by detailed sectoral education (skill) data from the Canadian occupational Projection System (COPS).

With these data, the authors estimate how much of Canada's employment is associated with exports and imports and whether changes in the industrial composition of our trade have affected the employment and skill mix of jobs over time. A key finding is that despite the rising importance of exports in overall economic activity, the growth in the share of employment attributable to exports has been much less pronounced. The major reason for this, according to the authors, is that exports now have a much higher import content in intermediate inputs than in the past. Likewise, if our imports were to be produced in Canada, our technology would produce them with much more imported intermediate inputs than was the case in the past.

The authors also find that changes in the employment mix are directly related to the composition of exports, along with the degree of import penetration for intermediate inputs. However, relative labour productivity and technical change were found to be less important.

EXECUTIVE SUMMARY

The intention of the project is to examine in detail the industry and skill mix of Canadian exports and imports as they stood in 1997 and to ask how this mix has changed since 1961. Some important and timely questions underlie the study: How much of Canada's employment is associated with exporting, and how much has this changed over the last three decades? To what extent do Canadian exports and export employment still depend upon raw materials, and how much have our exports moved to being made up of tertiary manufacturing and services? Even if such a movement has occurred, the skill mix implications are not clear: at least some primary sector jobs require considerable skill and are very well paid, while many manufacturing and services jobs require little skill and are poorly rewarded. How has the education/skill mix of Canadian export employment changed over time, and in relation to employment in the entire economy? On the import side there is the widely-held conception that a more open economy and heavier reliance on imports has pushed aside low-skill jobs in Canada and has led to lower incomes for the less skilled. To what extent can we identify such a trend from 1961 through 1997?

The study uses Input-Output (I/O) techniques to address these questions, supplemented by detailed sectoral education data from the Canadian Occupational Projection System (COPS). We build upon earlier studies at Industry Canada and elsewhere by using annual I/O tables for 1961 through 1992 and supplementary detail to extend the analysis through 1997, and by using a somewhat greater industrial disaggregation. Results are presented in both aggregated and disaggregated form together with a variety of sensitivity tests and with decompositions of the sources of change in export and "import replacement" employment over 1961–97.

Main Findings

- While exports and imports have grown strongly as shares of the Canadian economy since 1961 — and massively so in the 1990s — the growth in the share of employment attributable to exports (or "displaced" by imports) has been *much less rapid*. The major reason is import penetration: Exports today have a much higher import content in intermediate inputs than in the past. As for imports, if they too were to be produced in Canada, today's technology would have them produced with much more imported intermediate inputs than was true in the 1960s.
- When our detailed sectoral results are aggregated, Canadian exports have always been *above the average* for total business output in labour productivity — especially when the effect of agriculture in the 1960s is netted out. However, this relatively high labour productivity of exports has shown almost *no tendency to increase* over time. Along with higher labour productivity comes higher returns to labour in exports — but again, this relative performance in exports shows almost no trend over time. However, since the share of employment attributable to exports has been growing over time, it can be concluded that exports are helping to lift both the *overall level* of Canadian labour productivity and returns to labour.
- The sources of change in the employment mix of Canadian exports are primarily the final export mix itself and the degree of import penetration for intermediate inputs. Generally less important are changes among sectors in relative labour productivity or "technical change" as embodied in changes in Input-Output coefficients. The same observation applies for the most part also to changes in the employment mix of Canadian imports.

- Changes in export employment shares have occurred across a wider range of industries than might be imagined. Of the ten industry groups that increased their share of export employment by over one percentage point from 1961 to 1997, four are service industries (Personal and other services, Business services, Trade, and Finance), but the other six are various manufacturing categories, some of which might have been expected given the Auto Pact and changing technology — like Motor vehicles, Electrical and electronic products and Rubber and plastic products — and some that are surprising — like Leather, textile and clothing products. Of the four industries with declines in export employment shares of over one percentage point, the two largest declines are in primary production (Mining excluding oil and gas; and Agriculture, forestry and fishing), one is in raw material processing and manufacturing (Paper and allied products and printing) and the fourth is Transportation.
- Combining the I/O results with data on education mix by industry leads to the conclusion that since 1961 the mix of Canadian export employment (both direct and indirect) has continually evolved to emphasize industries with more highly-educated workers. However, this also turns out to be true of business-sector employment *as a whole*. If exports are compared to the total business sector in relative uses of different education mixes, the conclusion is that employment from exports is "bi-polar" in distribution. Exports *exceed* the economy-wide average in employing workers with low education, and also in employing workers with relatively advanced education. The relative ratios have changed only a little over the last three decades.
- The labour productivity of employment "displaced" by imports (if it were to be produced with Canadian technology) is invariably *lower* than that of exports — although it is still *above* the business-sector average for most years. The ratio has fallen to about the economy-wide average in recent years indicating some new inroads into replacing lower-productivity employment. Nonetheless, the evidence is that imports, on the whole, are not replacing exceptionally low-productivity employment (which is probably concentrated in non-tradable services in any event). However, imports are displacing "relatively" more jobs than exports are adding. If macro policies can keep the economy near full employment, and the pace of change is not too fast, this means that Canada is replacing low-productivity employment with high-productivity employment through expanded international trade, and is thereby made better off.
- Comparing changes in employment shares of exports and imports, it is remarkable that the largest increases and decreases occur, in many cases, in the *same* sectors. Personal and business services, and Trade show among the largest increases in employment shares for both exports and imports, while Mining, Agriculture and Forestry show among the largest decreases in employment shares for both exports and imports. *Both* Canadian exports and Canadian imports have become more intensive in service employment and less intensive in employment for the production of raw materials.
- The education mix calculations show that, at least by Canadian technology and education shares by sector, Canadian imports have been above the business-sector average in overall education content. In recent years, however, this discrepancy has been narrowing, indicating some increased competition from imports in sectors using lower-skill workers. Nonetheless, Canadian imports remain above the business sector average in education content. This result may seem at odds with the previous point about labour productivity and labour returns. However, it should be noted that we found productivity and returns to labour in imports also to be *above* the business-sector average, although they were also *lower* than for exports. Finding

that the education mix is above the business-sector average is not inconsistent with this. The anomaly, perhaps, is that *export* productivity and returns are so high when at least part of the education mix is low. The anomaly can, however, be better understood if it is recalled that education, as broadly measured, is not the sole determinant of either productivity or returns to labour; high capital or natural-resource endowments also matter.

1. INTRODUCTION

This project seeks to examine, in some detail, the industry and skill mix of Canadian exports and imports as they stood in 1997 and to ask how this mix has changed over the past three decades. Obviously, there are some important and very timely questions that will underlie this study: Canada, at least at one time, had the reputation of being a “hewer of wood and drawer of water” — that is, of being primarily an exporter of raw materials and an importer of finished goods. To what extent is this still true? Or how much have our exports moved to being made up of tertiary manufacturing and services? Even if such a movement has occurred, the skill mix implications are not clear: at least some primary sector jobs require considerable skill and are very well paid, while many manufacturing and services jobs require little skill and are poorly rewarded. On the import side there is the widely-held conception that a more open economy and heavier reliance on imports has pushed aside low-skill jobs in Canada and has led to lower incomes for the less skilled.

The primary method we use is Input-Output (I/O) analysis — a technique employed in a number of recent studies conducted at Industry Canada and by several other Canadian researchers. However, we are able to extend the time frame from some earlier studies by using a complete time series of I/O tables from 1961 through 1992 and by using supplementary industrial detail to extend the analysis through 1997. The I/O analysis also proceeds on a highly disaggregated basis, with over 150 industries being distinguished in the calculations. Finally, we are able to supplement the I/O work with detailed industry skill data from the Canadian Occupational Projection System (COPS) for 1986 and 1991; these data are used to make estimates of the changing educational skill mix of exports and imports over time, insofar as skill mix changes are due to changes in the industrial mix.

Three cautions on the methods and results should be noted up front: First, it is important to note at the outset that, while the industry and skill mix of exports is a fairly straightforward concept, by the industry and skill mix of imports we mean the industry and skill mix of equivalent or competitive production in Canada, not the industry and skill mix of the foreign country from which the imports originated. Second, Input-Output analysis and the associated skill calculations done here can establish important descriptions and associations but not necessarily “causality”. For example, while exports may be found to be associated with a certain number of jobs at a particular time, they did not necessarily create or “cause” these jobs, nor would the workers so employed have necessarily remained unemployed in the absence of the exports. The third caution is that the description and analysis is based on input-output relationships that occurred, at least in part, only because relative prices and scarcities were what they were in any given year, although we assume them to be “fixed” (“Leontief technology”). Had relative prices been different — say because of different monetary or exchange-rate policies — then different technologies might have been adopted and different I/O coefficients would have been observed. All in all, the primary purpose of the analysis presented in this study is to give an initial description of what has happened, preparatory to deeper analysis of causality, and, possibly, policy prescriptions.

The paper is organized as follows: Section 2 describes the data and calculation methods we have used in greater detail. Section 3 reviews some of the underlying literature and points out differences and advances in the present study relative to earlier Canadian work. Section 4 examines how the place of exports has changed in the Canadian economy since 1961, and how the industrial output and employment mix of exports has altered over that time. Changes in the employment mix are decomposed into four main sub-components. Then, adding industry skill-mix data, we discuss the education/skill mix of Canadian exports in recent years and, to the extent possible, determine what changes may have occurred in this mix over time. Section 5 repeats the analysis for Section 4, but for imports. Finally, Section 6 reports on our conclusions and main findings. Several appendices present details of the calculations, sensitivity tests and more detailed industrial results.

2. DATA AND METHODS

In studying the employment and skill mix of Canadian exports and imports from 1961 to 1997, two primary data sources will be exploited. The first is the time series of detailed Input-Output (I/O) tables produced by Statistics Canada. The Institute for Policy Analysis has collected this data set over the years and prepared a variety of software tools for exploiting it. Our I/O calculations proceed at what is termed by Statistics Canada the “L” (“Large”) disaggregation level, which permits us to examine over 160 industries. The data set covers the period 1961 through 1992 with annual tables.

Unfortunately, at the time this study was prepared, I/O tables beyond 1992 were unavailable. In an effort to bring the analysis up through 1997, we have collected data on aggregate domestic product, exports, imports and employment and have matched them as closely as possible to the I/O “L” disaggregation categories. We have combined these data with the 1992 I/O tables to extend our analysis of exports and imports through 1997. However, the results for 1993–97 must be taken cautiously, both because only the 1992 tables were used, and because our matching of published data for output, employment, etc. with I/O categories can only be approximate.

Why use Input-Output data? Why not simply examine “export” or “import-competing” industries and count up their employment? The answer to both questions lies in the multi-industry structure of production or, as the phrase goes, in “the production of commodities by means of commodities”. If Canada exports so many dollars worth of automobiles, and the auto industry employed so many workers, that is worth knowing — but it is not the whole story. Included in the exported autos may have been steel produced in Canada, and that steel may have in turn been produced from Canadian iron ore. Some of the employees of the steel and mining industries were also therefore involved *indirectly* in exporting the automobile, and it will be important in properly accounting for employment generated by exports to take this indirect input into account. In addition, a great deal of the exported auto may have been produced with *imported* parts — which would have no effect on Canadian employment —, whereas exports of another product or service, apparently smaller in dollar value, might have much greater Canadian content and a greater total impact on Canadian employment. Therefore, it will also be important to take into account the relative *import* contents of indirect inputs into production.

Fortunately, the annual Input-Output system provides, for each year, a picture of all these inter-industry interactions and, with appropriate manipulations, the entire backward chain of production inputs to produce exports (or to have replaced imports) can be derived from the system. Thus the importance of the I/O database for this study. The estimates of employment generated by exports (or, speaking loosely, replaced by imports) that are derived are not sums of the observed employment of what are deemed to be “export oriented” industries, but instead the employees involved in those shares of all industries producing for export either directly or indirectly at all stages back down the production sequence.

For each year between 1961 and 1997 our initial industrial-mix calculations proceed as follows:¹ We begin with the matrix of final demands by final-demand category and by industry. The export or import columns of this matrix tell us the industrial breakdown of exports or imports in that year. (From here on we will refer only to export impacts, but the determination of import effects is very similar).² The column is then multiplied by the “Leontief inverse” of the matrix of input-output coefficients to yield an estimate of the gross output in each of the 161 industries that is being used to supply exports in that year *together with* all intermediate inputs back along the production chain. For those not familiar with I/O terms, the “Leontief inverse” is simply the end result of the manipulations of the I/O data needed to extract the impacts of

particular expenditures (like exports) on industrial production including all intermediate processing stages. Note too that the calculation we use also includes automatically the average “leakage” into imports for demands from each industry as reflected in the data for that year. Coefficients derived from I/O data are then applied to the gross output impacts thus calculated to determine impacts on domestic product at factor cost (“domestic product” hereafter), employment, and wages and salaries earned — and consequently the average remuneration per employee in sectors supplying exports. These results are presented and examined both in absolute form and as relative shares of total domestic product and employment for the year.

By comparing our calculations annually and over different intervals, we see how output and employment mixes changed over time in providing Canadian exports. While the full 161-industry detail is presented, so also is a smaller 24-industry aggregation in order to determine broad trends in shifts of export production.

The Canadian I/O database is available in both current-dollar (or nominal) form and constant-dollar (or real) form. The constant-dollar data maintained by Statistics Canada use different base years for different sub-intervals and these must be spliced together by the user if a full time series from 1961 through 1992 is required. We have conducted our calculations using primarily the nominal tables, for several reasons: First, because we are primarily interested in changing *shares* of output and employment mixes, there is no inflationary distortion as such that enters calculations based on nominal data. We are simply examining changes in relative dollar earnings or relative employment in different export or import categories. Second, deflation of the massive amount of detail in the I/O tables is very difficult, and the possibility of deflation error has to be considered. The nominal data are the raw data in this case, and less likely to suffer from judgmental distortion. As noted above, to obtain a full time series of real I/O data several sub-periods with different base years must be spliced, further increasing the danger of distortion. And third, extension of the data from 1992 through 1997 is not possible in *real* terms for exports and imports for the type and level of detail required to match with the I/O 160-industry disaggregation — at least not with the resources available to us. If we wished to have consistent series from 1961 through 1997, then use of the nominal I/O data was required.

To check for sensitivity to the choice of nominal vs. real I/O series, we have conducted some of the calculations presented below with *both* data sets for 1961–92 and have compared the results. On the whole, the nominal data, in our judgement, yield results that are generally equivalent to those obtained from the real data, and, where they differ, the nominal series are smoother on a year-to-year basis and more intuitively appealing. As changes are observed across the entire 1961–97 period or ten-year spans within it, it is important to investigate their source. There are two possible contributors to a changing output mix from exports: The first is that the sectoral components of Canadian exports are themselves changing (as is shown in changing coefficients in the export vector in the final-demand matrix); and the second is that the industrial processes used to produce the export goods are changing (as is shown in changes in various coefficients from the input-output system). We decompose these two components by, for example, running the 1961 export mix on the 1971 input-output coefficients, or vice-versa. Within the I/O system we further differentiate between changes in the I/O “technical” coefficients (those describing how one industry uses products from others as inputs), and changes in import coefficients (reflecting the changing mix of imports and domestic production in satisfying both final and intermediate demand for products). For employment shifts from exports an additional source of change is alterations in the relative labour productivity of different industries between comparison years. Once again, this source is separately identified by examining changes in employment/output coefficients between comparison periods. A total of four sources of change in export or import employment shifts are thus examined: (1) changes in the export or import mix, (2)

changes in “technical” I/O coefficients, (3) changes in import requirements for intermediate or final demand, and (4) changes in relative labour productivity among sectors.³

The second primary data source used in this study is the database of industry employment by occupation and by educational (or skill) level maintained by the Canadian Occupational Projection System (COPS) group at Human Resources Development Canada. In coordinating this database with the I/O database, and making allowance for some “Unassigned” components in the COPS data, we can obtain a disaggregation of 112 industries. Unfortunately, only two years of data are available: 1991 and 1986.⁴ This means that we can only examine education-mix changes *within industries* between these two dates. We examine changes in the educational mix between 1986 and 1991, but for all years before 1986 we had to use the 1986 educational mix, and for the years 1992–97 we used the 1991 educational mix. However, using the 1986 or 1991 educational mix, together with I/O information on how the industry mix of exports and imports have changed from 1961–86 and from 1991–97 we are at least able to gain valuable insight into overall skill mix changes in these periods that are the result of changes in the *industrial* mix. Moreover, from the I/O industry data we not only are able to determine industrial employment mix changes but also changes in labour productivity and aggregate returns to labour (in effect, wage impacts).

The application of the COPS data is relatively straightforward. As noted above, the I/O calculations provide us with the employment by industry associated with exports in each of the years to be examined on a 161-industry disaggregation. First we aggregate up to the 112-industry aggregation available from COPS. Then we simply apportion these total employment estimates using shares from the COPS data for the appropriate educational (or occupational, if used) breakdown that we desire. Once the calculations are complete, we can state something like: In 1961, exports accounted for x percent of total employment in that year. These jobs were distributed among the following educational groups: no secondary, secondary, trade school, university and college, post-graduate, etc. (but recall that we must use 1986 education weights for 1961!) We can then present the same figures for 1997 and selected intervening years and compare them with 1961 to show changes in proportions and shares. As noted in the I/O discussion above, we are able to break down the employment impacts between changes in the export mix, changes in technical and import coefficients (or the structure of production), and changes in relative labour productivity among sectors. Further, between 1986 and 1991, we are able to measure the contribution of a changing skill or occupational mix *within* industries.

3. BACKGROUND AND RELATED STUDIES

While the primary intent of this study was to produce new empirical work, we have examined the relevant literature to determine if comparable studies have been done for Canada or for other industrialized nations. There is, not surprisingly, a very broad literature on the question of how changes in the levels and conditions of foreign trade have changed employment and wages, both in particular industries and in economies overall. The underlying policy concern is that increased trade with developing, low-wage countries will be hurting low-wage and low-skill industries in industrialized countries, leading to higher unemployment amongst the low skilled and diminished relative earning power (and hence, perhaps, a growing gap between high-skill and low-skill earnings in such countries). The primary analytical underpinning is the Heckscher-Ohlin theory or principle, "...whose central insight is that countries export goods that use intensively the factors of production with which they are relatively abundantly endowed.." (Wood, 1995, p.58). There are numerous papers on this subject — especially for the United States. Examples include the papers by Freeman, Richardson and Wood in a special issue of the *Journal of Economic Perspectives* in 1995, and papers by Sachs and Shatz, and Feenstra and Hanson in the *AEA Papers and Proceedings* of 1996. An earlier summary of the U.S. record can be found in Levy and Murnane (1992). In addition there are numerous studies examining some or all of the OECD countries, often together with the less developed countries (LDC's). Examples include Lawrence (1996) and Thygesen, Kosai and Lawrence (1996).

However, while there is a wide literature on the basic trade-and-wages question for the United States (and also for the United Kingdom), so far we have found much less empirical work in this general area for Canada. For example, only one relevant article has appeared in *Canadian Public Policy* in recent years (Gera and Mang, 1998), and in the *Canadian Journal of Economics* the sole major recent contribution has been Gaston and Trefler (1997) — which is really confined to the impacts of the Canada-United States Free Trade Agreement. The most recent study closest to our own in intention and methods is Betts and McCurdy (1993). These authors use I/O tables for 1961, 1971 and 1981 to determine sources of total employment change over the two subperiods in a 39-industry disaggregation. The sources of employment change examined include changes in the five major categories of final demand, and changes in I/O technical coefficients, labour productivity and hours per worker. In addition, they examine impacts on a detailed occupational breakdown.

Moreover, while the literature — at least for the United States and United Kingdom — on this general topic is vast, relatively little that we can find makes use of anything like the empirical approaches used here. Almost all the studies use panel-type data on wages or particular employer or employee groups, or confine their attention to particular economic sectors, whether narrow or broad (e.g., Manufacturing — see Betts, 1997). We use Input-Output techniques as the foundation of our approach, and have found only two good and immediate references to I/O based studies outside Canada: the first is by Gregory and Greenhalgh (1997) for the United Kingdom and the second is a reference in Tyson and Zysman (1988) to an I/O study for the United States by the Office of Technology Assessment (1987), which would have been based on much earlier I/O data and so is now quite dated.

Gregory and Greenhalgh (1997) use current-dollar I/O tables for 1979, 1985 and 1990 to examine the changes in labour demand in the United Kingdom in the 1980s and, in particular, to look for evidence of "deindustrialization" and the impact of changing international trade on both the level of employment and its sectoral distribution and on aggregate employment income. Changes in sectoral output and employment are decomposed into components based on domestic final demand, exports, import penetration and changes in

inter-industry purchases (technical change) and in technical change as it affects labour demand per unit of output. While the study's results — as with most studies of this sort — are primarily in the details, a few general conclusions could be drawn: No one source of "deindustrialization" could be found. Import penetration, the splitting off of services from goods producing sectors, and labour-saving technical change all were found to contribute. Import penetration was found to be important and large, but was balanced by export growth. Labour-saving technical change was more important than loss of markets in reducing labour demand — but this effect was apparent in all sectors in the 1980s. The study found some evidence of structural shifts from international competition pushing the economy in the direction of higher value-added or high-technology sectors, but there was also evidence in some sectors that this was not so, as there were rising imports and low value added in some high-technology products.

For Canada, the closest studies in approach to the work we have done, aside from Betts and McCurdy (1993), are Industry Canada reports by Gera and Mang (1997) (published subsequently as Gera and Mang, 1998) and Gera and Massé (1996), each a considerable extension of earlier work by the OECD (1992) that covered only the period 1981–86 and a small number of aggregated industries. Gera and Mang (1998 and 1997) and Gera and Massé (1996) all use constant-dollar I/O tables for 1971, 1981, 1986 and 1991 at the highest level of disaggregation available (over 200 industries and over 600 commodities). In the final report, however, data on 111 industries are reported, still well beyond the 33 identified in the OECD study. Because the Statistics Canada constant-dollar tables are not on comparable bases, three sub-periods are examined: 1971–81, 1981–86 and 1986–91. A very detailed decomposition of the sources of changes in output and employment between the reference years is calculated. Finally, a division of industries into high, medium and low knowledge categories developed by Lee and Has (1996) is used to examine the relative performance of industries and employment according to knowledge intensity over the periods studied.⁵

These studies resulted in a wide range of conclusions that cannot be completely summarized here. Widespread structural change was identified but, more surprisingly, the pace of change between 1971 and 1991 was found not to have accelerated, and the growth leaders were largely the same over the entire span. There was, of course, a relative shift in employment towards services. Skill intensity was found to be increasing in Manufacturing *and* in Services — but most jobs were still concentrated in the low and medium knowledge categories. International trade was found to play an increasingly important role in determining the relative growth rates of industries, including in the natural resource sector (where domestic effects were often negative), and services were also becoming more exposed to international trade. Trade expansion was also found to have a definite "knowledge bias" (at least using the categories of Lee and Has (1996)): "High-knowledge industries in the tradable sector seem to have benefitted the most from export performance; low-knowledge industries have seen their relative decline hastened by import competition." (Gera and Mang, 1998, p.149).

In many ways, the most recent study closest to our own in intention and methods is Betts and McCurdy (1993). These authors use I/O tables for 1961, 1971 and 1981 to determine sources of total employment change over the two subperiods by a 39-industry disaggregation. The sources of employment change examined include changes in the five major categories of final demand, and changes in I/O technical coefficients, labour productivity and hours per worker. In addition, they examined impacts on a detailed occupational breakdown. Among other findings, they determined that the higher rate of private-sector employment growth in the 1970s over the 1960s was associated primarily with lower growth in labour productivity, since final-demand growth actually fell in the 1970s relative to the 1960s, especially in exports. They also found that the primary source of intersectoral variation in employment growth in the 1960s was different rates of labour productivity growth, while the primary source in the 1970s was different rates of growth of final demand sectors.

Our own study builds upon this earlier work. Its special features include calculations brought up to the more recent past, a broader industrial disaggregation, a concentration on the special features of exports and imports in employment growth, and the use of relatively recent disaggregated data on the educational and skill mix of industries.

As with the other I/O based studies reviewed briefly above, the primary intention is *description* of the economy and its changes over time, as an ingredient to understanding and, eventually, useful policy. As Betts and McCurdy note (1993, p.289) “.. input-output analysis remains useful as a way of assessing the relative importance of various factors which have contributed to changes in an economic aggregate such as employment.” But it is important not to lose sight of the fact that description and association do not necessarily imply full causation. For example, while exports may be found to be associated with a certain number of jobs, they did not necessarily create or “cause” these jobs, nor would the workers so employed have remained unemployed in the absence of exports (a functioning labour market would have eventually seen them employed in some other fashion — but perhaps not earning as much).⁶ A related caution is that the description and analysis is based on input-output relationships that occurred, at least in part, only because relative prices and scarcities were what they were in any given year, although we assume them to be “fixed” (“Leontief technology”). Had relative prices been different — say because of different monetary or exchange-rate policies — then different technologies might have been adopted and different I/O coefficients would have been observed. Again, the primary purpose of the analysis is initial description of what has happened, preparatory to deeper analysis of causality, and, possibly, policy prescriptions.

4. CHANGES IN THE INDUSTRY AND SKILL MIX OF CANADIAN EXPORTS

In this section we examine, with the aid of National Accounts data and calculations based on a time-series of Input-Output tables, how the place of exports has changed in the Canadian economy since 1961, and how the industrial output and employment mix of exports has altered over that time. Then, adding industry skill-mix data, we discuss the education/skill mix of Canadian exports in recent years and, to the extent possible, determine what changes may have occurred in this mix over time.

Exports in the Canadian Economy, 1961–97: National Accounts Perspective

We begin by reviewing aggregate data for the place of exports in the Canadian economy. These data are from the National Accounts and will be the most familiar to readers. A series of key ratios or indicators is presented for 1961–97 in Table 1.

Columns 1 and 2 of Table 1 (plotted in Figure 1) show the growth of exports as a share of GDP since 1961. Measured in 1992 dollars, exports have grown from 12.5 percent of GDP in 1961 to just over 37 percent in 1997. Measured in current dollars, exports grew from 17.7 percent of GDP in 1961 to just over 40 percent in 1997. By either measure, Canada's economy has, since 1961, moved massively into world markets, and section 5 shows a corresponding growth in imports, as Canadian markets have opened up to the world. Especially impressive is the growth of exports (and imports) in the 1990s.

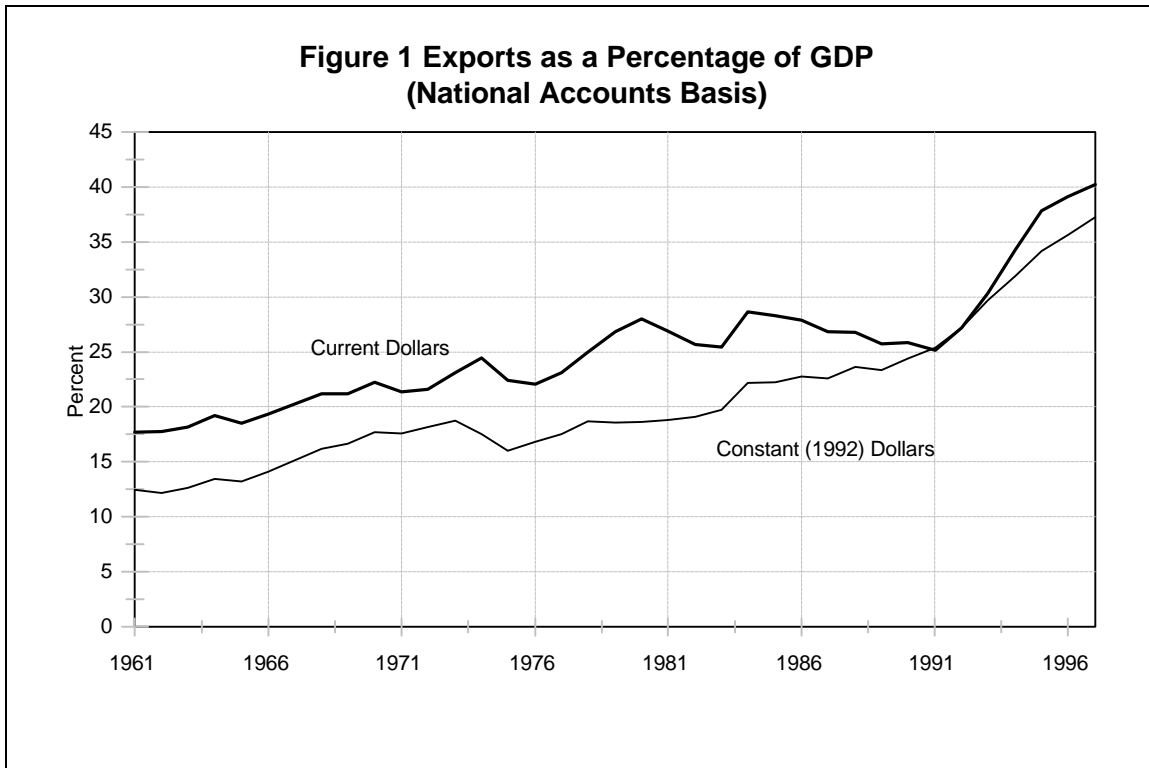
Note that for 1992, which is the last year available for I/O analysis, the shares of exports in GDP are identical at 27 percent since this is the base year for the National Accounts. The difference in the growth shares between real and nominal measures can be explained by the movement of the relative price of exports over the last 36 years. (By relative price we mean the price of exports relative to the prices of all the goods included in GDP (which includes exports) as measured by the GDP deflator). As seen in column 3 of Table 1, the relative price of exports declined significantly from 1961 through 1992, with most of the decline evident in the 1980s as relative energy prices weakened. However, there has been a modest rise in the relative price of exports since 1992.

This relative price increase has made the constant dollar (1992 dollars) share of exports rise less than the current dollar share since 1992 — although both increases are enormous for a five-year period by historical standards. Since our I/O work will concentrate primarily on relative *current* dollar shares or ratios, the distinction should be kept in mind.

It is interesting to ask if the rise in export share (both in recent years and since 1961) has been more attributable to changes in the shares of exports of goods or exports of services. National Accounts data (columns 4 and 5 in Table 1 and Figure 2) indicate that while the share of both goods and services exports have risen in GDP, the major part of the overall increase in export share is due to a rise in the share of exports of *goods*. This is true both for the 1961–92 period for which we have I/O data, and for the subsequent 1992–97 period.

Finally, column 6 of Table 1 shows exports as a share, not of GDP but of private-sector GDP at factor cost. The latter concept excludes government “production” (largely in the form of wages and salaries of government employees and government capital consumption allowances — neither of which has any

important export component), and also excludes indirect taxes (less subsidies) which are included in the “market price” concept of aggregate GDP. Most of the I/O work below concentrates on comparisons or changes in ratios of exports to this “private-sector at factor cost” concept, which is most readily accessible within the tables, and also the more meaningful concept for comparison. Column 6 presents the National Accounts equivalent and, as can be seen, the increase in share of exports is from 21.7 percent in 1961 to 34.0 percent in 1992 — and finally to almost 50 percent by 1997. The fact that the share of exports in total GDP (in current dollars) does not rise as much (only from 17.7 percent to 27.2 percent over 1961–92) reflects the growth of the government sector in this period and an increase in average indirect taxation.



	(1) Exports as a % of GDP (\$92)	(2) Exports as a % of GDP (Current Dollars)	(3) Ratio: Export Deflator to GDP Deflator	(4) Goods Exports as a % of GDP (Current Dollars)	(5) Services Exports as a % of GDP (Current Dollars)	(6) Exports as a % of Private- Sector GDP at Factor Cost
1961	12,5	17,7	1,42	15,2	2,5	21,7
1962	12,2	17,8	1,46	15,2	2,6	21,8
1963	12,6	18,2	1,44	15,5	2,6	22,2
1964	13,5	19,3	1,43	16,6	2,6	23,6
1965	13,2	18,6	1,40	15,9	2,6	22,8
1966	14,1	19,4	1,37	16,6	2,7	23,8
1967	15,2	20,3	1,34	16,9	3,4	25,1
1968	16,2	21,2	1,31	18,5	2,6	26,2
1969	16,6	21,2	1,27	18,4	2,8	26,3
1970	17,7	22,3	1,26	19,3	2,9	27,5
1971	17,6	21,4	1,21	18,6	2,8	26,5
1972	18,2	21,6	1,19	19,0	2,6	26,8
1973	18,8	23,1	1,23	20,5	2,6	28,5
1974	17,5	24,5	1,40	21,7	2,7	30,0
1975	16,0	22,4	1,40	19,8	2,6	27,0
1976	16,8	22,1	1,31	19,5	2,6	26,8
1977	17,5	23,1	1,32	20,6	2,5	28,1
1978	18,7	25,0	1,34	22,3	2,7	30,2
1979	18,6	26,8	1,44	23,9	2,9	32,0
1980	18,7	28,0	1,50	25,1	2,9	33,2
1981	18,8	26,9	1,43	23,9	3,0	32,5
1982	19,1	25,7	1,34	22,8	2,9	31,3
1983	19,8	25,5	1,29	22,6	2,9	30,8
1984	22,2	28,7	1,29	25,7	2,9	34,5
1985	22,2	28,3	1,27	25,3	3,0	34,0
1986	22,8	27,9	1,22	24,5	3,4	33,9
1987	22,6	26,9	1,19	23,6	3,3	32,7
1988	23,6	26,8	1,13	23,5	3,3	32,7
1989	23,3	25,7	1,10	22,4	3,3	31,6
1990	24,4	25,9	1,06	22,4	3,5	32,0
1991	25,4	25,2	0,99	21,6	3,6	31,3
1992	27,2	27,2	1,00	23,4	3,8	34,0
1993	29,7	30,4	1,02	26,3	4,1	38,0
1994	31,9	34,3	1,07	29,9	4,4	42,7
1995	34,2	37,8	1,11	33,2	4,7	46,8
1996	35,7	39,1	1,10	34,2	4,9	48,3
1997	37,3	40,2	1,08	35,2	5,0	49,5

Exports in the Canadian Economy: Aggregate Results from the I/O Analysis

The I/O calculations to determine the impact of exports on Canadian output (domestic product) and employment have been conducted for each year from 1961 through 1997.⁷ Individual industry impacts have been aggregated across all industries to derive economy-wide impacts, and these are summarized by year in Table 2 and the accompanying figures (Figures 3–8). Note again that these results are not simply sums of the outputs or employment levels of particular industries that are deemed to be primarily “exporters”; instead they are estimates of the direct and *all indirect* output and employment required to produce the exports observed in each year.

Column 1 of Table 2 provides something of a bridge between the more familiar National Accounts data and I/O calculations and concepts. This column shows exports (from the I/O database) as a share of business-sector domestic product, or value added, (also from the I/O database). This is the closest equivalent in the I/O data to column 6 of Table 1 and, as can be seen, both the estimated shares and their changes between 1961 and 1997 are quite close. (The differences are attributable to different classification schemes and to different definitions of the government sector.) Note that the I/O data show a slightly larger increase in export share from 1961–92 than do the National Accounts data, although through 1997 the changes in share are almost identical between the two measures.

Proceeding to column 4 of Table 2 (and Figure 3), we come to the central theme of this report — the impact of exports on employment.⁸ As can be seen, the share of export employment in total business-sector employment has indeed risen: from 17.1 percent in 1961 to 23.1 percent in 1992, and finally to 28.3 percent in 1997 — but the increase in the share of employment is much less than the increase in the share of exports relative to business-sector product. This is the first major insight that the I/O calculations have yielded (at least to the authors of this report): namely, that the impact of export growth on employment has been positive, but considerably less than might be imagined from looking purely at the shares of exports to GDP.

The search for the cause of the lower increase in the export *employment* share begins with productivity: A first thought might be that the lower share increase is the result of rising relative labour productivity in export production: The idea here would be that Canada has tended to export more in those sectors in which labour-productivity gains are especially large. However, the I/O calculations quickly put this possibility to rest: Column 5 of Table 2 (shown in Figure 6), shows that, while relative labour productivity in producing (directly or indirectly) for exports has always been above the business sector average (the ratio is above 1.0), the growth in *relative* labour productivity has been uneven and has, in fact, declined back almost to mid-1960s levels by 1997. Canada exports relatively high labour-productivity goods and services, therefore, but there has been no relentless climb in relative export labour productivity from the 1960s through the 1990s that would explain why the employment share of exports has not grown at the same pace as the share of exports in GDP.

While on the subject of export relative productivity, a caution should be noted: The drop-off in relative labour productivity after 1988/89 coincides with the 1990–92 recession period. The phenomenon of “labour hoarding” tends to reduce labour productivity in all sectors during a recession, but since exports were especially hard hit in the 1990–91 recession under the impact of an over-valued dollar, it is possible that labour hoarding was proportionally greater in the export sectors and that their relative labour productivity accordingly suffered. Since 1992 I/O coefficients have been used in the calculations for

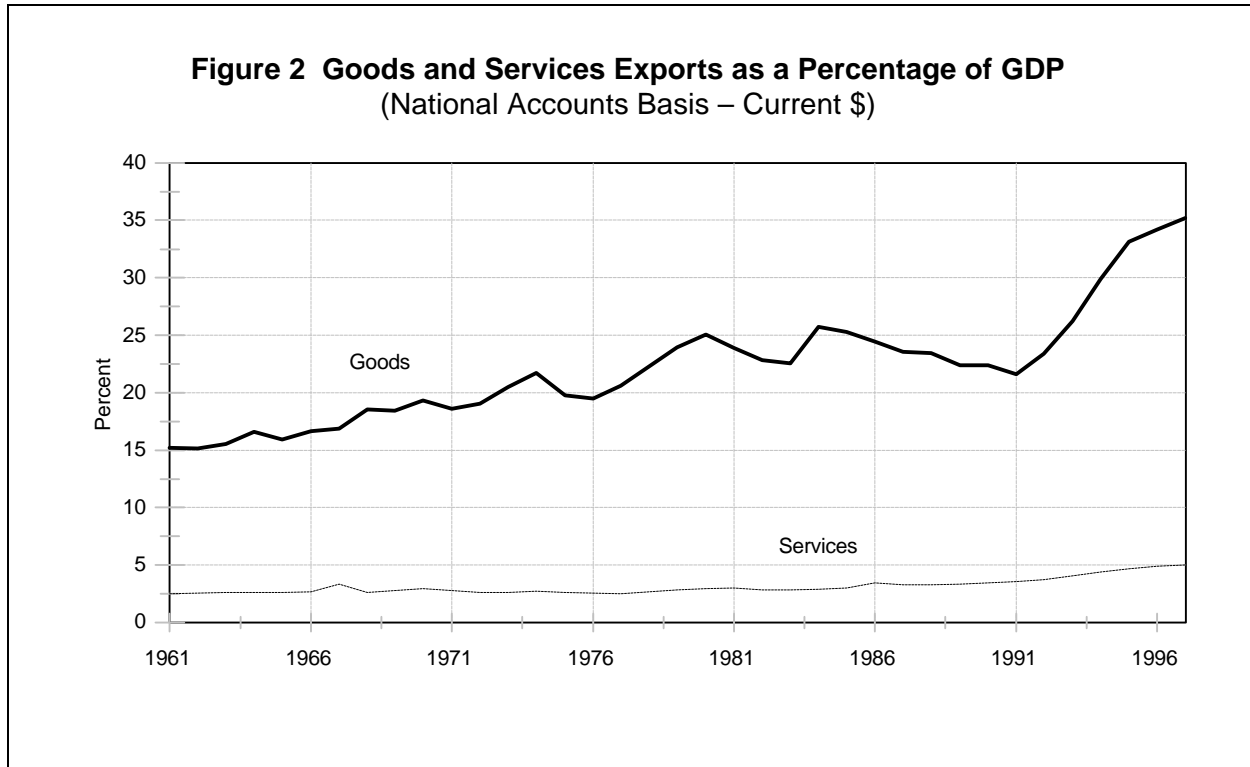
1993–97, then any lingering relative labour hoarding effects by sector from that year would be holding down our measures of relative labour productivity performance for exports in these years.

Since relative labour productivity in exports has risen little since the 1960s then it should be the case that the increase in the export share of business-sector domestic product should have risen much like that of employment — and column 2 of Table 2 confirms this point. The difference in columns 1 and 2 is important to understand: The denominator is the same in each case (total business sector domestic product). For column 1, the numerator is observed export sales (from the I/O database, plus extension past 1992) while for column 2 the numerator is the *impact* (via I/O Leontief calculations) of these exports on individual industry domestic products (which are then summed). While exports *sales* have risen as a share of domestic product since 1961, the impact that a dollar of export sales has on stimulating domestic product (whether directly or indirectly) has *fallen*. As a result, the ratio of export sales to total business domestic product has grown more than the ratio of domestic product *stimulated by* exports to total business domestic product (see Figure 4).

The reason for this reduction in the impact of exports is simply imports: Column 3 of Table 2 shows the imports required to produce exports as a percentage of the domestic product stimulated by exports. As the table shows, in 1961 for every dollar of domestic product attributable to exports, just over 12 cents of imports were required. By 1992 this figure had risen to 40 cents, and by 1997 our less-complete estimates suggest it was just under 50 cents. As Figure 5 shows, some of this increase in the import content of exports is clearly attributable to the implementation of the Canada-United States. Auto Pact from 1966 through the early 1970s. However, the import impact of exports has risen steadily since then, meaning that the output (and employment) shares of exports have risen considerably less rapidly than the overall share of export sales in GDP.

Given that the import share of exports has increased, we might have expected that the *indirect* impacts of exports on output and employment had risen relative to direct impacts — reflecting a greater share of more complex or manufactured exports requiring more intermediate production. This is partly the case: From 1961 through the late 1980s, column 7 of Table 2 and Figure 7 show that the ratio of direct to total employment impacts for exports declined slowly, reflecting greater indirect impacts. Still, the rate of decline is very gradual. From the late 1980s through 1992, however, the ratio increased again, indicating a reduction in relative indirect impacts. For 1993–97, a large increase in the relative impact of directly over indirectly induced employment is indicated, but it must be recalled that we are using the 1992 I/O technical coefficients throughout this period. The shift in the *mix* of exports and imports in the 1990s is such that greater direct, rather than indirect, impacts on export-generated employment would have resulted, but whether this has been offset by changes in the structure of production we cannot tell until I/O tables past 1992 can be used.

Finally, the I/O system permits us to calculate the impacts of exports on total remuneration to labour. (We have aggregated wages and salaries, supplementary labour income and the income of unincorporated business into this category). The returns to labour can be expressed as a ratio to employment generated to determine the relative returns to labour in exporting. As column 8 of Table 2 and Figure 8 show, this ratio climbed steadily from 1961 through the mid 1970s and has then remained relatively constant through 1992 — but at a value greater than 1.0 (calculations past 1992 are not available.) Some of the increase in the ratio from 1961 to the early 1970s has to do with the relative decline of agriculture in exports and export employment.

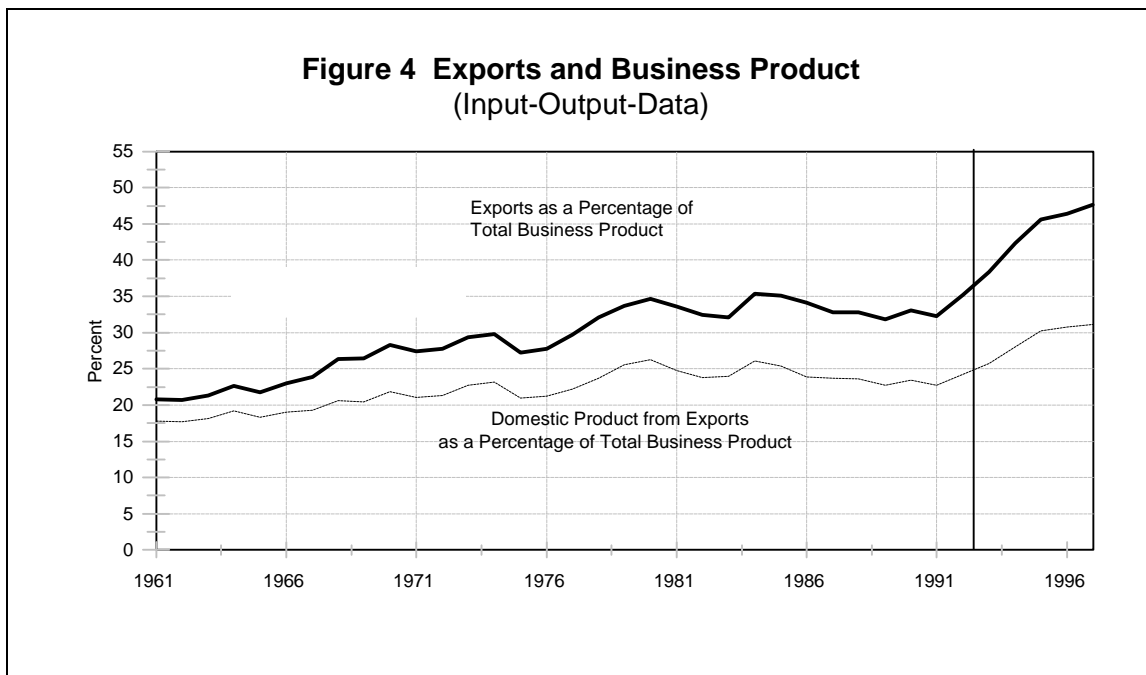


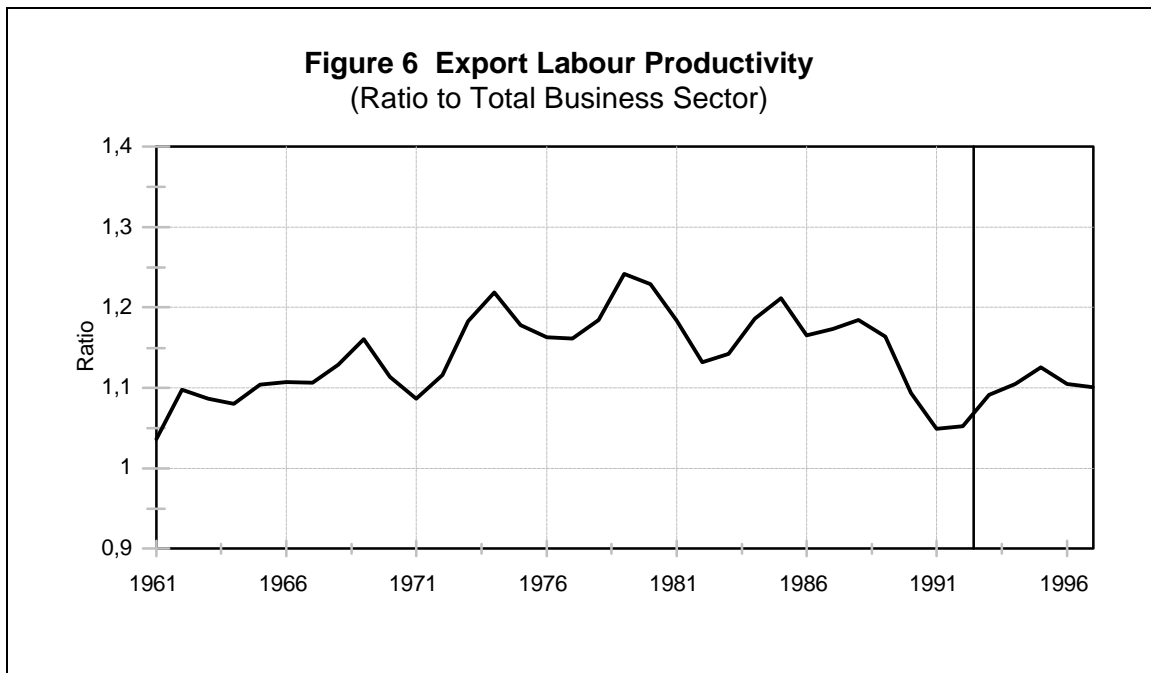
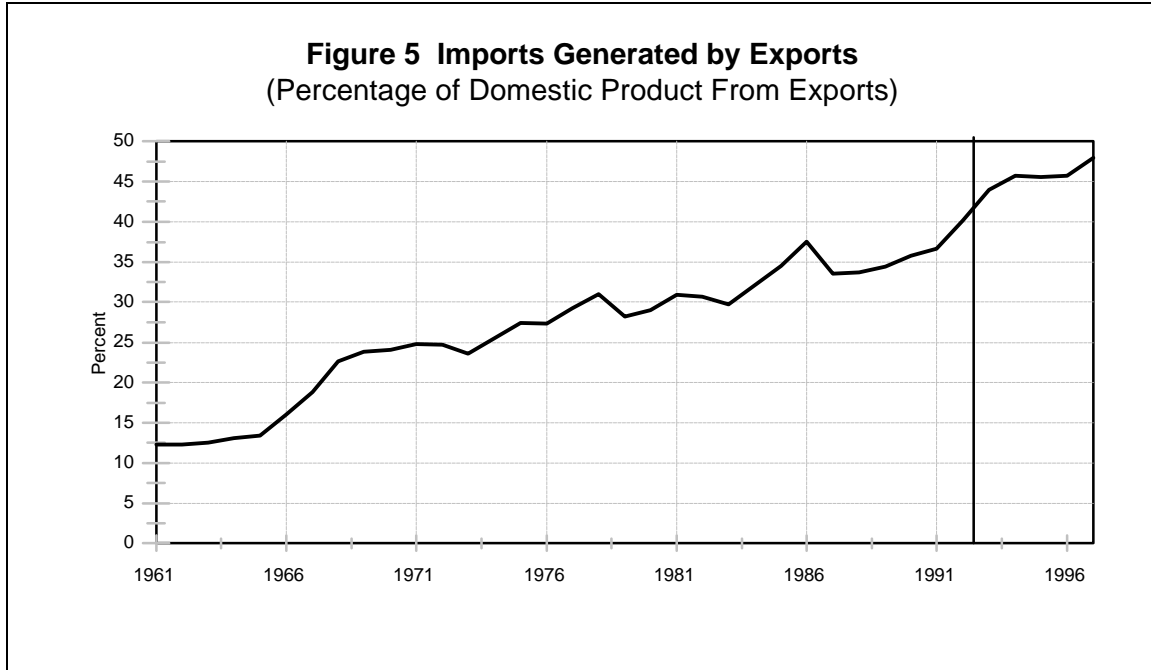
Before proceeding to more disaggregated results, two sensitivity tests on the aggregate calculations should be noted: The aggregate calculations were also performed for 1961–92 using real, rather than nominal I/O tables, and the nominal calculations were repeated excluding agricultural exports because this sector underwent major structural change, especially in the 1960s. Details of each sensitivity test are presented in Appendix 2. Briefly, neither alternative results in any major change in the broad conclusions drawn above. However, use of the real calculations does reduce the relative labour productivity drop-off for exports in 1990–92, and exclusion of Agriculture shows relative labour earnings in exports to be above the economy-wide average in *all* decades, not just since the 1960s.

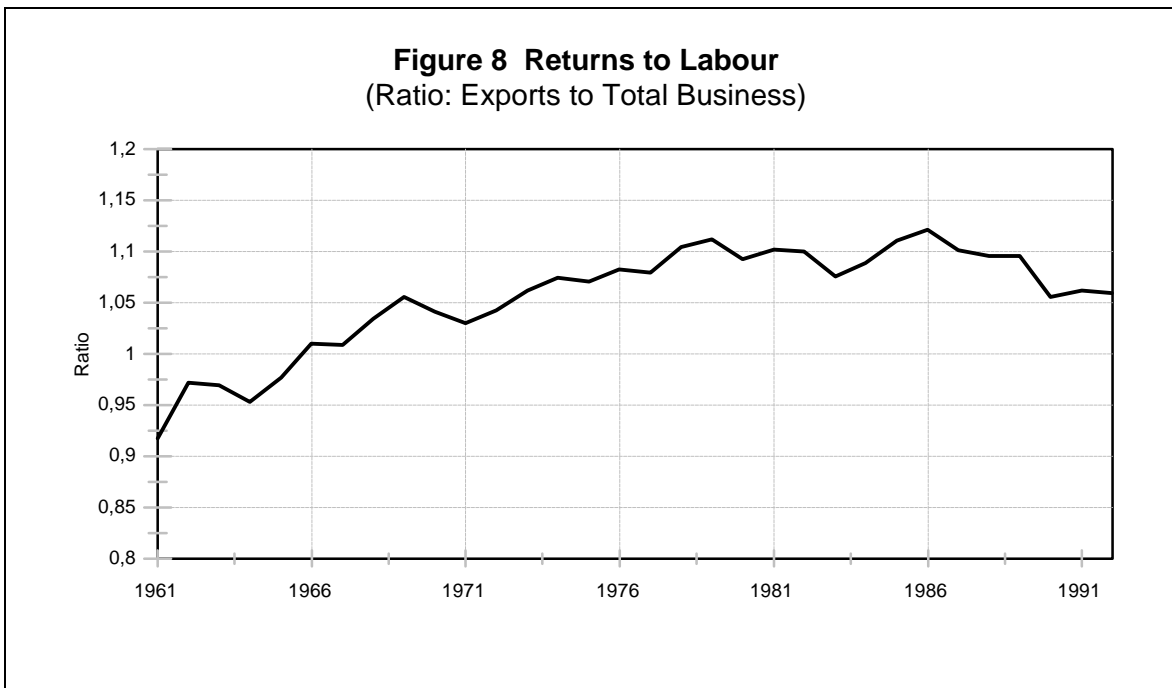
Table 2 Aggregate Comparisons from I/O Calculations – Exports – 1961–97

	(1) Exports as a % of Business Sector Domestic Product	(2) Domestic Product in Exports as a % of Business Domestic Product	(3) Imports from Exports as a % of Domestic Product from Exports	(4) Employment in Exports as a % of Total Business Employment	(5) Labour Productivity in Exports Relative to Business Sector	(6) Direct Employment in Exports as a % of Total Employment	(7) Ratio: Direct to Total Employment in Exports	(8) Ratio: Returns to Labour in Exports vs. Business Sector
1961	20,82	17,83	12,29	17,20	1,04	9,46	0,55	0,92
1962	20,72	17,70	12,33	16,12	1,10	8,55	0,53	0,97
1963	21,32	18,19	12,52	16,74	1,09	8,94	0,53	0,97
1964	22,68	19,19	13,13	17,77	1,08	9,54	0,54	0,95
1965	21,76	18,35	13,40	16,61	1,10	8,74	0,53	0,98
1966	22,96	19,04	16,04	17,19	1,11	8,94	0,52	1,01
1967	23,90	19,32	18,82	17,47	1,11	8,83	0,51	1,01
1968	26,35	20,61	22,67	18,26	1,13	9,11	0,50	1,03
1969	26,47	20,50	23,86	17,66	1,16	8,69	0,49	1,06
1970	28,31	21,86	24,14	19,62	1,11	9,88	0,50	1,04
1971	27,46	21,06	24,81	19,38	1,09	9,78	0,50	1,03
1972	27,83	21,35	24,72	19,13	1,12	9,75	0,51	1,04
1973	29,33	22,80	23,60	19,27	1,18	9,81	0,51	1,06
1974	29,79	23,15	25,54	18,99	1,22	9,76	0,51	1,07
1975	27,28	21,01	27,47	17,83	1,18	9,13	0,51	1,07
1976	27,84	21,23	27,33	18,25	1,16	9,24	0,51	1,08
1977	29,70	22,26	29,28	19,17	1,16	9,59	0,50	1,08
1978	32,10	23,76	31,00	20,06	1,18	10,09	0,50	1,10
1979	33,66	25,57	28,20	20,58	1,24	10,45	0,51	1,11
1980	34,63	26,27	29,04	21,37	1,23	10,78	0,50	1,09
1981	33,63	24,76	30,95	20,91	1,18	10,52	0,50	1,10
1982	32,48	23,83	30,71	21,04	1,13	10,35	0,49	1,10
1983	32,16	23,97	29,78	20,98	1,14	10,42	0,50	1,08
1984	35,40	26,05	32,16	21,97	1,19	10,96	0,50	1,09
1985	35,16	25,43	34,55	20,99	1,21	10,28	0,49	1,11
1986	34,14	23,96	37,55	20,56	1,17	10,07	0,49	1,12
1987	32,85	23,75	33,60	20,24	1,17	9,86	0,49	1,10
1988	32,80	23,63	33,73	19,95	1,18	9,57	0,48	1,10
1989	31,82	22,76	34,45	19,55	1,16	9,32	0,48	1,10
1990	33,12	23,42	35,80	21,41	1,09	10,80	0,50	1,06

Table 2 (cont'd)								
	(1) Exports as a % of Business Sector Domestic Product	(2) Domestic Product in Exports as a % of Business Domestic Product	(3) Imports from Exports as a % of Domestic Product from Exports	(4) Employment in Exports as a % of Total Business Employment	(5) Labour Productivity in Exports Relative to Business Sector	(6) Direct Employment in Exports as a % of Total Employment	(7) Ratio: Direct to Total Employment in Exports	(8) Ratio: Returns to Labour in Exports vs. Business Sector
1991	32,28	22,82	36,69	21,75	1,05	10,99	0,51	1,06
1992	35,24	24,28	40,19	23,07	1,05	11,82	0,51	1,06
1993	38,39	25,75	44,00	23,60	1,09	13,13	0,56	n.a.
1994	42,34	28,07	45,74	25,40	1,11	15,48	0,61	n.a.
1995	45,63	30,28	45,58	26,90	1,13	17,44	0,65	n.a.
1996	46,44	30,80	45,75	27,86	1,11	18,55	0,67	n.a.
1997	47,66	31,17	47,97	28,31	1,10	19,28	0,68	n.a.







The Changing Industrial Mix of Exports: 24-Industry Aggregation

We move now from examining aggregate to more disaggregated results. Tables 3A and 3B show, at a special 24-industry ‘Small (S)’ disaggregation developed for this paper, the employment attributable to exports as a share both of total export employment and of total employment, for both 1961 and 1997.¹⁰ The table also shows the change in each share between the two years. Table 3A shows these shares in order by industry — where the industries are arranged in the customary order of primary, manufacturing, construction and tertiary (or services). Table 3B shows the same impacts, but sorted in order from largest increase in share of export employment to largest decrease. Table 3C again shows the same impacts, but this time sorted from largest to smallest in terms of 1997 export employment as a percentage of total employment.

The figures in Tables 3A, 3B and 3C are interesting both in their absolute sizes in each year and changes over the 1961–97 period. Export employment (both direct and indirect) in Agriculture, forestry and fishing (AFF), for example, constituted 2.3 percent of all business sector employment in 1997 — a healthy share of the 28.3 percent of total business employment accounted for by *all* export employment. In fact, of the 24 industry groups in this aggregation only 3, all in services, accounted for larger shares of total business employment. Nonetheless, the weight of Agriculture, forestry and fishing has changed markedly since 1961: In that year, AFF export employment accounted for 5.8 percent of all business sector employment — about a third of the 17.2 percent of business-sector employment accounted for by *all* exports. The decline of 3.5 percentage points is the largest, in absolute value, of the 24 sectors in the aggregation.

Examining the 1961–97 changes more closely, we can see in Table 3B that, of the ten industry groups that increased their share of export employment by over one percentage point, four are service industries (Personal and other services, Business services, Trade, and Finance). The other six are various Manufacturing categories, including some that might be expected given the Auto Pact and changing technology since 1961 — like Motor vehicles, Electrical and electronic products, and Rubber and plastic products — and some that are surprising — like Leather, textile, and clothing products. Of the four industries with declines in export employment shares of over one percentage point, the two largest declines are in primary production (Mining excluding oil and gas, and Agriculture, forestry and fishing), one is in raw material processing and manufacturing (Paper and allied products and printing) and the fourth is Transportation.

Equivalent tables for the full 161-industry disaggregation are provided in Appendix 4, together with discussion of the results.

Table 3A Employment Shares: 1961 to 1997 – 24 Industry Groups

24-Industry Aggregation	1961		1997		Change 1961–97	
	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment
	S1. Agriculture, Forestry, Fishing and Trapping	33,72	5,80	8,19	2,32	-25,53
S2. Mining excluding Oil and Gas	7,80	1,34	2,11	0,60	-5,69	-0,74
S3. Crude Petroleum and Natural Gas	0,60	0,10	0,87	0,24	0,27	0,14
S4. Food, Beverages and Tobacco	3,14	0,54	2,45	0,69	-0,69	0,15
S5. Rubber and Plastic Products	0,42	0,07	2,42	0,68	1,99	0,61
S6. Leather, Textile and Clothing Products	1,40	0,24	2,84	0,80	1,44	0,56
S7. Wood and Furniture Products	4,83	0,83	4,07	1,15	-0,76	0,32
S8. Paper and Allied Products and Printing	7,09	1,22	3,30	0,93	-3,79	-0,29
S9. Primary Metals and Metal Fabricating	6,46	1,11	5,64	1,60	-0,82	0,48
S10. Machinery	1,39	0,24	2,45	0,69	1,06	0,45
S11. Motor Vehicles and Parts	0,53	0,09	5,26	1,49	4,74	1,40
S12. Other Transportation Equipment	1,57	0,27	1,98	0,56	0,41	0,29
S13. Electrical and Electronic Products	1,34	0,23	3,60	1,02	2,26	0,79
S14. Refined Petrol., Chemicals and Non-met.	2,73	0,47	2,39	0,68	-0,35	0,21
S15. Other Manufactured Products	0,82	0,14	1,84	0,52	1,02	0,38
S16. Construction	2,12	0,36	1,42	0,40	-0,70	0,04
S17. Transportation and Pipelines	10,61	1,82	7,53	2,13	-3,08	0,31
S18. Storage	0,78	0,13	0,64	0,18	-0,14	0,05
S19. Utilities	2,14	0,37	2,72	0,77	0,58	0,40
S20. Trade	5,97	1,03	12,68	3,59	6,71	2,56
S21. Finance, Insurance and Real Estate	1,64	0,28	3,87	1,10	2,23	0,81
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
S23. Business Services	1,57	0,27	10,65	3,02	9,08	2,74
S24. Personal and Other Services	1,32	0,23	11,11	3,15	9,79	2,92
TOTAL	100,00	17,20	100,00	28,31	0,00	11,11

Table 3B Employment Shares: 1961 to 1997 – 24 Industry Groups – Sorted by Size of Change

24-Industry Aggregation	1961		1997		Change 1961–97	
	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment
	S24. Personal and Other Services	1,32	0,23	11,11	3,15	9,79
S23. Business Services	1,57	0,27	10,65	3,02	9,08	2,74
S20. Trade	5,97	1,03	12,68	3,59	6,71	2,56
S11. Motor Vehicles and Parts	0,53	0,09	5,26	1,49	4,74	1,40
S13. Electrical and Electronic Products	1,34	0,23	3,60	1,02	2,26	0,79
S21. Finance, Insurance and Real Estate	1,64	0,28	3,87	1,10	2,23	0,81
S5. Rubber and Plastic Products	0,42	0,07	2,42	0,68	1,99	0,61
S6. Leather, Textile and Clothing Products	1,40	0,24	2,84	0,80	1,44	0,56
S10. Machinery	1,39	0,24	2,45	0,69	1,06	0,45
S15. Other Manufactured Products	0,82	0,14	1,84	0,52	1,02	0,38
S19. Utilities	2,14	0,37	2,72	0,77	0,58	0,40
S12. Other Transportation Equipment	1,57	0,27	1,98	0,56	0,41	0,29
S3. Crude Petroleum and Natural Gas	0,60	0,10	0,87	0,24	0,27	0,14
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
S18. Storage	0,78	0,13	0,64	0,18	-0,14	0,05
S14. Refined Petrol., Chemicals and Non-met.	2,73	0,47	2,39	0,68	-0,35	0,21
S4. Food, Beverages and Tobacco	3,14	0,54	2,45	0,69	-0,69	0,15
S16. Construction	2,12	0,36	1,42	0,40	-0,70	0,04
S7. Wood and Furniture Products	4,83	0,83	4,07	1,15	-0,76	0,32
S9. Primary Metals and Metal Fabricating	6,46	1,11	5,64	1,60	-0,82	0,48
S17. Transportation and Pipelines	10,61	1,82	7,53	2,13	-3,08	0,31
S8. Paper and Allied Products and Printing	7,09	1,22	3,30	0,93	-3,79	-0,29
S2. Mining excluding Oil and Gas	7,80	1,34	2,11	0,60	-5,69	-0,74
S1. Agriculture, Forestry, Fishing and Trapping	33,72	5,80	8,19	2,32	-25,53	-3,48
TOTAL	100,00	17,20	10000	28,31	0,00	11,11

**Table 3C Employment Shares: 1961 to 1997 – 24 Industry Groups –
Sorted by Export Employment as a Percentage of Total Employment**

24-Industry Aggregation	1961		1997		Change 1961-97	
	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment
	S20. Trade	5,97	1,03	12,68	3,59	6,71
S24. Personal and Other Services	1,32	0,23	11,11	3,15	9,79	2,92
S23. Business Services	1,57	0,27	10,65	3,02	9,08	2,74
S1. Agriculture, Forestry, Fishing and Trapping	33,72	5,80	8,19	2,32	-25,53	-3,48
S17. Transportation and Pipelines	10,61	1,82	7,53	2,13	-3,08	0,31
S9. Primary Metals and Metal Fabricating	6,46	1,11	5,64	1,60	-0,82	0,48
S11. Motor Vehicles and Parts	0,53	0,09	5,26	1,49	4,74	1,40
S7. Wood and Furniture Products	4,83	0,83	4,07	1,15	-0,76	0,32
S21. Finance, Insurance and Real Estate	1,64	0,28	3,87	1,10	2,23	0,81
S13. Electrical and Electronic Products	1,34	0,23	3,60	1,02	2,26	0,79
S8. Paper and Allied Products and Printing	7,09	1,22	3,30	0,93	-3,79	-0,29
S6. Leather, Textile and Clothing Products	1,40	0,24	2,84	0,80	1,44	0,56
S19. Utilities	2,14	0,37	2,72	0,77	0,58	0,40
S4. Food, Beverages and Tobacco	3,14	0,54	2,45	0,69	-0,69	0,15
S10. Machinery	1,39	0,24	2,45	0,69	1,06	0,45
S5. Rubber and Plastic Products	0,42	0,07	2,42	0,68	1,99	0,61
S14. Refined Petrol., Chemicals and Non-met.	2,73	0,47	2,39	0,68	-0,35	0,21
S2. Mining excluding Oil and Gas	7,80	1,34	2,11	0,60	-5,69	-0,74
S12. Other Transportation Equipment	1,57	0,27	1,98	0,56	0,41	0,29
S15. Other Manufactured Products	0,82	0,14	1,84	0,52	1,02	0,38
S16. Construction	2,12	0,36	1,42	0,40	-0,70	0,04
S3. Crude Petroleum and Natural Gas	0,60	0,10	0,87	0,24	0,27	0,14
S18. Storage	0,78	0,13	0,64	0,18	-0,14	0,05
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL	100,00	17,20	100,00	28,31	0,00	11,11

Changes in Export Employment Impacts over Selected Sub-Periods

The summary tables presented above cover a very long time span. It is also useful to examine employment impacts over various sub-periods. These results are presented in Tables 4A-4D for the periods 1961–71, 1971–81, 1981–91, and 1991–97. The tables present only the 24-industry aggregation, and are sorted by changes in export employment as a percentage of total export employment. Finally, a summary of the period-to-period changes only is presented in Table 5.

Turning to the summary of period-to-period changes in Table 5, a number of observations are forthcoming: Agriculture, forestry and fishing, for example, has lost “share” of export employment in all sub-periods, but by far the biggest decline actually occurred in the 1960s. Thereafter, the pace of decline in this sector has been smaller and steadier. Mining, on the other hand, has declined in share of export employment in all sub-periods, while Food, beverages and tobacco has seen periods of both decline and increase, with the former predominating.

Of special note are Leather, textiles and clothing, and Wood and furniture: If not too badly distorted by using the 1992 I/O tables for 1993–97, the figures in Table 11 indicate an interesting turnaround in shares of export employment over 1991–97, when previous declines (Wood) or steady performance (Leather, etc.) were replaced by significant increases in export employment share. While we cannot tell in the framework of this study, the timing of this reversal just after the United States-Canada Free Trade Agreement (FTA) is suggestive. [Gaston and Trefler (1997) also found positive employment impacts of the FTA on the clothing and wood industries].

Like Mining, Paper and allied products has lost export employment share in all sub-periods, and Primary metals and metal fabricating in all periods after the 1960s. Machinery, however, gained in all but the 1980s.

For Motor vehicles and parts, all the gain in export employment share was over 1961–71 as the Auto Pact was implemented. Thereafter, there has actually been a small net decline in share. Other transportation equipment (rail, ships and aircraft and parts) also gained in the earliest subperiod and lost net export employment share subsequently. Perhaps surprisingly, Electrical products also made its largest gain in export employment share in the 1961–71 period. However, it also gained considerably in the 1980s as well.

Transportation and pipelines lost export employment share in all sub-periods, reflecting perhaps a lower transportation-intensity of Canadian exports over time, as well as greater productivity gains in the sectors.

For Trade, Finance, Business services, and Personal services, there have been gains in export employment shares in all subperiods. It is interesting to note that this “shift to services” in export employment is not a recent phenomenon: share gains in Trade, Finance, and Business services were as large in the 1960s as in later periods. Only for Personal and other services can it be seen that the bulk of the increased export employment share occurred after 1980.

Table 4A Employment Shares: 1961 to 1971 – 24 Industry Groups – Sorted by Size of Change

24-Industry Aggregation	1961		1971		Change 1961–71	
	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment
	S11. Motor Vehicles and Parts	0,53	0,09	6,54	1,27	6,01
S20. Trade	5,97	1,03	8,67	1,68	2,70	0,65
S23. Business Services	1,57	0,27	3,78	0,73	2,21	0,46
S9. Primary Metals and Metal Fabricating	6,46	1,11	8,44	1,63	1,97	0,52
S13. Electrical and Electronic Products	1,34	0,23	3,17	0,61	1,83	0,38
S24. Personal and Other Services	1,32	0,23	2,25	0,44	0,93	0,21
S12. Other Transportation Equipment	1,57	0,27	2,39	0,46	0,83	0,19
S10. Machinery	1,39	0,24	2,12	0,41	0,73	0,17
S5. Rubber and Plastic Products	0,42	0,07	1,04	0,20	0,62	0,13
S21. Finance, Insurance and Real Estate	1,64	0,28	2,26	0,44	0,61	0,15
S15. Other Manufactured Products	0,82	0,14	1,20	0,23	0,38	0,09
S14. Refined Petrol., Chemicals and Non-met.	2,73	0,47	3,08	0,60	0,35	0,13
S19. Utilities	2,14	0,37	2,49	0,48	0,35	0,11
S6. Leather, Textile and Clothing Products	1,40	0,24	1,70	0,33	0,30	0,09
S3. Crude Petroleum and Natural Gas	0,60	0,10	0,87	0,17	0,28	0,07
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
S18. Storage	0,78	0,13	0,58	0,11	-0,21	-0,02
S4. Food, Beverages and Tobacco	3,14	0,54	2,80	0,54	-0,34	0,00
S16. Construction	2,12	0,36	1,61	0,31	-0,51	-0,05
S7. Wood and Furniture Products	4,83	0,83	4,23	0,82	-0,60	-0,01
S8. Paper and Allied Products and Printing	7,09	1,22	6,38	1,24	-0,70	0,02
S2. Mining excluding Oil and Gas	7,80	1,34	6,95	1,35	-0,84	0,01
S17. Transportation and Pipelines	1061	1,82	9,37	1,82	-1,24	-0,01
S1. Agriculture, Forestry, Fishing and Trapping	33,72	5,80	18,07	3,50	-15,65	-2,30
TOTAL	100,00	17,20	100,00	19,38	0,00	2,18

Table 4B Employment Shares: 1971 to 1981 – 24 Industry Groups – Sorted by Size of Change

24-Industry Aggregation	1971		1981		Change 1971–81	
	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment
	S23. Business Services	3,78	0,73	6,76	1,41	2,98
S20. Trade	8,67	1,68	10,31	2,16	1,64	0,48
S24. Personal and Other Services	2,25	0,44	3,32	0,69	1,06	0,26
S21. Finance, Insurance and Real Estate	2,26	0,44	3,24	0,68	0,98	0,24
S19. Utilities	2,49	0,48	3,21	0,67	0,72	0,19
S10. Machinery	2,12	0,41	2,76	0,58	0,64	0,17
S5. Rubber and Plastic Products	1,04	0,20	1,31	0,27	0,27	0,07
S3. Crude Petroleum and Natural Gas	0,87	0,17	1,05	0,22	0,18	0,05
S4. Food, Beverages and Tobacco	2,80	0,54	2,89	0,60	0,09	0,06
S15. Other Manufactured Products	1,20	0,23	1,29	0,27	0,08	0,04
S13. Electrical and Electronic Products	3,17	0,61	3,20	0,67	0,03	0,06
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
S18. Storage	0,58	0,11	0,52	0,11	-0,06	-0,00
S16. Construction	1,61	0,31	1,55	0,32	-0,06	0,01
S7. Wood and Furniture Products	4,23	0,82	4,09	0,86	-0,14	0,04
S12. Other Transportation Equipment	2,39	0,46	2,21	0,46	-0,18	-0,00
S14. Refined Petrol., Chemicals and Non-met.	3,08	0,60	2,88	0,60	-0,20	0,00
S6. Leather, Textile and Clothing Products	1,70	0,33	1,40	0,29	-0,30	-0,04
S17. Transportation and Pipelines	9,37	1,82	8,96	1,87	-0,41	0,06
S9. Primary Metals and Metal Fabricating	8,44	1,63	7,69	1,61	-0,75	-0,03
S8. Paper and Allied Products and Printing	6,38	1,24	5,47	1,14	-0,91	-0,09
S11. Motor Vehicles and Parts	6,54	1,27	5,41	1,13	-1,13	-0,14
S2. Mining excluding Oil and Gas	6,95	1,35	4,95	1,03	-2,01	-0,31
S1. Agriculture, Forestry, Fishing and Trapping	18,07	3,50	15,52	3,25	-2,55	-0,26
TOTAL	100,00	19,38	100,00	20,91	0,00	1,53

Table 4C Employment Shares: 1981 to 1991 – 24 Industry Groups – Sorted by Size of Change

24-Industry Aggregation	1981		1991		Change 1981–91	
	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment
	S24. Personal and Other Services	3,32	0,69	10,03	2,18	6,72
S23. Business Services	6,76	1,41	8,91	1,94	2,15	0,52
S20. Trade	10,31	2,16	11,61	2,52	1,30	0,37
S11. Motor Vehicles and Parts	5,41	1,13	6,11	1,33	0,70	0,20
S21. Finance, Insurance and Real Estate	3,24	0,68	3,83	0,83	0,59	0,16
S13. Electrical and Electronic Products	3,20	0,67	3,72	0,81	0,52	0,14
S5. Rubber and Plastic Products	1,31	0,27	1,72	0,37	0,41	0,10
S6. Leather, Textile and Clothing Products	1,40	0,29	1,64	0,36	0,24	0,06
S15. Other Manufactured Products	1,29	0,27	1,46	0,32	0,18	0,05
S3. Crude Petroleum and Natural Gas	1,05	0,22	1,15	0,25	0,09	0,03
S18. Storage	0,52	0,11	0,54	0,12	0,02	0,01
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
S12. Other Transportation Equipment	2,21	0,46	2,11	0,46	-0,10	-0,00
S16. Construction	1,55	0,32	1,30	0,28	-0,25	-0,04
S14. Refined Petrol., Chemicals and Non-met.	2,88	0,60	2,62	0,57	-0,26	-0,03
S19. Utilities	3,21	0,67	2,79	0,61	-0,43	-0,07
S4. Food, Beverages and Tobacco	2,89	0,60	2,38	0,52	-0,51	-0,09
S10. Machinery	2,76	0,58	1,99	0,43	-0,78	-0,15
S8. Paper and Allied Products and Printing	5,47	1,14	4,60	1,00	-0,88	-0,14
S7. Wood and Furniture Products	4,09	0,86	3,12	0,68	-0,97	-0,18
S17. Transportation and Pipelines	8,96	1,87	7,74	1,68	-1,21	-0,19
S9. Primary Metals and Metal Fabricating	7,69	1,61	6,47	1,41	-1,22	-0,20
S2. Mining excluding Oil and Gas	4,95	1,03	3,00	0,65	-1,95	-0,38
S1. Agriculture, Forestry, Fishing and Trapping	15,52	3,25	11,16	2,43	-4,36	-0,82
TOTAL	100,00	20,91	100,00	21,75	-0,00	0,84

Table 4D Employment Shares: 1991 to 1997 – 24 Industry Groups – Sorted by Size of Change

24-Industry Aggregation	1991		1997		Change 1991–97	
	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment
	S23. Business Services	8,91	1,94	10,65	3,02	1,74
S6. Leather, Textile and Clothing Products	1,64	0,36	2,84	0,80	1,20	0,45
S24. Personal and Other Services	10,03	2,18	11,11	3,15	1,08	0,96
S20. Trade	11,61	2,52	12,68	3,59	107	1,06
S7. Wood and Furniture Products	3,12	0,68	4,07	1,15	0,94	0,47
S5. Rubber and Plastic Products	1,72	0,37	2,42	0,68	0,70	0,31
S10. Machinery	1,99	0,43	2,45	0,69	0,46	0,26
S15. Other Manufactured Products	1,46	0,32	1,84	0,52	0,38	0,20
S16. Construction	1,30	0,28	1,42	0,40	0,12	0,12
S18. Storage	0,54	0,12	0,64	0,18	0,10	0,06
S4. Food, Beverages and Tobacco	2,38	0,52	2,45	0,69	0,07	0,18
S21. Finance, Insurance and Real Estate	3,83	0,83	3,87	1,10	0,04	0,26
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
S19. Utilities	2,79	0,61	2,72	0,77	-0,07	0,16
S13. Electrical and Electronic Products	3,72	0,81	3,60	1,02	-0,12	0,21
S12. Other Transportation Equipment	2,11	0,46	1,98	0,56	-0,13	0,10
S17. Transportation and Pipelines	7,74	1,68	7,53	2,13	-0,22	0,45
S14. Refined Petrol., Chemicals and Non-met.	2,62	0,57	2,39	0,68	-0,23	0,11
S3. Crude Petroleum and Natural Gas	1,15	0,25	0,87	0,24	-0,28	0,00
S9. Primary Metals and Metal Fabricating	6,47	1,41	5,64	1,60	-0,83	0,19
S11. Motor Vehicles and Parts	6,11	1,33	5,26	1,49	-0,85	0,16
S2. Mining excluding Oil and Gas	3,00	0,65	2,11	0,60	-0,89	-0,06
S8. Paper and Allied Products and Printing	4,60	1,00	3,30	0,93	-1,30	-0,07
S1. Agriculture, Forestry, Fishing and Trapping	11,16	2,43	8,19	2,32	-2,97	-0,11
TOTAL	100,00	21,75	100,00	28,31	0,00	6,57

Table 5 Employment Shares: Changes from 1961 to 1997 – 24 Industry Groups					
Export Employment as a Percentage of Total Export Employment					
24-Industry Aggregation	1961–97	1961–71	1971–81	1981–91	1991–97
S1. Agriculture, Forestry, Fishing and Trapping	-25,5	-15,7	-2,5	-4,4	-3,0
S2. Mining excluding Oil and Gas	-5,7	-0,8	-2,0	-1,9	-0,9
S3. Crude Petroleum and Natural Gas	0,3	0,3	0,2	0,1	-0,3
S4. Food, Beverages and Tobacco	-0,7	-0,3	0,1	-0,5	0,1
S5. Rubber and Plastic Products	2,0	0,6	0,3	0,4	0,7
S6. Leather, Textile and Clothing Products	1,4	0,3	-0,3	0,2	1,2
S7. Wood and Furniture Products	-0,8	-0,6	-0,1	-1,0	0,9
S8. Paper and Allied Products and Printing	-3,8	-0,7	-0,9	-0,9	-1,3
S9. Primary Metals and Metal Fabricating	-0,8	2,0	-0,7	-1,2	-0,8
S10. Machinery	1,1	0,7	0,6	-0,8	0,5
S11. Motor Vehicles and Parts	4,7	6,0	-1,1	0,7	-0,8
S12. Other Transportation Equipment	0,4	0,8	-0,2	-0,1	-0,1
S13. Electrical and Electronic Products	2,3	1,8	0,0	0,5	-0,1
S14. Refined Petrol., Chemicals and Non-met.	-0,3	0,4	-0,2	-0,3	-0,2
S15. Other Manufactured Products	1,0	0,4	0,1	0,2	0,4
S16. Construction	-0,7	-0,5	-0,1	-0,3	0,1
S17. Transportation and Pipelines	-3,1	-1,2	-0,4	-1,2	-0,2
S18. Storage	-0,1	-0,2	-0,1	0,0	0,1
S19. Utilities	0,6	0,4	0,7	-0,4	-0,1
S20. Trade	6,7	2,7	1,6	1,3	1,1
S21. Finance, Insurance and Real Estate	2,2	0,6	1,0	0,6	0,0
S22. Gov't Royalties and Owner Occupied Dwellings	0,0	0,0	0,0	0,0	0,0
S23. Business Services	9,1	2,2	3,0	2,2	1,7
S24. Personal and Other Services	9,8	0,9	1,1	6,7	1,1

Decomposing Changes in the Employment Mix of Exports, 1961–97

As noted above in Section 2 on methods, it is possible to decompose changes in export employment shares between two years into a number of components. While the decomposition is exhaustive (in the sense that if all the components considered are changed simultaneously from the base year to the comparison year they exactly explain all changes between the years), they interact with each other such that the sum of the individual impacts do not equal the total, leaving a residual/interaction term.

With this in mind, the following components of changes in export shares between two years are considered: (1) Changes in export shares: These are the weights of the 161 industries used for the I/O calculation in exports as they change from the base year to the comparison year; (2) Changes in employment/output ratio, that is the ratio of employment (in persons) to output (in total sales) for each of the 161 industries in the I/O calculations; (3) Changes in input/output coefficients — the “technical coefficients” that describe the shares of the 161 possible industrial inputs to each of the 161 producing industries; and (4) Changes in import coefficients: These are the shares of any new demand (other than exports) from an industry that goes to imports rather than being satisfied from domestic production.

The decompositions have been performed over a number of different time spans and at both the 24-industry and 161-industry aggregations. Table 6A shows the decomposition of changes from 1961 through 1997 for the 24-industry aggregation, in numerical order, while Table 6B presents the same data, but sorted in order from largest positive to largest negative changes. Tables A.4A and A.4B in Appendix 4 present the decompositions from 1961 through 1992, but at the 161-industry disaggregation. Finally, Tables 7A through 7D show 24-industry decompositions for the sub-periods 1961–71, 1971–81, 1981–91 and 1991–97, respectively.

We will discuss primarily the results in Table 6B, for 1961–97 at the 24-industry aggregation. Personal and other services is the industry with the largest positive change in share of export employment over the 1961–97 period. As can be seen, the increase is primarily due to two factors: an increase in the relative export share of the industry itself or of industries that use this sector intensively, and a decrease in *relative* import content — which acts positively on the sector’s employment share and so takes a positive sign. For Business services, the next in size of employment share gain, these two factors are also at work, but are supplemented by a relative *loss* in labour productivity (which adds to employment share and therefore takes a positive sign) and by increased use of these services by other exporting sectors (as shown by the 1.17 under “Change in input/output coefficients”. For Trade, on the other hand, which has the third-largest employment share gain, the source is overwhelmingly a decrease in relative import content. There is also some positive contribution from changes in the export mix, while Trade has actually improved its relative labour productivity, leading to a negative contribution from the employment/output ratio.

Motor vehicles and parts, and Electrical and electronic products are similar in that both have gained export employment share primarily from changes in Canada’s export mix — with a large offset for each in import content. Rubber and plastic products (largely the latter) and Leather, textiles and clothing, however, have gained in export employment share *both* due to gains in the export mix *and* due to a reduction in relative import content.

Turning to those sectors with large export employment-share losses, again several different patterns emerge. Transportation and pipelines lost share primarily due to the export mix: in 1997, Canada is exporting relatively more types of goods and services that are less transport intensive than in 1961. The decline is not due to the fact that some export-type goods require less transport than before (which would

have shown up as a negative under input-output coefficients), although the mix among transport types has changed, nor to improved relative labour productivity in transport, which would have shown up in the employment/output ratio column.

Paper and allied products and printing is somewhat more diverse in the causes for loss of export employment share: Changes in the export mix are still the prime cause, but are supplemented by improved relative labour productivity (the -0.74 under employment/output ratio) and by greater relative import penetration as a provider of intermediate inputs to exports (-0.42). Mining, and Agriculture and forestry have also lost export employment share both due to changes in the export mix and to increased import penetration for intermediate inputs. Agriculture and forestry also had a small negative contribution from improved labour productivity, and a positive offset from greater intermediate inputs of Agricultural and forestry inputs to other exports (the 0.82 under "Change in input/output coefficients").

Examining all the sector decompositions in Table 6A or 6B, it can be seen that the primary contributors to changes in export employment shares are the export mix itself, followed in many cases by changes in relative import penetration in the supply of intermediate inputs. Changes in relative labour productivity are, with one or two exceptions, much less important, while changes in the I/O technical coefficients are least important of all. However, the last statement is qualified by the fact that for 1993–97, within the 1961–97 period under examination, I/O technical coefficients are fixed due to the use of the 1992 coefficients for each of these years.

Table 7A Decomposition of Changes in Employment Shares: 1961 to 1971 – 24 Industries

Sorted by Size of Change	1961	1971	Change 1961–71	Due to:				
	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Change in Export Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Inter- action
	S11. Motor Vehicles and Parts	0,53	6,54	6,01	6,12	-0,01	-0,84	-1,52
S20. Trade	5,97	8,67	2,70	0,99	0,23	-0,01	1,22	0,27
S23. Business Services	1,57	3,78	2,21	1,28	1,12	0,21	0,72	-1,13
S9. Primary Metals and Metal Fabricating	6,46	8,44	1,97	1,37	-0,11	-0,24	0,74	0,21
S13. Electrical and Electronic Products	1,34	3,17	1,83	1,72	-0,00	-0,12	0,32	-0,09
S24. Personal and Other Services	1,32	2,25	0,93	0,39	0,09	-0,00	0,56	-0,11
S12. Other Transportation Equipment	1,57	2,39	0,83	0,82	-0,05	-0,02	-0,13	0,21
S10. Machinery	1,39	2,12	0,73	0,77	0,06	0,00	-0,08	-0,02
S5. Rubber and Plastic Products	0,42	1,04	0,62	0,53	0,14	-0,05	0,05	-0,05
S21. Finance, Insurance and Real Estate	1,64	2,26	0,61	0,13	0,19	-0,00	0,29	0,00
S15. Other Manufactured Products	0,82	1,20	0,38	0,38	0,02	-0,03	0,05	-0,04
S14. Refined Petrol., Chemicals and Non-met.	2,73	3,08	0,35	0,05	-0,11	0,00	0,32	0,09
S19. Utilities	2,14	2,49	0,35	-0,04	0,15	0,01	0,18	0,04
S6. Leather, Textile and Clothing Products	1,40	1,70	0,30	0,34	-0,11	-0,01	0,10	-0,01
S3. Crude Petroleum and Natural Gas	0,60	0,87	0,28	0,34	0,00	0,03	-0,15	0,06
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
S18. Storage	0,78	0,58	-0,21	-0,19	-0,07	0,01	0,04	0,00
S4. Food, Beverages and Tobacco	3,14	2,80	-0,34	-0,44	-0,11	0,07	0,16	-0,02
S16. Construction	2,12	1,61	-0,51	-0,01	-0,24	0,02	-0,23	-0,05
S7. Wood and Furniture Products	4,83	4,23	-0,60	-0,35	0,03	0,13	-0,36	-0,05
S8. Paper and Allied Products and Printing	7,09	6,38	-0,70	-2,07	-0,41	0,12	1,14	0,51
S2. Mining excluding Oil and Gas	7,80	6,95	-0,84	-2,34	0,22	0,02	0,60	0,66
S17. Transportation and Pipelines	10,61	9,37	-1,24	-0,38	-0,07	0,18	-0,86	-0,11
S1. Agriculture, Forestry, Fishing and Trapping	33,72	18,07	-15,65	-9,44	-0,96	0,52	-3,14	-2,63

Table 7B Decomposition of Changes in Employment Shares: 1971 to 1981 – 24 Industries

Sorted by Size of Change	1971	1981	Change 1971–81	Due to:				
	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Change in Export Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Inter- action
	S23. Business Services	3,78	6,76	2,98	0,75	0,58	0,03	1,87
S20. Trade	8,67	10,31	1,64	0,42	-0,62	0,02	1,93	-0,12
S24. Personal and Other Services	2,25	3,32	1,06	-0,24	0,21	0,04	1,07	-0,02
S21. Finance, Insurance and Real Estate	2,26	3,24	0,98	0,16	0,11	-0,01	0,81	-0,09
S19. Utilities	2,49	3,21	0,72	0,50	0,06	0,03	0,08	0,04
S10. Machinery	2,12	2,76	0,64	0,64	0,06	-0,01	0,04	-0,08
S5. Rubber and Plastic Products	1,04	1,31	0,27	0,24	0,01	-0,02	0,11	-0,07
S3. Crude Petroleum and Natural Gas	0,87	1,05	0,18	0,38	0,16	0,03	-0,66	0,27
S4. Food, Beverages and Tobacco	2,80	2,89	0,09	0,01	0,07	0,05	0,01	-0,06
S15. Other Manufactured Products	1,20	1,29	0,08	0,20	-0,04	-0,02	-0,09	0,03
S13. Electrical and Electronic Products	3,17	3,20	0,03	0,33	0,03	-0,12	-0,21	0,00
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
S18. Storage	0,58	0,52	-0,06	-0,19	-0,06	0,01	0,13	0,05
S16. Construction	1,61	1,55	-0,06	0,06	-0,12	0,02	-0,13	0,12
S7. Wood and Furniture Products	4,23	4,09	-0,14	-0,34	0,13	0,06	0,11	-0,10
S12. Other Transportation Equipment	2,39	2,21	-0,18	-0,15	0,02	0,03	-0,20	0,13
S14. Refined Petrol., Chemicals and Non-met.	3,08	2,88	-0,20	0,28	0,27	0,08	-1,35	0,52
S6. Leather, Textile and Clothing Products	1,70	1,40	-0,30	-0,13	-0,11	-0,03	0,01	-0,05
S17. Transportation and Pipelines	9,37	8,96	-0,41	-0,91	-0,16	0,13	0,79	-0,26
S9. Primary Metals and Metal Fabricating	8,44	7,69	-0,75	-0,19	-0,02	-0,38	-0,07	-0,09
S8. Paper and Allied Products and Printing	6,38	5,47	-0,91	0,05	-0,06	0,09	-0,81	-0,18
S11. Motor Vehicles and Parts	6,54	5,41	-1,13	-1,99	0,01	-0,21	0,92	0,15
S2. Mining excluding Oil and Gas	6,95	4,95	-2,01	-0,22	-0,37	-0,14	-1,77	0,50
S1. Agriculture, Forestry, Fishing and Trapping	18,07	15,52	-2,55	0,33	-0,16	0,30	-2,58	-0,44

Table 7C Decomposition of Changes in Employment Shares: 1981 to 1991 – 24 Industries

Sorted by Size of Change	1981	1991	Change 1981–91	Due to:				
	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Change in Export Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Inter- action
	S24. Personal and Other Services	3,32	10,03	6,72	5,68	0,29	-0,26	105
S23. Business Services	6,76	8,91	2,15	1,69	0,66	0,25	-0,71	0,27
S20. Trade	10,31	11,61	1,30	0,17	0,88	0,08	0,35	-0,19
S11. Motor Vehicles and Parts	5,41	6,11	0,70	1,31	-0,34	0,56	-0,61	-0,22
S21. Finance, Insurance and Real Estate	3,24	3,83	0,59	0,31	0,83	-0,02	-0,90	0,37
S13. Electrical and Electronic Products	3,20	3,72	0,52	1,49	-0,01	-0,30	-1,28	0,62
S5. Rubber and Plastic Products	1,31	1,72	0,41	0,37	-0,02	-0,15	0,27	-0,07
S6. Leather, Textile and Clothing Products	1,40	1,64	0,24	0,34	-0,10	-0,11	0,14	-0,03
S15. Other Manufactured Products	1,29	1,46	0,18	0,06	-0,09	-0,05	0,18	0,08
S3. Crude Petroleum and Natural Gas	1,05	1,15	0,09	-0,44	-0,28	0,05	0,52	0,24
S18. Storage	0,52	0,54	0,02	0,01	-0,04	0,00	0,07	-0,02
S22. Gov't Royalties and Owner Occ Dwellings	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
S12. Other Transportation Equipment	2,21	2,11	-0,10	0,19	-0,08	0,05	-0,09	-0,17
S16. Construction	1,55	1,30	-0,25	-0,22	-0,20	-0,01	0,20	-0,02
S14. Refined Petrol., Chemicals and Non-met.	2,88	2,62	-0,26	0,05	-0,24	-0,21	0,21	-0,06
S19. Utilities	3,21	2,79	-0,43	-0,21	0,49	-0,02	-0,78	0,10
S4. Food, Beverages and Tobacco	2,89	2,38	-0,51	-0,27	-0,20	-0,02	0,08	-0,09
S10. Machinery	2,76	1,99	-0,78	-0,97	-0,19	-0,02	0,33	0,08
S8. Paper and Allied Products and Printing	5,47	4,60	-0,88	-0,57	-0,26	-0,08	0,23	-0,20
S7. Wood and Furniture Products	4,09	3,12	-0,97	-0,24	-0,20	0,02	-0,23	-0,32
S17. Transportation and Pipelines	8,96	7,74	-1,21	0,15	-0,22	-0,17	-0,63	-0,34
S9. Primary Metals and Metal Fabricating	7,69	6,47	-1,22	-0,88	-0,67	-0,03	0,64	-0,28
S2. Mining excluding Oil and Gas	4,95	3,00	-1,95	-1,55	-0,25	0,17	-0,07	-0,25
S1. Agriculture, Forestry, Fishing and Trapping	15,52	11,16	-4,36	-6,46	0,25	0,27	1,03	0,55

Table 7D Decomposition of Changes in Employment Shares: 1991 to 1997 – 24 Industries

Sorted by Size of Change	1991	1997	Change 1991-97	Due to:				
	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Change in Export Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Inter- action
	S23. Business Services	8,91	10,65	1,74	0,00	0,19	0,01	1,46
S6. Leather, Textile and Clothing Products	1,64	2,84	1,20	1,19	-0,02	-0,12	0,30	-0,15
S24. Personal and Other Services	10,03	11,11	1,08	-1,36	0,03	0,24	1,84	0,33
S20. Trade	11,61	12,68	1,07	-0,18	-0,28	0,11	1,23	0,18
S7. Wood and Furniture Products	3,12	4,07	0,94	1,16	-0,03	0,13	-0,50	0,20
S5. Rubber and Plastic Products	1,72	2,42	0,70	0,79	-0,00	-0,22	0,16	-0,03
S10. Machinery	1,99	2,45	0,46	0,66	0,00	-0,08	-0,19	0,07
S15. Other Manufactured Products	1,46	1,84	0,38	0,38	0,09	0,01	0,18	-0,28
S16. Construction	1,30	1,42	0,12	-0,13	-0,01	-0,01	0,22	0,04
S18. Storage	0,54	0,64	0,10	-0,11	0,00	0,02	0,15	0,03
S4. Food, Beverages and Tobacco	2,38	2,45	0,07	-0,15	0,02	0,06	0,15	-0,01
S21. Finance, Insurance and Real Estate	3,83	3,87	0,04	-0,01	-0,20	-0,02	0,22	0,06
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
S19. Utilities	2,79	2,72	-0,07	-0,07	0,05	-0,01	-0,07	0,03
S13. Electrical and Electronic Products	3,72	3,60	-0,12	0,64	0,35	0,20	-0,28	-1,04
S12. Other Transportation Equipment	2,11	1,98	-0,13	-0,08	-0,01	-0,14	0,05	0,04
S17. Transportation and Pipelines	7,74	7,53	-0,22	-1,00	-0,03	0,06	0,55	0,21
S14. Refined Petrol., Chemicals and Non-met.	2,62	2,39	-0,23	0,31	0,01	-0,18	-0,40	0,02
S3. Crude Petroleum and Natural Gas	1,15	0,87	-0,28	-0,02	0,01	-0,03	-0,23	-0,00
S9. Primary Metals and Metal Fabricating	6,47	5,64	-0,83	0,45	-0,08	-0,32	-0,90	0,02
S11. Motor Vehicles and Parts	6,11	5,26	-0,85	0,35	0,02	0,09	-1,51	0,20
S2. Mining excluding Oil and Gas	3,00	2,11	-0,89	-0,95	-0,01	-0,09	0,02	0,15
S8. Paper and Allied Products and Printing	4,60	3,30	-1,30	-0,66	-0,05	0,01	-0,46	-0,15
S1. Agriculture, Forestry, Fishing and Trapping	11,16	8,19	-2,97	-1,21	-0,07	0,29	-1,98	0,01

The Changing Skill Mix of Canadian Exports

Use of the COPS data for 1986 and 1991 permits us to identify the "skill" or "educational" mix of employment for a total of 112 industries — all of which are single industries within the 161 I/O industry disaggregation or are sums of several 161-industry components.

The six educational categories divide employed individuals into categories by the highest degree or certificate obtained. These are: (1) No secondary school, (2) Secondary school only, (3) Trade certificate or diploma, (4) Post-secondary, non-university certificate or diploma, (5) University certificate or diploma below or up to Bachelor's, and (6) All post-graduate degrees. Table 8A shows shares of employment by the 112-industry disaggregation for 1991, while Table 8B shows shares for 1986. Table 8C shows the 1991 share less the 1986 share: it therefore indicates how much shares have changed both in aggregate and by industry between 1986 and 1991. These tables also indicate the concordance between the 112 industries available from the COPS data and the 161 industry I/O large disaggregation. For convenience, we have also aggregated the 112 industries into our small 24-industry categories using export employment weights. The shares for 1991 and for 1986 are presented in Tables 9A and 9B respectively, while the differences between the two years are reported in Table 9C.

The totals from Table 9A show that, in 1991, 34 percent of non-government employment had not completed secondary school, and a further 26 percent had completed only secondary school. Another 27 percent had either a trade certificate or diploma or some kind of post-secondary non-university degree. Finally, 13 percent had either a Bachelor's or some kind of post-graduate degree. Within industries, variation around these aggregate shares is considerable: In Agriculture, forestry, etc. 53 percent of the workforce had not finished secondary school, followed by Leather, textile and clothing at 52 percent, and Food, beverages and tobacco at 50 percent. Some other manufacturing sectors also have rather high proportions of low-education workers, including Wood and furniture at 48 percent, Rubber and plastic products at 41 percent, and Motor vehicles and parts at 41 percent. At the low end for shares of non-secondary school workers are Business services at 12 percent, Crude petroleum at 14 percent, Finance etc. at 16 percent, and Utilities at 19 percent.

Trade certificates are prominent in Mining, Paper and printing, Primary metals, Machinery and Other transportation equipment in Manufacturing, together with Construction. Post-secondary non-university degrees have a higher share in Other transport equipment, Electrical and electronic products, Utilities, Finance and real estate, and Business services.

University degrees, whether Bachelor's or graduate, have the highest shares in Crude petroleum, and Business services, followed by Other transport equipment, Electrical and electronic products, Refined petroleum products and chemicals, Utilities, and Finance.

From Table 9C it can be seen that there was an increase in overall education levels of the workforce, even in the five-year span between 1986 and 1991.¹⁰ The share of employed persons with no secondary school diploma dropped by 4 percent, with one or two percentage point improvements in all the categories above Secondary school. The improvement occurred generally across all sectors, the one exception being Personal and other services, in which the share of the workforce with no secondary school actually increased by 4 percentage points. However, it must be recalled that this figure is a weighted average of a number of components, with the weights being export employment in the relevant year. A quick glance at Table 8C will show that most components within this sector displayed at least some reduction in share of workers with no secondary education. The rise in this category for the aggregate

therefore reflects a shift within the export mix of the components to sectors with higher shares of workers with no secondary diploma.

By applying these education shares to the employment results discussed above, we can obtain the educational shares of both total non-government employment and employment resulting from exports for each year from 1961 through 1997. As noted above, the 1986 educational mix must be used for 1961–86, while the 1991 mix is used for 1992–97. Years between 1991 and 1986 are calculated using simple weighted averages of the two base years. We caution readers most strongly that the results presented for 1961–85 and for 1992–97 are suggestive only: they represent how *aggregate* skill mixes would have changed during these periods due to changes in total business-sector or export employment *if the education levels of the individual industries had remained the same*.¹¹

Table 10A reports on the calculated educational shares for exports, while Table 10B shows the corresponding educational shares for the business sector as a whole. The series in each of these tables are plotted in Figures 9 and 10. The ratios of export education shares to those of the total business sector are shown in Table 10C and the series in that table are plotted in Figures 11 and 12.

From Table 10A it will be observed that the industry mix of exports in Canada has changed since 1961 so as to increase the share of employment with post-secondary (and secondary) education and to reduce the share of employment in the ‘No-secondary’ category. Recall that, up to 1986, this shift *only* reflects a changing industrial mix, since the educational mix within each industry is (of necessity) held at the 1986 level. In addition, the industry mix of exports continued to change after 1991 so as to emphasize sectors with higher educational needs. Again, after 1991, the educational share shifts in Table 10A only reflect changes in the industry mix of exports, since the educational mix within each industry is held at 1991 levels. Only between 1986 and 1991 do changes in the education mix of exports include improvements in the educational mixes of individual industries themselves. Close perusal of Table 10A, and especially a glance at Figure 9 (where results from 1986 through 1991 are demarcated by vertical bars), shows that the improvement in educational mix is calculated to have been more rapid from 1986 to 1991.

Briefly, then, the calculations show that since 1961 the mix of Canadian exports (considering both direct and indirect employment) has continually evolved so as to emphasize industries that have more highly educated workers. If the improvement in industrial education levels between 1986 and 1991 is, as likely, indicative of more longer-term improvements in education levels by industry, then export-oriented employment from 1961 through 1997 may have become even more education intensive than the results in Table 10A and Figure 9 suggest.

However, while indeed Table 10A indicates that Canadian exports have become more “educationally intensive” since 1961, an examination of Table 10B and Figure 10 shows that the same is largely true of the business sector of the economy *as a whole*. This raises the question of whether exports have become relatively more or less educationally intensive than total business output over the 1961–97 period.

The question is addressed in Table 10C and Figures 11 and 12 which show the *ratios* of education shares in exports relative to the total business economy — in other words, the figures in Table 10A divided by the Figures in Table 10B, by year and education level. The figure 1.074 in column 1 and row 1 of Table 10C thus indicates that in 1961 the share in total export employment of those who had not finished secondary school was 1.074 times the share of those who had not finished secondary school in the entire

business-sector work force. Similarly, in 1961 the share of those in export employment who had a post-graduate degree was 0.99 of the share of those who had a post-graduate degree among all business-sector employees.

Table 10C and Figures 11 and 12 indicate that the education of employment resulting from exports is "bi-polar" in distribution — and generally always has been. Export employment is more concentrated in "No-secondary" education than is total employment, and also, less surprisingly, in Trade school education. It uses less than the economy-wide amount of "Secondary only" education levels, but is above the economy-wide average in Post-graduate employment and, more recently, in University at Bachelor's level. It is almost exactly at the economy average for Post-secondary, non-university education.

As can be seen from the charts, these ratios have changed relatively little over three decades. The ratio for the proportion of those employed with Secondary education only has gradually risen towards the business-wide level since 1980, while the ratio for Post-graduate education fell off sometime in the later 1980s, although it remains above the business-wide average. As noted, there has been a gradual rise in the University to Bachelor's ratio from a position at or below the business-wide total in the 1960s and 1970s to just above this level in the 1990s. While it may be an excessive generalization, and our data limitations must be kept in mind, it appears that Canada almost has two separate export sectors: one that uses more unskilled and trade-oriented workers than the economy as a whole (in sectors as diverse as Agriculture and forestry, Motor vehicles, and Food and accommodation), and one that uses more educated workers than the economy as a whole (again in diverse sectors like Crude petroleum, Other transport equipment (aircraft especially), Electrical and electronic products, Petroleum refining and chemicals, Finance, and Business services). Put too simply, the split may reflect the bi-polar nature of the customers for Canadian exports: Exports, according to theory, should embody factors of production in which the exporting country has a relative abundance. Compared to the United States, Canada has a relative "abundance" of a somewhat less-educated workforce (often combined with relative abundance in raw materials production). On the other hand, compared to many of its trading partners beyond the United States, Canada has a relative abundance of highly-educated workers, and exports accordingly.

Table 8A Education/Skill Shares: 1991 – 112 Industries (COPS Data)

	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post-Graduate Degrees	Equivalent 161 Industry No's
001 Agriculture and Related	0,54	0,21	0,10	0,08	0,05	0,02	1
002 Fishing and Trapping	0,60	0,16	0,13	0,06	0,04	0,01	2
003 Logging and Forestry	0,43	0,24	0,14	0,11	0,07	0,01	3
004 Metal Mines	0,36	0,19	0,24	0,12	0,07	0,02	4-6
005 Non-Metal Mines	0,37	0,20	0,25	0,10	0,06	0,02	7-9
006 Coal Mines	0,35	0,19	0,30	0,11	0,04	0,01	10
007 Crude Petroleum and Natural Gas	0,14	0,21	0,17	0,18	0,23	0,07	11
008 Quarries and Sand Pits	0,54	0,22	0,13	0,06	0,04	0,00	12
009 Services Related to Mineral Extraction	0,39	0,22	0,18	0,12	0,07	0,02	13
010 Meat and Poultry	0,51	0,25	0,11	0,07	0,04	0,01	14-15
011 Fish Products Industry	0,63	0,17	0,11	0,05	0,03	0,01	16
012 Fruit and Vegetable Processing	0,46	0,25	0,12	0,09	0,07	0,01	17
013 Dairy Products	0,38	0,29	0,13	0,12	0,06	0,01	18
014 Vegetable Oil Mills (excluding Corn)	0,30	0,17	0,19	0,17	0,13	0,04	20
015 Bread, Biscuit and Other Bakery	0,47	0,27	0,12	0,08	0,05	0,01	21-22
016 Cane and Beet Sugar Industry	0,43	0,28	0,10	0,10	0,08	0,01	23
017 Miscellaneous Food Industries	0,39	0,27	0,11	0,11	0,10	0,02	19+24
018 Soft Drink Industry	0,38	0,31	0,13	0,08	0,08	0,02	25
019 Distillery Products Industry	0,28	0,30	0,14	0,13	0,11	0,04	26
020 Brewery Products Industry	0,28	0,33	0,14	0,12	0,10	0,03	27
021 Wine Industry	0,24	0,34	0,11	0,11	0,16	0,04	28
022 Tobacco Products Industries	0,31	0,28	0,12	0,17	0,10	0,02	29
023 Rubber Products Industries	0,40	0,25	0,16	0,12	0,06	0,01	30
024 Plastic Products Industries	0,42	0,28	0,12	0,10	0,06	0,02	31
025 Leather and Footwear	0,58	0,24	0,08	0,06	0,03	0,01	32-34
026 Primary Textiles	0,45	0,26	0,13	0,09	0,05	0,02	35-37
027 Textile Products (including Carpet)	0,49	0,25	0,09	0,09	0,06	0,02	38-40
028 Clothing and Hosiery	0,56	0,24	0,08	0,06	0,05	0,01	41-42
029 Sawmills, Planing and Shingle Mills	0,50	0,21	0,18	0,07	0,03	0,01	43
030 Veneer and Plywood Industries	0,50	0,26	0,13	0,08	0,03	0,01	44
031 Sash, Door and Other Millwork Industries	0,41	0,29	0,16	0,10	0,04	0,01	45

Table 8A (cont'd)

	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post-Grad Degrees	Equivalent 161 Industry No's
032 Wooden Box and Coffin Industries	0,46	0,32	0,08	0,09	0,05	0,01	46
033 Other Wood Industries	0,45	0,25	0,15	0,10	0,04	0,01	47
034 Furniture and Fixtures	0,45	0,25	0,15	0,09	0,05	0,01	48-50
035 Pulp and Paper Industries	0,27	0,27	0,24	0,13	0,08	0,02	51
036 Other Paper Products	0,40	0,29	0,11	0,11	0,07	0,02	52-54
037 Printing and Publishing Industries	0,27	0,30	0,13	0,15	0,12	0,03	55
038 Plate making, Typesetting and Bindery	0,31	0,32	0,14	0,14	0,08	0,01	56
039 Primary Steel Industries	0,36	0,24	0,21	0,11	0,06	0,01	57
040 Steel Pipe and Tube Industry	0,39	0,22	0,21	0,11	0,06	0,01	58
041 Iron Foundries	0,47	0,20	0,20	0,09	0,04	0,01	59
042 Non-Ferrous Smelting and Refining	0,27	0,21	0,26	0,15	0,09	0,02	60
043 Alum. Rolling, Casting and Extruding	0,30	0,26	0,18	0,14	0,09	0,03	61
044 Copper Rolling, Casting and Extruding	0,34	0,32	0,14	0,13	0,05	0,01	62
045 Other Metal Rolling, Casting, etc.	0,40	0,21	0,17	0,11	0,07	0,03	63
046 Power Boiler and Struct. Metal Industries	0,31	0,19	0,29	0,13	0,06	0,02	64
047 Ornamental and Arch. Metal Products	0,40	0,27	0,17	0,09	0,05	0,01	65
048 Stamped, Pressed and Coated Metals	0,37	0,25	0,18	0,11	0,07	0,01	66
049 Wire and Wire Products Industries	0,40	0,26	0,16	0,10	0,06	0,02	67
050 Hardware Tool and Cutlery Industries	0,31	0,24	0,26	0,13	0,05	0,01	68
051 Heating Equipment Industry	0,34	0,23	0,21	0,14	0,07	0,01	69
052 Machine Shops Industry	0,25	0,20	0,38	0,13	0,03	0,01	70
053 Other Metal Fabricating Industries	0,36	0,25	0,19	0,12	0,06	0,02	71
054 Agricultural Implement Industry	0,40	0,24	0,17	0,12	0,06	0,01	72
055 Commercial Refrigeration Equipment	0,30	0,26	0,23	0,12	0,07	0,02	73
056 Other Machinery and Equip. Industries	0,27	0,22	0,23	0,17	0,09	0,02	74
057 Aircraft and Aircraft Parts Industries	0,19	0,21	0,22	0,21	0,13	0,04	75
058 Motor Vehicle Industry	0,36	0,28	0,17	0,10	0,07	0,02	76
059 Truck, Bus Body and Trailer Industries	0,42	0,25	0,19	0,09	0,05	0,01	77
060 Motor Vehicle Parts and Accessories	0,43	0,26	0,14	0,10	0,05	0,01	78
061 Railroad Rolling Stock Industry	0,30	0,24	0,23	0,15	0,06	0,01	79
062 Shipbuilding and Repair Industry	0,26	0,13	0,37	0,17	0,05	0,01	80
063 Misc. Transport. Equip. Industries	0,39	0,23	0,19	0,10	0,07	0,02	81
064 Small Electrical Appliance Industry	0,41	0,27	0,12	0,13	0,06	0,00	82
065 Major Appliances (Elec. and Non-Elec.)	0,42	0,27	0,15	0,11	0,05	0,01	83

Table 8A (cont'd)

	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post-Grad Degrees	Equivalent 161 Industry No's
066 Record Players, Radio and TV Receivers	0,30	0,28	0,09	0,16	0,14	0,02	84
067 Electronic Equipment Industries	0,19	0,23	0,11	0,23	0,18	0,06	85
068 Office, Store and Business Machines	0,14	0,24	0,11	0,22	0,21	0,08	86
069 Other Elect. and Electronic Products	0,33	0,24	0,14	0,16	0,11	0,03	87-89
070 Clay Products Industries	0,38	0,26	0,13	0,11	0,08	0,03	90
071 Cement Industry	0,40	0,23	0,17	0,10	0,09	0,01	91
072 Concrete Products Industry	0,47	0,24	0,14	0,09	0,06	0,01	92
073 Ready-Mix Concrete Industry	0,51	0,21	0,14	0,09	0,04	0,01	93
074 Glass and Glass Products Industries	0,44	0,26	0,14	0,09	0,05	0,01	94
075 Non-Metallic Mineral Products n.e.c.	0,40	0,24	0,15	0,11	0,08	0,02	95
076 Refined Petroleum and Coal Products	0,19	0,27	0,21	0,18	0,11	0,04	96
077 Industrial Chemicals Industries n.e.c.	0,18	0,25	0,19	0,19	0,15	0,05	97
078 Plastic and Synthetic Resin Industries	0,24	0,30	0,16	0,14	0,13	0,04	98
079 Pharmaceutical and Medicine Industry	0,15	0,24	0,08	0,17	0,25	0,10	99
080 Paint and Varnish Industry	0,30	0,33	0,11	0,13	0,11	0,02	100
081 Soap and Cleaning Compounds Industry	0,24	0,32	0,09	0,13	0,17	0,04	101
082 Toilet Preparations Industry	0,29	0,28	0,10	0,16	0,13	0,04	102
083 Chemicals and Chemical Products	0,27	0,27	0,13	0,15	0,14	0,04	103
084 Jewelry and Precious Metals Industry	0,39	0,28	0,13	0,12	0,07	0,01	104
085 Sporting Goods and Toys Industries	0,42	0,28	0,11	0,10	0,08	0,01	105
086 Sign and Display Industry	0,29	0,31	0,15	0,16	0,07	0,02	106
087 Other Manufacturing Industry	0,31	0,27	0,13	0,17	0,10	0,03	107-108
088 Construction	0,37	0,23	0,25	0,10	0,05	0,01	109-117
089 Air Transport and Incidental Services	0,14	0,31	0,19	0,23	0,11	0,02	118
090 Railway and Transport and Rel. Services	0,35	0,27	0,21	0,10	0,06	0,01	119
091 Water Transport and Related Services	0,31	0,22	0,21	0,17	0,07	0,02	120
092 Truck Transport Industries	0,51	0,25	0,14	0,07	0,03	0,00	121
093 Public Transit	0,40	0,29	0,15	0,10	0,04	0,01	122-123
094 Other Transport and Services to Transport	0,47	0,25	0,13	0,08	0,05	0,02	124-126
095 Pipeline Transport Industries	0,15	0,24	0,18	0,22	0,16	0,05	127
096 Storage and Warehousing Industries	0,38	0,33	0,12	0,09	0,05	0,02	128
097 Telecomm. Broadcasting Industry	0,12	0,25	0,11	0,29	0,18	0,05	129
098 Telecommunication Carriers and Other	0,15	0,36	0,13	0,20	0,13	0,03	130

Table 8A (cont'd)

	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post-Graduate Degrees	Equivalent 161 Industry No's
099 Postal Service Industry	0,32	0,38	0,10	0,11	0,07	0,01	131
100 Electric Power Systems Industry	0,12	0,22	0,24	0,23	0,14	0,05	132
101 Gas Distribution Systems Industry	0,18	0,29	0,18	0,17	0,14	0,03	133
102 Other Utility Industries n.e.c.	0,39	0,23	0,16	0,12	0,07	0,02	134
103 Wholesale Trade Industries	0,30	0,31	0,14	0,14	0,10	0,02	135
104 Retail Trade Industries	0,36	0,34	0,13	0,10	0,06	0,01	136
105 Finance, Insurance and Real Estate	0,16	0,34	0,10	0,19	0,17	0,04	137-139
106 Other Business Services Industries	0,12	0,22	0,09	0,20	0,26	0,11	142-144
107 Educational Services Industries	0,10	0,13	0,06	0,11	0,35	0,25	145
108 Hospitals and Health Services	0,17	0,16	0,12	0,31	0,15	0,10	146-147
109 Accommodation and Food Services Industry	0,46	0,32	0,08	0,09	0,05	0,01	148
110 Motion Picture, Amusement and Recreation	0,30	0,32	0,08	0,13	0,13	0,03	149-150
111 Personal and Household Services	0,34	0,23	0,26	0,11	0,05	0,01	151-152
112 Other Services and Organizations	0,30	0,25	0,13	0,14	0,12	0,07	153-154
TOTAL NON-GOVERNMENT	0,30	0,26	0,13	0,14	0,12	0,05	1-154

Table 8B Education/Skill Shares: 1986 – 112 Industries (COPS Data)

	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post-Graduate Degrees	No Secondary School
001 Agriculture and Related	0,58	0,21	0,08	0,07	0,06	0,01	1
002 Fishing and Trapping	0,65	0,15	0,11	0,05	0,03	0,01	2
003 Logging and Forestry	0,49	0,22	0,12	0,10	0,06	0,01	3
004 Metal Mines	0,41	0,20	0,23	0,09	0,06	0,01	4-6
005 Non-Metal Mines	0,39	0,20	0,23	0,11	0,05	0,01	7-9
006 Coal Mines	0,36	0,18	0,28	0,10	0,06	0,01	10
007 Crude Petroleum and Natural Gas	0,16	0,23	0,14	0,17	0,24	0,06	11
008 Quarries and Sand and Pits	0,57	0,22	0,13	0,05	0,02	0,00	12
009 Services Related to Mineral Extraction	0,42	0,23	0,15	0,09	0,08	0,02	13
010 Meat and Poultry	0,54	0,25	0,10	0,06	0,04	0,01	14-15
011 Fish Products Industry	0,68	0,15	0,11	0,04	0,02	0,00	16
012 Fruit and Vegetable Processing	0,51	0,22	0,10	0,09	0,07	0,01	17
013 Dairy Products	0,43	0,28	0,12	0,10	0,05	0,01	18
014 Vegetable Oil Mills (excluding Corn)	0,34	0,17	0,18	0,17	0,10	0,03	20
015 Bread, Biscuit and Other Bakery	0,52	0,27	0,10	0,07	0,04	0,01	21-22
016 Cane and Beet Sugar Industry	0,52	0,23	0,10	0,08	0,06	0,01	23
017 Miscellaneous Food Industries	0,41	0,28	0,09	0,10	0,09	0,02	19+24
018 Soft Drink Industry	0,41	0,33	0,10	0,08	0,06	0,01	25
019 Distillery Products Industry	0,31	0,30	0,13	0,10	0,13	0,04	26
020 Brewery Products Industry	0,32	0,33	0,14	0,10	0,10	0,02	27
021 Wine Industry	0,32	0,30	0,11	0,12	0,12	0,02	28
022 Tobacco Products Industries	0,40	0,26	0,11	0,14	0,08	0,02	29
023 Rubber Products Industries	0,42	0,27	0,15	0,09	0,05	0,01	30
024 Plastic Products Industries	0,45	0,28	0,11	0,09	0,06	0,01	31
025 Leather and Footwear	0,63	0,22	0,06	0,05	0,03	0,01	32-34
026 Primary Textiles	0,50	0,26	0,11	0,08	0,04	0,01	35-37
027 Textile Products (including Carpet)	0,50	0,27	0,09	0,08	0,05	0,01	38-40
028 Clothing and Hosiery	0,62	0,22	0,07	0,05	0,03	0,01	41-42
029 Sawmills, Planing and Shingle Mills	0,53	0,21	0,17	0,06	0,03	0,00	43
030 Veneer and Plywood Industries	0,55	0,23	0,14	0,06	0,03	0,01	44
031 Sash, Door and Other Millwork Industries	0,47	0,28	0,14	0,08	0,03	0,00	45
032 Wooden Box and Coffin Industries	0,56	0,27	0,10	0,05	0,02	0,01	46
033 Other Wood Industries	0,49	0,23	0,16	0,07	0,04	0,01	47
034 Furniture and Fixtures	0,48	0,26	0,13	0,08	0,04	0,01	48-50
035 Pulp and Paper Industries	0,33	0,28	0,21	0,11	0,06	0,01	51

Table 8B (cont'd)

	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post-Graduate Degrees	No Secondary School
036 Other Paper Products	0,46	0,28	0,10	0,09	0,05	0,01	52-54
037 Printing and Publishing Industries	0,29	0,33	0,13	0,13	0,10	0,02	55
038 Plate making, Typesetting and Bindery	0,30	0,33	0,14	0,14	0,07	0,01	56
039 Primary Steel Industries	0,39	0,25	0,19	0,10	0,05	0,01	57
040 Steel Pipe and Tube Industry	0,44	0,25	0,17	0,09	0,05	0,01	58
041 Iron Foundries	0,51	0,21	0,14	0,08	0,05	0,01	59
042 Non-Ferrous Smelting and Refining	0,34	0,23	0,22	0,12	0,07	0,02	60
043 Alum. Rolling, Casting and Extruding	0,33	0,31	0,15	0,11	0,07	0,02	61
044 Copper Rolling, Casting and Extruding	0,44	0,27	0,14	0,11	0,03	0,01	62
045 Other Metal Rolling, Casting, etc.	0,43	0,22	0,16	0,12	0,06	0,01	63
046 Power Boiler and Struct. Metal Industries	0,32	0,21	0,28	0,12	0,06	0,02	64
047 Ornamental and Arch. Metal Products	0,43	0,27	0,15	0,10	0,05	0,01	65
048 Stamped, Pressed and Coated Metals	0,41	0,26	0,16	0,09	0,06	0,01	66
049 Wire and Wire Products Industries	0,45	0,26	0,14	0,10	0,05	0,01	67
050 Hardware Tool and Cutlery Industries	0,35	0,26	0,23	0,12	0,04	0,01	68
051 Heating Equipment Industry	0,37	0,25	0,16	0,13	0,07	0,02	69
052 Machine Shops Industry	0,27	0,23	0,35	0,11	0,03	0,00	70
053 Other Metal Fabricating Industries	0,41	0,25	0,18	0,10	0,05	0,01	71
054 Agricultural Implement Industry	0,38	0,24	0,19	0,12	0,06	0,02	72
055 Commercial Refrigeration Equipment	0,33	0,27	0,19	0,12	0,07	0,01	73
056 Other Machinery and Equip. Industries	0,28	0,25	0,23	0,15	0,07	0,02	74
057 Aircraft and Aircraft Parts Industries	0,23	0,26	0,19	0,17	0,11	0,03	75
058 Motor Vehicle Industry	0,44	0,27	0,15	0,08	0,05	0,01	76
059 Truck, Bus Body and Trailer Industries	0,43	0,25	0,20	0,09	0,03	0,00	77
060 Motor Vehicle Parts and Accessories	0,46	0,26	0,13	0,09	0,04	0,01	78
061 Railroad Rolling Stock Industry	0,33	0,20	0,25	0,14	0,06	0,02	79
062 Shipbuilding and Repair Industry	0,32	0,17	0,33	0,13	0,05	0,01	80
063 Misc. Transport. Equipment Industries	0,40	0,24	0,21	0,10	0,04	0,01	81
064 Small Electrical Appliance Industry	0,43	0,28	0,13	0,10	0,05	0,01	82
065 Major Appliances (Elec. and Non-Elec.)	0,45	0,28	0,12	0,10	0,04	0,01	83
066 Record Players, Radio and TV Receivers	0,39	0,25	0,12	0,14	0,10	0,02	84
067 Electronic Equipment Industries	0,25	0,24	0,11	0,21	0,15	0,05	85
068 Office, Store and Business Machines	0,13	0,28	0,09	0,24	0,21	0,05	86
069 Other Elect. and Electronic Products	0,38	0,26	0,13	0,12	0,08	0,02	87-89
070 Clay Products Industries	0,48	0,25	0,09	0,09	0,07	0,02	90

Table 8B (cont'd)

	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post-Graduate Degrees	No Secondary School
071 Cement Industry	0,36	0,25	0,20	0,10	0,08	0,02	91
072 Concrete Products Industry	0,50	0,24	0,12	0,09	0,05	0,01	92
073 Ready-Mix Concrete Industry	0,53	0,22	0,14	0,08	0,03	0,01	93
074 Glass and Glass Products Industries	0,48	0,26	0,12	0,09	0,05	0,01	94
075 Non-Metallic Mineral Products n.e.c.	0,43	0,25	0,12	0,10	0,08	0,02	95
076 Refined Petroleum and Coal Products	0,17	0,29	0,17	0,16	0,16	0,05	96
077 Industrial Chemicals Industries n.e.c.	0,20	0,26	0,18	0,15	0,16	0,05	97
078 Plastic and Synthetic Resin Industries	0,24	0,31	0,14	0,15	0,12	0,04	98
079 Pharmaceutical and Medicine Industry	0,22	0,27	0,07	0,14	0,24	0,06	99
080 Paint and Varnish Industry	0,33	0,32	0,10	0,12	0,12	0,02	100
081 Soap and Cleaning Compounds Industry	0,30	0,28	0,09	0,14	0,15	0,04	101
082 Toilet Preparations Industry	0,32	0,31	0,09	0,13	0,12	0,03	102
083 Chemicals and Chemical Products	0,30	0,27	0,13	0,14	0,13	0,03	103
084 Jewelry and Precious Metals Industry	0,43	0,29	0,10	0,10	0,07	0,02	104
085 Sorting Goods and Toys Industries	0,46	0,29	0,10	0,09	0,05	0,01	105
086 Sign and Display Industry	0,36	0,30	0,16	0,12	0,06	0,01	106
087 Other Manufacturing Industry	0,35	0,28	0,12	0,14	0,08	0,02	107-108
088 Construction	0,41	0,23	0,24	0,08	0,04	0,01	109-117
089 Air Transport and Incidental Services	0,17	0,34	0,17	0,20	0,10	0,02	118
090 Railway and Transport and Rel. Services	0,40	0,28	0,18	0,08	0,05	0,01	119
091 Water Transport and Related Services	0,36	0,22	0,20	0,15	0,06	0,01	120
092 Truck Transport Industries	0,56	0,24	0,12	0,05	0,02	0,00	121
093 Public Transit	0,44	0,29	0,14	0,08	0,04	0,01	122-123
094 Other Transport and Services to Transport	0,51	0,25	0,12	0,07	0,04	0,01	124-126
095 Pipeline Transport Industries	0,17	0,28	0,16	0,19	0,16	0,04	127
096 Storage and Warehousing Industries	0,46	0,31	0,11	0,08	0,04	0,01	128
097 Telecomm. Broadcasting Industry	0,13	0,30	0,10	0,26	0,17	0,04	129
098 Telecommunication Carriers and Other	0,19	0,40	0,12	0,17	0,10	0,02	130
099 Postal Service Industry	0,38	0,38	0,08	0,09	0,05	0,01	131
100 Electric Power Systems Industry	0,15	0,25	0,23	0,19	0,12	0,05	132
101 Gas Distribution Systems Industry	0,22	0,29	0,19	0,15	0,12	0,02	133
102 Other Utility Industries n.e.c.	0,49	0,23	0,14	0,09	0,04	0,01	134
103 Wholesale Trade Industries	0,33	0,32	0,13	0,13	0,08	0,01	135
104 Retail Trade Industries	0,38	0,34	0,13	0,09	0,06	0,01	136
105 Finance, Insurance and Real Estate	0,19	0,37	0,10	0,16	0,14	0,03	137-139

Table 8B (cont'd)

	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post- Graduate Degrees	No Secondary School
106 Other Business Services Industries	0,13	0,24	0,08	0,20	0,25	0,10	142-144
107 Educational Services Industries	0,11	0,13	0,05	0,11	0,37	0,23	145
108 Hospitals and Health Services	0,18	0,17	0,11	0,31	0,19	0,04	146-147
109 Accommodation and Food Services Industry	0,49	0,31	0,08	0,07	0,04	0,01	148
110 Motion Picture, Amusement and Recreation	0,32	0,34	0,08	0,12	0,12	0,03	149-150
111 Personal and Household Services	0,37	0,23	0,27	0,09	0,03	0,00	151-152
112 Other Services and Organizations	0,30	0,26	0,12	0,13	0,12	0,06	153-154
TOTAL NON-GOVERNMENT	0,33	0,26	0,13	0,13	0,11	0,04	1-154

Table 8C Education/Skill Shares: Changes: 1986–91 (COPS Data)

	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post- Graduate Degrees	Equivalent 161 Industry No's
001 Agriculture and Related	-0,04	0,01	0,02	0,01	-0,00	0,01	1
002 Fishing and Trapping	-0,05	0,01	0,02	0,01	0,00	0,00	2
003 Logging and Forestry	-0,05	0,03	0,01	0,01	0,00	0,00	3
004 Metal Mines	-0,05	-0,00	0,01	0,02	0,01	0,01	4-6
005 Non-Metal Mines	-0,02	-0,00	0,01	-0,01	0,01	0,00	7-9
006 Coal Mines	-0,02	0,01	0,01	0,01	-0,02	-0,00	10
007 Crude Petroleum and Natural Gas	-0,01	-0,01	0,03	0,01	-0,01	0,00	11
008 Quarries and Sand Pits	-0,03	-0,00	0,01	0,01	0,02	-0,00	12
009 Services Related to Mineral Extraction	-0,03	-0,02	0,03	0,02	-0,01	0,00	13
010 Meat and Poultry	-0,03	0,00	0,01	0,01	0,00	0,00	14-15
011 Fish Products Industry	-0,05	0,02	0,01	0,01	0,01	0,00	16
012 Fruit and Vegetable Processing	-0,05	0,02	0,02	0,01	-0,00	0,00	17
013 Dairy Products	-0,05	0,01	0,01	0,02	0,01	-0,00	18
014 Vegetable Oil Mills (excluding Corn)	-0,04	-0,00	0,01	-0,00	0,03	0,01	20
015 Bread, Biscuit and Other Bakery	-0,05	0,00	0,02	0,01	0,01	0,00	21-22
016 Cane and Beet Sugar Industry	-0,09	0,05	0,00	0,02	0,02	-0,00	23
017 Miscellaneous Food Industries	-0,03	-0,01	0,01	0,01	0,01	0,01	19+24
018 Soft Drink Industry	-0,03	-0,02	0,03	-0,01	0,03	0,01	25
019 Distillery Products Industry	-0,04	0,00	0,01	0,03	-0,01	0,01	26
020 Brewery Products Industry	-0,03	-0,00	0,00	0,02	0,01	0,00	27
021 Wine Industry	-0,08	0,04	-0,00	-0,01	0,03	0,02	28
022 Tobacco Products Industries	-0,09	0,02	0,02	0,03	0,02	0,00	29
023 Rubber Products Industries	-0,02	-0,01	0,01	0,02	0,01	0,00	30
024 Plastic Products Industries	-0,04	-0,01	0,02	0,02	0,01	0,01	31
025 Leather and Footwear	-0,05	0,02	0,02	0,01	0,00	0,00	32-34
026 Primary Textiles	-0,05	0,00	0,02	0,01	0,01	0,01	35-37
027 Textile Products (including Carpet)	-0,01	-0,02	0,01	0,01	0,01	0,01	38-40
028 Clothing and Hosiery	-0,05	0,02	0,00	0,01	0,01	0,00	41-42
029 Sawmills, Planing and Shingle Mills	-0,04	0,00	0,02	0,02	0,00	0,00	43
030 Veneer and Plywood Industries	-0,05	0,03	-0,01	0,02	0,01	-0,00	44
031 Sash, Door and Other Millwork Industries	-0,06	0,01	0,01	0,02	0,01	0,00	45
032 Wooden Box and Coffin Industries	-0,10	0,05	-0,02	0,03	0,03	-0,00	46
033 Other Wood Industries	-0,04	0,02	-0,01	0,03	0,00	-0,00	47
034 Furniture and Fixtures	-0,03	-0,00	0,02	0,01	0,01	0,00	48-50

Table 8C (cont'd)

	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post- Graduate Degrees	Equivalent 161 Industry No's
035 Pulp and Paper Industries	-0,06	-0,01	0,03	0,02	0,02	0,01	51
036 Other Paper Products	-0,07	0,01	0,01	0,03	0,02	0,01	52-54
037 Printing and Publishing Industries	-0,02	-0,03	-0,00	0,02	0,02	0,01	55
038 Plate making, Typesetting and Bindery	0,01	-0,01	-0,00	0,00	0,00	0,00	56
039 Primary Steel Industries	-0,03	-0,01	0,02	0,01	0,01	0,00	57
040 Steel Pipe and Tube Industry	-0,04	-0,02	0,04	0,02	0,02	-0,00	58
041 Iron Foundries	-0,04	-0,01	0,06	0,01	-0,01	-0,00	59
042 Non-Ferrous Smelting and Refining	-0,07	-0,01	0,04	0,02	0,01	0,00	60
043 Alum. Rolling, Casting and Extruding	-0,03	-0,05	0,02	0,03	0,02	0,01	61
044 Copper Rolling, Casting and Extruding	-0,10	0,06	0,00	0,02	0,02	0,00	62
045 Other Metal Rolling, Casting, etc.	-0,02	-0,01	0,01	-0,00	0,01	0,02	63
046 Power Boiler and Struct. Metal Industries	-0,01	-0,02	0,01	0,02	-0,00	0,00	64
047 Ornamental and Arch. Metal Products	-0,02	-0,00	0,02	-0,00	0,01	0,00	65
048 Stamped, Pressed and Coated Metals	-0,05	-0,01	0,02	0,02	0,02	0,00	66
049 Wire and Wire Products Industries	-0,04	0,01	0,02	-0,00	0,01	0,01	67
050 Hardware Tool and Cutlery Industries	-0,04	-0,02	0,03	0,01	0,01	0,01	68
051 Heating Equipment Industry	-0,03	-0,03	0,05	0,01	0,00	-0,01	69
052 Machine Shops Industry	-0,02	-0,03	0,03	0,01	0,00	0,00	70
053 Other Metal Fabricating Industries	-0,05	0,00	0,01	0,02	0,01	0,01	71
054 Agricultural Implement Industry	0,02	0,00	-0,02	0,00	-0,00	-0,00	72
055 Commercial Refrigeration Equipment	-0,03	-0,01	0,04	-0,00	0,00	0,01	73
056 Other Machinery and Equip. Industries	-0,01	-0,03	0,00	0,01	0,02	0,00	74
057 Aircraft and Aircraft Parts Industries	-0,05	-0,05	0,03	0,04	0,02	0,01	75
058 Motor Vehicle Industry	-0,07	0,01	0,02	0,02	0,01	0,01	76
059 Truck, Bus Body and Trailer Industries	-0,01	0,00	-0,01	0,00	0,02	0,00	77
060 Motor Vehicle Parts and Accessories	-0,03	0,00	0,00	0,01	0,01	0,00	78
061 Railroad Rolling Stock Industry	-0,02	0,04	-0,02	0,01	-0,00	-0,00	79
062 Shipbuilding and Repair Industry	-0,06	-0,04	0,05	0,04	0,01	0,00	80
063 Misc. Transport. Equip. Industries	-0,01	-0,01	-0,02	-0,00	0,02	0,01	81
064 Small Electrical Appliance Industry	-0,03	-0,01	-0,00	0,03	0,02	-0,01	82
065 Major Appliances (Elec. and Non-Elec.)	-0,03	-0,02	0,03	0,01	0,02	-0,00	83
066 Record Players, Radio and TV Receivers	-0,08	0,04	-0,02	0,02	0,04	-0,00	84
067 Electronic Equipment Industries	-0,05	-0,01	-0,00	0,02	0,03	0,01	85

Table 8C (cont'd)

	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post- Graduate Degrees	Equivalent 161 Industry No's
068 Office, Store and Business Machines	0,01	-0,04	0,02	-0,02	-0,00	0,03	86
069 Other Elect. and Electronic Products	-0,05	-0,02	0,01	0,03	0,02	0,01	87-89
070 Clay Products Industries	-0,10	0,02	0,05	0,02	0,01	0,01	90
071 Cement Industry	0,03	-0,02	-0,03	0,01	0,01	-0,01	91
072 Concrete Products Industry	-0,03	-0,00	0,01	0,01	0,01	0,00	92
073 Ready-Mix Concrete Industry	-0,02	-0,01	0,00	0,02	0,01	0,00	93
074 Glass and Glass Products Industries	-0,04	0,00	0,02	0,01	0,01	-0,00	94
075 Non-Metallic Mineral Products n.e.c.	-0,04	-0,01	0,04	0,01	0,00	0,00	95
076 Refined Petroleum and Coal Products	0,02	-0,02	0,04	0,02	-0,05	-0,00	96
077 Industrial Chemicals Industries n.e.c.	-0,03	-0,01	0,01	0,04	-0,01	-0,00	97
078 Plastic and Synthetic Resin Industries	-0,01	-0,00	0,02	-0,01	0,00	-0,00	98
079 Pharmaceutical and Medicine Industry	-0,06	-0,02	0,01	0,03	0,01	0,04	99
080 Paint and Varnish Industry	-0,03	0,01	0,01	0,01	-0,01	0,00	100
081 Soap and Cleaning Compounds Industry	-0,06	0,04	0,00	-0,00	0,02	0,00	101
082 Toilet Preparations Industry	-0,03	-0,03	0,01	0,03	0,01	0,01	102
083 Chemicals and Chemical Products	-0,03	-0,01	0,00	0,01	0,01	0,01	103
084 Jewelry and Precious Metals Industry	-0,05	-0,01	0,03	0,02	0,00	-0,00	104
085 Sporting Goods and Toys Industries	-0,04	-0,01	0,00	0,01	0,03	0,00	105
086 Sign and Display Industry	-0,06	0,01	-0,01	0,04	0,01	0,01	106
087 Other Manufacturing Industry	-0,04	-0,02	0,01	0,02	0,02	0,01	107-108
088 Construction	-0,04	0,00	0,01	0,02	0,01	0,00	109-117
089 Air Transport and Incidental Services	-0,03	-0,04	0,02	0,03	0,01	0,00	118
090 Railway and Transport and Rel. Services	-0,06	-0,00	0,04	0,01	0,01	0,00	119
091 Water Transport and Related Services	-0,05	0,00	0,01	0,02	0,01	0,00	120
092 Truck Transport Industries	-0,05	0,01	0,02	0,02	0,00	0,00	121
093 Public Transit	-0,04	0,00	0,01	0,02	0,00	0,00	122-123
094 Other Transport and Services to Transport	-0,04	-0,00	0,02	0,01	0,01	0,01	124-126
095 Pipeline Transport Industries	-0,02	-0,04	0,01	0,03	-0,00	0,02	127
096 Storage and Warehousing Industries	-0,07	0,02	0,01	0,02	0,01	0,01	128
097 Telecomm. Broadcasting Industry	-0,01	-0,05	0,01	0,03	0,01	0,01	129
098 Telecommunication Carriers and Other	-0,04	-0,04	0,01	0,04	0,03	0,01	130
099 Postal Service Industry	-0,05	-0,01	0,02	0,02	0,02	0,01	131
100 Electric Power Systems Industry	-0,04	-0,03	0,01	0,03	0,02	0,01	132

Table 8C (cont'd)

	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post- Graduate Degrees	Equivalent 161 Industry No's
101 Gas Distribution Systems Industry	-0,04	0,00	-0,01	0,02	0,02	0,01	133
102 Other Utility Industries n.e.c.	-0,09	0,00	0,02	0,03	0,03	0,01	134
103 Wholesale Trade Industries	-0,03	-0,02	0,01	0,02	0,01	0,01	135
104 Retail Trade Industries	-0,03	0,01	0,00	0,01	0,01	0,00	136
105 Finance, Insurance and Real Estate	-0,03	-0,03	0,00	0,02	0,02	0,01	137-139
106 Other Business Services Industries	-0,01	-0,02	0,00	0,01	0,01	0,01	142-144
107 Educational Services Industries	-0,01	0,00	0,00	-0,00	-0,02	0,02	145
108 Hospitals and Health Services	-0,01	-0,00	0,00	-0,00	-0,04	0,06	146-147
109 Accom. and Food Services Industry	-0,03	0,00	0,00	0,01	0,01	0,00	148
110 Motion Picture, Amusement and Recreation	-0,01	-0,02	0,01	0,01	0,01	0,00	149-150
111 Personal and Household Services	-0,03	0,00	-0,01	0,02	0,02	0,00	151-152
112 Other Services and Organizations	-0,00	-0,01	0,01	0,01	-0,00	0,00	153-154
TOTAL NON-GOVERNMENT	-0,04	-0,01	0,01	0,02	0,01	0,01	1-154

Table 9A Export Education/Skill Shares: 1991 – 24 Industries (Export Employment Weights)

24-Industry Aggregation	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post- Graduate Degrees
S1. Agriculture, Forestry, Fishing and Trapping	0,53	0,21	0,11	0,08	0,05	0,02
S2. Mining excluding Oil and Gas	0,37	0,20	0,24	0,11	0,06	0,02
S3. Crude Petroleum and Natural Gas	0,14	0,21	0,17	0,18	0,23	0,07
S4. Food, Beverages and Tobacco	0,50	0,23	0,12	0,08	0,06	0,01
S5. Rubber and Plastic Products	0,41	0,27	0,14	0,11	0,06	0,02
S6. Leather, Textile and Clothing Products	0,52	0,25	0,10	0,08	0,05	0,01
S7. Wood and Furniture Products	0,48	0,23	0,17	0,08	0,04	0,01
S8. Paper and Allied Products and Printing	0,28	0,28	0,20	0,13	0,09	0,02
S9. Primary Metals and Metal Fabricating	0,33	0,23	0,24	0,12	0,06	0,02
S10. Machinery	0,29	0,22	0,22	0,16	0,08	0,02
S11. Motor Vehicles and Parts	0,41	0,27	0,15	0,10	0,06	0,01
S12. Other Transportation Equipment	0,21	0,21	0,23	0,20	0,12	0,04
S13. Electrical and Electronic Products	0,23	0,24	0,12	0,20	0,16	0,05
S14. Refined Petrol., Chemicals and Non-met.	0,27	0,27	0,15	0,15	0,13	0,04
S15. Other Manufactured Products	0,33	0,27	0,13	0,16	0,09	0,02
S16. Construction	0,37	0,23	0,25	0,10	0,05	0,01
S17. Transportation and Pipelines	0,42	0,26	0,16	0,10	0,05	0,01
S18. Storage	0,38	0,33	0,12	0,09	0,05	0,02
S19. Utilities	0,19	0,29	0,17	0,19	0,12	0,03
S20. Trade	0,32	0,32	0,14	0,13	0,08	0,02
S21. Finance, Insurance and Real Estate	0,16	0,34	0,10	0,19	0,17	0,04
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
S23. Business Services	0,12	0,22	0,09	0,20	0,26	0,11
S24. Personal and Other Services	0,39	0,29	0,10	0,11	0,08	0,03
TOTAL	0,34	0,26	0,14	0,13	0,10	0,03

Table 9B Export Education/Skill Shares: 1986 – 24 Industries (Export Employment Weights)

24-Industry Aggregation	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post- Graduate Degrees
S1. Agriculture, Forestry, Fishing and Trapping	0,57	0,20	0,09	0,08	0,05	0,01
S2. Mining excluding Oil and Gas	0,41	0,20	0,22	0,09	0,06	0,01
S3. Crude Petroleum and Natural Gas	0,16	0,23	0,14	0,17	0,24	0,06
S4. Food, Beverages and Tobacco	0,56	0,21	0,11	0,06	0,05	0,01
S5. Rubber and Plastic Products	0,44	0,28	0,13	0,09	0,06	0,01
S6. Leather, Textile and Clothing Products	0,56	0,24	0,08	0,06	0,04	0,01
S7. Wood and Furniture Products	0,52	0,22	0,16	0,06	0,03	0,01
S8. Paper and Allied Products and Printing	0,33	0,29	0,18	0,11	0,07	0,01
S9. Primary Metals and Metal Fabricating	0,38	0,24	0,20	0,11	0,06	0,01
S10. Machinery	0,30	0,25	0,22	0,15	0,07	0,02
S11. Motor Vehicles and Parts	0,45	0,26	0,14	0,09	0,05	0,01
S12. Other Transportation Equipment	0,26	0,25	0,21	0,16	0,09	0,03
S13. Electrical and Electronic Products	0,27	0,26	0,11	0,19	0,14	0,04
S14. Refined Petrol., Chemicals and Non-met.	0,30	0,27	0,14	0,13	0,12	0,03
S15. Other Manufactured Products	0,37	0,28	0,12	0,13	0,07	0,02
S16. Construction	0,41	0,23	0,24	0,08	0,04	0,01
S17. Transportation and Pipelines	0,48	0,25	0,14	0,08	0,04	0,01
S18. Storage	0,46	0,31	0,11	0,08	0,04	0,01
S19. Utilities	0,23	0,32	0,16	0,17	0,10	0,03
S20. Trade	0,34	0,33	0,13	0,12	0,07	0,01
S21. Finance, Insurance and Real Estate	0,19	0,37	0,10	0,16	0,14	0,03
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
S23. Business Services	0,13	0,24	0,08	0,20	0,25	0,10
S24. Personal and Other Services	0,35	0,27	0,11	0,12	0,11	0,05
TOTAL	0,38	0,26	0,14	0,11	0,09	0,02

Table 9C Export Education/Skill Shares: Changes 1986–91 – 24 Industries

24-Industry Aggregation	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post- Graduate Degrees
S1. Agriculture, Forestry, Fishing and Trapping	-0,04	0,01	0,02	0,01	-0,00	0,01
S2. Mining excluding Oil and Gas	-0,04	-0,00	0,01	0,02	0,00	0,01
S3. Crude Petroleum and Natural Gas	-0,01	-0,01	0,03	0,01	-0,01	0,00
S4. Food, Beverages and Tobacco	-0,06	0,02	0,01	0,01	0,01	0,00
S5. Rubber and Plastic Products	-0,03	-0,01	0,01	0,02	0,01	0,00
S6. Leather, Textile and Clothing Products	-0,04	0,01	0,01	0,01	0,01	0,00
S7. Wood and Furniture Products	-0,04	0,01	0,01	0,02	0,00	0,00
S8. Paper and Allied Products and Printing	-0,05	-0,01	0,02	0,02	0,02	0,01
S9. Primary Metals and Metal Fabricating	-0,04	-0,01	0,03	0,02	0,01	0,00
S10. Machinery	-0,01	-0,02	0,00	0,01	0,01	0,00
S11. Motor Vehicles and Parts	-0,05	0,00	0,01	0,02	0,01	0,00
S12. Other Transportation Equipment	-0,05	-0,04	0,01	0,04	0,02	0,01
S13. Electrical and Electronic Products	-0,04	-0,02	0,00	0,02	0,02	0,01
S14. Refined Petrol., Chemicals and Non-met.	-0,03	-0,01	0,01	0,02	0,00	0,01
S15. Other Manufactured Products	-0,05	-0,01	0,01	0,03	0,02	0,01
S16. Construction	-0,04	0,00	0,01	0,02	0,01	0,00
S17. Transportation and Pipelines	-0,06	0,00	0,02	0,02	0,01	0,00
S18. Storage	-0,07	0,02	0,01	0,02	0,01	0,01
S19. Utilities	-0,04	-0,02	0,01	0,03	0,02	0,01
S20. Trade	-0,03	-0,01	0,01	0,01	0,01	0,01
S21. Finance, Insurance and Real Estate	-0,03	-0,03	0,00	0,02	0,02	0,01
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
S23. Business Services	-0,01	-0,02	0,00	0,01	0,01	0,01
S24. Personal and Other Services	0,04	0,02	-0,01	-0,01	-0,02	-0,02
TOTAL	-0,04	-0,00	0,01	0,02	0,01	0,01

	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post- Graduate Degrees
1961	0,441	0,240	0,140	0,098	0,066	0,014
1962	0,430	0,242	0,144	0,100	0,068	0,015
1963	0,431	0,242	0,143	0,100	0,068	0,015
1964	0,434	0,242	0,140	0,100	0,068	0,015
1965	0,428	0,244	0,142	0,101	0,069	0,016
1966	0,420	0,247	0,144	0,103	0,070	0,016
1967	0,411	0,249	0,146	0,105	0,072	0,017
1968	0,406	0,251	0,147	0,106	0,072	0,018
1969	0,397	0,254	0,148	0,108	0,074	0,019
1970	0,401	0,253	0,147	0,107	0,074	0,018
1971	0,405	0,252	0,145	0,106	0,074	0,018
1972	0,403	0,252	0,145	0,107	0,074	0,018
1973	0,403	0,253	0,144	0,107	0,074	0,018
1974	0,402	0,253	0,144	0,107	0,075	0,019
1975	0,399	0,254	0,144	0,108	0,076	0,019
1976	0,395	0,255	0,145	0,109	0,077	0,019
1977	0,396	0,255	0,144	0,108	0,077	0,020
1978	0,393	0,256	0,143	0,109	0,078	0,020
1979	0,390	0,256	0,143	0,110	0,080	0,021
1980	0,391	0,255	0,141	0,111	0,081	0,021
1981	0,388	0,256	0,141	0,112	0,082	0,022
1982	0,386	0,257	0,140	0,112	0,083	0,022
1983	0,389	0,257	0,137	0,112	0,083	0,022
1984	0,386	0,258	0,136	0,113	0,084	0,022
1985	0,379	0,260	0,136	0,114	0,086	0,023
1986	0,378	0,260	0,138	0,114	0,086	0,023
1987	0,373	0,259	0,139	0,117	0,088	0,024
1988	0,364	0,258	0,141	0,121	0,090	0,026
1989	0,352	0,257	0,145	0,125	0,093	0,028
1990	0,350	0,259	0,143	0,126	0,093	0,028
1991	0,341	0,258	0,144	0,130	0,097	0,030
1992	0,343	0,258	0,143	0,130	0,097	0,030
1993	0,339	0,260	0,142	0,130	0,098	0,030
1994	0,337	0,260	0,142	0,131	0,099	0,031
1995	0,336	0,261	0,142	0,131	0,099	0,031
1996	0,335	0,261	0,141	0,132	0,100	0,031
1997	0,338	0,260	0,140	0,131	0,100	0,031

	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post- Graduate Degrees
1961	0,411	0,269	0,136	0,102	0,068	0,015
1962	0,408	0,270	0,136	0,102	0,069	0,015
1963	0,406	0,270	0,136	0,103	0,069	0,015
1964	0,404	0,271	0,137	0,103	0,070	0,015
1965	0,402	0,271	0,138	0,104	0,070	0,016
1966	0,398	0,272	0,139	0,105	0,071	0,016
1967	0,396	0,273	0,138	0,105	0,071	0,016
1968	0,395	0,273	0,138	0,106	0,072	0,016
1969	0,393	0,274	0,137	0,106	0,073	0,017
1970	0,390	0,275	0,137	0,107	0,073	0,017
1971	0,389	0,275	0,137	0,107	0,074	0,017
1972	0,387	0,277	0,137	0,108	0,075	0,017
1973	0,385	0,277	0,137	0,108	0,075	0,018
1974	0,383	0,278	0,137	0,109	0,076	0,018
1975	0,381	0,279	0,136	0,109	0,077	0,018
1976	0,381	0,279	0,136	0,109	0,077	0,018
1977	0,378	0,279	0,136	0,110	0,078	0,019
1978	0,378	0,280	0,135	0,110	0,079	0,019
1979	0,377	0,280	0,135	0,111	0,079	0,019
1980	0,375	0,280	0,134	0,111	0,080	0,020
1981	0,374	0,280	0,134	0,112	0,081	0,020
1982	0,370	0,281	0,133	0,113	0,082	0,021
1983	0,370	0,281	0,131	0,113	0,083	0,021
1984	0,370	0,282	0,131	0,113	0,084	0,021
1985	0,368	0,282	0,131	0,114	0,084	0,021
1986	0,368	0,282	0,131	0,114	0,084	0,021
1987	0,361	0,281	0,133	0,117	0,086	0,022
1988	0,353	0,280	0,135	0,120	0,088	0,024
1989	0,346	0,278	0,137	0,123	0,090	0,025
1990	0,338	0,277	0,138	0,127	0,093	0,027
1991	0,330	0,276	0,140	0,131	0,096	0,029
1992	0,329	0,276	0,139	0,131	0,096	0,029
1993	0,330	0,276	0,138	0,131	0,096	0,029
1994	0,330	0,276	0,138	0,131	0,096	0,029
1995	0,328	0,276	0,138	0,131	0,097	0,030
1996	0,328	0,275	0,138	0,131	0,098	0,030
1997	0,326	0,275	0,137	0,132	0,099	0,030

Table 10C Ratio: Education/Skill Shares of Exports/Total Business Sector Employment, 1961-97						
	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post- Graduate Degrees
1961	1,074	0,892	1,029	0,966	0,976	0,990
1962	1,054	0,898	1,057	0,981	0,990	1,031
1963	1,061	0,897	1,046	0,976	0,983	1,020
1964	1,073	0,896	1,025	0,969	0,978	1,004
1965	1,064	0,901	1,029	0,975	0,988	1,027
1966	1,056	0,907	1,036	0,981	0,991	1,037
1967	1,038	0,913	1,056	0,998	1,003	1,071
1968	1,027	0,918	1,069	1,004	1,006	1,088
1969	1,012	0,925	1,076	1,015	1,025	1,127
1970	1,028	0,918	1,067	1,003	1,009	1,087
1971	1,040	0,913	1,058	0,994	1,000	1,066
1972	1,042	0,913	1,060	0,991	0,995	1,058
1973	1,046	0,914	1,056	0,987	0,989	1,045
1974	1,049	0,912	1,051	0,986	0,992	1,044
1975	1,045	0,911	1,062	0,988	0,993	1,046
1976	1,038	0,914	1,068	0,992	0,999	1,063
1977	1,046	0,913	1,062	0,987	0,991	1,051
1978	1,040	0,915	1,064	0,991	0,997	1,066
1979	1,036	0,916	1,058	0,999	1,009	1,079
1980	1,043	0,912	1,052	0,995	1,008	1,074
1981	1,038	0,912	1,054	1,001	1,016	1,087
1982	1,042	0,913	1,053	0,996	1,011	1,076
1983	1,050	0,913	1,043	0,989	1,002	1,059
1984	1,043	0,917	1,041	0,995	1,011	1,075
1985	1,031	0,923	1,042	1,006	1,027	1,098
1986	1,026	0,923	1,052	1,007	1,026	1,106
1987	1,033	0,923	1,044	1,002	1,021	1,088
1988	1,029	0,922	1,046	1,005	1,027	1,089
1989	1,019	0,924	1,058	1,012	1,034	1,087
1990	1,038	0,937	1,031	0,994	1,004	1,027
1991	1,035	0,935	1,035	0,995	1,013	1,033
1992	1,042	0,934	1,027	0,991	1,011	1,030
1993	1,027	0,941	1,030	1,000	1,023	1,041
1994	1,023	0,943	1,024	1,003	1,031	1,052
1995	1,023	0,947	1,027	1,001	1,023	1,038
1996	1,022	0,949	1,026	1,002	1,022	1,032
1997	1,035	0,946	1,016	0,994	1,012	1,023

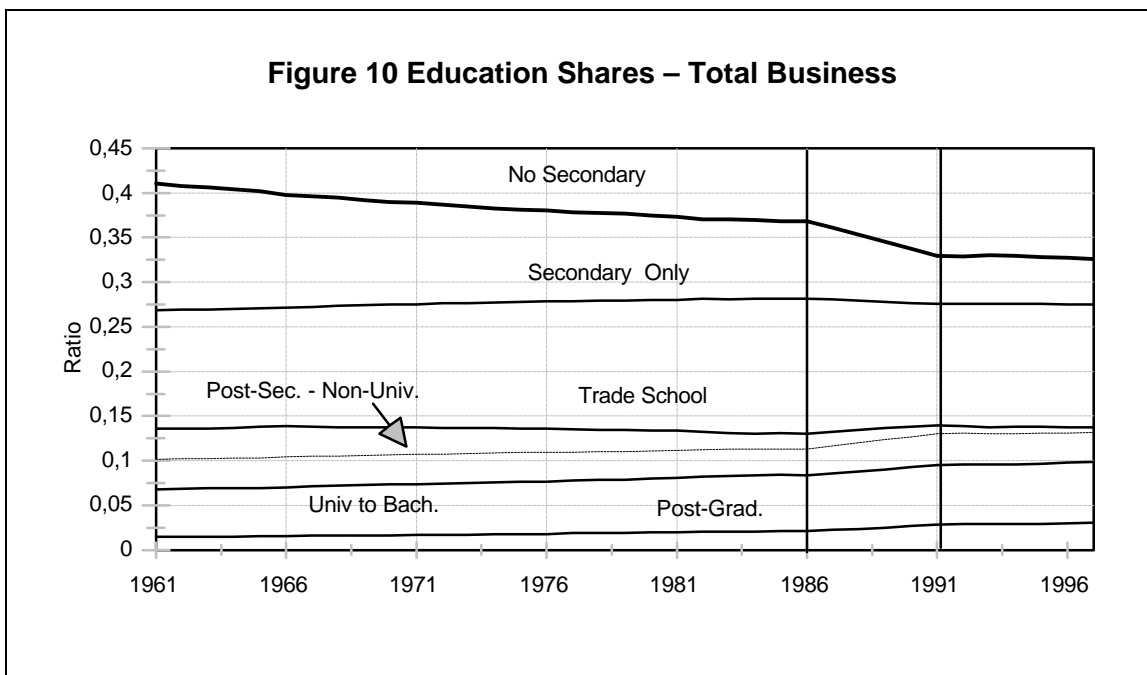
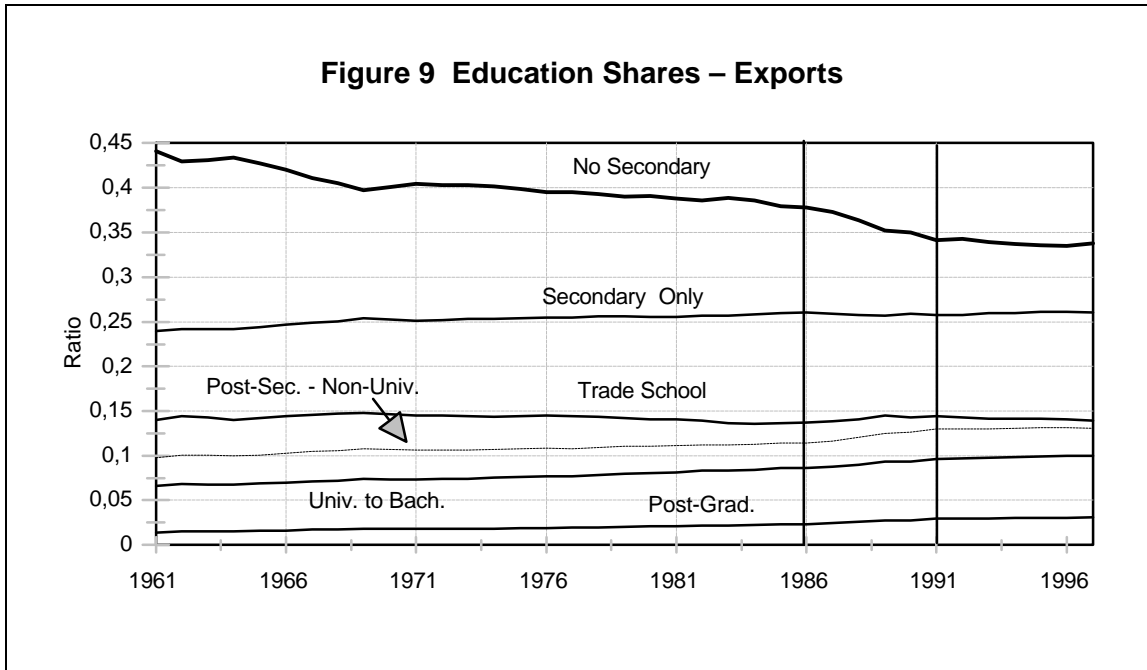


Figure 11 Relative Education Shares
(Ratio : Exports to Total Business)

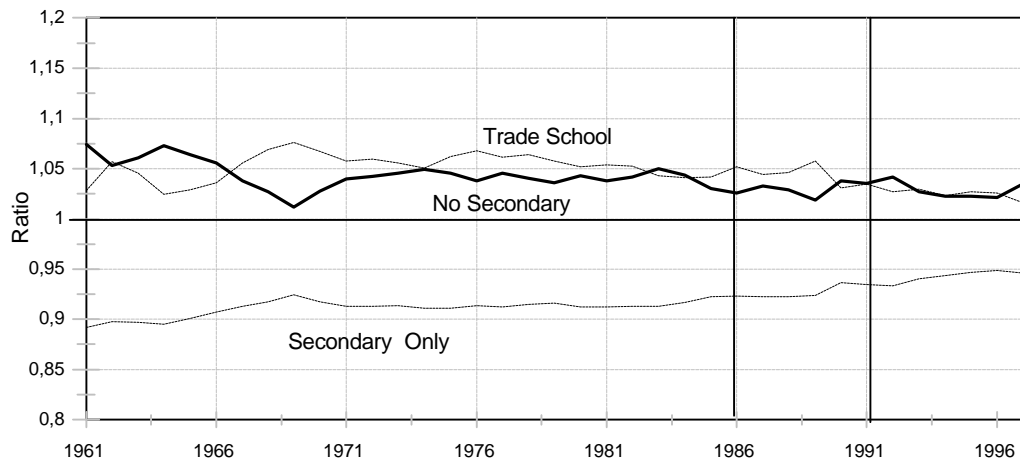
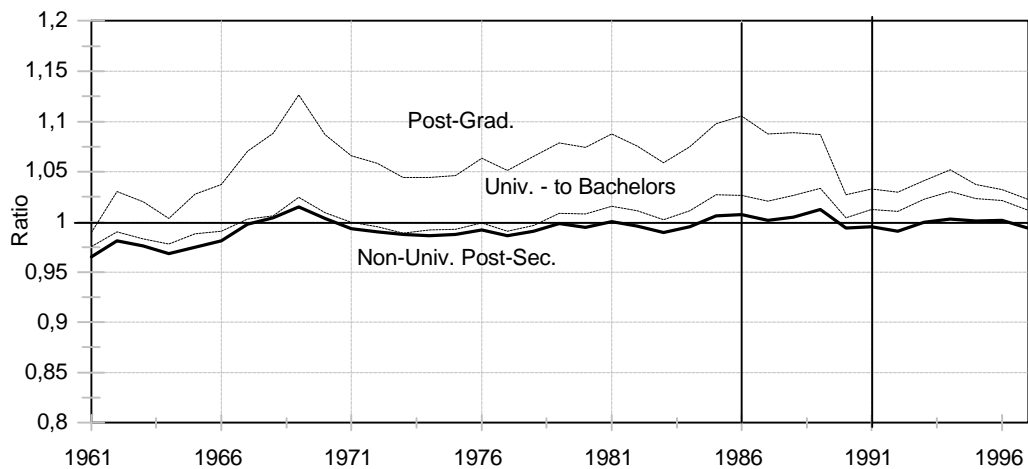


Figure 12 Relative Education Shares (2)
(Ratio : Exports to Total Business)



5. CHANGES IN THE INDUSTRY AND SKILL MIX OF CANADIAN IMPORTS

The section above examined the place of exports in the Canadian economy and how the industrial output and employment mix of exports had changed over time. This section repeats these calculations and analysis, but for Canadian imports. Of necessity, the results here are somewhat more speculative than in the previous section. While in Section 4 we were examining, subject to data limitations, what industrial and skill mix was *actually used* to produce Canadian exports, in this section we will be asking what industrial and skill mix *would have been used* to produce Canadian imports in Canada, instead of abroad, with the existing Canadian industrial technology and workforce. Given that these goods were, indeed, imported, it is probable that different technologies and skill mixes were used to produce them abroad. Nevertheless, the exercise is useful to see, as imports have grown in the Canadian economy, what the equivalent Canadian industry and skill mix would have been and, likely, where import pressures have been felt the most.

As explained in Section 2 (Methods and Data) above, there is a question of where this hypothetical substitution of domestic production for imports should end. According to the technology reflected in the Canadian I/O tables, producing domestically some or all of the goods that were historically imported would have required other imports as intermediate inputs. Rather than try to replace imports all the way back along the production chain — which would have taken us further and further from the reality of the structure of Canadian production — we have chosen to model domestic production of observed imports only. Any further imports that might be required to “produce” these imports domestically are permitted to occur and are not satisfied by further domestic production. For this reason, and for the others listed above, when we refer to “import-replaced” output or employment in describing the results of our calculations below, much caution must be used in interpreting both the term and the results.

Imports in the Canadian Economy, 1961–97: National Accounts Perspective

As was the case for exports, we begin by reviewing aggregate data for the place of imports in the Canadian economy from the National Accounts. A series of key ratios or indicators is presented for 1961–97 in Table 11 and plotted in Figures 13 and 14.

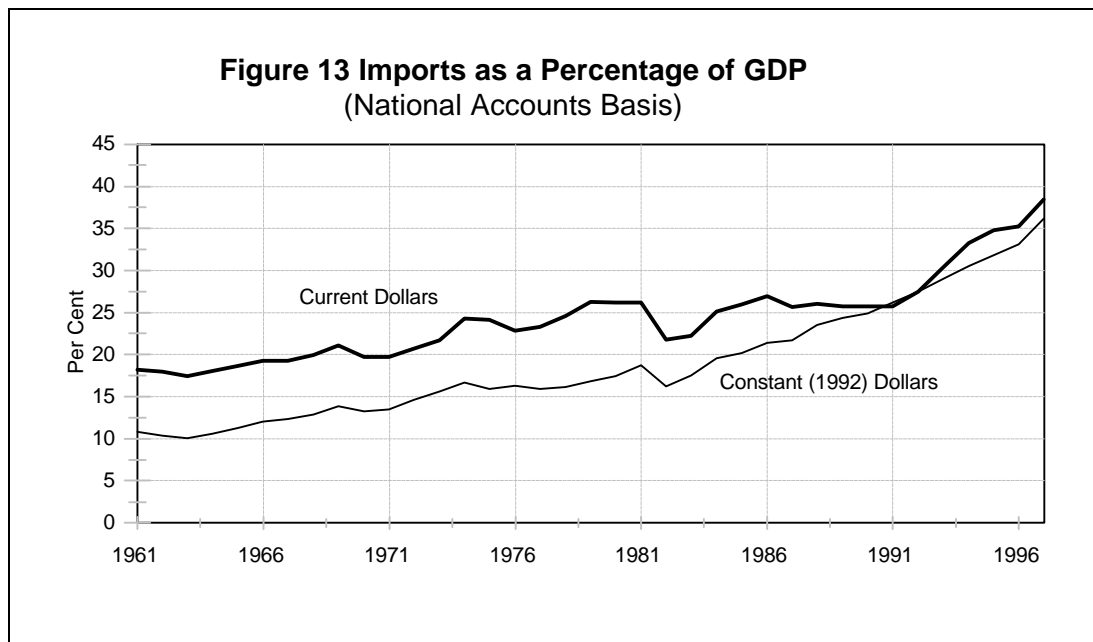
Columns 1 and 2 of Table 11 (plotted in Figure 13) show the growth of imports as a share of GDP since 1961. Measured in 1992 dollars, imports have grown from 10.8 percent of GDP in 1961 to just over 36 percent in 1997. Measured in current dollars, imports grew from 18.2 percent of GDP in 1961 to 38.5 percent in 1997. Note that for 1992, the last year for which data are available for I/O analysis, the shares of imports in GDP are identical at 27.5 percent since this is the base year for the National Accounts.

The difference in the growth shares can be explained by the movement of the relative price of imports over the last 36 years. (By relative price we mean the price of imports relative to the prices of all the goods included in GDP as measured by the GDP deflator). As seen in column 3 of Table 11, the relative price of imports declined significantly from 1961 through 1992, with much of the decline evident in the 1980s as relative energy and other commodity prices weakened. There has, however, been a modest rise in the relative price of imports since 1992.

This relative price increase for imports has made the constant dollar (1992 dollar) share of imports rise less than the current-dollar share since 1992 — although both increases, as for exports, are very large for a five-year period by historical standards.

As for exports, it is interesting to ask if the rise in share (both in recent years and since 1961) has been more attributable to changes in the shares of imports of goods or imports of services. National Accounts data (columns 4 and 5 in Table 11 and Figure 14) indicate that while the share of both goods and services imports have risen in GDP, the major part of the overall increase in import share is due to a rise in the share of imports of *goods*. This is true both for the 1961–92 period for which we have I/O data, and for the subsequent 1992–97 period.

Finally, column 6 of Table 11 shows imports as a share, not of GDP but of private-sector GDP at factor cost. The latter concept excludes government “production” and indirect taxes less subsidies, which are included in the “market price” concept of aggregate GDP. Most of the I/O work below concentrates on comparisons or changes in ratios of imports to this “private-sector at factor cost” concept. Column 6 presents the National Accounts equivalent and, as can be seen, the increase in share of imports is from 22.3 percent in 1961 to 34.5 percent in 1992 — and finally to just over 47 percent by 1997. As for exports, the fact that the share of imports in total GDP (in current dollars) does not rise as much (only from 18.2 percent to 27.5 percent over 1961–92) reflects the growth of the government sector in this period and an increase in average indirect taxation.



	(1) Imports as a % of GDP (\$92)	(2) Imports as a % of GDP (Current Dollars)	(3) Ratio: Import Deflator to GDP Deflator	(4) Goods Imports as a % of GDP (Current Dollars)	(5) Services Imports as a % of GDP (Current Dollars)	(6) Imports as a % of Private- Sector GDP at Factor Cost
1961	10,8	18,2	1,68	14,5	3,7	22,3
1962	10,4	18,0	1,73	14,5	3,5	22,1
1963	10,0	17,5	1,74	14,2	3,3	21,4
1964	10,6	18,1	1,70	14,7	3,4	22,2
1965	11,3	18,7	1,65	15,4	3,3	23,0
1966	12,0	19,3	1,60	16,0	3,3	23,7
1967	12,3	19,3	1,56	15,9	3,4	23,8
1968	12,9	20,0	1,55	16,6	3,4	24,7
1969	13,9	21,1	1,52	17,3	3,8	26,1
1970	13,3	19,7	1,49	15,8	3,9	24,4
1971	13,5	19,8	1,47	16,0	3,8	24,5
1972	14,6	20,7	1,42	17,1	3,6	25,7
1973	15,6	21,7	1,39	18,1	3,7	26,7
1974	16,7	24,3	1,46	20,6	3,7	29,8
1975	16,0	24,1	1,51	20,1	4,0	29,1
1976	16,3	22,8	1,40	18,8	4,1	27,7
1977	15,9	23,3	1,46	19,2	4,1	28,3
1978	16,2	24,6	1,52	20,4	4,2	29,8
1979	16,8	26,3	1,56	22,3	3,9	31,4
1980	17,4	26,2	1,50	22,1	4,0	31,0
1981	18,7	26,2	1,40	22,1	4,1	31,6
1982	16,2	21,8	1,34	17,9	3,9	26,6
1983	17,5	22,2	1,27	18,3	3,9	26,9
1984	19,6	25,1	1,28	21,2	3,9	30,3
1985	20,2	26,0	1,29	22,0	4,0	31,2
1986	21,4	26,9	1,26	22,5	4,4	32,7
1987	21,7	25,7	1,18	21,4	4,3	31,3
1988	23,5	26,0	1,11	21,7	4,3	31,7
1989	24,4	25,7	1,05	21,2	4,5	31,6
1990	24,9	25,8	1,04	20,8	5,0	31,8
1991	26,2	25,8	0,99	20,6	5,2	32,1
1992	27,5	27,5	1,00	22,1	5,4	34,5
1993	29,1	30,4	1,05	24,5	5,9	38,0
1994	30,5	33,3	1,09	27,4	5,9	41,4
1995	31,9	34,8	1,09	28,9	5,9	43,1
1996	33,1	35,3	1,06	29,2	6,1	43,6
1997	36,2	38,5	1,06	32,5	6,0	47,4

Imports in the Canadian Economy: Aggregate Results from the I/O Analysis

I/O calculations to determine the impact of replacing historical imports (at least the first “round”) on Canadian output (domestic product) and employment have been conducted for each year from 1961 through 1997.¹² Individual industry impacts have been aggregated across all industries to derive economy-wide impacts, and these are summarized by year in Table 12 and the accompanying figures (Figures 15-20). As with the export calculations, these aggregate results present fully worked-out impacts on output and employment — in this case, of hypothetical import replacement. They are not simply sums of the outputs or employment levels of particular industries which are deemed to be primarily “import competitors”; instead they are estimates of the direct and all indirect output and employment required to produce domestically the first round of imports actually observed in each year.

Column 1 of Table 12 bridges between the more familiar National Accounts data and I/O calculations and concepts. This column shows imports (from the I/O database) as a share of business-sector domestic product, or value added, (also from the I/O database). This is the closest equivalent in the I/O data to column 6 of Table 11. The differences are larger than for exports but again are attributable to different classification schemes and to different definitions of the government sector. They also reflect possible discrepancies from our own updating of the I/O aggregate data on imports after 1992.

Proceeding to column 4 of Table 12 (and Figure 21), we come again to the central theme of this report — the impact on employment. As can be seen, the share of “import replaced” employment in total business-sector employment has indeed risen: from 16.4 percent in 1961 to 26.0 percent in 1992, and finally to 32.7 percent in 1997 — but, just as for exports, the increase in share of employment is much less than the increase in share of imports relative to business-sector product. The reason is also the same: increased “import penetration”: From column 3 of Table 12 it can be seen that in 1961, if Canada had tried to produce what it imported, it would have required additional imports representing about 20 percent of the domestic product that would have been generated to produce the first round of imports. By 1997, this figure had risen to over 50 percent. Thus, while there has been considerable growth in employment and domestic product (see column 2) “displaced” by imports, the growth has not been nearly as large as that of the share of imports in GDP itself (see Figure 16).

Comparing the employment impacts of exports and “import replacement” is interesting: (see column 4 in Tables 2 and 12, and Figures 3 and 15). Employment “displaced” by imports in 1961, at 16.4 percent of total business employment, was just under the 17.2 percent of employment attributable to exports. (Both measures, it should be recalled, include employment for all intermediate inputs as well.) By 1992, however, the figure had reached to 26 percent for imports against 23.1 percent for exports, and by 1997 32.7 percent for imports against 28.3 percent for exports. That is, imports appear to have replaced more jobs than exports have provided. Why is this so? And, as might first appear, is this a bad thing? The answers to these two questions are closely related.

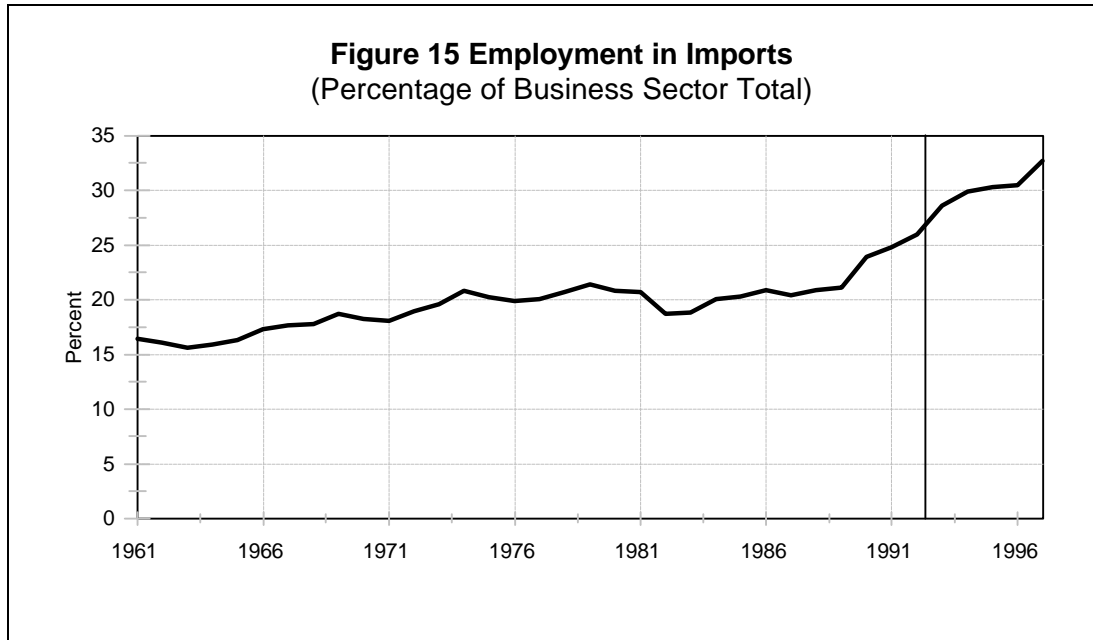
The principal insight comes from comparing calculated average labour productivity in exports and “import replacement” — see column 5 in each of Tables 2 and 12, and Figures 6 and 18. As can be seen, labour productivity in “import replacement” is invariably lower than in exports (it is at, or slightly above, the average for the economy as a whole), and in fact has fallen relatively in recent years. Thus, even though



imports have actually grown slightly less than exports as a share of GDP, because it is lower productivity output (at least by Canadian technology) it has tended to “displace” more jobs. However, if we subscribe to the mainstream macroeconomic principle that economies tend to full employment in the longer-run, whatever their output mix, then the result of increased international trade has not been any permanent loss of jobs, but rather the replacement of lower-productivity output (which we import instead) with higher-productivity output (which we export) — leaving the Canadian economy earning more than it otherwise would. Moreover, this result is what mainstream international trade theory would also lead us to expect. Only to the extent that trade changes have occurred too fast for the labour force to respond in full has increased international trade “cost jobs” by increasing structural unemployment (workers displaced by imports who cannot be employed elsewhere in the economy) and the full-employment unemployment rate.

Another element requiring discussion in Table 12 is the relative importance of direct and indirect employment in “import replacement” (see columns 6 and 7, and Figure 19). As can be seen, the ratio of direct to total employment in “import replacement” hovers just under 60 percent through 1992 and then rises rapidly thereafter. The rise after 1992, which is also seen for exports, must be taken cautiously because I/O tables after 1992 are not available. Before the 1990s, the constancy of the ratio is notable, indicating no “deepening” of inter-industry technology in “import replacement” over this long span. Also notable is the fact that the ratio for import replacement is higher than that for exports (compare Figures 7 and 19). Thus, the Canadian import mix, if it were to be produced with Canadian technology, would involve fewer intermediate inputs (and more imported inputs) than the Canadian export mix.

Finally, as for exports, the I/O system permits us to calculate impacts of “import replacement” on the total remuneration to labour (aggregating wages and salaries, supplementary labour income and the income of unincorporated businesses into this category). The returns to labour can be expressed as a ratio to employment generated to determine the relative returns to labour in import replacement. As column 8 of Table 12 and Figure 20 show, this ratio remained relatively steady from 1961 to 1976, it rose to a slightly higher plateau in the late-1970s and fell after 1988. At all times, however, it has been above 1.0, indicating



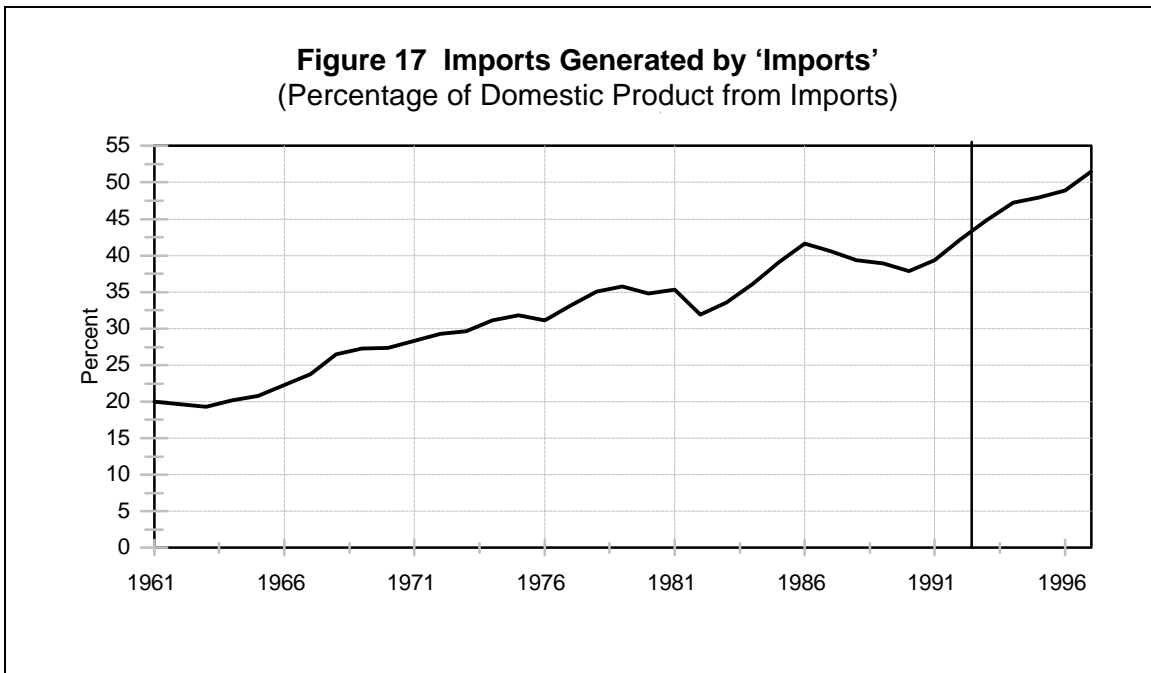
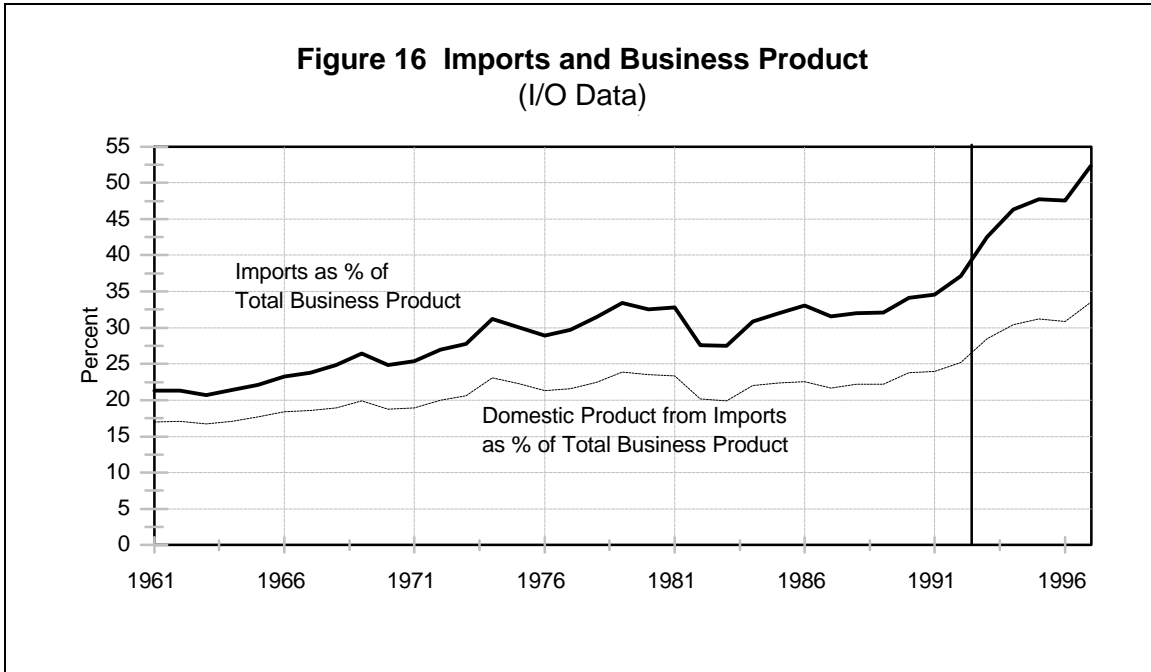
returns to labour above the business-sector average. When compared to returns to labour in exports, however (see Table 2 and Figure 8), the returns to labour in import replacement have been uniformly lower since the early 1970s (when the effect of Agriculture had been reduced). This might have been expected given that labour productivity in “import replacement” was also found to be lower than for exports. Again, the implication is that international trade has permitted Canada to substitute somewhat higher-paying jobs for relatively lower-paying ones. However, it should be kept in mind that even import-replacement labour returns are above the business-sector average. This indicates, not surprisingly, that there is a sizeable part of the economy which is relatively low paid and not much subject to international competition — some services, construction and some localized manufacturing (like cement) would be examples. While Canada is deriving net benefits from trade, on average it is not importing goods that, at least by its own technology, would be produced by very low-paid and low-productivity workers.

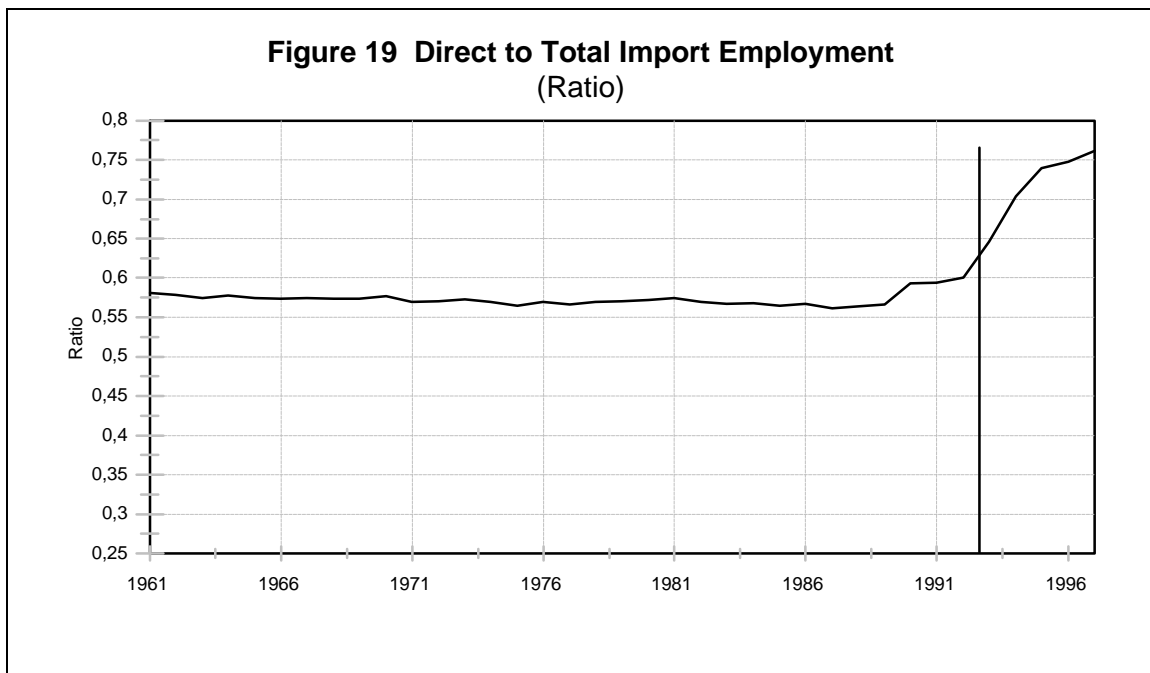
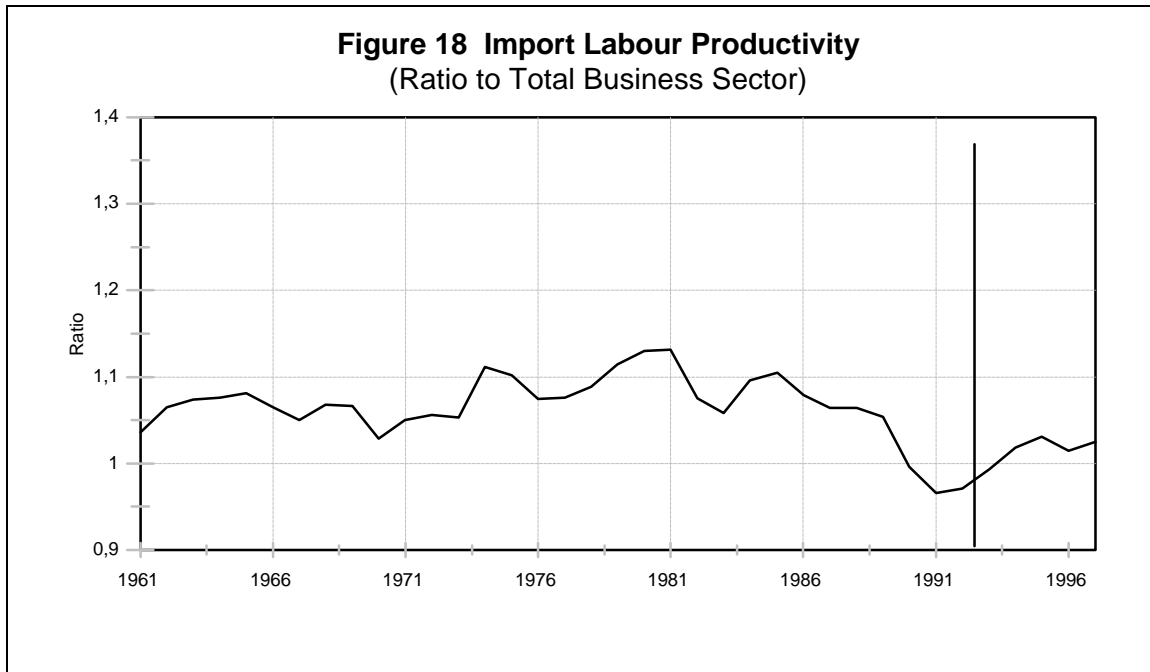
Table 12 Aggregate Comparisons from I/O Calculations – Imports – 1961–97

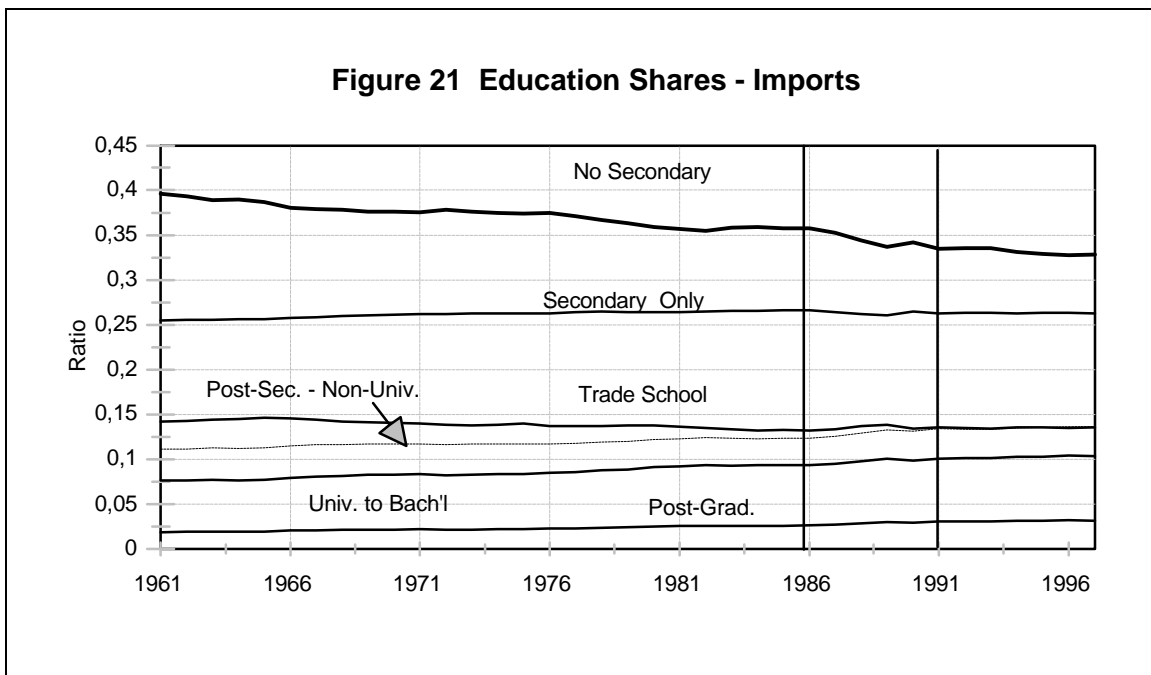
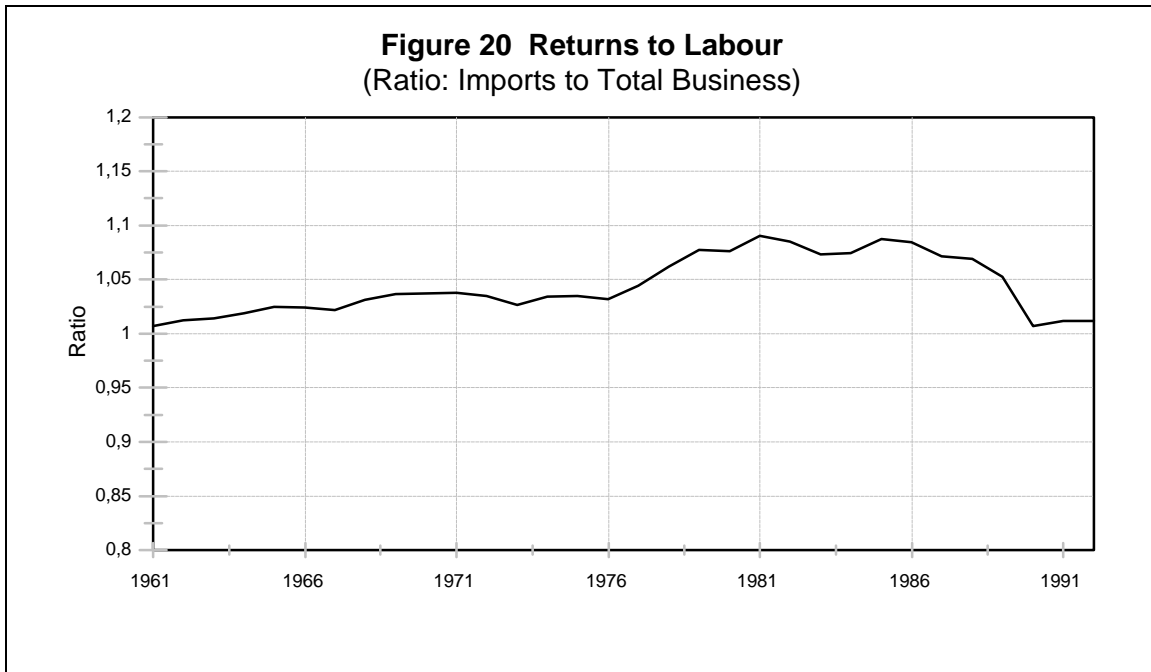
	(1) Imports as a % of Business Sector Domestic Product	(2) Domestic Product in Imports as a % of Business Domestic Product	(3) "Imports" from Imports as a % of Domestic Product from Imports	(4) Employment in Imports as a % of Total Business Employment	(5) Labour Productivity in Imports Relative to Business Sector	(6) Direct Employment in Imports as a % of Total Employment	(7) Ratio: Direct to Total Employment in Imports	(8) Ratio: Returns to Labour in Imports vs. Business Sector
1961	21,31	17,03	20,01	16,44	1,04	9,55	0,58	1,01
1962	21,37	17,15	19,66	16,10	1,06	9,33	0,58	1,01
1963	20,77	16,75	19,31	15,60	1,07	8,97	0,57	1,01
1964	21,45	17,15	20,18	15,94	1,08	9,21	0,58	1,02
1965	22,14	17,67	20,78	16,34	1,08	9,39	0,57	1,03
1966	23,29	18,42	22,34	17,30	1,06	9,92	0,57	1,02
1967	23,83	18,60	23,82	17,72	1,05	10,19	0,58	1,02
1968	24,93	18,99	26,48	17,78	1,07	10,21	0,57	1,03
1969	26,43	19,96	27,32	18,71	1,07	10,74	0,57	1,04
1970	24,91	18,76	27,41	18,24	1,03	10,52	0,58	1,04
1971	25,39	18,98	28,37	18,07	1,05	10,29	0,57	1,04
1972	27,02	20,05	29,35	18,98	1,06	10,83	0,57	1,03
1973	27,83	20,64	29,69	19,60	1,05	11,23	0,57	1,03
1974	31,29	23,14	31,15	20,81	1,11	11,86	0,57	1,03
1975	30,15	22,31	31,85	20,24	1,10	11,44	0,57	1,03
1976	28,94	21,38	31,12	19,89	1,08	11,34	0,57	1,03
1977	29,71	21,58	33,17	20,05	1,08	11,36	0,57	1,04
1978	31,47	22,54	35,07	20,70	1,09	11,79	0,57	1,06
1979	33,39	23,89	35,80	21,44	1,11	12,23	0,57	1,08
1980	32,55	23,53	34,83	20,82	1,13	11,92	0,57	1,08
1981	32,82	23,41	35,32	20,69	1,13	11,88	0,57	1,09
1982	27,65	20,15	31,94	18,74	1,08	10,68	0,57	1,09
1983	27,57	19,94	33,62	18,83	1,06	10,69	0,57	1,07
1984	30,86	22,02	36,13	20,09	1,10	11,42	0,57	1,07
1985	32,05	22,41	39,12	20,27	1,11	11,45	0,56	1,09
1986	33,08	22,57	41,68	20,92	1,08	11,88	0,57	1,08
1987	31,62	21,74	40,58	20,43	1,06	11,47	0,56	1,07
1988	32,09	22,20	39,33	20,85	1,06	11,77	0,56	1,07
1989	32,10	22,26	39,00	21,11	1,05	11,96	0,57	1,05
1990	34,14	23,83	37,87	23,92	1,00	14,20	0,59	1,01

Table 12 (cont'd)

	(1) Imports as a % of Business Sector Domestic Product	(2) Domestic Product in Imports as a % of Business Domestic Product	(3) "Imports" from Imports as a % of Domestic Product from Imports	(4) Employment in Imports as a % of Total Business Employment	(5) Labour Productivity in Imports Relative to Business Sector	(6) Direct Employment in Imports as a % of Total Employment	(7) Ratio: Direct to Total Employment in Imports	(8) Ratio: Returns to Labour in Imports vs. Business Sector
1991	34,54	23,99	39,38	24,84	0,97	14,75	0,59	1,01
1992	37,15	25,25	42,27	25,99	0,97	15,60	0,60	1,01
1993	42,59	28,45	44,89	28,64	0,99	18,51	0,65	n.a.
1994	46,32	30,46	47,25	29,91	1,02	21,06	0,70	n.a.
1995	47,72	31,24	47,94	30,30	1,03	22,40	0,74	n.a.
1996	47,54	30,93	48,87	30,47	1,01	22,78	0,75	n.a.
1997	52,37	33,51	51,50	32,69	1,03	24,90	0,76	n.a.







The Changing Industrial Mix of Imports: 24-Industry Aggregation

As with exports, we move now from examining aggregate to more disaggregated results and changes over time. Tables 13A and 13B show, at the 24-industry aggregation level, the employment attributable to imports as a share both of total import employment and of total employment, for 1961 and 1997. The table also shows the change in shares between the two years. Table 13A shows these shares in order by industry, while Table 13B shows the impacts sorted in order from largest increase in share of import employment to largest decrease. Table 13C shows the same impacts, but this time sorted from largest to smallest in terms of 1997 import employment as a percentage of total employment.

The figures in Tables 13A, B and C are interesting both in their absolute sizes in each year, and for changes over the 1961–97 period. In 1997, the first three industries in terms of share of total employment represented by “import replacement” employment were all in the services sector: Personal and other services, Business services, and Trade. Given that imports of services are not themselves a huge component of total imports, it can be seen that much, though not all, of the impact of these services is coming through indirect inputs into “import replacement”. The other industries accounting in their import replacement impacts for between 2 and 3 percent of total business sector employment are: Primary metals and metal fabricating (2.4 percent), Motor vehicles and parts (2.0 percent), and Electrical and electronic products (2.6 percent). Each of these industries, and the three service types mentioned, figure strongly in 1997 export employment also, indicating trade specialization within these industries leading to heavy two-way trade.

Examining changes from 1961 to 1997 more closely, we can see in Table 13B that, of the seven industry groups that increased their share of import employment by over one percentage point, four are service industries (Personal and other services, Business services, Trade, and Finance). The other three are various Manufacturing categories that might be expected given the Auto Pact and changing technology: Motor vehicles, Electrical and electronic products, and Rubber and plastic products. There are eight industries with declines in import employment shares of over one percentage point: the two largest are in primary production (Mining excluding oil and gas, and Agriculture, forestry and fishing). The others are all in manufacturing, and many indicate by their presence that the Canadian economy has increased its own domestic processing of raw materials over the years since 1961 — such as Primary metal, Refined petroleum products and chemicals, and Paper and allied products. Others also indicate a maturing of Canadian domestic manufacturing over the period that was able to (in relative terms) supplant imports — such as Machinery, and Other transport equipment.

Comparing the equivalent tables for exports and imports (Tables 3B and 13B), it is perhaps remarkable that the sectors with the largest increases and decreases in employment shares are virtually the same in each case: Personal and business services, and Trade at the top, and Mining and Agriculture and forestry at the bottom. *Both* Canadian exports and Canadian imports have become more intensive in service employment and less intensive in employment in production of raw materials.

An analysis of the changing industrial mix of imports at the disaggregated 161-industry classification level is provided in Appendix 5.

Table 13A Employment Shares, 1961 to 1997 – 24 Industry Groups

24-Industry Aggregation	1961		1997		Change 1961-97	
	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment
	S1. Agriculture, Forestry, Fishing and Trapping	13,92	2,29	3,69	1,21	-10,22
S2. Mining excluding Oil and Gas	5,18	0,85	1,08	0,35	-4,10	-0,50
S3. Crude Petroleum and Natural Gas	1,12	0,18	0,48	0,16	-0,64	-0,03
S4. Food, Beverages and Tobacco	2,83	0,47	2,13	0,70	-0,70	0,23
S5. Rubber and Plastic Products	1,44	0,24	3,03	0,99	1,58	0,75
S6. Leather, Textile and Clothing Products	7,88	1,30	5,81	1,90	-2,07	0,60
S7. Wood and Furniture Products	1,78	0,29	1,49	0,49	-0,29	0,19
S8. Paper and Allied Products and Printing	4,45	0,73	3,12	1,02	-1,32	0,29
S9. Primary Metals and Metal Fabricating	10,49	1,72	7,26	2,37	-3,23	0,65
S10. Machinery	6,31	1,04	5,16	1,69	-1,14	0,65
S11. Motor Vehicles and Parts	4,67	0,77	6,22	2,03	1,55	1,26
S12. Other Transportation Equipment	3,15	0,52	1,75	0,57	-140	0,06
S13. Electrical and Electronic Products	6,02	0,99	8,05	2,63	2,03	1,64
S14. Refined Petrol., Chemicals and Non-met.	5,61	0,92	3,36	1,10	-2,25	0,18
S15. Other Manufactured Products	3,95	0,65	4,40	1,44	0,46	0,79
S16. Construction	1,47	0,24	1,02	0,33	-0,45	0,09
S17. Transportation and Pipelines	4,51	0,74	4,26	1,39	-0,25	0,65
S18. Storage	0,17	0,03	0,13	0,04	-0,03	0,02
S19. Utilities	2,07	0,34	2,35	0,77	0,28	0,43
S20. Trade	5,85	0,96	8,85	2,89	2,99	1,93
S21. Finance, Insurance and Real Estate	2,03	0,33	4,13	1,35	2,11	1,02
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
S23. Business Services	3,13	0,51	10,33	3,38	7,20	2,86
S24. Personal and Other Services	1,97	0,32	11,88	3,88	9,90	3,56
TOTAL	100,00	16,44	100,00	32,69	-0,00	16,25

Table 13B Employment Shares, 1961 to 1997 – 24 Industry Groups – Sorted by Size of Change

24-Industry Aggregation	1961		1997		Change 1961–97	
	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment
	S24. Personal and Other Services	1,97	0,32	11,88	3,88	9,90
S23. Business Services	3,13	0,51	10,33	3,38	7,20	2,86
S20. Trade	5,85	0,96	8,85	2,89	2,99	1,93
S21. Finance, Insurance and Real Estate	2,03	0,33	4,13	1,35	2,11	1,02
S13. Electrical and Electronic Products	6,02	0,99	8,05	2,63	2,03	1,64
S5. Rubber and Plastic Products	1,44	0,24	3,03	0,99	1,58	0,75
S11. Motor Vehicles and Parts	4,67	0,77	6,,22	2,03	1,55	1,26
S15. Other Manufactured Products	3,95	0,65	4,40	1,44	0,46	0,79
S19. Utilities	2,07	0,34	2,35	0,77	0,28	0,43
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	00,0
S18. Storage	0,17	0,03	0,13	0,04	-0,03	0,02
S17. Transportation and Pipelines	4,51	0,74	4,26	1,39	-0,25	0,65
S7. Wood and Furniture Products	1,78	0,29	1,49	0,49	-0,29	0,19
S16. Construction	1,47	0,24	1,02	0,33	-0,45	0,09
S3. Crude Petroleum and Natural Gas	1,12	0,18	0,48	0,16	-0,64	-0,03
S4. Food, Beverages and Tobacco	2,83	0,47	2,13	0,70	-0,70	0,23
S10. Machinery	6,31	1,04	5,16	1,69	-1,14	0,65
S8. Paper and Allied Products and Printing	4,45	0,73	3,12	1,02	-1,32	0,29
S12. Other Transportation Equipment	3,15	0,52	1,75	0,57	-1,40	0,06
S6. Leather, Textile and Clothing Products	7,88	1,30	5,81	1,90	-2,07	0,60
S14. Refined Petrol., Chemicals and Non-met.	5,61	0,92	3,36	1,10	-2,25	0,18
S9. Primary Metals and Metal Fabricating	10,49	1,72	7,26	2,37	-3,23	0,65
S2. Mining excluding Oil and Gas	5,18	0,85	1,08	0,35	-4,10	-0,50
S1. Agriculture, Forestry, Fishing and Trapping	13,92	2,29	3,69	1,21	-10,22	-108
TOTAL	100,00	16,44	100,00	32,69	0,00	16,25

Table 13C Employment Shares: 1961 to 1997 – 24 Industry Groups – Sorted by Import Employment as a % of Total Employment

24-Industry Aggregation	1961		1997		Change 1961-97	
	Import Employment as a % of Total	Import Employment as a % of Total	Import Employment as a % of Total	Import Employment as a % of Total	Import Employment as a % of Total	Import Employment as a % of Total
	Import Employment	Import Employment	Import Employment	Import Employment	Import Employment	Import Employment
S24. Personal and Other Services	1,97	0,32	11,88	3,88	9,90	3,56
S23. Business Services	3,13	0,51	10,33	3,38	7,20	2,86
S20. Trade	5,85	0,96	8,85	2,89	2,99	1,93
S13. Electrical and Electronic Products	6,02	0,99	8,05	2,63	2,03	1,64
S9. Primary Metals and Metal Fabricating	10,49	1,72	7,26	2,37	-3,23	0,65
S11. Motor Vehicles and Parts	4,67	0,77	6,22	2,03	1,55	1,26
S6. Leather, Textile and Clothing Products	7,88	1,30	5,81	1,90	-2,07	0,60
S10. Machinery	6,31	1,04	5,16	1,69	-1,14	0,65
S15. Other Manufactured Products	3,95	0,65	4,40	1,44	0,46	0,79
S17. Transportation and Pipelines	4,51	0,74	4,26	1,39	-0,25	0,65
S21. Finance, Insurance and Real Estate	2,03	0,33	4,13	1,35	2,11	1,02
S1. Agriculture, Forestry, Fishing and Trapping	13,92	2,29	3,69	1,21	-10,22	-1,08
S14. Refined Petrol., Chemicals and Non-met.	5,61	0,92	3,36	1,10	-2,25	0,18
S8. Paper and Allied Products and Printing	4,45	0,73	3,12	1,02	-1,32	0,29
S5. Rubber and Plastic Products	1,44	0,24	3,03	0,99	1,58	0,75
S19. Utilities	2,07	0,34	2,35	0,77	0,28	0,43
S4. Food, Beverages and Tobacco	2,83	0,47	2,13	0,70	-0,70	0,23
S12. Other Transportation Equipment	3,15	0,52	1,75	0,57	-1,40	0,06
S7. Wood and Furniture Products	1,78	0,29	1,49	0,49	-0,29	0,19
S2. Mining excluding Oil and Gas	5,18	0,85	1,08	0,35	-4,10	-0,50
S16. Construction	1,47	0,24	1,02	0,33	-0,45	0,09
S3. Crude Petroleum and Natural Gas	1,12	0,18	0,48	0,16	-0,64	-0,03
S18. Storage	0,17	0,03	0,13	0,04	-0,03	0,02
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL	100,00	16,44	100,00	32,69	-0,00	16,25

Changes in Import Employment Impacts over Selected Sub-Periods

The summary and detail tables presented above cover very long time spans — either 1961–97 or 1961–92. It is also useful to select intermediate years and to examine import employment impacts in these years, noting how these impacts have changed over sub-periods. These results are presented in Tables 14A-D for the periods 1961–71, 1971–81, 1981–91, and 1991–97. The tables contain only the 24-industry aggregation, and are sorted by changes in import employment as a percentage of total import employment. Finally, a summary of the period-to-period changes is presented in Table 15.

Turning to the summary of period-to-period changes in Table 15, a number of observations are forthcoming: Agriculture, forestry and fishing, as was the case for exports, has lost “share” of import replacement employment in all sub-periods, but by far the biggest decline occurred in the 1960s. Thereafter, the pace of decline in this sector has been smaller and steadier but it apparently increased in the 1990s. Mining, on the other hand, has seen its share of import employment decline primarily in the 1960s and the 1990s. Relative import penetration in Food, beverages and tobacco occurred primarily in the 1960s, while the decline in import penetration for Leather, textile and clothing products happened through the 1960s and 1970s.

In Metals and machinery, there was a strong period of decline of relative import penetration in the 1980s. In the 1990s imports of Machinery have rebounded, partly fueled by very strong Machinery investment demand. In Motor vehicles and parts there was a large increase in import employment share in the 1960s under the Auto Pact. Since then the increase has been gradually whittled away by about half.

Interestingly, the increase in import employment share for Electrical and electronic products is not simply a recent phenomenon. Half of the share increase occurred in the 1960s and the share actually declined in the 1980s before rising again in the 1990s.

Finally, as noted before, the biggest increases in employment shares for imports are for the major services. However, this is not simply a recent development. The primary increases in import employment shares for Business services, for example, occurred in the 1960s and 1970s, and for Finance in the 1970s. For Trade (primarily wholesale trade) again the largest share gains were made in the 1960s and 1970s. For Personal services, however, there was a massive share increase in the 1980s, with some decline in the 1990s.

Decomposing Changes in the Employment Mix of Imports, 1961–97

As with exports, it is possible to decompose changes in import employment shares between two years into a number of components: (1) Changes in import shares, (2) Changes in the employment/output ratio, (3) Changes in input/output coefficients, and (4) Changes in import coefficients.

The decompositions have been performed over a number of different time spans and at both the 24-industry and 161-industry aggregations. Table 16A shows the decomposition of changes from 1961 through 1997 for the 24-industry aggregation, in numerical order, while Table 16B presents the same data, but sorted in order from largest positive to largest negative changes. The 161-industry decompositions are provided in Appendix 5. Finally, Tables 17A through 17D show 24-industry decompositions for the sub-periods 1961–71, 1971–81, 1981–91 and 1991–97 respectively.

Table 14A Employment Shares: 1961 to 1971 – 24 Industry Groups – Sorted by Size of Change

24-Industry Aggregation	1961		1971		Change 1961–71	
	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment
	S11. Motor Vehicles and Parts	4,67	0,77	8,39	1,52	3,72
S23. Business Services	3,13	0,51	5,76	1,04	2,63	0,53
S20. Trade	5,85	0,96	7,23	1,31	1,37	0,34
S13. Electrical and Electronic Products	6,02	0,99	7,27	1,31	1,25	0,32
S9. Primary Metals and Metal Fabricating	10,49	1,72	11,69	2,11	1,20	0,39
S21. Finance, Insurance and Real Estate	2,03	0,33	2,93	0,53	0,90	0,20
S24. Personal and Other Services	1,97	0,32	2,78	0,50	0,81	0,18
S5. Rubber and Plastic Products	1,44	0,24	2,07	0,37	0,63	0,14
S19. Utilities	2,07	0,34	2,39	0,43	0,32	0,09
S15. Other Manufactured Products	3,95	0,65	4,19	0,76	0,24	0,11
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
S18. Storage	0,17	0,03	0,13	0,02	-0,04	-0,00
S10. Machinery	6,31	1,04	6,15	1,11	-0,16	0,07
S16. Construction	1,47	0,24	1,15	0,21	-0,32	-0,03
S8. Paper and Allied Products and Printing	4,45	0,73	4,09	0,74	-0,36	0,01
S3. Crude Petroleum and Natural Gas	1,12	0,18	0,74	0,13	-0,38	-0,05
S14. Refined Petrol., Chemicals and Non-met.	5,61	0,92	5,21	0,94	-0,40	0,02
S7. Wood and Furniture Products	1,78	0,29	1,37	0,25	-0,41	-0,05
S6. Leather, Textile and Clothing Products	7,88	1,30	7,38	1,33	-0,50	0,04
S17. Transportation and Pipelines	4,51	0,74	3,95	0,71	-0,55	-0,03
S4. Food, Beverages and Tobacco	2,83	0,47	2,13	0,39	-0,70	-0,08
S12. Other Transportation Equipment	3,15	0,52	2,12	0,38	-1,03	-0,13
S2. Mining excluding Oil and Gas	5,18	0,85	3,06	0,55	-2,12	-0,30
S1. Agriculture, Forestry, Fishing and Trapping	13,92	2,29	7,81	1,41	-6,11	-0,88
TOTAL	100,00	16,44	100,00	18,07	-0,00	1,63

Table 14B Employment Shares: 1971 to 1981 – 24 Industry Groups – Sorted by Size of Change

24-Industry Aggregation	1971		1981		Change 1971–81	
	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment
S23. Business Services	5,76	1,04	9,24	1,91	3,48	0,87
S21. Finance, Insurance and Real Estate	2,93	0,53	4,21	0,87	1,28	0,34
S24. Personal and Other Services	2,78	0,50	4,06	0,84	1,28	0,34
S20. Trade	7,23	1,31	8,23	1,70	1,00	0,40
S12. Other Transportation Equipment	2,12	0,38	2,66	0,55	0,54	0,17
S3. Crude Petroleum and Natural Gas	0,74	0,13	1,07	0,22	0,33	0,09
S10. Machinery	6,15	1,11	6,44	1,33	0,29	0,22
S13. Electrical and Electronic Products	7,27	1,31	7,54	1,56	0,27	0,25
S19. Utilities	2,39	0,43	2,59	0,54	0,21	0,11
S7. Wood and Furniture Products	1,37	0,25	1,46	0,30	0,10	0,06
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
S18. Storage	0,13	0,02	0,13	0,03	-0,00	0,00
S5. Rubber and Plastic Products	2,07	0,37	2,05	0,42	-0,02	0,05
S16. Construction	1,15	0,21	1,10	0,23	-0,05	0,02
S4. Food, Beverages and Tobacco	2,13	0,39	2,00	0,41	-0,14	0,03
S17. Transportation and Pipelines	3,95	0,71	3,68	0,76	-0,28	0,05
S15. Other Manufactured Products	4,19	0,76	3,85	0,80	-0,34	0,04
S11. Motor Vehicles and Parts	8,39	1,52	7,77	1,61	-0,62	0,09
S2. Mining excluding Oil and Gas	3,06	0,55	2,37	0,49	-0,69	-0,06
S8. Paper and Allied Products and Printing	4,09	0,74	3,35	0,69	-0,74	-0,05
S14. Refined Petrol., Chemicals and Non-met.	5,21	0,94	4,05	0,84	-1,16	-0,10
S9. Primary Metals and Metal Fabricating	11,69	2,11	10,29	2,13	-1,40	0,02
S6. Leather, Textile and Clothing Products	7,38	1,33	5,73	1,18	-1,66	-0,15
S1. Agriculture, Forestry, Fishing and Trapping	7,81	1,41	6,12	1,27	-1,69	-0,14
TOTAL	100,00	18,07	100,00	20,69	0,00	2,62

Table 14C Employment Shares: 1981 to 1991 – 24 Industry Groups – Sorted by Size of Change

24-Industry Aggregation	1981		1991		Change 1981-91	
	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment
	S24. Personal and Other Services	4,06	0,84	13,18	3,27	9,12
S17. Transportation and Pipelines	3,68	0,76	4,12	1,02	0,44	0,26
S5. Rubber and Plastic Products	2,05	0,42	2,40	0,60	0,35	0,17
S7. Wood and Furniture Products	1,46	0,30	1,73	0,43	0,27	0,13
S21. Finance, Insurance and Real Estate	4,21	0,87	4,47	1,11	0,26	0,24
S8. Paper and Allied Products and Printing	3,35	0,69	3,54	0,88	0,20	0,19
S4. Food, Beverages and Tobacco	2,00	0,41	2,17	0,54	0,18	0,13
S6. Leather, Textile and Clothing Products	5,73	1,18	5,86	1,46	0,13	0,27
S23. Business Services	9,24	1,91	9,25	2,30	0,01	0,39
S20. Trade	8,23	1,70	8,24	2,05	0,01	0,34
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
S18. Storage	0,13	0,03	0,10	0,03	-0,02	-0,00
S15. Other Manufactured Products	3,85	0,80	3,76	0,93	-0,09	0,14
S19. Utilities	2,59	0,54	2,40	0,60	-0,20	0,06
S16. Construction	1,10	0,23	0,90	0,22	-0,21	-0,01
S3. Crude Petroleum and Natural Gas	1,07	0,22	0,64	0,16	-0,43	-0,06
S14. Refined Petrol., Chemicals and Non-met.	4,05	0,84	3,60	0,90	-0,45	0,06
S1. Agriculture, Forestry, Fishing and Trapping	6,12	1,27	5,49	1,36	-0,63	0,10
S13. Electrical and Electronic Products	7,54	1,56	6,77	1,68	-0,76	0,12
S12. Other Transportation Equipment	2,66	0,55	1,56	0,39	-1,10	-0,16
S11. Motor Vehicles and Parts	7,77	1,61	6,67	1,66	-1,10	0,05
S2. Mining excluding Oil and Gas	2,37	0,49	1,15	0,29	-1,22	-0,21
S10. Machinery	6,44	1,33	4,11	1,02	-2,33	-0,31
S9. Primary Metals and Metal Fabricating	10,29	2,13	7,87	1,95	-2,42	-0,17
TOTAL	100,00	20,69	100,00	24,84	0,00	4,15

Table 14D Employment Shares: 1991 to 1997 – 24 Industry Groups – Sorted by Size of Change

24-Industry Aggregation	1991		1997		Change 1991–97	
	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment
	S13. Electrical and Electronic Products	6,77	1,68	8,05	2,63	1,28
S23. Business Services	9,25	2,30	10,33	3,38	1,08	1,08
S10. Machinery	4,11	1,02	5,16	1,69	1,05	0,67
S15. Other Manufactured Products	3,76	0,93	4,40	1,44	0,65	0,51
S5. Rubber and Plastic Products	2,40	0,60	3,03	0,99	0,63	0,39
S20. Trade	8,24	2,05	8,85	2,89	0,61	0,85
S12. Other Transportation Equipment	1,56	0,39	1,75	0,57	0,19	0,18
S17. Transportation and Pipelines	4,12	1,02	4,26	1,39	0,14	0,37
S16. Construction	0,90	0,22	1,02	0,33	0,13	0,11
S18. Storage	0,10	0,03	0,13	0,04	0,03	0,02
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
S4. Food, Beverages and Tobacco	2,17	0,54	2,13	0,70	-0,04	0,16
S6. Leather, Textile and Clothing Products	5,86	1,46	5,81	1,90	-0,04	0,45
S19. Utilities	2,40	0,60	2,35	0,77	-0,05	0,17
S2. Mining excluding Oil and Gas	1,15	0,29	1,08	0,35	-0,07	0,07
S3. Crude Petroleum and Natural Gas	0,64	0,16	0,48	0,16	-0,17	-0,00
S7. Wood and Furniture Products	1,73	0,43	1,49	0,49	-0,24	0,06
S14. Refined Petrol., Chemicals and Non-met.	3,60	0,90	3,36	1,10	-0,25	0,20
S21. Finance, Insurance and Real Estate	4,47	1,11	4,13	1,35	-0,34	0,24
S8. Paper and Allied Products and Printing	3,54	0,88	3,12	1,02	-0,42	0,14
S11. Motor Vehicles and Parts	6,67	1,66	6,22	2,03	-0,45	0,38
S9. Primary Metals and Metal Fabricating	7,87	1,95	7,26	2,37	-0,61	0,42
S24. Personal and Other Services	13,18	3,27	11,88	3,88	-1,30	0,61
S1. Agriculture, Forestry, Fishing and Trapping	5,49	1,36	3,69	1,21	-1,80	-0,16
TOTAL	100,00	24,84	100,00	32,69	-0,00	7,85

Table 15 Employment Shares: Changes from 1961 to 1997 – 24 Industry Groups

Import Employment as a % of Total Import Employment					
24-Industry Aggregation	1961–97	1961–71	1971–81	1981–91	1991–97
S1. Agriculture, Forestry, Fishing and Trapping	-10,2	-6,1	-1,7	-0,6	-1,8
S2. Mining excluding Oil and Gas	-4,1	-2,1	-0,7	-1,2	-0,1
S3. Crude Petroleum and Natural Gas	-0,6	-0,4	0,3	-0,4	-0,2
S4. Food, Beverages and Tobacco	-0,7	-0,7	-0,1	0,2	-0,0
S5. Rubber and Plastic Products	1,6	0,6	-0,0	0,3	0,6
S6. Leather, Textile and Clothing Products	-2,1	-0,5	-1,7	0,1	-0,0
S7. Wood and Furniture Products	-0,3	-0,4	0,1	0,3	-0,2
S8. Paper and Allied Products and Printing	-1,3	-0,4	-0,7	0,2	-0,4
S9. Primary Metals and Metal Fabricating	-3,2	1,2	-1,4	-2,4	-0,6
S10. Machinery	-1,1	-0,2	0,3	-2,3	1,1
S11. Motor Vehicles and Parts	1,5	3,7	-0,6	-1,1	-0,5
S12. Other Transportation Equipment	-1,4	-1,0	0,5	-1,1	0,2
S13. Electrical and Electronic Products	2,0	1,3	0,3	-0,8	1,3
S14. Refined Petrol., Chemicals and Non-met.	-2,2	-0,4	-1,2	-0,4	-0,2
S15. Other Manufactured Products	0,5	0,2	-0,3	-0,1	0,6
S16. Construction	-0,4	-0,3	-0,0	-0,2	0,1
S17. Transportation and Pipelines	-0,3	-0,6	-0,3	0,4	0,1
S18. Storage	-0,0	-0,0	-0,0	-0,0	0,0
S19. Utilities	0,3	0,3	0,2	-0,2	-0,1
S20. Trade	3,0	1,4	1,0	0,0	0,6
S21. Finance, Insurance and Real Estate	2,1	0,9	1,3	0,3	-0,3
S22. Gov't Royalties and Owner Occ. Dwell.	0,0	0,0	0,0	0,0	0,0
S23. Business Services	7,2	2,6	3,5	0,0	1,1
S24. Personal and Other Services	9,9	0,8	1,3	9,1	-1,3

Table 16A Decomposition of Changes in Employment Shares: 1961 to 1997 – 24 Industries

	1961	1997	Change 1961-97	Due to:				
	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Change in Import Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Inter- action
	S1. Agriculture, Forestry, Fishing and Trapping	13,92	3,69	-10,22	-5,10	-0,64	0,30	-3,08
S2. Mining excluding Oil and Gas	5,18	1,08	-4,10	-1,22	-0,09	-0,10	-0,89	-1,80
S3. Crude Petroleum and Natural Gas	1,12	0,48	-0,64	-0,42	0,01	0,03	-0,26	-0,00
S4. Food, Beverages and Tobacco	2,83	2,13	-0,70	-1,19	-0,21	0,11	-0,01	0,60
S5. Rubber and Plastic Products	1,44	3,03	1,58	1,20	0,03	-0,29	0,46	0,18
S6. Leather, Textile and Clothing Products	7,88	5,81	-2,07	-1,72	-0,58	-0,02	0,64	-0,38
S7. Wood and Furniture Products	1,78	1,49	-0,29	-0,05	-0,19	0,06	-0,18	0,06
S8. Paper and Allied Products and Printing	4,45	3,12	-1,32	-0,82	-0,79	-0,04	-0,20	0,53
S9. Primary Metals and Metal Fabricating	10,49	7,26	-3,23	-2,00	-0,88	-0,90	-0,56	1,11
S10. Machinery	6,31	5,16	-1,14	-1,33	-0,39	0,19	-0,28	0,67
S11. Motor Vehicles and Parts	4,67	6,22	1,55	2,71	-0,33	-0,02	-2,92	2,11
S12. Other Transportation Equipment	3,15	1,75	-1,40	-0,83	-0,15	-0,15	-0,46	0,19
S13. Electrical and Electronic Products	6,02	8,05	2,03	3,73	1,18	0,37	-3,41	0,16
S14. Refined Petrol., Chemicals and Non-met.	5,61	3,36	-2,25	-0,83	-0,26	-0,20	-1,46	0,50
S15. Other Manufactured Products	3,95	4,40	0,46	-0,16	-0,17	0,09	0,48	0,22
S16. Construction	1,47	1,02	-0,45	-0,20	-0,40	-0,04	-0,05	0,25
S17. Transportation and Pipelines	4,51	4,26	-0,25	0,71	-0,31	-0,22	0,11	-0,54
S18. Storage	0,17	0,13	-0,03	-0,05	-0,15	-0,00	0,06	0,11
S19. Utilities	2,07	2,35	0,28	-0,06	0,60	-0,10	-0,88	0,71
S20. Trade	5,85	8,85	2,99	-0,64	-0,19	-0,37	2,48	1,72
S21. Finance, Insurance and Real Estate	2,03	4,13	2,11	0,51	0,67	-0,01	0,41	0,54
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
S23. Business Services	3,13	10,33	7,20	1,47	3,04	1,02	3,61	-1,94
S24. Personal and Other Services	1,97	11,88	9,90	6,31	0,18	0,31	6,39	-3,29
TOTAL	100,00	100,00	-0,00	0,00	-0,00	-0,00	0,00	0,00

Table 16B Decomposition of Changes in Employment Shares: 1961 to 1997 – 24 Industries

Sorted by Size of Change	1961	1997	Change 1961–97	Due to:				
	Import Employ't as a % of Total	Import Employ't as a % of Total	Import Employ't as a % of Total	Change in Import Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Inter- action
	Import Employ't	Import Employ't	Import Employ't					
S24. Personal and Other Services	1,97	11,88	9,90	6,31	0,18	0,31	6,39	-3,29
S23. Business Services	3,13	10,33	7,20	1,47	3,04	1,02	3,61	-1,94
S20. Trade	5,85	8,85	2,99	-0,64	-0,19	-0,37	2,48	1,72
S21. Finance, Insurance and Real Estate	2,03	4,13	2,11	0,51	0,67	-0,01	0,41	0,54
S13. Electrical and Electronic Products	6,02	8,05	2,03	3,73	1,18	0,37	-3,41	0,16
S5. Rubber and Plastic Products	1,44	3,03	1,58	1,20	0,03	-0,29	0,46	0,18
S11. Motor Vehicles and Parts	4,67	6,22	1,55	2,71	-0,33	-0,02	-2,92	2,11
S15. Other Manufactured Products	3,95	4,40	0,46	-0,16	-0,17	0,09	0,48	0,22
S19. Utilities	2,07	2,35	0,28	-0,06	0,60	-0,10	-0,88	0,71
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
S18. Storage	0,17	0,13	-0,03	-0,05	-0,15	-0,00	0,06	0,11
S17. Transportation and Pipelines	4,51	4,26	-0,25	0,71	-0,31	-0,22	0,11	-0,54
S7. Wood and Furniture Products	1,78	1,49	-0,29	-0,05	-0,19	0,06	-0,18	0,06
S16. Construction	1,47	1,02	-0,45	-0,20	-0,40	-0,04	-0,05	0,25
S3. Crude Petroleum and Natural Gas	1,12	0,48	-0,64	-0,42	0,01	0,03	-0,26	-0,00
S4. Food, Beverages and Tobacco	2,83	2,13	-0,70	-1,19	-0,21	0,11	-0,01	0,60
S10. Machinery	6,31	5,16	-1,14	-1,33	-0,39	0,19	-0,28	0,67
S8. Paper and Allied Products and Printing	4,45	3,12	-1,32	-0,82	-0,79	-0,04	-0,20	0,53
S12. Other Transportation Equipment	3,15	1,75	-1,40	-0,83	-0,15	-0,15	-0,46	0,19
S6. Leather, Textile and Clothing Products	7,88	5,81	-2,07	-1,72	-0,58	-0,02	0,64	-0,38
S14. Refined Petrol., Chemicals and Non-met.	5,61	3,36	-2,25	-0,83	-0,26	-0,20	-1,46	0,50
S9. Primary Metals and Metal Fabricating	10,49	7,26	-3,23	-2,00	-0,88	-0,90	-0,56	1,11
S2. Mining excluding Oil and Gas	5,18	1,08	-4,10	-1,22	-0,09	-0,10	-0,89	-1,80
S1. Agriculture, Forestry, Fishing and Trapping	13,92	3,69	-10,22	-5,10	-0,64	0,30	-3,08	-1,70
TOTAL	100,00	100,00	-0,00	0,00	-0,00	-0,00	0,00	0,00

Table 17A Decomposition of Changes in Employment Shares: 1961 to 1971 – 24 Industries

Sorted by Size of Change	1961	1971	Change 1961-71	Due to:				
	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Change in Import Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Inter- action
	S11. Motor Vehicles and Parts	4,67	8,39	3,72	4,76	0,03	-0,63	-1,87
S23. Business Services	3,13	5,76	2,63	0,97	1,09	0,30	0,99	-0,72
S20. Trade	5,85	7,23	1,37	0,43	-0,09	-0,05	0,90	0,19
S13. Electrical and Electronic Products	6,02	7,27	1,25	0,80	0,02	-0,18	0,59	0,02
S9. Primary Metals and Metal Fabricating	10,49	11,69	1,20	0,43	0,04	-0,19	0,74	0,18
S21. Finance, Insurance and Real Estate	2,03	2,93	0,90	0,37	0,22	0,01	0,36	-0,07
S24. Personal and Other Services	1,97	2,78	0,81	0,21	-0,01	0,02	0,65	-0,06
S5. Rubber and Plastic Products	1,44	2,07	0,63	0,51	0,12	-0,02	0,05	-0,04
S19. Utilities	2,07	2,39	0,32	0,06	0,11	0,01	0,07	0,06
S15. Other Manufactured Products	3,95	4,19	0,24	0,18	0,02	0,04	0,05	-0,05
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
S18. Storage	0,17	0,13	-0,04	-0,02	-0,03	0,00	0,01	0,01
S10. Machinery	6,31	6,15	-0,16	0,09	0,05	0,11	-0,37	-0,04
S16. Construction	1,47	1,15	-0,32	-0,11	-0,13	0,02	-0,19	0,09
S8. Paper and Allied Products and Printing	4,45	4,09	-0,36	-0,50	-0,45	0,06	0,39	0,14
S3. Crude Petroleum and Natural Gas	1,12	0,74	-0,38	-0,24	0,01	0,03	-0,15	-0,03
S14. Refined Petrol., Chemicals and Non-met.	5,61	5,21	-0,40	-0,69	-0,20	0,07	0,34	0,09
S7. Wood and Furniture Products	1,78	1,37	-0,41	-0,35	-0,03	0,04	-0,06	-0,00
S6. Leather, Textile and Clothing Products	7,88	7,38	-0,50	-0,80	-0,13	0,09	0,25	0,10
S17. Transportation and Pipelines	4,51	3,95	-0,55	-0,06	-0,16	0,02	-0,40	0,04
S4. Food, Beverages and Tobacco	2,83	2,13	-0,70	-0,92	-0,04	0,06	0,11	0,09
S12. Other Transportation Equipment	3,15	2,12	-1,03	-1,00	-0,03	-0,04	-0,07	0,11
S2. Mining excluding Oil and Gas	5,18	3,06	-2,12	-0,87	0,12	0,00	-0,71	-0,66
S1. Agriculture, Forestry, Fishing and Trapping	13,92	7,81	-6,11	-3,27	-0,53	0,24	-1,68	-0,87

Table 17B Decomposition of Changes in Employment Shares: 1971 to 1981 – 24 Industries

Sorted by Size of Change	1971	1981	Change 1971-81	Due to:				
	Import Employ't as a % of Total	Import Employ't as a % of Total	Import Employ't as a % of Total	Change in Import Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Inter- action
	Import Employ't	Import Employ't	Import Employ't					
S23. Business Services	5,76	9,24	3,48	0,81	0,53	0,15	2,26	-0,27
S21. Finance, Insurance and Real Estate	2,93	4,21	1,28	0,33	0,10	0,03	0,94	-0,12
S24. Personal and Other Services	2,78	4,06	1,28	-0,09	0,21	0,06	1,19	-0,10
S20. Trade	7,23	8,23	1,00	0,32	-0,52	-0,05	1,31	-0,07
S12. Other Transportation Equipment	2,12	2,66	0,54	0,68	0,02	0,06	-0,36	0,14
S3. Crude Petroleum and Natural Gas	0,74	1,07	0,33	0,51	0,12	0,04	-0,74	0,40
S10. Machinery	6,15	6,44	0,29	0,37	0,11	0,11	-0,19	-0,10
S13. Electrical and Electronic Products	7,27	7,54	0,27	0,94	0,04	-0,13	-0,63	0,04
S19. Utilities	2,39	2,59	0,21	0,06	0,04	0,01	0,07	0,03
S7. Wood and Furniture Products	1,37	1,46	0,10	0,16	-0,01	0,01	-0,02	-0,04
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
S18. Storage	0,13	0,13	-0,00	-0,00	-0,04	0,00	0,03	0,01
S5. Rubber and Plastic Products	2,07	2,05	-0,02	-0,10	0,03	0,00	0,04	0,01
S16. Construction	1,15	1,10	-0,05	0,15	-0,17	0,00	-0,14	0,12
S4. Food, Beverages and Tobacco	2,13	2,00	-0,14	-0,09	0,05	0,04	-0,10	-0,03
S17. Transportation and Pipelines	3,95	3,68	-0,28	-0,09	-0,31	-0,01	0,25	-0,12
S15. Other Manufactured Products	4,19	3,85	-0,34	-0,45	0,05	0,03	-0,02	0,03
S11. Motor Vehicles and Parts	8,39	7,77	-0,62	-1,96	0,01	-0,08	1,25	0,15
S2. Mining excluding Oil and Gas	3,06	2,37	-0,69	0,56	-0,19	-0,19	-1,40	0,54
S8. Paper and Allied Products and Printing	4,09	3,35	-0,74	-0,35	-0,09	0,03	-0,29	-0,03
S14. Refined Petrol., Chemicals and Non-met.	5,21	4,05	-1,16	-0,34	0,31	0,13	-1,49	0,24
S9. Primary Metals and Metal Fabricating	11,69	10,29	-1,40	-0,05	-0,15	-0,43	-0,49	-0,28
S6. Leather, Textile and Clothing Products	7,38	5,73	-1,66	-1,09	-0,21	0,09	-0,14	-0,31
S1. Agriculture, Forestry, Fishing and Trapping	7,81	6,12	-1,69	-0,28	0,06	0,10	-1,32	-0,24

Table 17C Decomposition of Changes in Employment Shares: 1981 to 1991 – 24 Industries

Sorted by Size of Change	1981	1991	Change 1981-91	Due to:				
	Import Employ't as a % of Total	Import Employ't as a % of Total	Import Employ't as a % of Total	Change in Import Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Inter- action
	Import Employ't	Import Employ't	Import Employ't					
S24. Personal and Other Services	4,06	13,18	9,12	8,40	0,08	-0,12	1,19	-0,43
S17. Transportation and Pipelines	3,68	4,12	0,44	1,03	-0,15	-0,13	-0,30	-0,02
S5. Rubber and Plastic Products	2,05	2,40	0,35	0,19	0,02	-0,11	0,38	-0,12
S7. Wood and Furniture Products	1,46	1,73	0,27	0,35	-0,08	-0,00	0,15	-0,15
S21. Finance, Insurance and Real Estate	4,21	4,47	0,26	0,30	0,71	0,01	-1,09	0,34
S8. Paper and Allied Products and Printing	3,35	3,54	0,20	0,54	-0,17	-0,10	0,05	-0,12
S4. Food, Beverages and Tobacco	2,00	2,17	0,18	0,30	-0,15	-0,01	0,05	-0,01
S6. Leather, Textile and Clothing Products	5,73	5,86	0,13	0,35	-0,28	-0,14	0,44	-0,25
S23. Business Services	9,24	9,25	0,01	-0,25	0,83	0,28	-0,78	-0,06
S20. Trade	8,23	8,24	0,01	-1,18	0,94	0,04	0,14	0,07
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
S18. Storage	0,13	0,10	-0,02	-0,01	-0,02	-0,00	0,01	-0,00
S15. Other Manufactured Products	3,85	3,76	-0,09	-0,18	-0,18	-0,02	0,39	-0,10
S19. Utilities	2,59	2,40	-0,20	-0,03	0,40	-0,02	-0,70	0,16
S16. Construction	1,10	0,90	-0,21	-0,18	-0,11	-0,00	0,13	-0,05
S3. Crude Petroleum and Natural Gas	1,07	0,64	-0,43	-1,08	-0,17	0,04	0,29	0,50
S14. Refined Petrol., Chemicals and Non-met.	4,05	3,60	-0,45	-0,01	-0,27	-0,19	0,11	-0,09
S1. Agriculture, Forestry, Fishing and Trapping	6,12	5,49	-0,63	-1,38	-0,25	0,10	0,68	0,22
S13. Electrical and Electronic Products	7,54	6,77	-0,76	1,28	0,01	-0,34	-2,08	0,36
S12. Other Transportation Equipment	2,66	1,56	-1,10	-0,82	-0,03	0,05	-0,08	-0,21
S11. Motor Vehicles and Parts	7,77	6,67	-1,10	-0,34	-0,19	0,48	-0,67	-0,39
S2. Mining excluding Oil and Gas	2,37	1,15	-1,22	-1,32	-0,10	0,14	0,01	0,05
S10. Machinery	6,44	4,11	-2,33	-3,22	-0,23	0,04	0,65	0,43
S9. Primary Metals and Metal Fabricating	10,29	7,87	-2,42	-2,74	-0,58	0,01	1,03	-0,14

Table 17D Decomposition of Changes in Employment Shares: 1991 to 1997 – 24 Industries

Sorted by Size of Change	1991	1997	Change 1991-97	Due to:				
	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Change in Import Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
	S13. Electrical and Electronic Products	677	8,05	1,28	2,44	1,39	1,30	0,18
S23. Business Services	9,25	10,33	1,08	-0,30	-0,00	-0,07	1,06	0,39
S10. Machinery	4,11	5,16	1,05	1,34	-0,09	-0,02	-0,48	0,30
S15. Other Manufactured Products	3,76	4,40	0,65	0,58	0,10	0,07	0,29	-0,39
S5. Rubber and Plastic Products	2,40	3,03	0,63	0,66	-0,04	-0,23	0,17	0,06
S20. Trade	8,24	8,85	0,61	0,00	-0,27	-0,17	0,67	0,37
S12. Other Transportation Equipment	1,56	1,75	0,19	0,29	-0,03	-0,15	-0,02	0,10
S17. Transportation and Pipelines	4,12	4,26	0,14	-0,32	-0,06	-0,10	0,38	0,24
S16. Construction	0,90	1,02	0,13	-0,01	-0,01	-0,04	0,14	0,05
S18. Storage	0,10	0,13	0,03	-0,00	-0,00	-0,00	0,03	0,01
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
S4. Food, Beverages and Tobacco	2,17	2,13	-0,04	-0,23	-0,01	0,03	0,08	0,09
S6. Leather, Textile and Clothing Products	5,86	5,81	-0,04	-0,52	-0,12	-0,11	0,43	0,26
S19. Utilities	2,40	2,35	-0,05	0,02	0,02	-0,06	-0,13	0,09
S2. Mining excluding Oil and Gas	1,15	1,08	-0,07	0,07	-0,02	-0,12	-0,05	0,05
S3. Crude Petroleum and Natural Gas	0,64	0,48	-0,17	0,00	-0,00	-0,04	-0,14	0,02
S7. Wood and Furniture Products	1,73	1,49	-0,24	-0,09	-0,04	0,01	-0,15	0,03
S14. Refined Petrol., Chemicals and Non-met.	3,60	3,36	-0,25	0,26	-0,04	-0,17	-0,50	0,21
S21. Finance, Insurance and Real Estate	4,47	4,13	-0,34	-0,37	-0,26	-0,05	0,13	0,21
S8. Paper and Allied Products and Printing	3,54	3,12	-0,42	-0,33	-0,12	-0,04	-0,08	0,16
S11. Motor Vehicles and Parts	6,67	6,22	-0,45	0,57	-0,09	0,14	-1,37	0,29
S9. Primary Metals and Metal Fabricating	7,87	7,26	-0,61	0,80	-0,14	-0,43	-1,28	0,45
S24. Personal and Other Services	13,18	11,88	-1,30	-4,20	-0,11	0,17	1,73	1,10
S1. Agriculture, Forestry, Fishing and Trapping	5,49	3,69	-1,80	-0,67	-0,07	0,08	-1,10	-0,03

We will discuss primarily the results in Table 16B, for 1961–97 at the 24-industry aggregation. Not surprisingly, there are many similarities between this table and the equivalent one for export employment shares (Table 6B). This is partly because 1961–97 changes in employment/output ratios, input/output coefficients and Import coefficients are the same between these two years, whether we are analyzing exports or imports. Only the first component of the decomposition — the import share in this case — will differ. Of course, the numerical results are not identical for the other columns because of different aggregation weights and different interactions with the export or import shares.

For the sectors showing large changes in employment share the primary sources, as for exports, are the import shares themselves and the import coefficients. Changes in relative employment/output ratios and in input/output coefficients are generally much less important.

There are, however, several exceptions: Changes in the employment/output ratio are important components of overall import employment shares for Business services, Electrical and electronic products, and Paper and primary metals. Changes in I/O coefficients are important for Business services again, and Primary metals.

For the remaining sectors there are a variety of patterns of influence. Sometimes the import shares and import coefficients reinforce each other in effect and sometimes they offset.

The Changing Skill Mix of Canadian Imports

As for exports, we can now apply educational shares by industry to the employment impacts generated above to get some idea of the (Canadian) educational mix of the employment that imports are “displacing”. Also as for exports, the results for years outside the range 1986–91 must be considered as illustrative only, and reflect only changes in the mix of employment by sector and not any changes in educational mix within industries themselves.

See the section entitled The Changing Skill Mix of Canadian Exports above for a further description of the basic COPS data and for listing of educational shares by the 112 industries available at the most detailed disaggregation. These data have been aggregated to the 24-industry level using import employment weights in Tables 18A and 18B for 1991 and 1986 respectively.

Table 19A reports on the calculated educational shares for imports, while Table 10B above in Section 4 shows the corresponding educational shares for the business sector as a whole. The series in Table 19A are plotted in Figure 21.

As with exports, the critical concern is not with the absolute educational shares of imports over 1961–97, but with how these compare to the economy as a whole. The ratios of import education shares to those of the total business sector are shown in Table 19B and the series in that table are plotted in Figures 22 and 23. These will be reviewed on their own and compared with the results for exports as presented in Table 10C and Figures 11 and 12.

Table 19B and Figures 22 and 23 are fairly unequivocal in showing that, over the entire time span, Canadian imports have been — at least by Canadian technology and education shares by sector — *above* the business-sector average in overall education content. In recent years, however, there are strong signs that the discrepancy with respect to the average education level of Canadian output is narrowing. This

indicates relatively greater displacement of lower skill Canadian employment by imports in more recent years, but the average for imports remains above Canadian average skill levels.

As can be seen from Figure 22, import employment has had a share of employees having only secondary education that is only about .95 of the business sector total almost continually since 1961. During most of the period since 1961 the share of “import” employees having no secondary diploma has also been somewhat below that of the total business sector; however, in about 1990 this ratio shifted such that “import” employees had just above the total business sector average share of no secondary. In the same year this a shift in the relative share of trade school education — with import employment moving from just above to just below the business-sector average. As can be seen from Figures 23, import employment has invariably had shares of post-secondary education of all kinds above the total business-sector average. However, each type has converged toward the business sector average starting in the late 1980s.

Table 18A Import Education/Skill Shares, 1991 – 24 Industries (Import Employment Weights)

24-Industry Aggregation	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post- Graduate Degrees
S1. Agriculture, Forestry, Fishing and Trapping	0,53	0,21	0,10	0,08	0,05	0,02
S2. Mining excluding Oil and Gas	0,38	0,20	0,23	0,11	0,06	0,02
S3. Crude Petroleum and Natural Gas	0,14	0,21	0,17	0,18	0,23	0,07
S4. Food, Beverages and Tobacco	0,44	0,26	0,12	0,09	0,07	0,02
S5. Rubber and Plastic Products	0,41	0,27	0,14	0,11	0,06	0,02
S6. Leather, Textile and Clothing Products	0,53	0,25	0,09	0,07	0,05	0,01
S7. Wood and Furniture Products	0,45	0,25	0,15	0,09	0,04	0,01
S8. Paper and Allied Products and Printing	0,30	0,30	0,15	0,14	0,10	0,02
S9. Primary Metals and Metal Fabricating	0,34	0,23	0,23	0,12	0,06	0,01
S10. Machinery	0,29	0,23	0,22	0,16	0,08	0,02
S11. Motor Vehicles and Parts	0,42	0,26	0,14	0,10	0,06	0,01
S12. Other Transportation Equipment	0,22	0,21	0,23	0,19	0,11	0,03
S13. Electrical and Electronic Products	0,25	0,24	0,12	0,19	0,15	0,05
S14. Refined Petrol., Chemicals and Non-met.	0,28	0,27	0,14	0,14	0,13	0,04
S15. Other Manufactured Products	0,33	0,27	0,13	0,15	0,09	0,02
S16. Construction	0,37	0,23	0,25	0,10	0,05	0,01
S17. Transportation and Pipelines	0,38	0,26	0,16	0,12	0,06	0,01
S18. Storage	0,38	0,33	0,12	0,09	0,05	0,02
S19. Utilities	0,19	0,30	0,16	0,19	0,12	0,03
S20. Trade	0,32	0,32	0,13	0,13	0,08	0,02
S21. Finance, Insurance and Real Estate	0,16	0,34	0,10	0,19	0,17	0,04
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
S23. Business Services	0,12	0,22	0,09	0,20	0,26	0,11
S24. Personal and Other Services	0,40	0,30	0,09	0,11	0,08	0,03
TOTAL	0,33	0,26	0,14	0,13	0,10	0,03

Table 18B Import Education/Skill Shares: 1986 – 24 Industries (Import Employment Weights)

24-Industry Aggregation	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post- Graduate Degrees
S1. Agriculture, Forestry, Fishing and Trapping	0,58	0,20	0,08	0,07	0,05	0,01
S2. Mining excluding Oil and Gas	0,41	0,20	0,22	0,09	0,06	0,01
S3. Crude Petroleum and Natural Gas	0,16	0,23	0,14	0,17	0,24	0,06
S4. Food, Beverages and Tobacco	0,49	0,24	0,10	0,08	0,07	0,01
S5. Rubber and Plastic Products	0,44	0,28	0,13	0,09	0,06	0,01
S6. Leather, Textile and Clothing Products	0,57	0,24	0,08	0,06	0,04	0,01
S7. Wood and Furniture Products	0,51	0,24	0,14	0,07	0,03	0,01
S8. Paper and Allied Products and Printing	0,33	0,31	0,15	0,12	0,08	0,02
S9. Primary Metals and Metal Fabricating	0,38	0,25	0,20	0,11	0,05	0,01
S10. Machinery	0,30	0,25	0,22	0,15	0,07	0,02
S11. Motor Vehicles and Parts	0,45	0,26	0,14	0,09	0,05	0,01
S12. Other Transportation Equipment	0,26	0,25	0,21	0,16	0,09	0,03
S13. Electrical and Electronic Products	0,28	0,26	0,11	0,18	0,13	0,04
S14. Refined Petrol., Chemicals and Non-met.	0,31	0,27	0,13	0,13	0,13	0,03
S15. Other Manufactured Products	0,37	0,28	0,12	0,13	0,08	0,02
S16. Construction	0,41	0,23	0,24	0,08	0,04	0,01
S17. Transportation and Pipelines	0,46	0,26	0,14	0,09	0,05	0,01
S18. Storage	0,46	0,31	0,11	0,08	0,04	0,01
S19. Utilities	0,23	0,33	0,14	0,16	0,10	0,03
S20. Trade	0,35	0,33	0,13	0,11	0,07	0,01
S21. Finance, Insurance and Real Estate	0,19	0,37	0,10	0,16	0,14	0,03
S22. Gov't Royalties and Owner Occ. Dwell.	0,00	0,00	0,00	0,00	0,00	0,00
S23. Business Services	0,13	0,24	0,08	0,20	0,25	0,10
S24. Personal and Other Services	0,36	0,28	0,10	0,12	0,10	0,04
TOTAL	0,36	0,27	0,13	0,12	0,09	0,03

Table 19A Education/Skill Shares of Imports, 1961–97						
	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post- Graduate Degrees
1961	0,396	0,255	0,142	0,111	0,076	0,019
1962	0,394	0,255	0,143	0,112	0,077	0,019
1963	0,390	0,256	0,145	0,113	0,078	0,019
1964	0,390	0,256	0,145	0,113	0,077	0,019
1965	0,387	0,257	0,146	0,113	0,077	0,019
1966	0,381	0,258	0,146	0,115	0,079	0,021
1967	0,379	0,259	0,144	0,116	0,081	0,021
1968	0,378	0,260	0,142	0,116	0,082	0,021
1969	0,377	0,261	0,141	0,117	0,083	0,022
1970	0,376	0,261	0,141	0,117	0,083	0,022
1971	0,376	0,262	0,140	0,117	0,083	0,022
1972	0,378	0,262	0,139	0,116	0,083	0,022
1973	0,377	0,263	0,138	0,117	0,083	0,022
1974	0,375	0,263	0,139	0,117	0,084	0,022
1975	0,374	0,263	0,140	0,117	0,084	0,022
1976	0,375	0,263	0,137	0,117	0,085	0,023
1977	0,371	0,264	0,137	0,118	0,086	0,023
1978	0,367	0,265	0,137	0,119	0,088	0,024
1979	0,364	0,264	0,138	0,120	0,089	0,024
1980	0,359	0,264	0,138	0,122	0,091	0,025
1981	0,357	0,265	0,137	0,123	0,093	0,026
1982	0,355	0,265	0,135	0,124	0,094	0,026
1983	0,358	0,266	0,134	0,123	0,093	0,026
1984	0,359	0,266	0,132	0,123	0,093	0,026
1985	0,358	0,266	0,133	0,123	0,094	0,026
1986	0,358	0,266	0,132	0,123	0,094	0,026
1987	0,353	0,264	0,134	0,126	0,096	0,027
1988	0,344	0,262	0,137	0,130	0,098	0,029
1989	0,337	0,261	0,138	0,133	0,101	0,030
1990	0,342	0,265	0,134	0,131	0,099	0,030
1991	0,335	0,263	0,136	0,134	0,101	0,031
1992	0,336	0,263	0,135	0,134	0,101	0,031
1993	0,336	0,263	0,134	0,134	0,101	0,031
1994	0,331	0,263	0,136	0,135	0,103	0,032
1995	0,330	0,263	0,136	0,136	0,103	0,032
1996	0,328	0,263	0,135	0,136	0,104	0,032
1997	0,329	0,263	0,136	0,137	0,104	0,032

Table 19B Ratio: Education/Skill Shares of Imports/ Total Business-Sector Employment, 1961-97						
	No Secondary School	Secondary School Only	Trade Certificate or Diploma	Post-Sec. Non-Univ. Degree	University up to Bachelor's Degree	All Post- Graduate Degrees
1961	0,965	0,948	1,044	1,097	1,123	1,284
1962	0,965	0,948	1,050	1,094	1,115	1,271
1963	0,959	0,947	1,061	1,100	1,120	1,283
1964	0,965	0,947	1,057	1,092	1,107	1,257
1965	0,963	0,948	1,060	1,092	1,104	1,248
1966	0,957	0,949	1,051	1,100	1,126	1,294
1967	0,956	0,949	1,043	1,105	1,133	1,310
1968	0,958	0,950	1,034	1,100	1,134	1,319
1969	0,959	0,950	1,028	1,101	1,139	1,323
1970	0,964	0,949	1,025	1,097	1,128	1,295
1971	0,966	0,951	1,017	1,095	1,128	1,293
1972	0,978	0,947	1,015	1,081	1,108	1,257
1973	0,978	0,949	1,012	1,082	1,105	1,249
1974	0,979	0,945	1,016	1,077	1,106	1,250
1975	0,980	0,943	1,030	1,072	1,094	1,233
1976	0,985	0,944	1,008	1,072	1,104	1,247
1977	0,982	0,946	1,010	1,074	1,105	1,243
1978	0,972	0,947	1,020	1,083	1,114	1,257
1979	0,966	0,945	1,027	1,089	1,123	1,272
1980	0,957	0,944	1,030	1,098	1,140	1,293
1981	0,955	0,944	1,023	1,104	1,150	1,302
1982	0,958	0,943	1,021	1,100	1,141	1,277
1983	0,967	0,945	1,020	1,091	1,118	1,240
1984	0,972	0,944	1,009	1,087	1,118	1,243
1985	0,973	0,945	1,012	1,085	1,114	1,234
1986	0,971	0,944	1,009	1,085	1,122	1,250
1987	0,977	0,941	1,009	1,076	1,112	1,218
1988	0,973	0,938	1,019	1,080	1,110	1,201
1989	0,974	0,937	1,011	1,076	1,116	1,191
1990	1,012	0,956	0,970	1,033	1,060	1,088
1991	1,016	0,954	0,973	1,028	1,057	1,074
1992	1,020	0,953	0,970	1,023	1,056	1,070
1993	1,016	0,953	0,975	1,027	1,058	1,067
1994	1,005	0,953	0,980	1,035	1,071	1,085
1995	1,004	0,955	0,984	1,037	1,066	1,072
1996	1,000	0,958	0,984	1,038	1,068	1,071
1997	1,007	0,955	0,989	1,036	1,054	1,048

Figure 22 Relative Education Shares
(Ratio: Imports to Total Business)

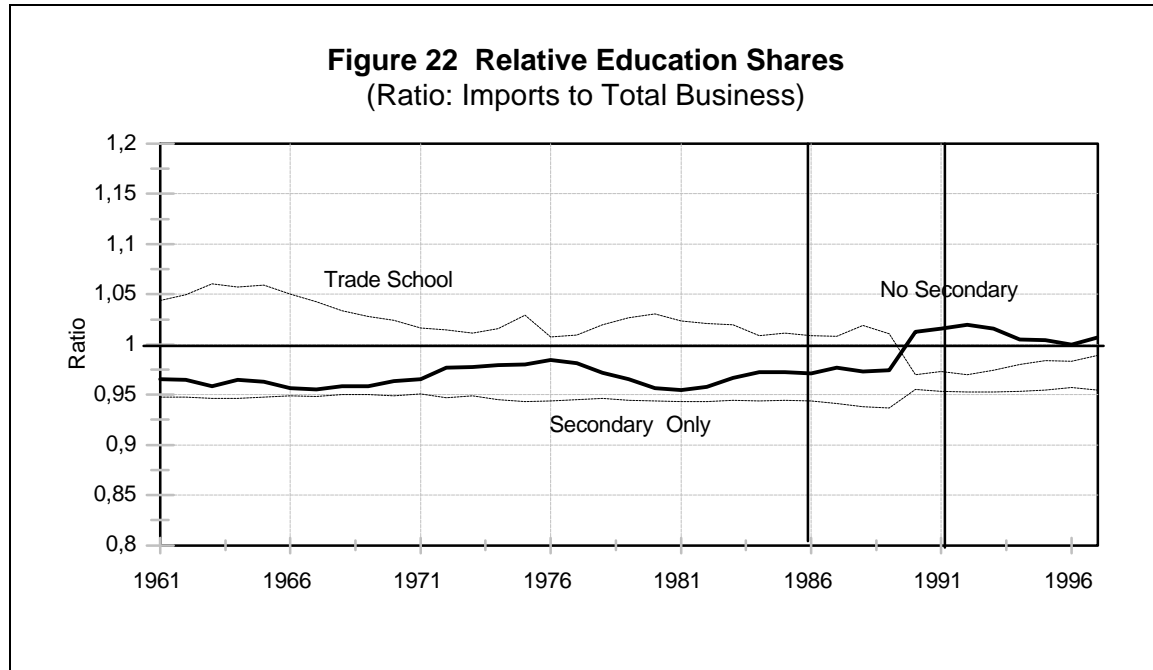
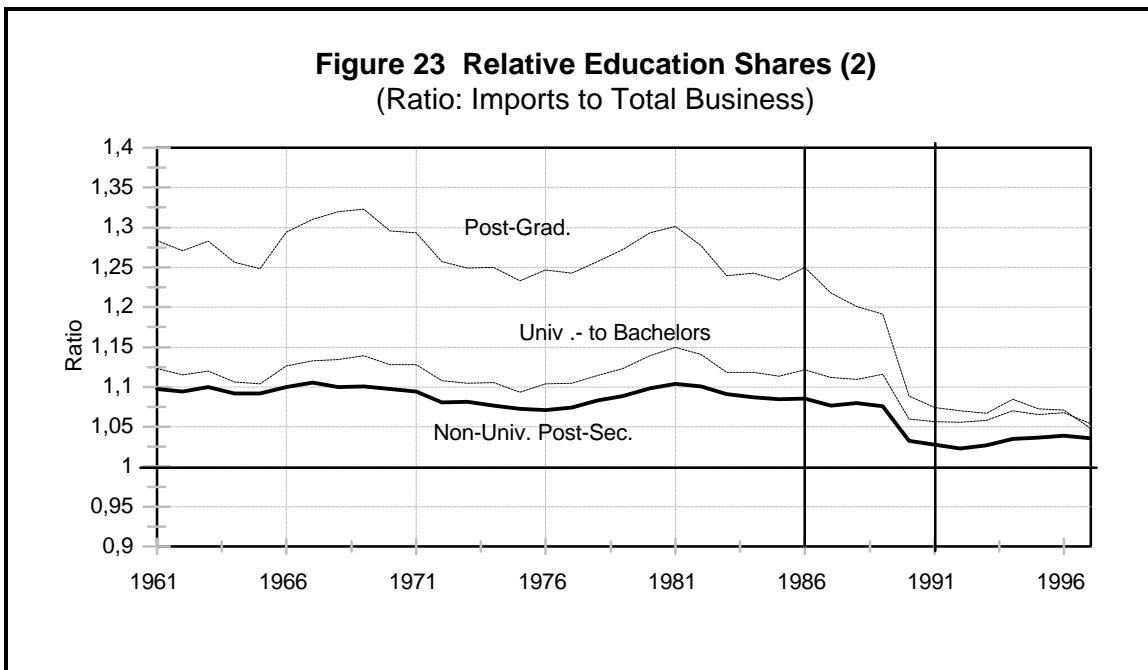


Figure 23 Relative Education Shares (2)
(Ratio: Imports to Total Business)



6. CONCLUSIONS

The value of a detailed study such as ours partly resides in the detailed calculation results presented, in that they are somewhat more up to date and comprehensive than those of similar past studies. With luck, they may permit other researchers in the field and readers to answer their own specific questions in various areas, and perhaps to suggest new questions.

Nonetheless, we also attempt to draw some broad conclusions of our own. Some have already been touched upon in the discussions above.

- 1) While exports and imports have grown strongly as a proportion of the Canadian economy since 1961 — especially in the 1990s — the growth in the share of employment attributable to exports (or "displaced" by imports) has been *much less rapid*. The major reason is import penetration: Exports today have a much higher import content in intermediate inputs than in the past. As for imports, if they were to be produced in Canada, today's technology would have them produced with much more imported intermediate inputs than in the 1960s.
- 2) When our detailed sectoral results are aggregated, Canadian exports are always above the average for total business output in labour productivity — especially when the effect of Agriculture in the 1960s is netted out. However, this relatively high labour productivity of exports has shown almost *no tendency to increase* over time. Along with higher labour productivity comes higher returns to labour in exports — but again, this relative performance in exports shows almost no trend over time. However, since the share of employment attributable to exports has been steadily growing, it could be concluded that exports are helping to lift both the *overall level* of Canadian labour productivity and returns to labour.
- 3) The sources of change in the employment mix of Canadian exports are primarily the final export mix itself and the degree of import penetration for intermediate inputs. Generally less important are changes among sectors in relative labour productivity or "technical change" as embodied in changes in input-output coefficients — although for particular industries they may still be crucial (e.g., Rail transport). The same observation essentially applies to changes in the employment mix of Canadian imports.
- 4) Changes in export employment shares have occurred across a wider range of industries than might be imagined. Of the ten industry groups that increased their share of export employment by over one percent point from 1961 to 1997, four are service industries (Personal and other services, Business services, Trade, and Finance), but the other six are various manufacturing categories, some of which might have been expected given the Auto Pact and changing technology — like Motor vehicles, Electrical and electronic products, and Rubber and plastic products — and some that are surprising — like Leather, textile and clothing products. Of the four industries with declines in export employment shares of over one percentage point, the two largest declines are in primary production (Mining excluding oil and gas, and Agriculture, forestry and fishing), one is in raw material processing and manufacturing (Paper and allied products and printing) and the fourth is Transportation. The timing of changes is also sometimes surprising: For example, the Motor vehicle industry gained almost all of its increase in export employment share from 1961 to 1971 and share gains in Trade, Finance, and Business services were as large in the 1960s as in other periods. In short, the individual industrial detailed results are important.

- 5) Combining the input-output results with data on education mix by industry leads to the conclusion that since 1961 the mix of Canadian export employment (both direct and indirect) has continually evolved to emphasize industries with more highly-educated workers. However, this also turns out to be true of business-sector employment as a whole. If exports are compared to the total business sector in relative uses of different education profiles, the conclusion is that employment from exports is "bi-polar" in distribution. Exports exceed the economy-wide average in employing workers with low education, and also in employing workers with relatively advanced education. The relative ratios have changed only a little over the last three decades.
- 6) The labour productivity of employment "displaced" by imports (if it were to be produced with Canadian technology) is invariably lower than that of exports — although it is still above the business-sector average for most years. The ratio has fallen to about the economy-wide average in recent years. Thus, there is evidence that imports, on the whole, are not replacing exceptionally low-productivity employment (which is probably concentrated in non-tradable services in any event). However, imports are displacing "relatively" more jobs than exports are adding. If macro policies can keep the economy near full employment, and the pace of change is not too fast, this means that Canada is replacing low-productivity employment with high-productivity employment through expanded international trade, and is thereby better off.
- 7) Comparing changes in employment shares of exports and imports, it is remarkable that the largest increases and decreases occur, in many cases, in the *same* sectors. Personal and Business services, and Trade have among the largest increases in employment shares for both exports and imports, and Mining, Agriculture and Forestry have among the largest decreases in employment shares for both exports and imports. *Both* Canadian exports and Canadian imports have become more intensive in service employment and less intensive in raw materials production employment.
- 8) The education mix calculations show that, at least for Canadian technology and education shares by sector, Canadian imports have been above the business-sector average in overall education content. In recent years, however, this discrepancy has been narrowing, indicating some increased competition from imports in sectors using lower-skill workers. Nonetheless, Canadian imports remain above the business sector average in education content. This result may seem at odds with the previous point about labour productivity and labour returns. However, it should be noted that we found productivity and returns to labour in imports to be *above* the business-sector average, although they were also *lower* than for exports. Finding that the education mix is above the business-sector average is not inconsistent with this. This anomaly, perhaps, is that export productivity and returns are so high when at least part of the education mix is low. The anomaly can, however, be better understood if it is recalled that education, as broadly measured, is not the sole determinant of either productivity or returns to labour. High capital or natural resource endowments can make even relatively uneducated labour highly productive and highly rewarded, and that seems to be the case for such Canadian exports sectors as Motor vehicles and Metal products.

NOTES

- 1 For greater detail, see Appendix 1.
- 2 Note also that all references to imports should be taken to be mean imports net of any re-exports.
- 3 Courakis, Maskus and Webster (1997) point out that trying to "assign blame" between globalization (increased trade) and technical change in examining employment losses (or changes) may be something of a false dichotomy and is at variance with trade theory, since both effects will be driven by underlying changes in technology and tastes. The point may be valid in terms of assessing causality or formulating policy, but the intention in our study is simply to find out first what the data say in terms of the relative contributions of various factors.
- 4 The 1986 and 1991 data sets are not on a completely comparable basis and some judgement was required to reconcile the two.
- 5 An alternative method of examining impacts of imports and technology on employment and wages without using I/O techniques is found in Lee (1996).
- 6 We are grateful to an anonymous referee for emphasizing this point and providing this particular example.
- 7 Recall that for 1993–97, the 1992 I/O coefficients are used, while exports, employment shares and import coefficients have been estimated for the actual year.
- 8 Note that here and at all other times in this report employment is measured in terms of number of persons employed, and not hours worked. Employment can include part-time employment, as is the practice, for example, in the Labour Force Survey. Conclusions regarding employment shares and labour productivity can be skewed sometimes by failing to consider changes in hours worked per employee.
- 9 Details of the aggregation and of the SIC codes of the 161 most-disaggregated industries are given in Appendix 3.
- 10 Unfortunately, we cannot be sure that higher educational attainment actually reflects improved skills or abilities of the workforce. It may, in the succinct phrase offered by an anonymous referee, simply represent "creeping credentialism": a job may be no more demanding of skill than in the past, but now requires a university degree (perhaps since many graduates are now available) when formerly a high school diploma was considered adequate.
- 11 In light of the problem of "creeping credentialism" (see footnote above), the use of relatively fixed education requirements by industry may actually offer some advantages in identifying how the changing industrial mix of exports has affected skill demands over time.
- 12 As for the export analysis, of course, the 1992 I/O coefficients are used for 1993–97, while import levels, employment shares and import coefficients have been estimated for the actual year.

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APPENDIX 1

A MORE DETAILED DESCRIPTION OF THE CALCULATIONS

This appendix describes the calculations behind the paper's results in somewhat greater detail and in more algebraic form. Very roughly, the notation follows that of Gera and Mang (1997, pp 69–70).

To begin, consider the calculations for only one year (say, 1992) and recall that there are 161 industries in the “L” aggregation employed.

The basic I/O relationship for this or any other year is as follows:

$$g = Bg + fo + fx + fm \tag{1}$$

where g : the 1x161 vector of total gross output for each industry
 B : matrix of direct input coefficients b_{ij} — the direct input requirements from industry i to produce one unit of output for industry j
 fo : 1x161 vector of all final demands other than exports and imports less re-exports
 fx : 1x161 vector of all exports
 fm : 1x161 vector of all imports less re-exports (defined as negative values)

Note that Bg constitutes all intermediate demands upon the output of any industrial sector, while the sum of $fo + fx + fm$ constitutes all net final demand on the output of any sector. These two groups must identically equal the total output of a sector (g) since inventory changes, whether intended or unintended, are a part of fo .

To determine the impact on g of any change in one of the f final demand components, some behavioural judgements must be made with respect to “leakages” of demand out of the backward chain of production. In the standard Statistics Canada I/O model, and in the work of Gera and Mang (1997), three leakages are assumed: through imports, through provision of demand from inventories, and through provision of demand from “government production”, i.e. the provision of government services and infrastructure. We take the simpler alternative of permitting only leakages from consumption. In our judgement, the provision of government services are largely fixed in any one year and would vary little even with relatively large changes in demand. The term is, in any event, very small. How much even major changes in demand would be met from inventories is also, in our view, an open question, but more to the point is the fact that inventory “ratios”, from which the leakage would have to be calculated, can vary drastically for some sectors from year to year, yielding, in our experience, wild and unreasonable swings in results and impacts. We therefore restrict ourselves to leakages from imports, where average import leakage in any sector in a given year is defined as the ratio of imports over domestic production *less exports* for that sector in the given year. Exports are not included in calculating the average import leakage, since re-exports have already been netted out, and exports will only be supplied from domestic production.

Thus we assume an equation for imports as follows:

$$fm = M \cdot (Bg + fo) = M \cdot (g - fx) \tag{2}$$

where M is a matrix with zeros off the diagonals and diagonal elements for row and column i defined as:

$$M_{ii} = fm_i / (g_i - fx_i) \quad (3)$$

Therefore, equation (1) may be re-written as

$$g = Bg + fo + fx + M(g-fx) \quad (3)$$

Solving for g we proceed as follows:

$$\begin{aligned} g - Bg - Mg &= fo + fx - Mfx \\ (I - B - M)g &= fo + (I - M)fx \\ g &= (I - B - M)^{-1} \cdot (fo + (I - M)fx). \end{aligned} \quad (4)$$

Solving for *changes* in fx we get:

$$\Delta g = (I - B - M)^{-1} \cdot (I - M) \cdot \Delta fx \quad (5)$$

Equation 5 is therefore the equation used to obtain the change in output by sector (the change in g) for a given change in fx . In our case, the amount we enter for the change in fx is the actual level of fx in the year being examined.

From the I/O data in each year, supplementary ratios for domestic product (or value added) per unit of total output, employment per unit of total output and returns to labour per unit of total output can all be calculated. These ratios are then applied to the Δg as calculated above in order to obtain impacts of exports in that year on domestic product, employment and returns to labour for each industry:

$$rdp_i = dp_i / g_i, \text{ where } rdp \text{ and } dp \text{ are ratios and levels of domestic product}$$

$$re_i = e_i / g_i, \text{ where } re \text{ and } e \text{ are ratios and levels of employment in persons}$$

$$rw_i = w_i / g_i, \text{ where } rw \text{ and } w \text{ are ratios and levels of returns to labour}$$

Then:

$$\Delta dp = rdp \cdot \Delta g$$

$$\Delta e = re \cdot \Delta g$$

$$\Delta w = rw \cdot \Delta g$$

Decomposition:

For any two years, say 1961 and 1992, the employment attributable to the exports of that year can be calculated as:

$$\Delta e_{92} = re_{92} \cdot (I - B_{92} - M_{92})^{-1} \cdot (I - M_{92}) \cdot fx_{92}, \text{ and} \quad (6)$$

$$\Delta e_{61} = re_{61} \cdot (I - B_{61} - M_{61})^{-1} \cdot (I - M_{61}) \cdot fx_{61} \quad (7)$$

To determine the independent contributions, the Δe_{92} calculation is repeated successively using re_{61} , B_{61} , M_{61} , and fx_{61} instead. Since it is ratios of employees in different industries to total employment that is reported, we use shares of industries in fx_{61} , rather than levels, but the alternative calculation gives the same result.

This decomposition is less elaborate than the growth decomposition used by Gera and Mang (1997, pp. 71–74); but it serves the primary purpose of displaying the major contributors to changes in employment share between two years. The decomposition is exhaustive in the sense that if all four elements for 1961 (fx_{61} , re_{61} , etc.) were to be entered together in equation (6) then obviously the result would be equation (7), and all the difference between the two years would be explained. However, because of interaction between the terms, the sum of the individual items will not equal the total change, and thus a residual/interaction term is reported in the decomposition tables. As far as we can see, any attempt to “distribute” the interaction term will be somewhat arbitrary. If the interaction term were to be distributed proportionally, there would of course be no change in the relative weights of the contributing items. (For an alternative decomposition approach that removes the residual term, see Betts, 1989.)

APPENDIX 2

TESTING FOR SENSITIVITY IN THE AGGREGATE CALCULATIONS FOR EXPORTS

This appendix presents detailed results for two alternative sets of export calculations. The first set uses real or constant dollar, rather than nominal, I/O tables and data, and the second excludes Agriculture from the calculations.

Use of Constant Dollar Data

As noted in Section 2 above, we have done most of the calculations in this paper using nominal data, either from the I/O system or from other sources. Use of nominal data permits us to extend some of the calculations into 1993–97 and avoids potential re-basing difficulties between the different series of real I/O tables. Nonetheless, it has been possible to perform some of the calculations described above using constant dollar (or real) data instead and to test whether this alternative leads to major differences in results and implications.

Table A.1 reports aggregate results identical in concept to those of Table 2 in Section 4, except that our chained series of real I/O tables has been used. Data cannot be extended past 1992 and the calculation of returns to labour is not possible. The columns of Tables 2 and A.1 can be compared directly to determine differences from using real and nominal concepts; several of these comparisons are shown in Figures A.1-A.3.

Figure A.1 compares employment in exports, as a percentage of the total business sector, under the two calculations. Both series show a pattern of gradual increase after 1961, with somewhat stronger increases for the real calculations in the 1960s. In each there is a decline in export's employment share after 1984, but the drop is much more abrupt in the real calculations — and somewhat difficult to understand. After 1984, results from the two series are nearly identical. Both series therefore show that the share of Canadian employment due to exports has risen only gradually from 1961 through 1992. The real calculations show that the share is more pronounced in movement, and with a puzzling drop after 1984 that had not been recouped even by 1992.

Figure A.2 compares domestic product due to exports as a share of total business product, using both the nominal and real series. The pattern is somewhat the same as for employment, showing a gradual upward trend, with the real calculations being more volatile. Note that from the late 1980s, the real data suggest a slightly stronger increase in GDP share of exports than do the nominal data.

Finally, the two different calculations for labour productivity in exports are compared in Figure A.3. Both calculations suggest that there has been no strong trend in this term: it has always been greater than the economy-wide average (it is always above 1.0), but there has been no pronounced trend. The real calculations suggest a significant decline in relative productivity in the mid-1970s, most of which has been gradually recouped. Unlike the nominal data, the real data show little relative decline after the late 1980s, suggesting that the decline in the nominal series is due to a relative valuation of exports rather than to a decline in relative physical productivity.

Excluding Agricultural Exports

Because Agriculture is a major contributor to exports, and because the sector underwent major structural change, especially in the 1960s, we have calculated the aggregate, nominal measures of Table 2 in Section 4 *excluding* agricultural exports for comparison. (Note that it is exports of agricultural products we have excluded from the calculation; there may be some indirect impact through the Agricultural sector if it needs to produce indirect inputs for other types of exports). This calculation also shows an example of how other exclusions could be done in the calculations, although such variations (which could be quite voluminous) have not been included in the present paper.

Table A.2 summarizes the aggregate annual calculations excluding agricultural exports; results here should be compared with the equivalent aggregate nominal calculations including exports as shown in Table 2 of Section 4. Figures A.4-A.6 compare the two calculations for three key indicators.

Figure A.4 shows employment attributable to exports as a ratio to total business-sector employment both in total (from Table 2) and with agricultural exports excluded. As can be seen, agricultural exports did indeed matter more in the 1960s, although their impact, on a dollar basis, was also substantial in the 1980s. Inclusion or exclusion of agricultural exports does not affect any judgements with respect to trends.

Figure A.5 plots labour productivity in exports both with and without agricultural exports. As can be seen, excluding agricultural exports flattens the trend all the more and clearly makes export labour productivity rank ahead of average labour productivity in all decades.

Finally, Figure A.6 plots returns to labour (including unincorporated business income) in exports relative to the total business sector. If agricultural exports are excluded, then export-related employment has enjoyed returns above the business-sector average in all decades. However, the basic story of a rising trend through the mid-1980s and a slight fall-off thereafter is unchanged.

Table A.1 Aggregate Comparisons from I/O Calculations – Exports
***REAL* – 1961–92**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Exports as a % of BusinessSector Domestic Product	Domestic Product in Exports as a % of Business of Domestic Product	Imports from Exports as a % of Domestic Product from Exports	Employment in Exports as a % of Total Business Employment	Labour Productivity in Exports Relative to Business Sector	Direct Employment in Exports as a % of Total Empl.	Ratio: Direct to Total Employment in Exports
1961	25,39	20,66	18,48	17,62	1,17	9,59	0,54
1962	25,38	20,79	17,64	16,90	1,23	8,92	0,53
1963	25,96	21,25	17,90	17,67	1,20	9,34	0,53
1964	27,51	22,52	17,76	18,68	1,21	9,77	0,52
1965	26,71	21,66	18,82	18,10	1,20	9,53	0,53
1966	28,81	22,50	23,48	19,08	1,18	10,08	0,53
1967	31,51	23,54	28,95	19,82	1,19	10,40	0,52
1968	35,73	26,08	32,29	21,39	1,22	11,13	0,52
1969	37,77	26,72	36,64	21,45	1,25	11,25	0,52
1970	40,57	28,39	38,33	23,30	1,22	12,66	0,54
1971	40,50	28,45	38,13	22,98	1,24	12,34	0,54
1972	41,96	29,45	38,33	22,87	1,29	12,53	0,55
1973	43,23	30,40	38,07	22,63	1,34	12,32	0,54
1974	40,08	28,02	38,74	21,41	1,31	11,45	0,53
1975	37,19	25,38	41,85	20,41	1,24	10,96	0,54
1976	37,93	25,27	45,56	21,28	1,19	11,52	0,54
1977	39,25	25,51	49,28	22,40	1,14	11,97	0,53
1978	41,78	25,21	60,93	22,80	1,11	12,85	0,56
1979	40,32	26,65	46,35	23,65	1,13	12,87	0,54
1980	39,59	25,95	47,15	24,05	1,08	12,92	0,54
1981	39,81	26,33	46,05	24,41	1,08	13,08	0,54
1982	40,99	26,21	51,02	24,66	1,06	13,15	0,53
1983	43,29	27,27	53,58	24,90	1,10	13,43	0,54
1984	49,22	30,46	56,48	26,75	1,14	14,51	0,54
1985	36,17	25,48	36,92	21,83	1,17	11,05	0,51
1986	34,14	23,96	37,55	20,85	1,15	10,21	0,49
1987	33,85	24,16	35,43	20,46	1,18	10,00	0,49
1988	34,79	24,28	38,56	20,20	1,20	9,71	0,48
1989	34,35	23,74	40,09	19,70	1,20	9,44	0,48
1990	37,02	25,29	41,91	21,85	1,16	11,09	0,51
1991	38,44	26,19	42,21	22,62	1,16	11,61	0,51
1992	41,37	27,64	45,01	23,63	1,17	12,27	0,52

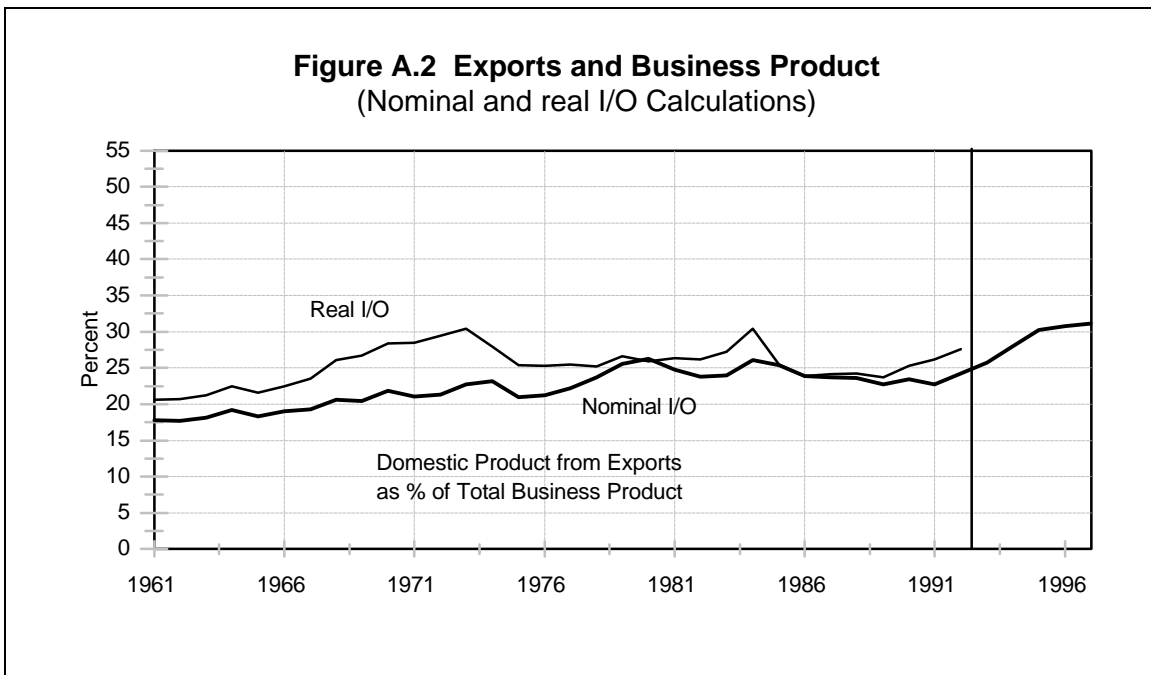
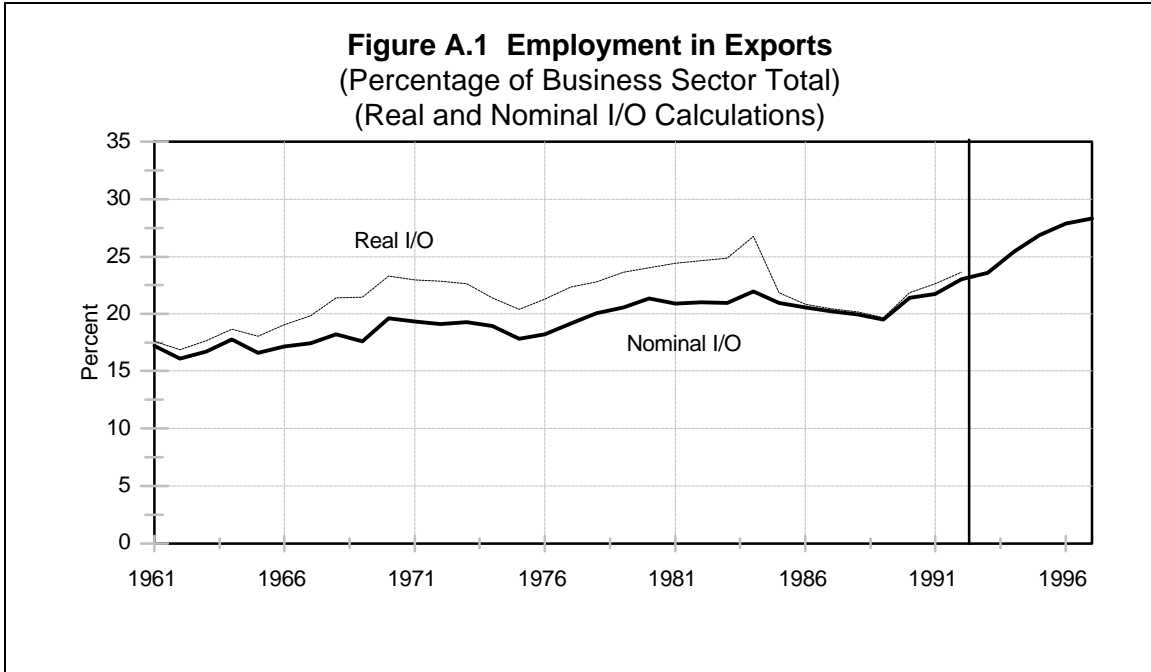
Table A.2 Aggregate Comparisons from I/O Calculations – Exports – 1961–97

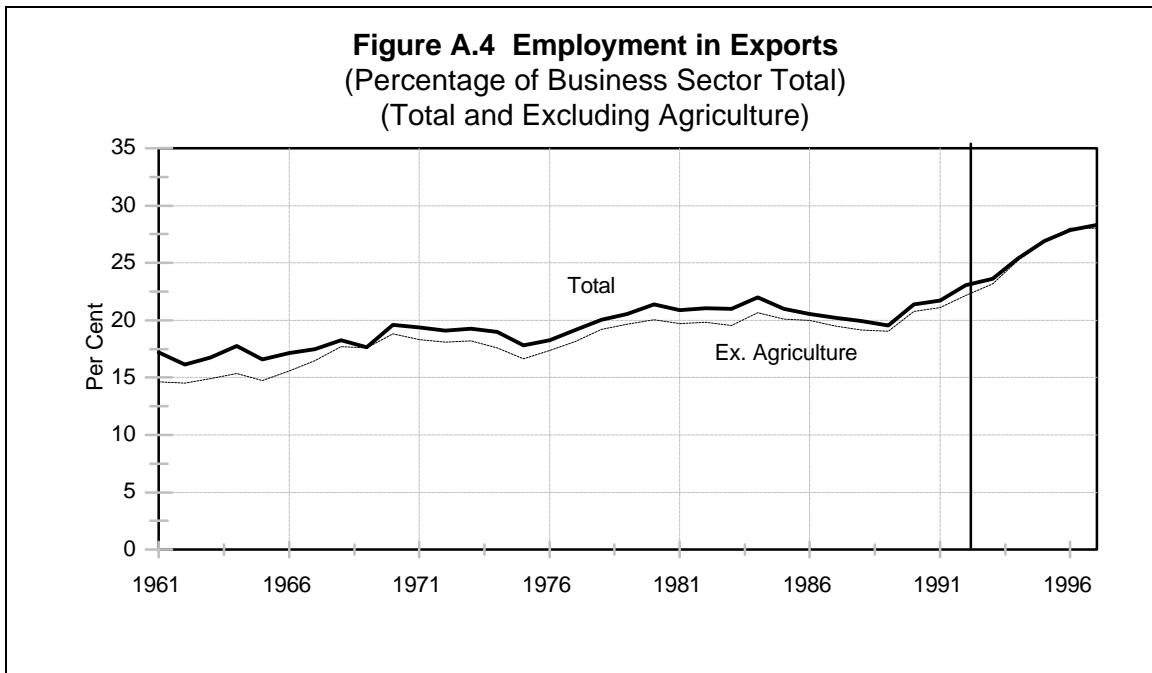
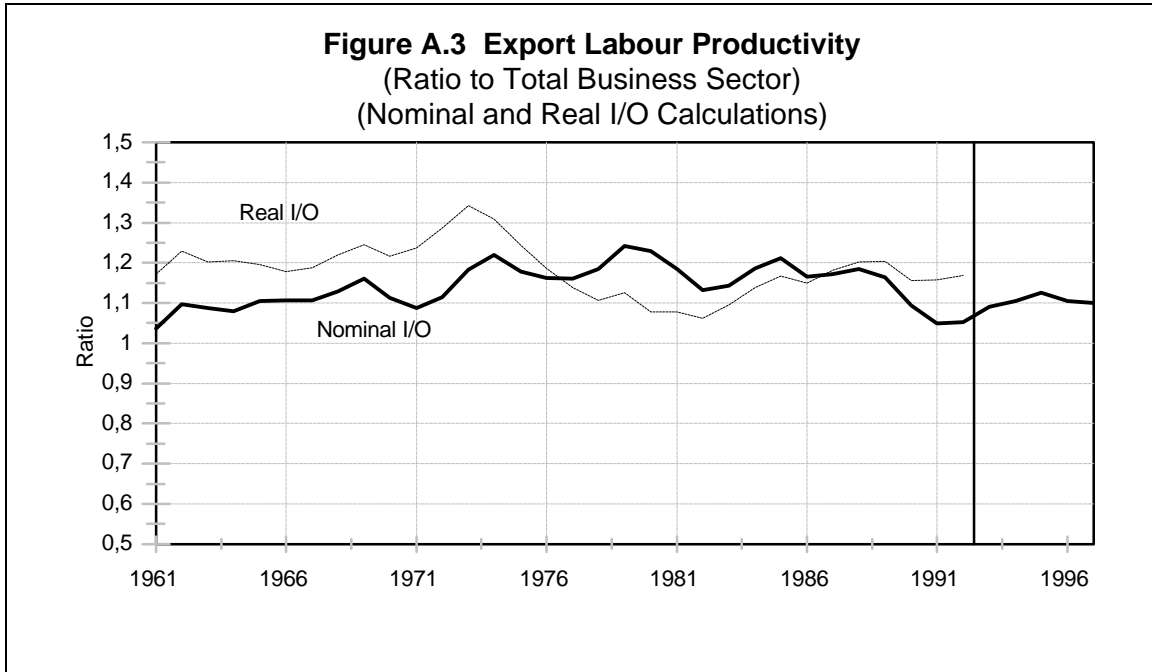
Excluding the Agriculture Industry									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
	Exports as a % of Business Sector Domestic Product	Domestic Product in Exports as a % of Business Domestic Product	Imports from Exports as a % of Domestic Product from Exports	Employment in Exports as a % of Total Business Employment	Labour Productivity in Exports Relative to Business Sector	Direct Employment in Exports as a % of Total Employment	Ratio: Direct to Total Employment in Exports	Ratio: Returns to Labour in Exports vs. Business Sector	
1961	19,34	17,01	13,15	14,61	1,16	6,68	0,46	1,01	
1962	19,77	17,09	13,28	14,53	1,18	6,65	0,46	1,02	
1963	20,12	17,43	13,67	14,95	1,17	6,82	0,46	1,02	
1964	21,12	18,22	14,22	15,34	1,19	6,98	0,45	1,02	
1965	20,56	17,56	14,45	14,76	1,19	6,75	0,46	1,03	
1966	21,77	18,17	17,58	15,62	1,16	7,17	0,46	1,04	
1967	23,32	18,96	19,82	16,49	1,15	7,63	0,46	1,04	
1968	26,13	20,46	23,73	17,69	1,16	8,22	0,46	1,05	
1969	26,69	20,60	24,68	17,58	1,17	8,30	0,47	1,06	
1970	28,02	21,60	25,19	18,84	1,15	8,89	0,47	1,07	
1971	26,88	20,66	26,07	18,32	1,13	8,54	0,47	1,06	
1972	27,22	20,95	25,87	18,07	1,16	8,57	0,47	1,08	
1973	28,72	22,26	25,08	18,23	1,22	8,66	0,47	1,08	
1974	28,83	22,37	27,46	17,62	1,27	8,28	0,47	1,10	
1975	26,51	20,38	29,53	16,66	1,22	7,80	0,47	1,10	
1976	27,29	20,81	28,85	17,34	1,20	8,16	0,47	1,11	
1977	29,10	21,84	30,69	18,15	1,20	8,46	0,47	1,12	
1978	31,75	23,45	32,43	19,25	1,22	9,16	0,48	1,13	
1979	33,27	25,22	29,49	19,65	1,28	9,46	0,48	1,14	
1980	33,77	25,68	30,57	20,06	1,28	9,43	0,47	1,13	
1981	32,87	24,18	32,65	19,75	1,22	9,30	0,47	1,14	
1982	31,58	23,21	32,42	19,84	1,17	9,08	0,46	1,14	
1983	31,12	23,40	31,16	19,55	1,20	8,93	0,46	1,13	
1984	34,65	25,55	33,56	20,67	1,24	9,61	0,46	1,13	
1985	34,78	25,15	35,68	20,10	1,25	9,33	0,46	1,15	
1986	34,09	23,78	38,73	20,00	1,19	9,44	0,47	1,14	
1987	32,56	23,50	34,44	19,48	1,21	9,28	0,48	1,13	
1988	32,47	23,34	34,71	19,18	1,22	8,94	0,47	1,12	

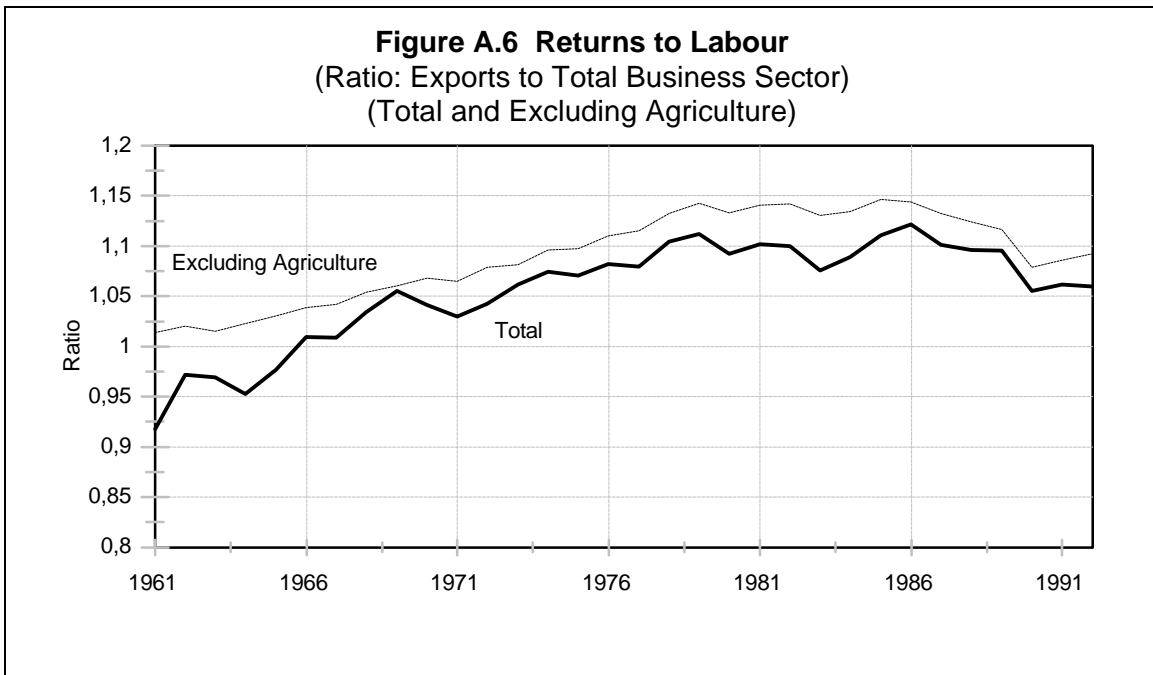
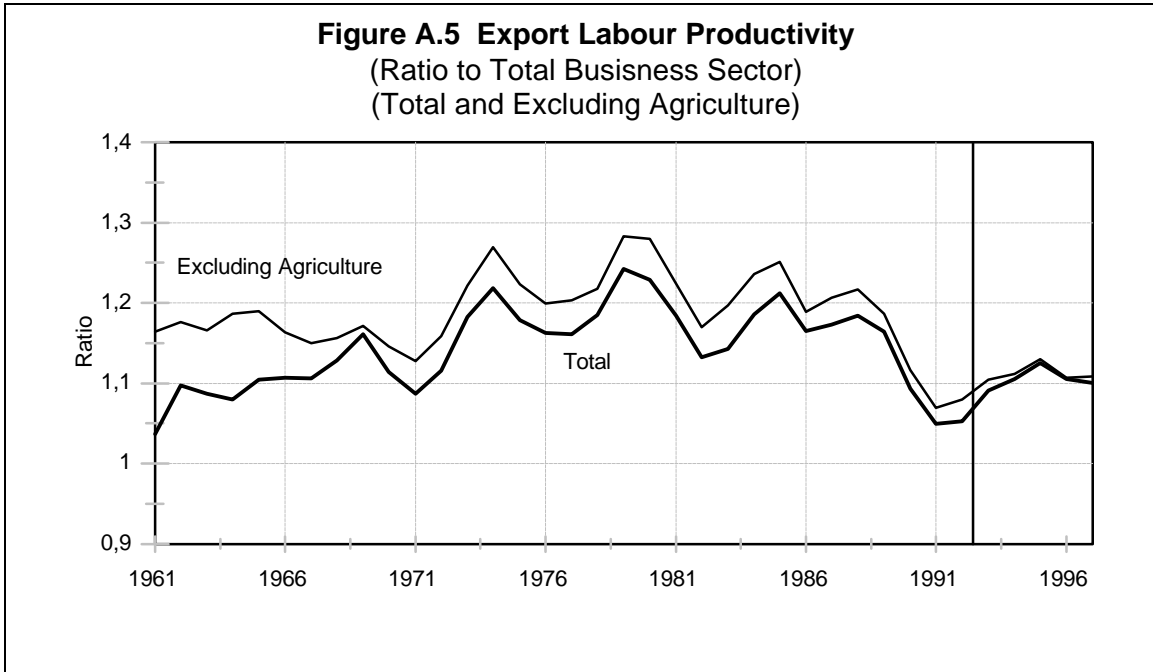
Table A.2 (cont'd)

Excluding the Agriculture Industry

	(1) Exports as a % of Business Sector Domestic Product	(2) Domestic Product in Exports as a % of Business Domestic Product	(3) Imports from Exports as a % of Domestic Product from Exports	(4) Employment in Exports as a % of Total Business Employment	(5) Labour Productivity in Exports Relative to Business Sector	(6) Direct Employment in Exports as a % of Total Employment	(7) Ratio: Direct to Total Employment in Exports	(8) Ratio: Returns to Labour in Exports vs. Business Sector
1989	31,63	22,60	35,20	19,04	1,19	8,87	0,47	1,12
1990	32,77	23,19	36,58	20,78	1,12	10,31	0,50	1,08
1991	31,93	22,59	37,47	21,12	1,07	10,52	0,50	1,09
1992	34,74	23,95	41,14	22,17	1,08	11,16	0,50	1,09
1993	38,36	25,64	44,79	23,22	1,10	12,88	0,55	n.a.
1994	42,47	28,06	46,61	25,24	1,11	15,18	0,60	n.a.
1995	45,91	30,35	46,48	26,86	1,13	17,11	0,64	n.a.
1996	47,01	31,04	46,84	28,04	1,11	18,13	0,65	n.a.
1997	47,74	31,08	49,04	28,03	1,11	18,71	0,67	n.a.







APPENDIX 3
24-INDUSTRY AGGREGATION – AGGREGATION PARAMETERS

24-Industry Aggregation	Input/Output 161-Industry 'L' Components	COPS 112-Industry Component s	SIC Group
S1. Agriculture, Forestry, Fishing and Trapping	1-3	1-3	01-05
S2. Mining excluding Oil and Gas	4-10, 12-13	4-6, 8-9	06, 08, 09
S3. Crude Petroleum and Natural Gas	11	7	07
S4. Food, Beverages and Tobacco	14-29	10-22	10-12
S5. Rubber and Plastic Products	30, 31	23, 24	15, 16
S6. Leather, Textile and Clothing Products	32-42	25-28	17-19, 24
S7. Wood and Furniture Products	43-50	29-34	25, 26
S8. Paper and Allied Products and Printing	51-56	35-38	27, 28
S9. Primary Metals and Metal Fabricating	57-71	39-53	29, 30
S10. Machinery	72-74	54-56	31
S11. Motor Vehicles and Parts	76-78	58-60	323-325
S12. Other Transportation Equipment	75, 79-81	57, 61-63	321, 326-329
S13. Electrical and Electronic Products	82-89	64-69	33
S14. Refined Petrol., Chemicals and Non-met.	90-103	70-83	35-37
S15. Other Manufactured Products	104-108	84-87	39
S16. Construction	109-117	88	40-44
S17. Transportation and Pipelines	118-127	89-95	45, 46
S18. Storage	128	96	47
S19. Utilities	129-134	97-102	48, 49
S20. Trade	135, 136	103, 104	50-69
S21. Finance, Insurance and Real Estate	137-139	105	70-74
S22. Gov't Royalties and Owner Occ. Dwell.	140, 141	none	75, 76
S23. Business Services	142-144	106	77
S24. Personal and Other Services	145-154	107-112	85-99

APPENDIX 4

THE CHANGING INDUSTRIAL MIX OF EXPORTS 161-INDUSTRY AGGREGATION

Tables A.3A and A.3B show the detailed results behind the aggregates in Tables 3A and 3B in Section 4, using the full 161-industry calculations. In these tables the years 1961 and 1992 are shown, representing the span of our complete I/O data. In Table A.3A the industries are listed in standard or numerical order from primary production through manufacturing and services. In Table A.3B the sectors are sorted from largest increase in export employment shares to largest decrease.

Those industries showing the largest increase in share of export employment tend to be of three major types¹: The first, and most numerous are service industries of all types, from Accommodation and Food services, through Business and professional services, Trade, and Banking. How much this increase in Services employment is due to an expansion of direct exports in these industries and how much is due to other industries using more services as inputs (or to changing relative labour productivity among sectors) is analyzed in the decompositions section below. For now, the fact that exports of services in aggregate did not rise significantly relative to exports of goods from 1961 through 1992 (as we observed in Table 1) suggests that it is largely a change in intermediate inputs for exporting or relative sector productivity that is responsible for this shift.

The second group of industries increasing their employment share is Motor vehicles and Motor vehicle parts, and Accessories. This might be expected from the Auto Pact and from the continued expansion and integration of the North American auto industry. Note that the third major element in the expansion of export employment shares is, gratifyingly, Electronic equipment industries, indicating that Canada has been able to find important export opportunities in this rising worldwide sector.

At the bottom of the table are the sectors which have seen the largest declines in share of export employment. As can be seen, these are primary production sectors like Agriculture, Forestry and some of the Mines, together with associated sectors like Non-ferrous smelting and refining, Pulp and paper, and Sawmills. Also noteworthy is the decline in the share of Rail transport since 1961; as exports have grown they have tended to be shipped much less by rail.

Finally, this appendix also presents the 161-industry decompositions of changes in employment shares from 1961 to 1992 in Tables A.4A and A.4B.

¹The ranking tends to be the same for export employment as a percentage of *total* employment as well, but there can be small differences due to the fact that export employment has itself changed as a share of total employment over the same time period.

Table A.3A Employment Shares: 1961 to 1992 – 161 Industries

	1961		1992		Change 1961–92	
	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment
	001 Agriculture and Related	26,93	4,63	8,69	2,01	-18,24
002 Fishing and Trapping	1,24	0,21	1,38	0,32	0,14	0,11
003 Logging and Forestry	5,55	0,95	1,77	0,41	-3,78	-0,55
004 Gold Mines	1,81	0,31	0,35	0,08	-1,46	-0,23
005 Other Metal Mines	3,35	0,58	0,87	0,20	-2,48	-0,38
006 Iron Mines	0,79	0,14	0,22	0,05	-0,58	-0,09
007 Asbestos Mines	0,72	0,12	0,10	0,02	-0,62	-0,10
008 Non-Metal excl. Coal and Asbestos	0,28	0,05	0,25	0,06	-0,03	0,01
009 Salt Mines	0,04	0,01	0,02	0,00	-0,02	-0,00
010 Coal Mines	0,52	0,09	0,25	0,06	-0,27	-0,03
011 Crude Petroleum and Natural Gas	0,60	0,10	1,09	0,25	0,50	0,15
012 Quarries and Sand Pits	0,13	0,02	0,09	0,02	-0,04	-0,00
013 Services Related to Mineral Extraction	0,16	0,03	0,51	0,12	0,35	0,09
014 Meat and Meat Prod. (excl. Poultry)	0,28	0,05	0,37	0,09	0,09	0,04
015 Poultry Products	0,01	0,00	0,04	0,01	0,02	0,01
016 Fish Products Industry	1,11	0,19	0,87	0,20	-0,25	0,01
017 Fruit and Vegetable Processing	0,08	0,01	0,15	0,04	0,07	0,02
018 Dairy Products	0,17	0,03	0,09	0,02	-0,08	-0,01
019 Feed Industry	0,34	0,06	0,16	0,04	-0,18	-0,02
020 Vegetable Oil Mills (excluding Corn)	0,03	0,00	0,02	0,00	-0,01	0,00
021 Biscuit Industry	0,02	0,00	0,04	0,01	0,02	0,01
022 Bread and Other Bakery Prod. Industries	0,04	0,01	0,11	0,02	0,06	0,02
023 Cane and Beet Sugar Industry	0,02	0,00	0,01	0,00	-0,00	0,00
024 Miscellaneous Food Industries	0,53	0,09	0,34	0,08	-0,19	-0,01
025 Soft Drink Industry	0,01	0,00	0,07	0,02	0,06	0,01
026 Distillery Products Industry	0,31	0,05	0,09	0,02	-0,22	-0,03
027 Brewery Products Industry	0,04	0,01	0,06	0,01	0,02	0,01
028 Wine Industry	0,00	0,00	0,01	0,00	0,01	0,00
029 Tobacco Products Industries	0,13	0,02	0,06	0,01	-0,07	-0,01
030 Rubber Products Industries	0,29	0,05	0,77	0,18	0,48	0,13

Table A.3A (cont'd)

	1961		1992		Change 1961-92	
	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment
	031 Plastic Products Industries	0,13	0,02	0,98	0,23	0,84
032 Leather Tanneries	0,09	0,02	0,02	0,01	-0,07	-0,01
033 Footwear Industry	0,07	0,01	0,09	0,02	0,02	0,01
034 Misc. Leather and Allied Prod. Ind.	0,04	0,01	0,04	0,01	0,00	0,00
035 Man-Made Fibre Yarn and Woven Cloth	0,51	0,09	0,34	0,08	-0,17	-0,01
036 Wool Yarn and Woven Cloth Industry	0,14	0,02	0,07	0,02	-0,07	-0,01
037 Broad Knitted Fabric Industry	0,01	0,00	0,03	0,01	0,02	0,00
038 Misc. Textile Products Industries	0,25	0,04	0,29	0,07	0,04	0,02
039 Contract Textile Dyeing and Finishing	0,02	0,00	0,06	0,01	0,04	0,01
040 Carpet, Mat and Rug Industry	0,00	0,00	0,04	0,01	0,04	0,01
041 Clothing Industry excl. Hosiery	0,25	0,04	0,66	0,15	0,41	0,11
042 Hosiery Industry	0,02	0,00	0,01	0,00	-0,01	-0,00
043 Sawmills, Planing and Shingle Mills	3,85	0,66	1,99	0,46	-1,86	-0,20
044 Veneer and Plywood Industries	0,36	0,06	0,16	0,04	-0,20	-0,03
045 Sash, Door and Oth. Millwork Industries	0,23	0,04	0,30	0,07	0,07	0,03
046 Wooden Box and Coffin Industries	0,10	0,02	0,06	0,01	-0,04	-0,00
047 Other Wood Industries	0,22	0,04	0,25	0,06	0,03	0,02
048 Household Furniture Industries	0,04	0,01	0,33	0,08	0,29	0,07
049 Office Furniture Industry	0,00	0,00	0,14	0,03	0,13	0,03
050 Other Furniture and Fixture Industries	0,03	0,01	0,13	0,03	0,10	0,02
051 Pulp and Paper Industries	5,92	1,02	2,64	0,61	-3,27	-0,41
052 Asphalt Roofing Industry	0,02	0,00	0,02	0,01	0,01	0,00
053 Paper Box and Bag Industries	0,27	0,05	0,30	0,07	0,03	0,02
054 Other Converted Paper Prod. Industries	0,15	0,03	0,26	0,06	0,11	0,03
055 Printing and Publishing Industries	0,65	0,11	0,93	0,22	0,29	0,10
056 Plate making, Typesetting and Bindery	0,08	0,01	0,15	0,03	0,07	0,02
057 Primary Steel Industries	1,10	0,19	1,24	0,29	0,14	0,10
058 Steel Pipe and Tube Industry	0,03	0,00	0,11	0,02	0,08	0,02
059 Iron Foundries	0,16	0,03	0,23	0,05	0,08	0,03
060 Non-Ferrous Smelting and Refining	3,18	0,55	1,20	0,28	-1,98	-0,27

Table A.3A (cont'd)

	1961		1992		Change 1961-92	
	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment
	061 Alum. Rolling, Casting and Extruding	0,24	0,04	0,20	0,05	-0,04
062 Copper Rolling, Casting and Extruding	0,11	0,02	0,07	0,02	-0,04	-0,00
063 Other Metal Rolling, Casting, etc.	0,15	0,03	0,20	0,05	0,05	0,02
064 Power Boiler and Struct. Metal Industries	0,19	0,03	0,24	0,06	0,05	0,02
065 Ornamental and Arch. Metal Products	0,06	0,01	0,15	0,04	0,09	0,02
066 Stamped, Pressed and Coated Metals	0,29	0,05	0,59	0,14	0,31	0,09
067 Wire and Wire Products Industries	0,31	0,05	0,30	0,07	-0,00	0,02
068 Hardware Tool and Cutlery Industries	0,19	0,03	0,39	0,09	0,20	0,06
069 Heating Equipment Industry	0,03	0,01	0,05	0,01	0,02	0,01
070 Machine Shops Industry	0,15	0,03	0,69	0,16	0,55	0,13
071 Other Metal Fabricating Industries	0,28	0,05	0,39	0,09	0,11	0,04
072 Agricultural Implement Industry	0,72	0,12	0,21	0,05	-0,51	-0,07
073 Commercial Refrigeration Equipment	0,02	0,00	0,11	0,03	0,10	0,02
074 Other Machinery and Equip. Industries	0,65	0,11	1,70	0,39	1,05	0,28
075 Aircraft and Aircraft Parts Industries	1,17	0,20	1,62	0,37	0,44	0,17
076 Motor Vehicle Industry	0,11	0,02	2,32	0,54	2,21	0,52
077 Truck, Bus Body and Trailer Industries	0,04	0,01	0,16	0,04	0,12	0,03
078 Motor Vehicle Parts and Accessories	0,37	0,06	3,72	0,86	3,35	0,79
079 Railroad Rolling Stock Industry	0,11	0,02	0,20	0,05	0,09	0,03
080 Shipbuilding and Repair Industry	0,25	0,04	0,11	0,03	-0,14	-0,02
081 Misc. Transport. Equip. Industries	0,03	0,01	0,11	0,02	0,07	0,02
082 Small Electrical Appliance Industry	0,02	0,00	0,05	0,01	0,03	0,01
083 Major Appliances (Elec. and Non-Elec.)	0,08	0,01	0,09	0,02	0,01	0,01
084 Record Players, Radio and TV Receivers	0,05	0,01	0,09	0,02	0,05	0,01
085 Electronic Equipment Industries	0,40	0,07	1,82	0,42	1,42	0,35
086 Office, Store and Business Machines	0,26	0,04	0,71	0,16	0,45	0,12
087 Communic., Energy Wire and Cable	0,13	0,02	0,15	0,03	0,02	0,01
088 Battery Industry	0,03	0,01	0,04	0,01	0,01	0,00
089 Other Elect. and Electronic Products	0,38	0,07	0,79	0,18	0,40	0,12
090 Clay Products Industries	0,06	0,01	0,01	0,00	-0,05	-0,01

Table A.3A (cont'd)						
	1961		1992		Change 1961-92	
	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment
	091 Cement Industry	0,03	0,00	0,03	0,01	0,00
092 Concrete Products Industry	0,02	0,00	0,03	0,01	0,00	0,00
093 Ready-Mix Concrete Industry	0,01	0,00	0,02	0,00	0,01	0,00
094 Glass and Glass Products Industries	0,10	0,02	0,21	0,05	0,11	0,03
095 Non-Metallic Mineral Products n.e.c.	0,38	0,07	0,27	0,06	-0,11	-0,00
096 Refined Petroleum and Coal Products	0,21	0,04	0,21	0,05	-0,00	0,01
097 Industrial Chemicals Industries n.e.c.	1,05	0,18	0,63	0,15	-0,42	-0,04
098 Plastic and Synthetic Resin Industries	0,16	0,03	0,26	0,06	0,10	0,03
099 Pharmaceutical and Medicine Industry	0,09	0,02	0,14	0,03	0,05	0,02
100 Paint and Varnish Industry	0,11	0,02	0,13	0,03	0,03	0,01
101 Soap and Cleaning Compounds Industry	0,07	0,01	0,10	0,02	0,03	0,01
102 Toilet Preparations Industry	0,01	0,00	0,06	0,01	0,06	0,01
103 Chemicals and Chemical Products	0,43	0,07	0,52	0,12	0,09	0,05
104 Jewelry and Precious Metals Industry	0,14	0,02	0,15	0,03	0,01	0,01
105 Sporting Goods and Toys Industries	0,06	0,01	0,15	0,03	0,08	0,02
106 Sign and Display Industry	0,05	0,01	0,09	0,02	0,04	0,01
107 Floor Tile, Linoleum, Coated Fabrics	0,03	0,00	0,06	0,01	0,03	0,01
108 Other Manufacturing Industry n.e.c.	0,54	0,09	1,04	0,24	0,50	0,15
109 Repair Construction	2,11	0,36	1,28	0,30	-0,83	-0,07
110 Residential Construction	0,00	0,00	0,00	0,00	0,00	0,00
111 Non-Residential Bldg Construction	0,00	0,00	0,00	0,00	0,00	0,00
112 Road, Highway and Airstrip Constr.	0,00	0,00	0,00	0,00	0,00	0,00
113 Gas and Oil Facility Construction	0,00	0,00	0,00	0,00	0,00	0,00
114 Dams and Irrigation Projects	0,00	0,00	0,00	0,00	0,00	0,00
115 Railway and Telephone Teleg. Constr.	0,00	0,00	0,00	0,00	0,00	0,00
116 Other Engineering Construction	0,00	0,00	0,00	0,00	0,00	0,00
117 Construction, Other Activities	0,01	0,00	0,02	0,00	0,00	0,00
118 Air Transport and Incidental Services	0,16	0,03	0,62	0,14	0,46	0,11
119 Railway and Transport and Rel. Services	5,07	0,87	1,30	0,30	-3,77	-0,57
120 Water Transport and Related Services	2,10	0,36	0,62	0,14	-1,48	-0,22

Table A.3A (cont'd)						
	1961		1992		Change 1961-92	
	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment
	121 Truck Transport Industries	2,92	0,50	3,13	0,72	0,21
122 Urban Transit System Industry	0,01	0,00	0,10	0,02	0,08	0,02
123 Interurban and Rural Transit Systems	0,01	0,00	0,06	0,01	0,04	0,01
124 Taxicab Industry	0,15	0,03	0,41	0,10	0,26	0,07
125 Other Transport and Services to Transport	0,07	0,01	1,10	0,25	1,03	0,24
126 Highway and Bridge Maintenance Ind.	0,01	0,00	0,01	0,00	-0,01	-0,00
127 Pipeline Transport Industries	0,11	0,02	0,18	0,04	0,07	0,02
128 Storage and Warehousing Industries	0,78	0,13	0,49	0,11	-0,29	-0,02
129 Telecomm. Broadcasting Industry	0,42	0,07	0,21	0,05	-0,20	-0,02
130 Telecommunication Carriers and Other	0,53	0,09	0,74	0,17	0,21	0,08
131 Postal Service Industry	0,26	0,04	0,52	0,12	0,26	0,08
132 Electric Power Systems Industry	0,77	0,13	1,00	0,23	0,23	0,10
133 Gas Distribution Systems Industry	0,12	0,02	0,10	0,02	-0,02	0,00
134 Other Utility Industries n.e.c.	0,05	0,01	0,25	0,06	0,20	0,05
135 Wholesale Trade Industries	3,63	0,63	7,96	1,84	4,33	1,21
136 Retail Trade Industries	2,34	0,40	3,74	0,86	1,40	0,46
137 Banks, Credit Union and Oth. Dep. Inst.	0,46	0,08	1,55	0,36	1,09	0,28
138 Trust, Other Finance and Real Estate	0,51	0,09	1,59	0,37	1,09	0,28
139 Insurance Industries	0,67	0,12	0,70	0,16	0,03	0,05
140 Govt. Royalties on Nat. Resources	0,00	0,00	0,00	0,00	0,00	0,00
141 Owner Occupied Dwellings	0,00	0,00	0,00	0,00	0,00	0,00
142 Other Business Services Industries	0,45	0,08	4,60	1,06	4,15	0,98
143 Professional Business Services	0,94	0,16	4,03	0,93	3,10	0,77
144 Advertising Services	0,18	0,03	0,41	0,09	0,23	0,06
145 Educational Services Industries	0,08	0,01	0,21	0,05	0,13	0,03
146 Hospitals	0,02	0,00	0,05	0,01	0,03	0,01
147 Other Health Services	0,00	0,00	0,01	0,00	0,01	0,00
148 Accom. and Food Services Industry	0,46	0,08	5,74	1,32	5,28	1,25
149 Motion Picture and Video Industries	0,05	0,01	0,20	0,05	0,15	0,04
150 Other Amusement and Recreational Serv.	0,03	0,01	0,59	0,14	0,56	0,13

Table A.3A (cont'd)

	1961		1992		Change 1961-92	
	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment
	151 Laundries and Cleaners	0,04	0,01	0,09	0,02	0,04
152 Other Personal Services	0,00	0,00	0,01	0,00	0,01	0,00
153 Photographers	0,01	0,00	0,03	0,01	0,02	0,01
154 Misc. Service Industries	0,62	0,11	3,02	0,70	2,39	0,59
TOTAL	100,00	17,20	100,00	23,07	0,00	5,87

Table A.3B Employment Shares: 1961 to 1992 – 161 Industries – Sorted by Size of Change

	1961		1992		Change 1961–92	
	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment
	148 Accom. and Food Services Industry	0,46	0,08	5,74	1,32	5,28
135 Wholesale Trade Industries	3,63	0,63	7,96	1,84	4,33	1,21
142 Other Business Services Industries	0,45	0,08	4,60	1,06	4,15	0,98
078 Motor Vehicle Parts and Accessories	0,37	0,06	3,72	0,86	3,35	0,79
143 Professional Business Services	0,94	0,16	4,03	0,93	3,10	0,77
154 Misc. Service Industries	0,62	0,11	3,02	0,70	2,39	0,59
076 Motor Vehicle Industry	0,11	0,02	2,32	0,54	2,21	0,52
085 Electronic Equipment Industries	0,40	0,07	1,82	0,42	1,42	0,35
136 Retail Trade Industries	2,34	0,40	3,74	0,86	1,40	0,46
137 Banks, Credit Union and Oth. Dep. Inst.	0,46	0,08	1,55	0,36	1,09	0,28
138 Trust, Other Finance and Real Estate	0,51	0,09	1,59	0,37	1,09	0,28
074 Other Machinery and Equip. Industries	0,65	0,11	1,70	0,39	1,05	0,28
125 Other Transport and Services to Transp.	0,07	0,01	1,10	0,25	1,03	0,24
031 Plastic Products Industries	0,13	0,02	0,98	0,23	0,84	0,20
150 Other Amusement and Recr. Services	0,03	0,01	0,59	0,14	0,56	0,13
070 Machine Shops Industry	0,15	0,03	0,69	0,16	0,55	0,13
108 Other Manufacturing Industry n.e.c.	0,54	0,09	1,04	0,24	0,50	0,15
011 Crude Petroleum and Natural Gas	0,60	0,10	1,09	0,25	0,50	0,15
030 Rubber Products Industries	0,29	0,05	0,77	0,18	0,48	0,13
118 Air Transport and Incidental Services	0,16	0,03	0,62	0,14	0,46	0,11
086 Office, Store and Business Machines	0,26	0,04	0,71	0,16	0,45	0,12
075 Aircraft and Aircraft Parts Industries	1,17	0,20	1,62	0,37	0,44	0,17
041 Clothing Industry excluding Hosiery	0,25	0,04	0,66	0,15	0,41	0,11
089 Other Elect. and Electronic Products	0,38	0,07	0,79	0,18	0,40	0,12
013 Services Related to Mineral Extraction	0,16	0,03	0,51	0,12	0,35	0,09
066 Stamped, Pressed and Coated Metals	0,29	0,05	0,59	0,14	0,31	0,09
055 Printing and Publishing Industries	0,65	0,11	0,93	0,22	0,29	0,10
048 Household Furniture Industries	0,04	0,01	0,33	0,08	0,29	0,07
131 Postal Service Industry	0,26	0,04	0,52	0,12	0,26	0,08
124 Taxicab Industry	0,15	0,03	0,41	0,10	0,26	0,07
144 Advertising Services	0,18	0,03	0,41	0,09	0,23	0,06
132 Electric Power Systems Industry	0,77	0,13	1,00	0,23	0,23	0,10

Table A.3B (cont'd)

	1961		1992		Change 1961-92	
	Export Employment as a % of Total	Export Employment as a % of Total	Export Employment as a % of Total	Export Employment as a % of Total	Export Employment as a % of Total	Export Employment as a % of Total
	Export Employment	Export Employment	Export Employment	Export Employment	Export Employment	Export Employment
121 Truck Transport Industries	2,92	0,50	3,13	0,72	0,21	0,22
130 Telecommunication Carriers and Other	0,53	0,09	0,74	0,17	0,21	0,08
068 Hardware Tool and Cutlery Industries	0,19	0,03	0,39	0,09	0,20	0,06
134 Other Utility Industries n.e.c.	0,05	0,01	0,25	0,06	0,20	0,05
149 Motion Picture and Video Industries	0,05	0,01	0,20	0,05	0,15	0,04
002 Fishing and Trapping	1,24	0,21	1,38	0,32	0,14	0,11
057 Primary Steel Industries	1,10	0,19	1,24	0,29	0,14	0,10
049 Office Furniture Industry	0,00	0,00	0,14	0,03	0,13	0,03
145 Educational Services Industries	0,08	0,01	0,21	0,05	0,13	0,03
077 Truck, Bus Body and Trailer Industries	0,04	0,01	0,16	0,04	0,12	0,03
071 Other Metal Fabricating Industries	0,28	0,05	0,39	0,09	0,11	0,04
094 Glass and Glass Products Industries	0,10	0,02	0,21	0,05	0,11	0,03
054 Other Converted Paper Prod. Industries	0,15	0,03	0,26	0,06	0,11	0,03
098 Plastic and Synthetic Resin Industries	0,16	0,03	0,26	0,06	0,10	0,03
050 Other Furniture and Fixture Industries	0,03	0,01	0,13	0,03	0,10	0,02
073 Commercial Refrigeration Equipment	0,02	0,00	0,11	0,03	0,10	0,02
103 Chemicals and Chemical Products	0,43	0,07	0,52	0,12	0,09	0,05
065 Ornamental and Arch. Metal Products	0,06	0,01	0,15	0,04	0,09	0,02
014 Meat and Meat Prod. (excl. Poultry)	0,28	0,05	0,37	0,09	0,09	0,04
079 Railroad Rolling Stock Industry	0,11	0,02	0,20	0,05	0,09	0,03
122 Urban Transit System Industry	0,01	0,00	0,10	0,02	0,08	0,02
105 Sporting Goods and Toys Industries	0,06	0,01	0,15	0,03	0,08	0,02
058 Steel Pipe and Tube Industry	0,03	0,00	0,11	0,02	0,08	0,02
059 Iron Foundries	0,16	0,03	0,23	0,05	0,08	0,03
017 Fruit and Vegetable Processing	0,08	0,01	0,15	0,04	0,07	0,02
081 Misc. Transport. Equip. Industries	0,03	0,01	0,11	0,02	0,07	0,02
127 Pipeline Transport Industries	0,11	0,02	0,18	0,04	0,07	0,02
045 Sash, Door and Other Millwork Ind.	0,23	0,04	0,30	0,07	0,07	0,03
056 Plate making, Typesetting and Bindery	0,08	0,01	0,15	0,03	0,07	0,02
022 Bread and Other Bakery Prod. Ind.	0,04	0,01	0,11	0,02	0,06	0,02
025 Soft Drink Industry	0,01	0,00	0,07	0,02	0,06	0,01

Table A.3B (cont'd)

	1961		1992		Change 1961-92	
	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment
	102 Toilet Preparations Industry	0,01	0,00	0,06	0,01	0,06
099 Pharmaceutical and Medicine Industry	0,09	0,02	0,14	0,03	0,05	0,02
064 Power Boiler and Struct. Metal Ind.	0,19	0,03	0,24	0,06	0,05	0,02
063 Other Metal Rolling, Casting, etc.	0,15	0,03	0,20	0,05	0,05	0,02
084 Record Players, Radio and TV Receivers	0,05	0,01	0,09	0,02	0,05	0,01
151 Laundries and Cleaners	0,04	0,01	0,09	0,02	0,04	0,01
123 Interurban and Rural Transit Systems	0,01	0,00	0,06	0,01	0,04	0,01
040 Carpet, Mat and Rug Industry	0,00	0,00	0,04	0,01	0,04	0,01
038 Misc. Textile Products Industries	0,25	0,04	0,29	0,07	0,04	0,02
106 Sign and Display Industry	0,05	0,01	0,09	0,02	0,04	0,01
039 Contract Textile Dyeing and Finishing	0,02	0,00	0,06	0,01	0,04	0,01
146 Hospitals	0,02	0,00	0,05	0,01	0,03	0,01
101 Soap and Cleaning Compounds Industry	0,07	0,01	0,10	0,02	0,03	0,01
047 Other Wood Industries	0,22	0,04	0,25	0,06	0,03	0,02
107 Floor Tile, Linoleum, Coated Fabrics	0,03	0,00	0,06	0,01	0,03	0,01
100 Paint and Varnish Industry	0,11	0,02	0,13	0,03	0,03	0,01
139 Insurance Industries	0,67	0,12	0,70	0,16	0,03	0,05
053 Paper Box and Bag Industries	0,27	0,05	0,30	0,07	0,03	0,02
082 Small Electrical Appliance Industry	0,02	0,00	0,05	0,01	0,03	0,01
087 Communic., Energy Wire and Cable	0,13	0,02	0,15	0,03	0,02	0,01
153 Photographers	0,01	0,00	0,03	0,01	0,02	0,01
015 Poultry Products	0,01	0,00	0,04	0,01	0,02	0,01
027 Brewery Products Industry	0,04	0,01	0,06	0,01	0,02	0,01
069 Heating Equipment Industry	0,03	0,01	0,05	0,01	0,02	0,01
033 Footwear Industry	0,07	0,01	0,09	0,02	0,02	0,01
021 Biscuit Industry	0,02	0,00	0,04	0,01	0,02	0,01
037 Broad Knitted Fabric Industry	0,01	0,00	0,03	0,01	0,02	0,00
147 Other Health Services	0,00	0,00	0,01	0,00	0,01	0,00
083 Major Appliances (Elec. and Non-Elec.)	0,08	0,01	0,09	0,02	0,01	0,01
152 Other Personal Services	0,00	0,00	0,01	0,00	0,01	0,00
104 Jewelry and Precious Metals Industry	0,14	0,02	0,15	0,03	0,01	0,01

Table A.3B (cont'd)

	1961		1992		Change 1961-92	
	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment
	093 Ready-Mix Concrete Industry	0,01	0,00	0,02	0,00	0,01
028 Wine Industry	0,00	0,00	0,01	0,00	0,01	0,00
052 Asphalt Roofing Industry	0,02	0,00	0,02	0,01	0,01	0,00
088 Battery Industry	0,03	0,01	0,04	0,01	0,01	0,00
092 Concrete Products Industry	0,02	0,00	0,03	0,01	0,00	0,00
091 Cement Industry	0,03	0,00	0,03	0,01	0,00	0,00
117 Construction, Other Activities	0,01	0,00	0,02	0,00	0,00	0,00
034 Misc. Leather and Allied Prod. Ind.	0,04	0,01	0,04	0,01	0,00	0,00
113 Gas and Oil Facility Construction	0,00	0,00	0,00	0,00	0,00	0,00
111 Non-Residential Bldg Construction	0,00	0,00	0,00	0,00	0,00	0,00
112 Road, Highway and Airstrip Constr.	0,00	0,00	0,00	0,00	0,00	0,00
114 Dams and Irrigation Projects	0,00	0,00	0,00	0,00	0,00	0,00
141 Owner Occupied Dwellings	0,00	0,00	0,00	0,00	0,00	0,00
116 Other Engineering Construction	0,00	0,00	0,00	0,00	0,00	0,00
115 Railway and Telephone Teleg. Constr.	0,00	0,00	0,00	0,00	0,00	0,00
110 Residential Construction	0,00	0,00	0,00	0,00	0,00	0,00
140 Govt. Royalties on Nat. Resources	0,00	0,00	0,00	0,00	0,00	0,00
096 Refined Petroleum and Coal Products	0,21	0,04	0,21	0,05	-0,00	0,01
067 Wire and Wire Products Industries	0,31	0,05	0,30	0,07	-0,00	0,02
023 Cane and Beer Sugar Industry	0,02	0,00	0,01	0,00	-0,00	0,00
126 Highway and Bridge Maintenance Ind.	0,01	0,00	0,01	0,00	-0,01	-0,00
020 Vegetable Oil Mills (excluding Corn)	0,03	0,00	0,02	0,00	-0,01	0,00
042 Hosiery Industry	0,02	0,00	0,01	0,00	-0,01	-0,00
133 Gas Distribution Systems Industry	0,12	0,02	0,10	0,02	-0,02	0,00
009 Salt Mines	0,04	0,01	0,02	0,00	-0,02	-0,00
008 Non-Metal excl. Coal and Asbestos	0,28	0,05	0,25	0,06	-0,03	0,01
012 Quarries and Sand Pits	0,13	0,02	0,09	0,02	-0,04	-0,00
061 Alum. Rolling, Casting and Extruding	0,24	0,04	0,20	0,05	-0,04	0,01
046 Wooden Box and Coffin Industries	0,10	0,02	0,06	0,01	-0,04	-0,00
062 Copper Rolling, Casting and Extruding	0,11	0,02	0,07	0,02	-0,04	-0,00
090 Clay Products Industries	0,06	0,01	0,01	0,00	-0,05	-0,01

Table A.3B (cont'd)

	1961		1992		Change 1961-92	
	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment	Export Employment as a % of Total Export Employment	Export Employment as a % of Total Employment
	036 Wool Yarn and Woven Cloth Industry	0,14	0,02	0,07	0,02	-0,07
032 Leather Tanneries	0,09	0,02	0,02	0,01	-0,07	-0,01
029 Tobacco Products Industries	0,13	0,02	0,06	0,01	-0,07	-0,01
018 Dairy Products	0,17	0,03	0,09	0,02	-0,08	-0,01
095 Non-Metallic Mineral Products n.e.c.	0,38	0,07	0,27	0,06	-0,11	-0,00
080 Shipbuilding and Repair Industry	0,25	0,04	0,11	0,03	-0,14	-0,02
035 Man-Made Fibre Yarn and Woven Cloth	0,51	0,09	0,34	0,08	-0,17	-0,01
019 Feed Industry	0,34	0,06	0,16	0,04	-0,18	-0,02
024 Miscellaneous Food Industries	0,53	0,09	0,34	0,08	-0,19	-0,01
044 Veneer and Plywood Industries	0,36	0,06	0,16	0,04	-0,20	-0,03
129 Telecomm. Broadcasting Industry	0,42	0,07	0,21	0,05	-0,20	-0,02
026 Distillery Products Industry	0,31	0,05	0,09	0,02	-0,22	-0,03
016 Fish Products Industry	1,11	0,19	0,87	0,20	-0,25	0,01
010 Coal Mines	0,52	0,09	0,25	0,06	-0,27	-0,03
128 Storage and Warehousing Industries	0,78	0,13	0,49	0,11	-0,29	-0,02
097 Industrial Chemicals Industries n.e.c.	1,05	0,18	0,63	0,15	-0,42	-0,04
072 Agricultural Implement Industry	0,72	0,12	0,21	0,05	-0,51	-0,07
006 Iron Mines	0,79	0,14	0,22	0,05	-0,58	-0,09
007 Asbestos Mines	0,72	0,12	0,10	0,02	-0,62	-0,10
109 Repair Construction	2,11	0,36	1,28	0,30	-0,83	-0,07
004 Gold Mines	1,81	0,31	0,35	0,08	-1,46	-0,23
120 Water Transport and Related Services	2,10	0,36	0,62	0,14	-1,48	-0,22
043 Sawmills, Planing and Shingle Mills	3,85	0,66	1,99	0,46	-1,86	-0,20
060 Non-Ferrous Smelting and Refining	3,18	0,55	1,20	0,28	-1,98	-0,27
005 Other Metal Mines	3,35	0,58	0,87	0,20	-2,48	-0,38
051 Pulp and Paper Industries	5,92	1,02	2,64	0,61	-3,27	-0,41
119 Railway and Transport and Rel. Services	5,07	0,87	1,30	0,30	-3,77	-0,57
003 Logging and Forestry	5,55	0,95	1,77	0,41	-3,78	-0,55
001 Agriculture and Related	26,93	4,63	8,69	2,01	-18,24	-2,63
TOTAL	100,00	17,20	100,00	23,07	0,00	5,87

Table A.4A Decomposition of Changes in Employment Shares: 1961 to 1992 – 161 Industries

	1961	1992	Change 1961-92	Due to:				
	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Change in Export Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
001 Agriculture and Related	26,93	8,69	-18,24	-13,16	-3,23	-0,30	0,55	-2,09
002 Fishing and Trapping	1,24	1,38	0,14	-0,64	0,46	-0,14	0,22	0,24
003 Logging and Forestry	5,55	1,77	-3,78	-1,36	-1,17	-0,21	0,11	-1,15
004 Gold Mines	1,81	0,35	-1,46	-0,31	-0,64	-0,02	0,02	-0,50
005 Other Metal Mines	3,35	0,87	-2,48	-1,31	-0,14	-0,26	-0,05	-0,72
006 Iron Mines	0,79	0,22	-0,58	-0,48	-0,04	-0,03	0,03	-0,06
007 Asbestos Mines	0,72	0,10	-0,62	-1,06	0,04	-0,02	0,01	0,41
008 Non-Metal excl Coal and Asbestos	0,28	0,25	-0,03	0,01	-0,26	-0,00	0,05	0,17
009 Salt Mines	0,04	0,02	-0,02	-0,01	-0,00	-0,01	0,00	-0,00
010 Coal Mines	0,52	0,25	-0,27	0,18	-0,89	-0,05	0,01	0,47
011 Crude Petroleum and Natural Gas	0,60	1,09	0,50	0,47	-0,25	-0,01	0,14	0,14
012 Quarries and Sand Pits	0,13	0,09	-0,04	-0,06	0,00	-0,01	0,00	0,03
013 Services Related to Mineral Extraction	0,16	0,51	0,35	0,04	0,24	0,22	0,06	-0,21
014 Meat and Meat Prod (excl. Poultry)	0,28	0,37	0,09	0,02	0,09	-0,06	0,01	0,03
015 Poultry Products	0,01	0,04	0,02	0,01	0,01	-0,00	0,00	-0,00
016 Fish Products Industry	1,11	0,87	-0,25	-0,31	0,07	-0,08	0,05	0,04
017 Fruit and Vegetable Processing	0,08	0,15	0,07	0,08	-0,01	-0,01	0,01	0,02
018 Dairy Products	0,17	0,09	-0,08	-0,05	-0,02	-0,01	0,00	-0,00
019 Feed Industry	0,34	0,16	-0,18	-0,16	-0,00	-0,01	-0,01	0,00
020 Vegetable Oil Mills (excluding Corn)	0,03	0,02	-0,01	-0,01	-0,00	-0,00	0,00	0,00
021 Biscuit Industry	0,02	0,04	0,02	0,02	-0,01	0,00	0,00	0,00
022 Bread and Other Bakery Prod. Industries	0,04	0,11	0,06	0,07	0,00	-0,01	0,00	0,01
023 Cane and Beer Sugar Industry	0,02	0,01	-0,00	0,00	0,00	-0,01	0,00	0,00
024 Miscellaneous Food Industries	0,53	0,34	-0,19	-0,20	0,04	-0,06	0,01	0,01
025 Soft Drink Industry	0,01	0,07	0,06	0,05	-0,05	0,01	0,00	0,05
026 Distillery Products Industry	0,31	0,09	-0,22	-0,25	0,01	-0,01	0,01	0,02
027 Brewery Products Industry	0,04	0,06	0,02	0,02	-0,00	-0,01	0,00	0,00
028 Wine Industry	0,00	0,01	0,01	0,01	0,00	-0,00	-0,00	-0,00
029 Tobacco Products Industries	0,13	0,06	-0,07	-0,02	-0,03	-0,01	0,00	-0,02
030 Rubber Products Industries	0,29	0,77	0,48	0,55	0,13	-0,13	-0,15	0,08

Table A.4A (cont'd)								
	1961	1992	Change 1961-92	Due to:				
	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Change in Export Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
031 Plastic Products Industries	0,13	0,98	0,84	0,59	0,06	0,21	-0,04	0,03
032 Leather Tanneries	0,09	0,02	-0,07	-0,07	0,00	0,00	-0,02	0,02
033 Footwear Industry	0,07	0,09	0,02	0,02	0,01	-0,01	-0,01	0,01
034 Misc. Leather and Allied Prod. Ind.	0,04	0,04	0,00	0,01	0,01	-0,00	-0,01	0,00
035 Man-Made Fibre Yarn and Woven Cloth	0,51	0,34	-0,17	0,05	-0,05	-0,14	-0,06	0,03
036 Wool Yarn and Woven Cloth Industry	0,14	0,07	-0,07	-0,03	0,00	-0,04	-0,02	0,02
037 Broad Knitted Fabric Industry	0,01	0,03	0,02	0,02	-0,00	0,01	-0,00	-0,00
038 Misc. Textile Products Industries	0,25	0,29	0,04	0,06	0,05	-0,05	-0,02	0,00
039 Contract Textile Dyeing and Finishing	0,02	0,06	0,04	0,04	0,01	0,01	-0,01	-0,02
040 Carpet, Mat and Rug Industry	0,00	0,04	0,04	0,04	-0,01	-0,00	-0,00	0,01
041 Clothing Industry excl. Hosiery	0,25	0,66	0,41	0,45	0,05	-0,07	-0,01	-0,01
042 Hosiery Industry	0,02	0,01	-0,01	-0,01	0,00	-0,00	0,00	0,00
043 Sawmills, Planing and Shingle Mills	3,85	1,99	-1,86	-0,98	-0,98	-0,08	0,17	0,02
044 Veneer and Plywood Industries	0,36	0,16	-0,20	-0,17	-0,02	-0,03	0,01	0,01
045 Sash, Door and Other Millwork Ind.	0,23	0,30	0,07	0,06	0,04	-0,05	0,02	-0,00
046 Wooden Box and Coffin Industries	0,10	0,06	-0,04	-0,01	-0,01	-0,01	-0,01	-0,00
047 Other Wood Industries	0,22	0,25	0,03	0,12	-0,15	-0,03	0,02	0,07
048 Household Furniture Industries	0,04	0,33	0,29	0,30	0,03	-0,03	0,01	-0,02
049 Office Furniture Industry	0,00	0,14	0,13	0,13	0,00	-0,01	0,01	0,00
050 Other Furniture and Fixture Industries	0,03	0,13	0,10	0,09	0,03	-0,01	0,00	-0,01
051 Pulp and Paper Industries	5,92	2,64	-3,27	-3,27	0,02	-0,33	0,14	0,17
052 Asphalt Roofing Industry	0,02	0,02	0,01	0,01	-0,01	-0,01	0,00	0,01
053 Paper Box and Bag Industries	0,27	0,30	0,03	0,06	0,03	-0,11	-0,02	0,06
054 Other Converted Paper Prod. Industries	0,15	0,26	0,11	0,11	0,03	-0,08	-0,01	0,05
055 Printing and Publishing Industries	0,65	0,93	0,29	0,33	-0,01	-0,23	-0,04	0,23
056 Plate making, Typesetting and Bindery	0,08	0,15	0,07	0,06	0,02	-0,04	-0,00	0,02
057 Primary Steel Industries	1,10	1,24	0,14	0,30	-0,03	-0,15	-0,19	0,21
058 Steel Pipe and Tube Industry	0,03	0,11	0,08	0,05	0,04	-0,01	-0,00	0,00
059 Iron Foundries	0,16	0,23	0,08	0,08	-0,05	-0,00	-0,02	0,08

Table A.4A (cont'd)								
	1961	1992	Change 1961-92	Due to:				
	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Change in Export Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
060 Non-Ferrous Smelting and Refining	3,18	1,20	-1,98	-1,79	-0,04	-0,10	-0,02	-0,03
061 Alum. Rolling, Casting and Extruding	0,24	0,20	-0,04	0,04	-0,13	0,03	-0,08	0,10
062 Copper Rolling, Casting and Extruding	0,11	0,07	-0,04	-0,07	0,03	-0,06	-0,04	0,10
063 Other Metal Rolling, Casting, etc.	0,15	0,20	0,05	-0,02	0,07	-0,05	-0,02	0,07
064 Power Boiler and Struct. Metal Ind.	0,19	0,24	0,05	0,07	0,04	-0,10	0,01	0,04
065 Ornamental and Arch. Metal Products	0,06	0,15	0,09	0,08	0,01	0,00	0,00	-0,01
066 Stamped, Pressed and Coated Metals	0,29	0,59	0,31	0,30	0,09	-0,09	-0,07	0,06
067 Wire and Wire Products Industries	0,31	0,30	-0,00	0,16	0,04	-0,23	-0,07	0,09
068 Hardware Tool and Cutlery Industries	0,19	0,39	0,20	0,17	0,10	-0,04	-0,02	-0,00
069 Heating Equipment Industry	0,03	0,05	0,02	0,02	0,01	-0,01	-0,00	-0,00
070 Machine Shops Industry	0,15	0,69	0,55	0,49	0,16	0,05	-0,16	-0,00
071 Other Metal Fabricating Industries	0,28	0,39	0,11	0,15	0,03	-0,08	-0,06	0,07
072 Agricultural Implement Industry	0,72	0,21	-0,51	-0,57	0,02	-0,04	0,02	0,06
073 Commercial Refrigeration Equipment	0,02	0,11	0,10	0,09	0,02	0,03	-0,04	-0,00
074 Other Machinery and Equip. Industries	0,65	1,70	1,05	1,05	0,11	-0,12	-0,05	0,05
075 Aircraft and Aircraft Parts Industries	1,17	1,62	0,44	0,56	-0,10	-0,14	0,04	0,09
076 Motor Vehicle Industry	0,11	2,32	2,21	2,26	-1,56	-0,28	0,18	1,59
077 Truck, Bus Body and Trailer Industries	0,04	0,16	0,12	0,12	0,02	0,01	-0,00	-0,02
078 Motor Vehicle Parts and Accessories	0,37	3,72	3,35	3,47	-0,31	-0,03	-1,06	1,27
079 Railroad Rolling Stock Industry	0,11	0,20	0,09	0,14	-0,06	-0,02	-0,01	0,03
080 Shipbuilding and Repair Industry	0,25	0,11	-0,14	-0,14	-0,02	-0,00	0,01	0,01
081 Misc. Transport. Equip. Industries	0,03	0,11	0,07	0,08	-0,06	-0,00	0,01	0,05
082 Small Electrical Appliance Industry	0,02	0,05	0,03	0,03	0,01	-0,01	-0,00	0,00
083 Major Appliances (Elec. and Non-Elec.)	0,08	0,09	0,01	0,02	-0,00	-0,01	-0,01	0,00
084 Record Players, Radio and TV Receivers	0,05	0,09	0,05	0,07	-0,03	-0,01	-0,05	0,07
085 Electronic Equipment Industries	0,40	1,82	1,42	1,58	-1,62	0,09	-0,39	1,75
086 Office, Store and Business Machines	0,26	0,71	0,45	0,55	-0,16	-0,07	-0,16	0,29
087 Communic., Energy Wire and Cable	0,13	0,15	0,02	0,03	0,01	-0,03	-0,02	0,03
088 Battery Industry	0,03	0,04	0,01	0,01	0,01	-0,01	-0,01	0,01

Table A.4A (cont'd)								
	1961	1992	Change 1961-92	Due to:				
	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Change in Export Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
089 Other Elect. and Electronic Products	0,38	0,79	0,40	0,40	0,07	-0,06	-0,16	0,16
090 Clay Products Industries	0,06	0,01	-0,05	-0,02	-0,00	-0,01	-0,00	-0,01
091 Cement Industry	0,03	0,03	0,00	0,01	0,00	-0,01	0,00	-0,00
092 Concrete Products Industry	0,02	0,03	0,00	0,01	0,00	-0,01	0,00	0,00
093 Ready-Mix Concrete Industry	0,01	0,02	0,01	-0,00	0,01	0,00	0,00	0,00
094 Glass and Glass Products Industries	0,10	0,21	0,11	0,13	-0,02	-0,11	-0,01	0,12
095 Non-Metallic Mineral Products n.e.c.	0,38	0,27	-0,11	-0,08	0,00	-0,06	-0,03	0,06
096 Refined Petroleum and Coal Products	0,21	0,21	-0,00	0,05	-0,10	-0,00	-0,00	0,05
097 Industrial Chemicals Industries n.e.c.	1,05	0,63	-0,42	-0,09	-0,37	0,03	-0,05	0,05
098 Plastic and Synthetic Resin Industries	0,16	0,26	0,10	0,13	-0,08	0,01	-0,03	0,07
099 Pharmaceutical and Medicine Industry	0,09	0,14	0,05	0,06	-0,04	0,01	0,00	0,03
100 Paint and Varnish Industry	0,11	0,13	0,03	0,05	-0,01	-0,00	-0,03	0,02
101 Soap and Cleaning Compounds Industry	0,07	0,10	0,03	0,02	0,03	-0,02	-0,01	0,01
102 Toilet Preparations Industry	0,01	0,06	0,06	0,05	0,01	-0,00	-0,00	-0,01
103 Chemicals and Chemical Products	0,43	0,52	0,09	0,08	-0,07	0,03	-0,07	0,12
104 Jewelry and Precious Metals Industry	0,14	0,15	0,01	0,01	0,02	-0,02	-0,00	0,00
105 Sporting Goods and Toys Industries	0,06	0,15	0,08	0,09	-0,01	-0,02	0,00	0,01
106 Sign and Display Industry	0,05	0,09	0,04	0,03	0,03	-0,03	-0,00	0,01
107 Floor Tile, Linoleum, Coated Fabrics	0,03	0,06	0,03	0,04	0,00	-0,01	-0,01	0,01
108 Other Manufacturing Industry n.e.c.	0,54	1,04	0,50	0,52	0,12	-0,10	-0,09	0,06
109 Repair Construction	2,11	1,28	-0,83	-0,41	-0,19	-0,43	0,02	0,19
110 Residential Construction	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
111 Non-Residential Bldg Construction	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
112 Road, Highway and Airstrip Constr.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
113 Gas and Oil Facility Construction	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
114 Dams and Irrigation Projects	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
115 Railway and Telephone Teleg. Constr.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
116 Other Engineering Construction	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
117 Construction, Other Activities	0,01	0,02	0,00	0,00	0,01	-0,01	-0,00	0,01
118 Air Transport and Incidental Services	0,16	0,62	0,46	0,41	-0,04	0,03	-0,04	0,11

Table A.4A (cont'd)								
	1961	1992	Change 1961-92	Due to:				
	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Change in Export Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
119 Railway and Transport and Rel. Services	5,07	1,30	-3,77	-0,66	-0,37	-1,80	0,01	-0,94
120 Water Transport and Related Services	2,10	0,62	-1,48	-0,79	-0,18	-0,23	0,03	-0,30
121 Truck Transport Industries	2,92	3,13	0,21	-0,95	-0,56	0,99	0,10	0,64
122 Urban Transit System Industry	0,01	0,10	0,08	0,07	0,05	-0,01	0,00	-0,03
123 Interurban and Rural Transit Systems.	0,01	0,06	0,04	0,05	-0,01	-0,01	-0,00	0,02
124 Taxicab Industry	0,15	0,41	0,26	0,17	0,08	0,04	-0,04	0,01
125 Other Transport and Services to Transp.	0,07	1,10	1,03	0,13	0,56	0,66	0,03	-0,35
126 Highway and Bridge Maintenance Ind.	0,01	0,01	-0,01	-0,00	-0,00	-0,00	0,00	0,00
127 Pipeline Transport Industries	0,11	0,18	0,07	0,01	0,04	-0,01	0,01	0,01
128 Storage and Warehousing Industries	0,78	0,49	-0,29	-0,56	0,17	-0,19	0,03	0,26
129 Telecomm. Broadcasting Industry	0,42	0,21	-0,20	-0,08	-0,19	0,05	-0,00	0,01
130 Telecommunication Carriers and Other	0,53	0,74	0,21	0,20	-0,21	0,04	-0,01	0,19
131 Postal Service Industry	0,26	0,52	0,26	0,17	0,01	0,03	0,01	0,05
132 Electric Power Systems Industry	0,77	1,00	0,23	-0,33	-0,21	0,39	0,00	0,38
133 Gas Distribution Systems Industry	0,12	0,10	-0,02	-0,00	-0,05	0,01	0,00	0,02
134 Other Utility Industries n.e.c.	0,05	0,25	0,20	-0,00	0,01	0,19	-0,00	0,01
135 Wholesale Trade Industries	3,63	7,96	4,33	1,37	1,95	0,66	0,11	0,23
136 Retail Trade Industries	2,34	3,74	1,40	-0,03	1,22	-0,79	0,03	0,96
137 Banks, Credit Union and Oth. Dep. Inst.	0,46	1,55	1,09	0,15	-0,01	0,80	-0,00	0,16
138 Trust, Other Finance and Real Estate	0,51	1,59	1,09	0,22	0,62	0,25	0,02	-0,03
139 Insurance Industries	0,67	0,70	0,03	0,17	-0,10	-0,11	0,01	0,05
140 Govt. Royalties on Nat. Resources	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
141 Owner Occupied Dwellings	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
142 Other Business Services Industries	0,45	4,60	4,15	2,15	1,68	1,85	0,91	-2,45
143 Professional Business Services	0,94	4,03	3,10	1,98	0,94	1,15	0,18	-1,15
144 Advertising Services	0,18	0,41	0,23	0,01	0,07	0,17	0,01	-0,02
145 Educational Services Industries	0,08	0,21	0,13	0,11	0,03	-0,02	0,02	-0,01
146 Hospitals	0,02	0,05	0,03	0,04	-0,01	-0,01	0,00	0,01
147 Other Health Services	0,00	0,01	0,01	0,00	0,00	0,01	0,00	-0,01
148 Accom. and Food Services Industry	0,46	5,74	5,28	4,73	2,95	-0,42	0,03	-2,01

Table A.4A (cont'd)

	1961	1992	Change 1961-92	Due to:				
	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Export Employ't as a % of Total Export Employ't	Change in Export Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
149 Motion Picture and Video Industries	0,05	0,20	0,15	0,10	0,01	0,02	0,01	0,01
150 Other Amusement and Recreat. Serv.	0,03	0,59	0,56	0,56	0,16	-0,06	0,04	-0,14
151 Laundries and Cleaners	0,04	0,09	0,04	0,02	0,02	-0,01	-0,00	0,02
152 Other Personal Services	0,00	0,01	0,01	0,00	0,00	-0,00	0,00	0,00
153 Photographers	0,01	0,03	0,02	0,01	0,02	0,01	0,00	-0,00
154 Misc. Service Industries	0,62	3,02	2,39	-0,02	1,77	1,03	0,07	-0,46

Table A.4B Decomposition of Changes in Employment Shares: 1961 to 1992 – 161 Industries

Sorted by Size of Change	1961	1992	Change 1961–92	Due to:				
	Export Employ't as a % of Total	Export Employ't as a % of Total	Export Employ't as a % of Total	Change in Export Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
	Export Employ't	Export Employ't	Export Employ't					
148 Accom. and Food Services Industry	0,46	5,74	5,28	4,73	2,95	-0,42	0,03	-2,01
135 Wholesale Trade Industries	3,63	7,96	4,33	1,37	1,95	0,66	0,11	0,23
142 Other Business Services Industries	0,45	4,60	4,15	2,15	1,68	1,85	0,91	-2,45
078 Motor Vehicle Parts and Accessories	0,37	3,72	3,35	3,47	-0,31	-0,03	-1,06	1,27
143 Professional Business Services	0,94	4,03	3,10	1,98	0,94	1,15	0,18	-1,15
154 Misc. Service Industries	0,62	3,02	2,39	-0,02	1,77	1,03	0,07	-0,46
076 Motor Vehicle Industry	0,11	2,32	2,21	2,26	-1,56	-0,28	0,18	1,59
085 Electronic Equipment Industries	0,40	1,82	1,42	1,58	-1,62	0,09	-0,39	1,75
136 Retail Trade Industries	2,34	3,74	1,40	-0,03	1,22	-0,79	0,03	0,96
137 Banks, Credit Union and Oth. Dep. Inst.	0,46	1,55	1,09	0,15	-0,01	0,80	-0,00	0,16
138 Trust, Other Finance and Real Estate	0,51	1,59	1,09	0,22	0,62	0,25	0,02	-0,03
074 Other Machinery and Equip. Industries	0,65	1,70	1,05	1,05	0,11	-0,12	-0,05	0,05
125 Other Transport and Services to Transport	0,07	1,10	1,03	0,13	0,56	0,66	0,03	-0,35
031 Plastic Products Industries	0,13	0,98	0,84	0,59	0,06	0,21	-0,04	0,03
150 Other Amusement and Recreational Serv.	0,03	0,59	0,56	0,56	0,16	-0,06	0,04	-0,14
070 Machine Shops Industry	0,15	0,69	0,55	0,49	0,16	0,05	-0,16	-0,00
108 Other Manufacturing Industry n.e.c.	0,54	1,04	0,50	0,52	0,12	-0,10	-0,09	0,06
011 Crude Petroleum and Natural Gas	0,60	1,09	0,50	0,47	-0,25	-0,01	0,14	0,14
030 Rubber Products Industries	0,29	0,77	0,48	0,55	0,13	-0,13	-0,15	0,08
118 Air Transport and Incidental Services	0,16	0,62	0,46	0,41	-0,04	0,03	-0,04	0,11
086 Office, Store and Business Machines	0,26	0,71	0,45	0,55	-0,16	-0,07	-0,16	0,29
075 Aircraft and Aircraft Parts Industries	1,17	1,62	0,44	0,56	-0,10	-0,14	0,04	0,09
041 Clothing Industry excl. Hosiery	0,25	0,66	0,41	0,45	0,05	-0,07	-0,01	-0,01
089 Other Elect. and Electronic Products	0,38	0,79	0,40	0,40	0,07	-0,06	-0,16	0,16
013 Services Related to Mineral Extraction	0,16	0,51	0,35	0,04	0,24	0,22	0,06	-0,21
066 Stamped, Pressed and Coated Metals	0,29	0,59	0,31	0,30	0,09	-0,09	-0,07	0,06
055 Printing and Publishing Industries	0,65	0,93	0,29	0,33	-0,01	-0,23	-0,04	0,23
048 Household Furniture Industries	0,04	0,33	0,29	0,30	0,03	-0,03	0,01	-0,02
131 Postal Service Industry	0,26	0,52	0,26	0,17	0,01	0,03	0,01	0,05

Table A.4B (cont'd)								
Sorted by Size of Change	1961	1992	Change 1961-92	Due to:				
	Export Employ't as a % of Total	Export Employ't as a % of Total	Export Employ't as a % of Total	Change in Export Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
	Export Employ't	Export Employ't	Export Employ't					
124 Taxicab Industry	0,15	0,41	0,26	0,17	0,08	0,04	-0,04	0,01
144 Advertising Services	0,18	0,41	0,23	0,01	0,07	0,17	0,01	-0,02
132 Electric Power Systems Industry	0,77	1,00	0,23	-0,33	-0,21	0,39	0,00	0,38
121 Truck Transport Industries	2,92	3,13	0,21	-0,95	-0,56	0,99	0,10	0,64
130 Telecommunication Carriers and Other	0,53	0,74	0,21	0,20	-0,21	0,04	-0,01	0,19
068 Hardware Tool and Cutlery Industries	0,19	0,39	0,20	0,17	0,10	-0,04	-0,02	-0,00
134 Other Utility Industries n.e.c.	0,05	0,25	0,20	-0,00	0,01	0,19	-0,00	0,01
149 Motion Picture and Video Industries	0,05	0,20	0,15	0,10	0,01	0,02	0,01	0,01
002 Fishing and Trapping	1,24	1,38	0,14	-0,64	0,46	-0,14	0,22	0,24
057 Primary Steel Industries	1,10	1,24	0,14	0,30	-0,03	-0,15	-0,19	0,21
049 Office Furniture Industry	0,00	0,14	0,13	0,13	0,00	-0,01	0,01	0,00
145 Educational Services Industries	0,08	0,21	0,13	0,11	0,03	-0,02	0,02	-0,01
077 Truck, Bus Body and Trailer Industries	0,04	0,16	0,12	0,12	0,02	0,01	-0,00	-0,02
071 Other Metal Fabricating Industries	0,28	0,39	0,11	0,15	0,03	-0,08	-0,06	0,07
094 Glass and Glass Products Industries	0,10	0,21	0,11	0,13	-0,02	-0,11	-0,01	0,12
054 Other Converted Paper Prod. Industries	0,15	0,26	0,11	0,11	0,03	-0,08	-0,01	0,05
098 Plastic and Synthetic Resin Industries	0,16	0,26	0,10	0,13	-0,08	0,01	-0,03	0,07
050 Other Furniture and Fixture Industries	0,03	0,13	0,10	0,09	0,03	-0,01	0,00	-0,01
073 Commercial Refrigeration Equipment	0,02	0,11	0,10	0,09	0,02	0,03	-0,04	-0,00
103 Chemicals and Chemical Products	0,43	0,52	0,09	0,08	-0,07	0,03	-0,07	0,12
065 Ornamental and Arch. Metal Products	0,06	0,15	0,09	0,08	0,01	0,00	0,00	-0,01
014 Meat and Meat Prod (excl. Poultry)	0,28	0,37	0,09	0,02	0,09	-0,06	0,01	0,03
079 Railroad Rolling Stock Industry	0,11	0,20	0,09	0,14	-0,06	-0,02	-0,01	0,03
122 Urban Transit System Industry	0,01	0,10	0,08	0,07	0,05	-0,01	0,00	-0,03
105 Sporting Goods and Toys Industries	0,06	0,15	0,08	0,09	-0,01	-0,02	0,00	0,01
058 Steel Pipe and Tube Industry	0,03	0,11	0,08	0,05	0,04	-0,01	-0,00	0,00
059 Iron Foundries	0,16	0,23	0,08	0,08	-0,05	-0,00	-0,02	0,08
017 Fruit and Vegetable Processing	0,08	0,15	0,07	0,08	-0,01	-0,01	0,01	0,02
081 Misc. Transport. Equip. Industries	0,03	0,11	0,07	0,08	-0,06	-0,00	0,01	0,05

Table A.4B (cont'd)

Sorted by Size of Change	1961	1992	Change 1961-92	Due to:				
	Export Employ't as a % of Total	Export Employ't as a % of Total	Export Employ't as a % of Total	Change in Export Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
	Export Employ't	Export Employ't	Export Employ't					
127 Pipeline Transport Industries	0,11	0,18	0,07	0,01	0,04	-0,01	0,01	0,01
045 Sash, Door and Other Millwork Industries	0,23	0,30	0,07	0,06	0,04	-0,05	0,02	-0,00
056 Plate making, Typesetting and Bindery	0,08	0,15	0,07	0,06	0,02	-0,04	-0,00	0,02
022 Bread and Other Bakery Prod. Industries	0,04	0,11	0,06	0,07	0,00	-0,01	0,00	0,01
025 Soft Drink Industry	0,01	0,07	0,06	0,05	-0,05	0,01	0,00	0,05
102 Toilet Preparations Industry	0,01	0,06	0,06	0,05	0,01	-0,00	-0,00	-0,01
099 Pharmaceutical and Medicine Industry	0,09	0,14	0,05	0,06	-0,04	0,01	0,00	0,03
064 Power Boiler and Struct. Metal Industries	0,19	0,24	0,05	0,07	0,04	-0,10	0,01	0,04
063 Other Metal Rolling, Casting, etc.	0,15	0,20	0,05	-0,02	0,07	-0,05	-0,02	0,07
084 Record Players, Radio and TV Receivers	0,05	0,09	0,05	0,07	-0,03	-0,01	-0,05	0,07
151 Laundries and Cleaners	0,04	0,09	0,04	0,02	0,02	-0,01	-0,00	0,02
123 Interurban and Rural Transit Systems	0,01	0,06	0,04	0,05	-0,01	-0,01	-0,00	0,02
040 Carpet, Mat and Rug Industry	0,00	0,04	0,04	0,04	-0,01	-0,00	-0,00	0,01
038 Misc. Textile Products Industries	0,25	0,29	0,04	0,06	0,05	-0,05	-0,02	0,00
106 Sign and Display Industry	0,05	0,09	0,04	0,03	0,03	-0,03	-0,00	0,01
039 Contract Textile Dyeing and Finishing	0,02	0,06	0,04	0,04	0,01	0,01	-0,01	-0,02
146 Hospitals	0,02	0,05	0,03	0,04	-0,01	-0,01	0,00	0,01
101 Soap and Cleaning Compounds Industry	0,07	0,10	0,03	0,02	0,03	-0,02	-0,01	0,01
047 Other Wood Industries	0,22	0,25	0,03	0,12	-0,15	-0,03	0,02	0,07
107 Floor Tile, Linoleum, Coated Fabrics	0,03	0,06	0,03	0,04	0,00	-0,01	-0,01	0,01
100 Paint and Varnish Industry	0,11	0,13	0,03	0,05	-0,01	-0,00	-0,03	0,02
139 Insurance Industries	0,67	0,70	0,03	0,17	-0,10	-0,11	0,01	0,05
053 Paper Box and Bag Industries	0,27	0,30	0,03	0,06	0,03	-0,11	-0,02	0,06
082 Small Electrical Appliance Industry	0,02	0,05	0,03	0,03	0,01	-0,01	-0,00	0,00
087 Communic., Energy Wire and Cable	0,13	0,15	0,02	0,03	0,01	-0,03	-0,02	0,03
153 Photographers	0,01	0,03	0,02	0,01	0,02	0,01	0,00	-0,00
015 Poultry Products	0,01	0,04	0,02	0,01	0,01	-0,00	0,00	-0,00
027 Brewery Products Industry	0,04	0,06	0,02	0,02	-0,00	-0,01	0,00	0,00
069 Heating Equipment Industry	0,03	0,05	0,02	0,02	0,01	-0,01	-0,00	-0,00
033 Footwear Industry	0,07	0,09	0,02	0,02	0,01	-0,01	-0,01	0,01

Table A.4B (cont'd)

Sorted by Size of Change	1961	1992	Change 1961-92	Due to:				
	Export Employ't as a % of Total	Export Employ't as a % of Total	Export Employ't as a % of Total	Change in Export Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
	Export Employ't	Export Employ't	Export Employ't					
021 Biscuit Industry	0,02	0,04	0,02	0,02	-0,01	0,00	0,00	0,00
037 Broad Knitted Fabric Industry	0,01	0,03	0,02	0,02	-0,00	0,01	-0,00	-0,00
147 Other Health Services	0,00	0,01	0,01	0,00	0,00	0,01	0,00	-0,01
083 Major Appliances (Elec. and Non-Elec.)	0,08	0,09	0,01	0,02	-0,00	-0,01	-0,01	0,00
152 Other Personal Services	0,00	0,01	0,01	0,00	0,00	-0,00	0,00	0,00
104 Jewelry and Precious Metals Industry	0,14	0,15	0,01	0,01	0,02	-0,02	-0,00	0,00
093 Ready-Mix Concrete Industry	0,01	0,02	0,01	-0,00	0,01	0,00	0,00	0,00
028 Wine Industry	0,00	0,01	0,01	0,01	0,00	-0,00	-0,00	-0,00
052 Asphalt Roofing Industry	0,02	0,02	0,01	0,01	-0,01	-0,01	0,00	0,01
088 Battery Industry	0,03	0,04	0,01	0,01	0,01	-0,01	-0,01	0,01
092 Concrete Products Industry	0,02	0,03	0,00	0,01	0,00	-0,01	0,00	0,00
091 Cement Industry	0,03	0,03	0,00	0,01	0,00	-0,01	0,00	-0,00
117 Construction, Other Activities	0,01	0,02	0,00	0,00	0,01	-0,01	-0,00	0,01
034 Misc. Leather and Allied Prod. Ind	0,04	0,04	0,00	0,01	0,01	-0,00	-0,01	0,00
113 Gas and Oil Facility Construction	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
111 Non-Residential Bldg Construction	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
112 Road, Highway and Airstrip Constr.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
114 Dams and Irrigation Projects	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
141 Owner Occupied Dwellings	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
116 Other Engineering Construction	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
115 Railway and Telephone Teleg. Constr.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
110 Residential Construction	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
140 Govt. Royalties on Nat. Resources	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
096 Refined Petroleum and Coal Products	0,21	0,21	-0,00	0,05	-0,10	-0,00	-0,00	0,05
067 Wire and Wire Products Industries	0,31	0,30	-0,00	0,16	0,04	-0,23	-0,07	0,09
023 Cane and Beer Sugar Industry	0,02	0,01	-0,00	0,00	0,00	-0,01	0,00	0,00
126 Highway and Bridge Maintenance Ind.	0,01	0,01	-0,01	-0,00	-0,00	-0,00	0,00	0,00
020 Vegetable Oil Mills (excluding Corn)	0,03	0,02	-0,01	-0,01	-0,00	-0,00	0,00	0,00
042 Hosiery Industry	0,02	0,01	-0,01	-0,01	0,00	-0,00	0,00	0,00
133 Gas Distribution Systems Industry	0,12	0,10	-0,02	-0,00	-0,05	0,01	0,00	0,02

Table A.4B (cont'd)								
Sorted by Size of Change	1961	1992	Change 1961-92	Due to:				
	Export Employ't as a % of Total	Export Employ't as a % of Total	Export Employ't as a % of Total	Change in Export Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
	Export Employ't	Export Employ't	Export Employ't					
009 Salt Mines	0,04	0,02	-0,02	-0,01	-0,00	-0,01	0,00	-0,00
008 Non-Metal excl. Coal and Asbestos	0,28	0,25	-0,03	0,01	-0,26	-0,00	0,05	0,17
012 Quarries and Sand Pits	0,13	0,09	-0,04	-0,06	0,00	-0,01	0,00	0,03
061 Alum. Rolling, Casting and Extruding	0,24	0,20	-0,04	0,04	-0,13	0,03	-0,08	0,10
046 Wooden Box and Coffin Industries	0,10	0,06	-0,04	-0,01	-0,01	-0,01	-0,01	-0,00
062 Copper Rolling, Casting and Extruding	0,11	0,07	-0,04	-0,07	0,03	-0,06	-0,04	0,10
090 Clay Products Industries	0,06	0,01	-0,05	-0,02	-0,00	-0,01	-0,00	-0,01
036 Wool Yarn and Woven Cloth Industry	0,14	0,07	-0,07	-0,03	0,00	-0,04	-0,02	0,02
032 Leather Tanneries	0,09	0,02	-0,07	-0,07	0,00	0,00	-0,02	0,02
029 Tobacco Products Industries	0,13	0,06	-0,07	-0,02	-0,03	-0,01	0,00	-0,02
018 Dairy Products	0,17	0,09	-0,08	-0,05	-0,02	-0,01	0,00	-0,00
095 Non-Metallic Mineral Products n.e.c.	0,38	0,27	-0,11	-0,08	0,00	-0,06	-0,03	0,06
080 Shipbuilding and Repair Industry	0,25	0,11	-0,14	-0,14	-0,02	-0,00	0,01	0,01
035 Man-Made Fibre Yarn and Woven Cloth	0,51	0,34	-0,17	0,05	-0,05	-0,14	-0,06	0,03
019 Feed Industry	0,34	0,16	-0,18	-0,16	-0,00	-0,01	-0,01	0,00
024 Miscellaneous Food Industries	0,53	0,34	-0,19	-0,20	0,04	-0,06	0,01	0,01
044 Veneer and Plywood Industries	0,36	0,16	-0,20	-0,17	-0,02	-0,03	0,01	0,01
129 Telecomm. Broadcasting Industry	0,42	0,21	-0,20	-0,08	-0,19	0,05	-0,00	0,01
026 Distillery Products Industry	0,31	0,09	-0,22	-0,25	0,01	-0,01	0,01	0,02
016 Fish Products Industry	1,11	0,87	-0,25	-0,31	0,07	-0,08	0,05	0,04
010 Coal Mines	0,52	0,25	-0,27	0,18	-0,89	-0,05	0,01	0,47
128 Storage and Warehousing Industries	0,78	0,49	-0,29	-0,56	0,17	-0,19	0,03	0,26
097 Industrial Chemicals Industries n.e.c.	1,05	0,63	-0,42	-0,09	-0,37	0,03	-0,05	0,05
072 Agricultural Implement Industry	0,72	0,21	-0,51	-0,57	0,02	-0,04	0,02	0,06
006 Iron Mines	0,79	0,22	-0,58	-0,48	-0,04	-0,03	0,03	-0,06
007 Asbestos Mines	0,72	0,10	-0,62	-1,06	0,04	-0,02	0,01	0,41
109 Repair Construction	2,11	1,28	-0,83	-0,41	-0,19	-0,43	0,02	0,19
004 Gold Mines	1,81	0,35	-1,46	-0,31	-0,64	-0,02	0,02	-0,50
120 Water Transport and Related Services	2,10	0,62	-1,48	-0,79	-0,18	-0,23	0,03	-0,30
043 Sawmills, Planing and Shingle Mills	3,85	1,99	-1,86	-0,98	-0,98	-0,08	0,17	0,02

Table A.4B (cont'd)

Sorted by Size of Change	1961	1992	Change 1961-92	Due to:				
	Export Employ't as a % of Total	Export Employ't as a % of Total	Export Employ't as a % of Total	Change in Export Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
	Export Employ't	Export Employ't	Export Employ't					
060 Non-Ferrous Smelting and Refining	3,18	1,20	-1,98	-1,79	-0,04	-0,10	-0,02	-0,03
005 Other Metal Mines	3,35	0,87	-2,48	-1,31	-0,14	-0,26	-0,05	-0,72
051 Pulp and Paper Industries	5,92	2,64	-3,27	-3,27	0,02	-0,33	0,14	0,17
119 Railway and Transport and Rel. Services	5,07	1,30	-3,77	-0,66	-0,37	-1,80	0,01	-0,94
003 Logging and Forestry	5,55	1,77	-3,78	-1,36	-1,17	-0,21	0,11	-1,15
001 Agriculture and Related	26,93	8,69	-18,24	-13,16	-3,23	-0,30	0,55	-2,09

APPENDIX 5
THE CHANGING INDUSTRIAL MIX OF IMPORTS
161-INDUSTRY AGGREGATION

Tables A.5A and A.5B show the detailed results behind the aggregates in Tables 13A and 13B in Section 5.3, using the full 161-industry calculations. In these tables the years 1961 and 1992 are shown, representing the span of our complete I/O data. In Table A.5A industries are listed in standard or numerical order from primary production through manufacturing and services. In Table A.5B the sectors are sorted from largest increase in export employment shares to largest decrease.

Those industries showing the largest increase in share of import employment are predominantly services of different types, including Accommodation and food services, Business and professional services, Wholesale trade, and Banking and other finance. Much the same sectors are also near the top of the list for exports (see Table A.3B). Motor vehicle parts and accessories is also near the top of the list, as imports of this sector have increased massively since 1961 under integration of the North American auto industry, with Canada primarily importing parts and exporting finished vehicles. Clothing, plastic products, Business machines and Electronic equipment also have increased significantly their share of employment “replaced” by imports.

At the bottom of the table are the sectors which have seen the largest declines in share of import employment. As can be seen, these include primary production sectors like Agriculture, and Coal mines, some manufactures like Agricultural implements, and Aircraft and parts, and particular services like Rail and water transport.

Finally, this appendix also presents the 161-industry decompositions of changes in employment shares attributable to imports from 1961 to 1992 in Tables A.6A and A.6B. Table A.6A presents the decomposition from 1961 through 1992 in numerical order while Table A.6B presents the same data sorted from largest positive to largest negative change.

Table A.5A Employment Shares: 1961 to 1992 – 161 Industries

	1961		1992		Change 1961–92	
	Import Employment as a % of Total	Import Employment as a % of Total	Import Employment as a % of Total	Import Employment as a % of Total	Import Employment as a % of Total	Import Employment as a % of Total
	Import Employment	Import Employment	Import Employment	Import Employment	Import Employment	Import Employment
001 Agriculture and Related	12,42	2,04	4,77	1,24	-7,64	-0,80
002 Fishing and Trapping	0,44	0,07	0,36	0,09	-0,08	0,02
003 Logging and Forestry	1,06	0,17	0,38	0,10	-0,69	-0,08
004 Gold Mines	0,13	0,02	0,13	0,03	-0,00	0,01
005 Other Metal Mines	0,58	0,10	0,28	0,07	-0,30	-0,02
006 Iron Mines	0,39	0,06	0,10	0,03	-0,29	-0,04
007 Asbestos Mines	0,03	0,00	0,00	0,00	-0,03	-0,00
008 Non-Metal excl. Coal and Asbestos	0,41	0,07	0,10	0,03	-0,30	-0,04
009 Salt Mines	0,02	0,00	0,02	0,00	-0,01	0,00
010 Coal Mines	3,23	0,53	0,19	0,05	-3,04	-0,48
011 Crude Petroleum and Natural Gas	1,12	0,18	0,57	0,15	-0,56	-0,04
012 Quarries and Sand Pits	0,23	0,04	0,09	0,02	-0,14	-0,01
013 Services Related to Mineral Extraction	0,15	0,03	0,27	0,07	0,12	0,04
014 Meat and Meat Prod (excl. Poultry)	0,31	0,05	0,31	0,08	0,00	0,03
015 Poultry Products	0,04	0,01	0,08	0,02	0,04	0,01
016 Fish Products Industry	0,22	0,04	0,34	0,09	0,12	0,05
017 Fruit and Vegetable Processing	0,70	0,11	0,30	0,08	-0,40	-0,04
018 Dairy Products	0,12	0,02	0,12	0,03	-0,00	0,01
019 Feed Industry	0,16	0,03	0,13	0,03	-0,03	0,01
020 Vegetable Oil Mills (excluding Corn)	0,06	0,01	0,02	0,00	-0,04	-0,00
021 Biscuit Industry	0,10	0,02	0,05	0,01	-0,04	-0,00
022 Bread and Other Bakery Prod. Industries	0,04	0,01	0,11	0,03	0,07	0,02
023 Cane and Beer Sugar Industry	0,05	0,01	0,02	0,01	-0,03	-0,00
024 Miscellaneous Food Industries	0,70	0,12	0,50	0,13	-0,21	0,01
025 Soft Drink Industry	0,04	0,01	0,04	0,01	0,01	0,01
026 Distillery Products Industry	0,18	0,03	0,07	0,02	-0,11	-0,01
027 Brewery Products Industry	0,02	0,00	0,04	0,01	0,03	0,01
028 Wine Industry	0,05	0,01	0,09	0,02	0,04	0,02
029 Tobacco Products Industries	0,05	0,01	0,11	0,03	0,06	0,02
030 Rubber Products Industries	0,77	0,13	0,81	0,21	0,04	0,08
031 Plastic Products Industries	0,67	0,11	1,51	0,39	0,84	0,28

Table A.5A (cont'd)

	1961		1992		Change 1961-92	
	Import	Import	Import	Import	Import	Import
	Employment as a	Employment as a	Employment as a	Employment as a	Employment as a	Employment as a
	% of Total	% of Total	% of Total	% of Total	% of Total	% of Total
	Import	Employment	Import	Employment	Import	Employment
	Employment		Employment		Employment	
032 Leather Tanneries	0,14	0,02	0,11	0,03	-0,03	0,00
033 Footwear Industry	0,45	0,07	0,79	0,21	0,34	0,13
034 Misc. Leather and Allied Prod. Ind	0,28	0,05	0,25	0,07	-0,03	0,02
035 Man-Made Fibre Yarn and Woven Cloth	3,14	0,52	0,76	0,20	-2,38	-0,32
036 Wool Yarn and Woven Cloth Industry	0,59	0,10	0,16	0,04	-0,43	-0,06
037 Broad Knitted Fabric Industry	0,24	0,04	0,11	0,03	-0,13	-0,01
038 Misc. Textile Products Industries	1,26	0,21	0,69	0,18	-0,57	-0,03
039 Contract Textile Dyeing and Finishing	0,11	0,02	0,15	0,04	0,04	0,02
040 Carpet, Mat and Rug Industry	0,09	0,01	0,11	0,03	0,02	0,01
041 Clothing Industry excl. Hosiery	1,53	0,25	2,71	0,70	1,18	0,45
042 Hosiery Industry	0,06	0,01	0,05	0,01	-0,00	0,00
043 Sawmills, Planing and Shingle Mills	0,65	0,11	0,24	0,06	-0,41	-0,04
044 Veneer and Plywood Industries	0,21	0,04	0,07	0,02	-0,14	-0,02
045 Sash, Door and Other Millwork Industries	0,10	0,02	0,21	0,06	0,11	0,04
046 Wooden Box and Coffin Industries	0,11	0,02	0,07	0,02	-0,04	-0,00
047 Other Wood Industries	0,15	0,03	0,06	0,02	-0,09	-0,01
048 Household Furniture Industries	0,33	0,06	0,58	0,15	0,24	0,10
049 Office Furniture Industry	0,06	0,01	0,07	0,02	0,02	0,01
050 Other Furniture and Fixture Industries	0,16	0,03	0,25	0,07	0,09	0,04
051 Pulp and Paper Industries	0,86	0,14	0,58	0,15	-0,28	0,01
052 Asphalt Roofing Industry	0,04	0,01	0,01	0,00	-0,02	-0,00
053 Paper Box and Bag Industries	0,51	0,08	0,36	0,09	-0,15	0,01
054 Other Converted Paper Prod. Industries	0,34	0,06	0,33	0,09	-0,01	0,03
055 Printing and Publishing Industries	2,35	0,39	1,94	0,51	-0,41	0,12
056 Plate making, Typesetting and Bindery	0,35	0,06	0,33	0,09	-0,02	0,03
057 Primary Steel Industries	2,44	0,40	1,48	0,39	-0,95	-0,01
058 Steel Pipe and Tube Industry	0,18	0,03	0,14	0,04	-0,04	0,01
059 Iron Foundries	0,58	0,10	0,36	0,09	-0,23	-0,00
060 Non-Ferrous Smelting and Refining	0,67	0,11	0,42	0,11	-0,25	-0,00
061 Alum. Rolling, Casting and Extruding	0,30	0,05	0,23	0,06	-0,07	0,01
062 Copper Rolling, Casting and Extruding	0,16	0,03	0,11	0,03	-0,05	0,00

Table A.5A (cont'd)

	1961		1992		Change 1961-92	
	Import	Import	Import	Import	Import	Import
	Employment as a	Employment as a	Employment as a	Employment as a	Employment as a	Employment as a
	% of Total	% of Total	% of Total	% of Total	% of Total	% of Total
	Import	Employment	Import	Employment	Import	Employment
	Employment		Employment		Employment	
063 Other Metal Rolling, Casting, etc.	0,21	0,03	0,18	0,05	-0,03	0,01
064 Power Boiler and Struct. Metal Industries	0,69	0,11	0,26	0,07	-0,43	-0,05
065 Ornamental and Arch. Metal Products	0,19	0,03	0,17	0,04	-0,02	0,01
066 Stamped, Pressed and Coated Metals	1,19	0,20	0,83	0,22	-0,36	0,02
067 Wire and Wire Products Industries	0,75	0,12	0,44	0,11	-0,30	-0,01
068 Hardware Tool and Cutlery Industries	0,95	0,16	0,94	0,25	-0,01	0,09
069 Heating Equipment Industry	0,19	0,03	0,12	0,03	-0,07	0,00
070 Machine Shops Industry	0,72	0,12	1,01	0,26	0,29	0,14
071 Other Metal Fabricating Industries	1,28	0,21	0,71	0,18	-0,57	-0,03
072 Agricultural Implement Industry	2,01	0,33	0,42	0,11	-1,58	-0,22
073 Commercial Refrigeration Equipment	0,18	0,03	0,30	0,08	0,11	0,05
074 Other Machinery and Equip. Industries	4,12	0,68	3,36	0,87	-0,76	0,20
075 Aircraft and Aircraft Parts Industries	2,34	0,38	0,96	0,25	-1,38	-0,14
076 Motor Vehicle Industry	0,91	0,15	1,14	0,30	0,23	0,15
077 Truck, Bus Body and Trailer Industries	0,21	0,03	0,33	0,09	0,12	0,05
078 Motor Vehicle Parts and Accessories	3,55	0,58	5,34	1,39	1,80	0,81
079 Railroad Rolling Stock Industry	0,18	0,03	0,17	0,04	-0,01	0,02
080 Shipbuilding and Repair Industry	0,46	0,08	0,11	0,03	-0,35	-0,05
081 Misc. Transport. Equip. Industries	0,17	0,03	0,15	0,04	-0,02	0,01
082 Small Electrical Appliance Industry	0,26	0,04	0,29	0,08	0,03	0,03
083 Major Appliances (Elec. and Non-Elec.)	0,73	0,12	0,33	0,09	-0,40	-0,03
084 Record Players, Radio and TV Receivers	0,34	0,06	0,39	0,10	0,04	0,04
085 Electronic Equipment Industries	1,89	0,31	2,51	0,65	0,63	0,34
086 Office, Store and Business Machines	0,74	0,12	1,64	0,43	0,90	0,30
087 Communic., Energy Wire and Cable	0,19	0,03	0,18	0,05	-0,01	0,02
088 Battery Industry	0,07	0,01	0,08	0,02	0,01	0,01
089 Other Elect. and Electronic Products	1,80	0,30	1,69	0,44	-0,11	0,14
090 Clay Products Industries	0,53	0,09	0,19	0,05	-0,34	-0,04
091 Cement Industry	0,02	0,00	0,02	0,00	-0,01	0,00
092 Concrete Products Industry	0,04	0,01	0,02	0,01	-0,02	-0,00
093 Ready-Mix Concrete Industry	0,01	0,00	0,01	0,00	0,00	0,00

Table A.5A (cont'd)

	1961		1992		Change 1961-92	
	Import	Import	Import	Import	Import	Import
	Employment as a	Employment as a	Employment as a	Employment as a	Employment as a	Employment as a
	% of Total	% of Total	% of Total	% of Total	% of Total	% of Total
	Employment	Employment	Employment	Employment	Employment	Employment
094 Glass and Glass Products Industries	0,92	0,15	0,40	0,11	-0,52	-0,05
095 Non-Metallic Mineral Products n.e.c.	0,57	0,09	0,32	0,08	-0,25	-0,01
096 Refined Petroleum and Coal Products	0,29	0,05	0,16	0,04	-0,13	-0,01
097 Industrial Chemicals Industries n.e.c.	1,22	0,20	0,62	0,16	-0,61	-0,04
098 Plastic and Synthetic Resin Industries	0,39	0,06	0,33	0,09	-0,05	0,02
099 Pharmaceutical and Medicine Industry	0,29	0,05	0,39	0,10	0,10	0,05
100 Paint and Varnish Industry	0,21	0,03	0,20	0,05	-0,01	0,02
101 Soap and Cleaning Compounds Industry	0,16	0,03	0,18	0,05	0,03	0,02
102 Toilet Preparations Industry	0,03	0,01	0,18	0,05	0,15	0,04
103 Chemicals and Chemical Products	0,92	0,15	0,67	0,17	-0,24	0,02
104 Jewelry and Precious Metals Industry	0,38	0,06	0,31	0,08	-0,06	0,02
105 Sporting Goods and Toys Industries	0,50	0,08	0,67	0,17	0,17	0,09
106 Sign and Display Industry	0,10	0,02	0,14	0,04	0,03	0,02
107 Floor Tile, Linoleum, Coated Fabrics	0,22	0,04	0,11	0,03	-0,11	-0,01
108 Other Manufacturing Industry n.e.c.	2,74	0,45	2,58	0,67	-0,16	0,22
109 Repair Construction	1,46	0,24	0,89	0,23	-0,57	-0,01
110 Residential Construction	0,00	0,00	0,00	0,00	0,00	0,00
111 Non-Residential Bldg Construction	0,00	0,00	0,00	0,00	0,00	0,00
112 Road, Highway and Airstrip Constr.	0,00	0,00	0,00	0,00	0,00	0,00
113 Gas and Oil Facility Construction	0,00	0,00	0,00	0,00	0,00	0,00
114 Dams and Irrigation Projects	0,00	0,00	0,00	0,00	0,00	0,00
115 Railway and Telephone Teleg. Constr.	0,00	0,00	0,00	0,00	0,00	0,00
116 Other Engineering Construction	0,00	0,00	0,00	0,00	0,00	0,00
117 Construction, Other Activities	0,01	0,00	0,02	0,00	0,01	0,00
118 Air Transport and Incidental Services	0,23	0,04	0,80	0,21	0,57	0,17
119 Railway and Transport and Rel. Services	1,63	0,27	0,48	0,13	-1,14	-0,14
120 Water Transport and Related Services	1,00	0,17	0,30	0,08	-0,70	-0,09
121 Truck Transport Industries	1,22	0,20	1,10	0,29	-0,12	0,09
122 Urban Transit System Industry	0,02	0,00	0,18	0,05	0,16	0,04
123 Interurban and Rural Transit Systems	0,02	0,00	0,09	0,02	0,07	0,02
124 Taxicab Industry	0,26	0,04	0,61	0,16	0,35	0,12

Table A.5A (cont'd)

	1961		1992		Change 1961-92	
	Import	Import	Import	Import	Import	Import
	Employment as a	Employment as a	Employment as a	Employment as a	Employment as a	Employment as a
	% of Total	% of Total	% of Total	% of Total	% of Total	% of Total
	Import	Employment	Import	Employment	Import	Employment
	Employment		Employment		Employment	
125 Other Transport and Services to Transport	0,04	0,01	0,51	0,13	0,47	0,13
126 Highway and Bridge Maintenance Ind.	0,01	0,00	0,00	0,00	-0,00	-0,00
127 Pipeline Transport Industries	0,08	0,01	0,07	0,02	-0,01	0,01
128 Storage and Warehousing Industries	0,17	0,03	0,11	0,03	-0,06	0,00
129 Telecomm. Broadcasting Industry	0,27	0,04	0,27	0,07	-0,00	0,02
130 Telecommunication Carriers and Other	0,72	0,12	0,77	0,20	0,06	0,08
131 Postal Service Industry	0,38	0,06	0,45	0,12	0,07	0,05
132 Electric Power Systems Industry	0,52	0,08	0,64	0,17	0,13	0,08
133 Gas Distribution Systems Industry	0,13	0,02	0,08	0,02	-0,06	-0,00
134 Other Utility Industries n.e.c.	0,05	0,01	0,23	0,06	0,18	0,05
135 Wholesale Trade Industries	3,26	0,54	5,08	1,32	1,83	0,79
136 Retail Trade Industries	2,59	0,43	3,14	0,82	0,55	0,39
137 Banks, Credit Union and Oth. Dep. Inst.	0,73	0,12	1,83	0,48	1,11	0,36
138 Trust, Other Finance and Real Estate	0,79	0,13	1,83	0,47	1,04	0,34
139 Insurance Industries	0,51	0,08	0,62	0,16	0,11	0,08
140 Govt. Royalties on Nat. Resources	0,00	0,00	0,00	0,00	0,00	0,00
141 Owner Occupied Dwellings	0,00	0,00	0,00	0,00	0,00	0,00
142 Other Business Services Industries	1,19	0,20	5,23	1,36	4,04	1,16
143 Professional Business Services	1,70	0,28	3,65	0,95	1,95	0,67
144 Advertising Services	0,24	0,04	0,56	0,15	0,32	0,11
145 Educational Services Industries	0,04	0,01	0,12	0,03	0,08	0,02
146 Hospitals	0,03	0,01	0,08	0,02	0,04	0,01
147 Other Health Services	0,00	0,00	0,04	0,01	0,04	0,01
148 Accom. and Food Services Industry	0,75	0,12	8,89	2,31	8,14	2,19
149 Motion Picture and Video Industries	0,25	0,04	0,24	0,06	-0,01	0,02
150 Other Amusement and Recreational Serv.	0,03	0,00	0,89	0,23	0,87	0,23
151 Laundries and Cleaners	0,06	0,01	0,10	0,03	0,04	0,02
152 Other Personal Services	0,00	0,00	0,01	0,00	0,01	0,00
153 Photographers	0,01	0,00	0,04	0,01	0,02	0,01
154 Misc. Service Industries	0,80	0,13	2,80	0,73	2,00	0,60
TOTAL	100,00	16,44	100,00	25,99	0,00	9,55

Table A.5B Employment Shares: 1961 to 1992 – 161 Industries – Sorted by Size of Change

	1961		1992		Change 1961–92	
	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment
148 Accom. and Food Services Industry	0,75	0,12	8,89	2,31	8,14	2,19
142 Other Business Services Industries	1,19	0,20	5,23	1,36	4,04	1,16
154 Misc. Service Industries	0,80	0,13	2,80	0,73	2,00	0,60
143 Professional Business Services	1,70	0,28	3,65	0,95	1,95	0,67
135 Wholesale Trade Industries	3,26	0,54	5,08	1,32	1,83	0,79
078 Motor Vehicle Parts and Accessories	3,55	0,58	5,34	1,39	1,80	0,81
041 Clothing Industry excl. Hosiery	1,53	0,25	2,71	0,70	1,18	0,45
137 Banks, Credit Union and Oth. Dep. Inst.	0,73	0,12	1,83	0,48	1,11	0,36
138 Trust, Other Finance and Real Estate	0,79	0,13	1,83	0,47	1,04	0,34
086 Office, Store and Business Machines	0,74	0,12	1,64	0,43	0,90	0,30
150 Other Amusement and Recreational Serv.	0,03	0,00	0,89	0,23	0,87	0,23
031 Plastic Products Industries	0,67	0,11	1,51	0,39	0,84	0,28
085 Electronic Equipment Industries	1,89	0,31	2,51	0,65	0,63	0,34
118 Air Transport and Incidental Services	0,23	0,04	0,80	0,21	0,57	0,17
136 Retail Trade Industries	2,59	0,43	3,14	0,82	0,55	0,39
125 Other Transport and Services to Transport	0,04	0,01	0,51	0,13	0,47	0,13
124 Taxicab Industry	0,26	0,04	0,61	0,16	0,35	0,12
033 Footwear Industry	0,45	0,07	0,79	0,21	0,34	0,13
144 Advertising Services	0,24	0,04	0,56	0,15	0,32	0,11
070 Machine Shops Industry	0,72	0,12	1,01	0,26	0,29	0,14
048 Household Furniture Industries	0,33	0,06	0,58	0,15	0,24	0,10
076 Motor Vehicle Industry	0,91	0,15	1,14	0,30	0,23	0,15
134 Other Utility Industries n.e.c.	0,05	0,01	0,23	0,06	0,18	0,05
105 Sporting Goods and Toys Industries	0,50	0,08	0,67	0,17	0,17	0,09
122 Urban Transit System Industry	0,02	0,00	0,18	0,05	0,16	0,04
102 Toilet Preparations Industry	0,03	0,01	0,18	0,05	0,15	0,04
132 Electric Power Systems Industry	0,52	0,08	0,64	0,17	0,13	0,08
077 Truck, Bus Body and Trailer Industries	0,21	0,03	0,33	0,09	0,12	0,05
016 Fish Products Industry	0,22	0,04	0,34	0,09	0,12	0,05
013 Services Related to Mineral Extraction	0,15	0,03	0,27	0,07	0,12	0,04
045 Sash, Door and Other Millwork Industries	0,10	0,02	0,21	0,06	0,11	0,04

Table A.5B (cont'd)

	1961		1992		Change 1961-92	
	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment
	073 Commercial Refrigeration Equipment	0,18	0,03	0,30	0,08	0,11
139 Insurance Industries	0,51	0,08	0,62	0,16	0,11	0,08
099 Pharmaceutical and Medicine Industry	0,29	0,05	0,39	0,10	0,10	0,05
050 Other Furniture and Fixture Industries	0,16	0,03	0,25	0,07	0,09	0,04
145 Educational Services Industries	0,04	0,01	0,12	0,03	0,08	0,02
131 Postal Service Industry	0,38	0,06	0,45	0,12	0,07	0,05
022 Bread and Other Bakery Prod. Industries	0,04	0,01	0,11	0,03	0,07	0,02
123 Interurban and Rural Transit Systems	0,02	0,00	0,09	0,02	0,07	0,02
130 Telecommunication Carriers and Other	0,72	0,12	0,77	0,20	0,06	0,08
029 Tobacco Products Industries	0,05	0,01	0,11	0,03	0,06	0,02
084 Record Players, Radio and TV Receivers	0,34	0,06	0,39	0,10	0,04	0,04
151 Laundries and Cleaners	0,06	0,01	0,10	0,03	0,04	0,02
039 Contract Textile Dyeing and Finishing	0,11	0,02	0,15	0,04	0,04	0,02
146 Hospitals	0,03	0,01	0,08	0,02	0,04	0,01
028 Wine Industry	0,05	0,01	0,09	0,02	0,04	0,02
147 Other Health Services	0,00	0,00	0,04	0,01	0,04	0,01
030 Rubber Products Industries	0,77	0,13	0,81	0,21	0,04	0,08
015 Poultry Products	0,04	0,01	0,08	0,02	0,04	0,01
106 Sign and Display Industry	0,10	0,02	0,14	0,04	0,03	0,02
082 Small Electrical Appliance Industry	0,26	0,04	0,29	0,08	0,03	0,03
101 Soap and Cleaning Compounds Industry	0,16	0,03	0,18	0,05	0,03	0,02
027 Brewery Products Industry	0,02	0,00	0,04	0,01	0,03	0,01
153 Photographers	0,01	0,00	0,04	0,01	0,02	0,01
040 Carpet, Mat and Rug Industry	0,09	0,01	0,11	0,03	0,02	0,01
049 Office Furniture Industry	0,06	0,01	0,07	0,02	0,02	0,01
088 Battery Industry	0,07	0,01	0,08	0,02	0,01	0,01
152 Other Personal Services	0,00	0,00	0,01	0,00	0,01	0,00
025 Soft Drink Industry	0,04	0,01	0,04	0,01	0,01	0,01
117 Construction, Other Activities	0,01	0,00	0,02	0,00	0,01	0,00
093 Ready-Mix Concrete Industry	0,01	0,00	0,01	0,00	0,00	0,00
014 Meat and Meat Prod (excl. Poultry)	0,31	0,05	0,31	0,08	0,00	0,03

Table A.5B (cont'd)

	1961		1992		Change 1961-92	
	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment
	111 Non-Residential Bldg Construction	0,00	0,00	0,00	0,00	0,00
110 Residential Construction	0,00	0,00	0,00	0,00	0,00	0,00
140 Govt. Royalties on Nat. Resources	0,00	0,00	0,00	0,00	0,00	0,00
116 Other Engineering Construction	0,00	0,00	0,00	0,00	0,00	0,00
141 Owner Occupied Dwellings	0,00	0,00	0,00	0,00	0,00	0,00
115 Railway and Telephone Teleg. Constr.	0,00	0,00	0,00	0,00	0,00	0,00
112 Road, Highway and Airstrip Constr.	0,00	0,00	0,00	0,00	0,00	0,00
113 Gas and Oil Facility Construction	0,00	0,00	0,00	0,00	0,00	0,00
114 Dams and Irrigation Projects	0,00	0,00	0,00	0,00	0,00	0,00
018 Dairy Products	0,12	0,02	0,12	0,03	-0,00	0,01
042 Hosiery Industry	0,06	0,01	0,05	0,01	-0,00	0,00
126 Highway and Bridge Maintenance Industries	0,01	0,00	0,00	0,00	-0,00	-0,00
129 Telecomm. Broadcasting Industry	0,27	0,04	0,27	0,07	-0,00	0,02
004 Gold Mines	0,13	0,02	0,13	0,03	-0,00	0,01
068 Hardware Tool and Cutlery Industries	0,95	0,16	0,94	0,25	-0,01	0,09
091 Cement Industry	0,02	0,00	0,02	0,00	-0,01	0,00
079 Railroad Rolling Stock Industry	0,18	0,03	0,17	0,04	-0,01	0,02
149 Motion Picture and Video Industries	0,25	0,04	0,24	0,06	-0,01	0,02
087 Communic., Energy Wire and Cable	0,19	0,03	0,18	0,05	-0,01	0,02
127 Pipeline Transport Industries	0,08	0,01	0,07	0,02	-0,01	0,01
009 Salt Mines	0,02	0,00	0,02	0,00	-0,01	0,00
054 Other Converted Paper Prod. Industries	0,34	0,06	0,33	0,09	-0,01	0,03
100 Paint and Varnish Industry	0,21	0,03	0,20	0,05	-0,01	0,02
065 Ornamental and Arch. Metal Products	0,19	0,03	0,17	0,04	-0,02	0,01
092 Concrete Products Industry	0,04	0,01	0,02	0,01	-0,02	-0,00
056 Plate making, Typesetting and Bindery	0,35	0,06	0,33	0,09	-0,02	0,03
081 Misc. Transport. Equip. Industries	0,17	0,03	0,15	0,04	-0,02	0,01
052 Asphalt Roofing Industry	0,04	0,01	0,01	0,00	-0,02	-0,00
023 Cane and Beer Sugar Industry	0,05	0,01	0,02	0,01	-0,03	-0,00
007 Asbestos Mines	0,03	0,00	0,00	0,00	-0,03	-0,00
034 Misc. Leather and Allied Prod. Ind.	0,28	0,05	0,25	0,07	-0,03	0,02

Table A.5B (cont'd)

	1961		1992		Change 1961-92	
	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment
	019 Feed Industry	0,16	0,03	0,13	0,03	-0,03
032 Leather Tanneries	0,14	0,02	0,11	0,03	-0,03	0,00
063 Other Metal Rolling, Casting, etc.	0,21	0,03	0,18	0,05	-0,03	0,01
020 Vegetable Oil Mills (excluding Corn)	0,06	0,01	0,02	0,00	-0,04	-0,00
058 Steel Pipe and Tube Industry	0,18	0,03	0,14	0,04	-0,04	0,01
046 Wooden Box and Coffin Industries	0,11	0,02	0,07	0,02	-0,04	-0,00
021 Biscuit Industry	0,10	0,02	0,05	0,01	-0,04	-0,00
062 Copper Rolling, Casting and Extruding	0,16	0,03	0,11	0,03	-0,05	0,00
098 Plastic and Synthetic Resin Industries	0,39	0,06	0,33	0,09	-0,05	0,02
133 Gas Distribution Systems Industry	0,13	0,02	0,08	0,02	-0,06	-0,00
128 Storage and Warehousing Industries	0,17	0,03	0,11	0,03	-0,06	0,00
104 Jewelry and Precious Metals Industry	0,38	0,06	0,31	0,08	-0,06	0,02
069 Heating Equipment Industry	0,19	0,03	0,12	0,03	-0,07	0,00
061 Alum. Rolling, Casting and Extruding	0,30	0,05	0,23	0,06	-0,07	0,01
002 Fishing and Trapping	0,44	0,07	0,36	0,09	-0,08	0,02
047 Other Wood Industries	0,15	0,03	0,06	0,02	-0,09	-0,01
089 Other Elect. and Electronic Products	1,80	0,30	1,69	0,44	-0,11	0,14
107 Floor Tile, Linoleum, Coated Fabrics	0,22	0,04	0,11	0,03	-0,11	-0,01
026 Distillery Products Industry	0,18	0,03	0,07	0,02	-0,11	-0,01
121 Truck Transport Industries	1,22	0,20	1,10	0,29	-0,12	0,09
037 Broad Knitted Fabric Industry	0,24	0,04	0,11	0,03	-0,13	-0,01
096 Refined Petroleum and Coal Products	0,29	0,05	0,16	0,04	-0,13	-0,01
012 Quarries and Sand Pits	0,23	0,04	0,09	0,02	-0,14	-0,01
044 Veneer and Plywood Industries	0,21	0,04	0,07	0,02	-0,14	-0,02
053 Paper Box and Bag Industries	0,51	0,08	0,36	0,09	-0,15	0,01
108 Other Manufacturing Industry n.e.c.	2,74	0,45	2,58	0,67	-0,16	0,22
024 Miscellaneous Food Industries	0,70	0,12	0,50	0,13	-0,21	0,01
059 Iron Foundries	0,58	0,10	0,36	0,09	-0,23	-0,00
103 Chemicals and Chemical Products	0,92	0,15	0,67	0,17	-0,24	0,02
095 Non-Metallic Mineral Products n.e.c.	0,57	0,09	0,32	0,08	-0,25	-0,01
060 Non-Ferrous Smelting and Refining	0,67	0,11	0,42	0,11	-0,25	-0,00

Table A.5B (cont'd)

	1961		1992		Change 1961-92	
	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment	Import Employment as a % of Total Import Employment	Import Employment as a % of Total Employment
	051 Pulp and Paper Industries	0,86	0,14	0,58	0,15	-0,28
006 Iron Mines	0,39	0,06	0,10	0,03	-0,29	-0,04
005 Other Metal Mines	0,58	0,10	0,28	0,07	-0,30	-0,02
008 Non-Metal excl. Coal and Asbestos	0,41	0,07	0,10	0,03	-0,30	-0,04
067 Wire and Wire Products Industries	0,75	0,12	0,44	0,11	-0,30	-0,01
090 Clay Products Industries	0,53	0,09	0,19	0,05	-0,34	-0,04
080 Shipbuilding and Repair Industry	0,46	0,08	0,11	0,03	-0,35	-0,05
066 Stamped, Pressed and Coated Metals	1,19	0,20	0,83	0,22	-0,36	0,02
083 Major Appliances (Elec. and Non-Elec.)	0,73	0,12	0,33	0,09	-0,40	-0,03
017 Fruit and Vegetable Processing	0,70	0,11	0,30	0,08	-0,40	-0,04
043 Sawmills, Planing and Shingle Mills	0,65	0,11	0,24	0,06	-0,41	-0,04
055 Printing and Publishing Industries	2,35	0,39	1,94	0,51	-0,41	0,12
064 Power Boiler and Struct. Metal Industries	0,69	0,11	0,26	0,07	-0,43	-0,05
036 Wool Yarn and Woven Cloth Industry	0,59	0,10	0,16	0,04	-0,43	-0,06
094 Glass and Glass Products Industries	0,92	0,15	0,40	0,11	-0,52	-0,05
011 Crude Petroleum and Natural Gas	1,12	0,18	0,57	0,15	-0,56	-0,04
109 Repair Construction	1,46	0,24	0,89	0,23	-0,57	-0,01
071 Other Metal Fabricating Industries	1,28	0,21	0,71	0,18	-0,57	-0,03
038 Misc. Textile Products Industries	1,26	0,21	0,69	0,18	-0,57	-0,03
097 Industrial Chemicals Industries n.e.c.	1,22	0,20	0,62	0,16	-0,61	-0,04
003 Logging and Forestry	1,06	0,17	0,38	0,10	-0,69	-0,08
120 Water Transport and Related Services	1,00	0,17	0,30	0,08	-0,70	-0,09
074 Other Machinery and Equip. Industries	4,12	0,68	3,36	0,87	-0,76	0,20
057 Primary Steel Industries	2,44	0,40	1,48	0,39	-0,95	-0,01
119 Railway and Transport and Rel. Services	1,63	0,27	0,48	0,13	-1,14	-0,14
075 Aircraft and Aircraft Parts Industries	2,34	0,38	0,96	0,25	-1,38	-0,14
072 Agricultural Implement Industry	2,01	0,33	0,42	0,11	-1,58	-0,22
035 Man-Made Fibre Yarn and Woven Cloth	3,14	0,52	0,76	0,20	-2,38	-0,32
010 Coal Mines	3,23	0,53	0,19	0,05	-3,04	-0,48
001 Agriculture and Related	12,42	2,04	4,77	1,24	-7,64	-0,80
TOTAL	100,00	17,20	100,00	23,07	0,00	5,87

Table A.6A Decomposition of Changes in Employment Shares: 1961 to 1992 – 161 Industries

	1961	1992	Change 1961-92	Due to:				
	Import Employ't as a % of Total	Import Employ't as a % of Total	Import Employ't as a % of Total	Change in Import Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
	Import Employ't	Import Employ't	Import Employ't					
001 Agriculture and Related	12,42	4,77	-7,64	-4,68	-2,19	-0,58	0,23	-0,42
002 Fishing and Trapping	0,44	0,36	-0,08	-0,32	0,10	-0,07	0,06	0,14
003 Logging and Forestry	1,06	0,38	-0,69	-0,18	-0,29	-0,10	0,00	-0,12
004 Gold Mines	0,13	0,13	-0,00	0,06	-0,25	0,01	-0,00	0,18
005 Other Metal Mines	0,58	0,28	-0,30	-0,04	-0,07	-0,07	-0,06	-0,06
006 Iron Mines	0,39	0,10	-0,29	-0,24	-0,03	-0,02	0,02	-0,01
007 Asbestos Mines	0,03	0,00	-0,03	-0,03	0,00	-0,01	-0,00	0,01
008 Non-Metal excl. Coal and Asbestos	0,41	0,10	-0,30	-0,15	-0,12	-0,00	0,03	-0,06
009 Salt Mines	0,02	0,02	-0,01	-0,00	-0,00	-0,00	-0,00	0,00
010 Coal Mines	3,23	0,19	-3,04	-0,49	-0,73	-0,03	0,01	-1,79
011 Crude Petroleum and Natural Gas	1,12	0,57	-0,56	-0,51	-0,17	0,05	0,08	-0,00
012 Quarries and Sand Pits	0,23	0,09	-0,14	-0,15	-0,00	-0,01	0,00	0,02
013 Services Related to Mineral Extraction	0,15	0,27	0,12	-0,26	0,12	0,12	0,03	0,11
014 Meat and Meat Prod (excl. Poultry)	0,31	0,31	0,00	-0,08	0,06	-0,06	-0,00	0,08
015 Poultry Products	0,04	0,08	0,04	0,02	0,02	-0,00	0,00	-0,01
016 Fish Products Industry	0,22	0,34	0,12	0,10	0,01	-0,01	0,01	0,01
017 Fruit and Vegetable Processing	0,70	0,30	-0,40	-0,38	-0,05	-0,01	0,02	0,02
018 Dairy Products	0,12	0,12	-0,00	0,02	-0,04	-0,01	0,00	0,02
019 Feed Industry	0,16	0,13	-0,03	-0,02	-0,01	-0,01	-0,00	0,01
020 Vegetable Oil Mills (excluding Corn)	0,06	0,02	-0,04	-0,04	-0,00	-0,00	0,00	0,00
021 Biscuit Industry	0,10	0,05	-0,04	-0,04	-0,01	0,00	0,00	0,00
022 Bread and Other Bakery Prod. Industries	0,04	0,11	0,07	0,07	-0,01	-0,01	0,00	0,01
023 Cane and Beer Sugar Industry	0,05	0,02	-0,03	-0,02	0,00	-0,01	0,00	0,00
024 Miscellaneous Food Industries	0,70	0,50	-0,21	-0,29	0,03	-0,04	0,03	0,07
025 Soft Drink Industry	0,04	0,04	0,01	0,00	-0,04	0,02	0,00	0,02
026 Distillery Products Industry	0,18	0,07	-0,11	-0,13	0,01	-0,01	0,00	0,02
027 Brewery Products Industry	0,02	0,04	0,03	0,03	-0,00	-0,01	0,00	0,00
028 Wine Industry	0,05	0,09	0,04	0,03	0,01	-0,00	0,00	0,00
029 Tobacco Products Industries	0,05	0,11	0,06	0,08	-0,05	-0,01	0,00	0,04
030 Rubber Products Industries	0,77	0,81	0,04	0,13	0,10	-0,11	-0,10	0,02

Table A.6A (cont'd)

	1961	1992	Change 1961-92	Due to:				
	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Change in Import Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
031 Plastic Products Industries	0,67	1,51	0,84	0,45	-0,00	0,27	0,00	0,12
032 Leather Tanneries	0,14	0,11	-0,03	-0,01	0,00	0,00	-0,06	0,03
033 Footwear Industry	0,45	0,79	0,34	0,30	0,02	-0,04	0,05	0,02
034 Misc. Leather and Allied Prod. Ind.	0,28	0,25	-0,03	-0,06	0,02	-0,02	-0,01	0,03
035 Man-Made Fibre Yarn and Woven Cloth	3,14	0,76	-2,38	-1,46	-0,16	-0,20	-0,11	-0,45
036 Wool Yarn and Woven Cloth Industry	0,59	0,16	-0,43	-0,33	-0,00	-0,10	-0,01	0,01
037 Broad Knitted Fabric Industry	0,24	0,11	-0,13	-0,12	-0,02	0,02	0,00	-0,01
038 Misc. Textile Products Industries	1,26	0,69	-0,57	-0,65	0,09	-0,12	0,01	0,09
039 Contract Textile Dyeing and Finishing	0,11	0,15	0,04	0,02	0,02	0,07	-0,01	-0,06
040 Carpet, Mat and Rug Industry	0,09	0,11	0,02	0,03	-0,03	0,00	0,01	0,02
041 Clothing Industry excl. Hosiery	1,53	2,71	1,18	1,12	0,04	-0,13	0,13	0,02
042 Hosiery Industry	0,06	0,05	-0,00	-0,01	0,01	-0,01	0,00	0,00
043 Sawmills, Planing and Shingle Mills	0,65	0,24	-0,41	-0,17	-0,14	-0,05	0,01	-0,06
044 Veneer and Plywood Industries	0,21	0,07	-0,14	-0,11	-0,01	-0,03	0,00	0,00
045 Sash, Door and Other Millwork Ind.	0,10	0,21	0,11	0,10	0,02	-0,01	0,01	-0,01
046 Wooden Box and Coffin Industries	0,11	0,07	-0,04	-0,01	-0,02	-0,01	-0,01	0,00
047 Other Wood Industries	0,15	0,06	-0,09	-0,03	-0,04	-0,01	0,00	-0,02
048 Household Furniture Industries	0,33	0,58	0,24	0,22	0,02	-0,03	0,03	0,01
049 Office Furniture Industry	0,06	0,07	0,02	0,02	-0,00	-0,00	0,01	0,00
050 Other Furniture and Fixture Industries	0,16	0,25	0,09	0,06	0,04	-0,02	0,02	-0,01
051 Pulp and Paper Industries	0,86	0,58	-0,28	-0,06	-0,03	-0,16	-0,03	0,01
052 Asphalt Roofing Industry	0,04	0,01	-0,02	-0,01	-0,01	-0,01	-0,00	-0,00
053 Paper Box and Bag Industries	0,51	0,36	-0,15	-0,03	0,02	-0,13	-0,02	0,01
054 Other Converted Paper Prod. Industries	0,34	0,33	-0,01	0,02	0,01	-0,07	-0,00	0,03
055 Printing and Publishing Industries	2,35	1,94	-0,41	-0,17	-0,15	-0,31	0,05	0,16
056 Plate making, Typesetting and Bindery	0,35	0,33	-0,02	-0,07	0,03	-0,05	0,01	0,05
057 Primary Steel Industries	2,44	1,48	-0,95	-0,60	-0,13	-0,09	-0,17	0,04

Table A.6A (cont'd)

	1961	1992	Change 1961-92	Due to:				
	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Change in Import Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
	058 Steel Pipe and Tube Industry	0,18	0,14	-0,04	-0,20	0,05	0,00	0,00
059 Iron Foundries	0,58	0,36	-0,23	-0,18	-0,11	0,03	0,01	0,02
060 Non-Ferrous Smelting and Refining	0,67	0,42	-0,25	-0,15	-0,04	-0,01	-0,09	0,03
061 Alum. Rolling, Casting and Extruding	0,30	0,23	-0,07	0,05	-0,17	0,04	-0,09	0,11
062 Copper Rolling, Casting and Extruding	0,16	0,11	-0,05	0,01	0,05	-0,08	-0,05	0,03
063 Other Metal Rolling, Casting, etc.	0,21	0,18	-0,03	-0,10	0,06	-0,04	-0,03	0,07
064 Power Boiler and Struct. Metal Ind.	0,69	0,26	-0,43	-0,38	0,03	-0,14	0,01	0,06
065 Ornamental and Arch. Metal Products	0,19	0,17	-0,02	-0,02	0,01	-0,00	0,00	-0,00
066 Stamped, Pressed and Coated Metals	1,19	0,83	-0,36	-0,34	0,09	-0,14	-0,05	0,08
067 Wire and Wire Products Industries	0,75	0,44	-0,30	-0,16	0,04	-0,17	-0,05	0,04
068 Hardware Tool and Cutlery Industries	0,95	0,94	-0,01	-0,30	0,19	-0,06	0,03	0,13
069 Heating Equipment Industry	0,19	0,12	-0,07	-0,10	0,02	-0,02	0,00	0,03
070 Machine Shops Industry	0,72	1,01	0,29	0,12	0,19	-0,01	-0,09	0,08
071 Other Metal Fabricating Industries	1,28	0,71	-0,57	-0,51	0,01	-0,09	-0,04	0,05
072 Agricultural Implement Industry	2,01	0,42	-1,58	-1,86	0,02	-0,04	0,04	0,25
073 Commercial Refrigeration Equipment	0,18	0,30	0,11	0,07	0,04	0,01	-0,01	0,01
074 Other Machinery and Equip. Industries	4,12	3,36	-0,76	-1,08	0,02	-0,13	0,10	0,33
075 Aircraft and Aircraft Parts Industries	2,34	0,96	-1,38	-1,21	-0,13	-0,02	0,01	-0,02
076 Motor Vehicle Industry	0,91	1,14	0,23	0,61	-0,88	-0,08	0,09	0,49
077 Truck, Bus Body and Trailer Industries	0,21	0,33	0,12	0,08	0,02	-0,01	0,02	0,00
078 Motor Vehicle Parts and Accessories	3,55	5,34	1,80	2,28	-0,81	-0,11	-0,37	0,80
079 Railroad Rolling Stock Industry	0,18	0,17	-0,01	0,05	-0,07	-0,01	-0,00	0,02
080 Shipbuilding and Repair Industry	0,46	0,11	-0,35	-0,28	-0,03	-0,01	0,01	-0,04
081 Misc. Transport. Equip. Industries	0,17	0,15	-0,02	0,03	-0,10	-0,00	0,01	0,04
082 Small Electrical Appliance Industry	0,26	0,29	0,03	-0,01	0,06	-0,03	0,01	0,00
083 Major Appliances (Elec. and Non-Elec.)	0,73	0,33	-0,40	-0,39	-0,02	-0,02	0,01	0,02
084 Record Players, Radio and TV Receivers	0,34	0,39	0,04	0,16	-0,17	-0,02	-0,04	0,11
085 Electronic Equipment Industries	1,89	2,51	0,63	1,48	-2,55	0,25	-0,60	2,04
086 Office, Store and Business Machines	0,74	1,64	0,90	1,12	-0,50	-0,08	-0,30	0,65
087 Communic., Energy Wire and Cable	0,19	0,18	-0,01	0,04	0,00	-0,04	-0,02	0,02

Table A.6A (cont'd)

	1961	1992	Change 1961-92	Due to:				
	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Change in Import Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
	088 Battery Industry	0,07	0,08	0,01	0,01	0,01	-0,01	-0,00
089 Other Elect. and Electronic Products	1,80	1,69	-0,11	-0,06	0,05	-0,12	-0,12	0,14
090 Clay Products Industries	0,53	0,19	-0,34	-0,26	-0,03	-0,03	0,01	-0,03
091 Cement Industry	0,02	0,02	-0,01	-0,00	0,00	-0,00	0,00	0,00
092 Concrete Products Industry	0,04	0,02	-0,02	-0,02	0,00	-0,01	0,00	0,00
093 Ready-Mix Concrete Industry	0,01	0,01	0,00	-0,00	0,01	0,00	0,00	0,00
094 Glass and Glass Products Industries	0,92	0,40	-0,52	-0,37	-0,07	-0,10	0,00	0,01
095 Non-Metallic Mineral Products n.e.c.	0,57	0,32	-0,25	-0,17	-0,02	-0,09	-0,02	0,04
096 Refined Petroleum and Coal Products	0,29	0,16	-0,13	-0,04	-0,09	-0,00	-0,00	0,00
097 Industrial Chemicals Industries n.e.c.	1,22	0,62	-0,61	-0,18	-0,42	0,05	-0,05	0,00
098 Plastic and Synthetic Resin Industries	0,39	0,33	-0,05	0,01	-0,14	0,03	-0,03	0,07
099 Pharmaceutical and Medicine Industry	0,29	0,39	0,10	0,14	-0,15	0,02	0,02	0,07
100 Paint and Varnish Industry	0,21	0,20	-0,01	0,03	-0,04	-0,01	-0,02	0,01
101 Soap and Cleaning Compounds Industry	0,16	0,18	0,03	-0,00	0,04	-0,02	-0,00	0,01
102 Toilet Preparations Industry	0,03	0,18	0,15	0,13	0,03	-0,00	0,01	-0,02
103 Chemicals and Chemical Products	0,92	0,67	-0,24	-0,15	-0,14	0,02	-0,05	0,07
104 Jewelry and Precious Metals Industry	0,38	0,31	-0,06	-0,08	0,02	-0,02	0,00	0,02
105 Sporting Goods and Toys Industries	0,50	0,67	0,17	0,18	-0,07	-0,03	0,04	0,06
106 Sign and Display Industry	0,10	0,14	0,03	0,02	0,04	-0,03	-0,00	0,01
107 Floor Tile, Linoleum, Coated Fabrics	0,22	0,11	-0,11	-0,09	0,00	-0,02	-0,01	0,01
108 Other Manufacturing Industry n.e.c.	2,74	2,58	-0,16	-0,43	0,14	-0,10	-0,02	0,24
109 Repair Construction	1,46	0,89	-0,57	-0,15	-0,20	-0,28	-0,01	0,06
110 Residential Construction	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
111 Non-Residential Bldg Construction	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
112 Road, Highway and Airstrip Constr.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
113 Gas and Oil Facility Construction	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
114 Dams and Irrigation Projects	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
115 Railway and Telephone Teleg. Constr.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
116 Other Engineering Construction	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
117 Construction, Other Activities	0,01	0,02	0,01	0,00	0,01	-0,01	-0,00	0,00

Table A.6A (cont'd)

	1961	1992	Change 1961-92	Due to:				
	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Change in Import Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
	118 Air Transport and Incidental Services	0,23	0,80	0,57	0,59	-0,11	-0,00	-0,01
119 Railway and Transport and Rel. Services	1,63	0,48	-1,14	0,04	-0,18	-0,69	-0,02	-0,29
120 Water Transport and Related Services	1,00	0,30	-0,70	-0,35	-0,12	-0,12	0,01	-0,12
121 Truck Transport Industries	1,22	1,10	-0,12	-0,10	-0,28	0,11	-0,03	0,18
122 Urban Transit System Industry	0,02	0,18	0,16	0,15	0,08	-0,01	0,01	-0,07
123 Interurban and Rural Transit Systems	0,02	0,09	0,07	0,08	-0,03	-0,01	0,00	0,02
124 Taxicab Industry	0,26	0,61	0,35	0,31	0,09	-0,00	-0,03	-0,02
125 Other Transport and Services to Transp.	0,04	0,51	0,47	0,18	0,25	0,27	-0,01	-0,22
126 Highway and Bridge Maintenance Ind.	0,01	0,00	-0,00	0,00	-0,00	-0,00	-0,00	0,00
127 Pipeline Transport Industries	0,08	0,07	-0,01	-0,05	0,01	0,01	0,00	0,02
128 Storage and Warehousing Industries	0,17	0,11	-0,06	-0,03	0,03	-0,11	0,00	0,05
129 Telecomm. Broadcasting Industry	0,27	0,27	-0,00	0,05	-0,27	0,07	0,00	0,14
130 Telecommunication Carriers and Other	0,72	0,77	0,06	0,17	-0,29	0,02	-0,01	0,16
131 Postal Service Industry	0,38	0,45	0,07	0,00	-0,02	0,05	-0,00	0,04
132 Electric Power Systems Industry	0,52	0,64	0,13	-0,14	-0,19	0,29	-0,02	0,18
133 Gas Distribution Systems Industry	0,13	0,08	-0,06	-0,04	-0,04	0,01	-0,00	0,01
134 Other Utility Industries n.e.c.	0,05	0,23	0,18	-0,02	-0,00	0,17	-0,00	0,03
135 Wholesale Trade Industries	3,26	5,08	1,83	-0,24	1,00	0,82	-0,15	0,40
136 Retail Trade Industries	2,59	3,14	0,55	-0,21	0,90	-0,79	-0,00	0,66
137 Banks, Credit Union and Oth. Dep. Inst.	0,73	1,83	1,11	0,25	-0,13	0,71	0,03	0,26
138 Trust, Other Finance and Real Estate	0,79	1,83	1,04	0,26	0,64	0,19	0,04	-0,10
139 Insurance Industries	0,51	0,62	0,11	0,23	-0,13	-0,04	0,01	0,04
140 Govt. Royalties on Nat. Resources	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
141 Owner Occupied Dwellings	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
142 Other Business Services Industries	1,19	5,23	4,04	1,50	1,70	1,64	0,92	-1,73
143 Professional Business Services	1,70	3,65	1,95	0,48	0,67	1,00	0,15	-0,35
144 Advertising Services	0,24	0,56	0,32	0,05	0,06	0,20	0,02	-0,02
145 Educational Services Industries	0,04	0,12	0,08	0,07	0,01	-0,01	0,01	-0,01

Table A.6A (cont'd)

	1961	1992	Change 1961-92	Due to:				
	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Change in Import Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
146 Hospitals	0,03	0,08	0,04	0,05	-0,01	-0,00	0,01	0,01
147 Other Health Services	0,00	0,04	0,04	0,03	0,02	0,01	0,00	-0,02
148 Accom. and Food Services Industry	0,75	8,89	8,14	7,66	4,29	-0,51	0,32	-3,63
149 Motion Picture and Video Industries	0,25	0,24	-0,01	-0,08	-0,00	0,03	0,01	0,03
150 Other Amusement and Recreat. Serv.	0,03	0,89	0,87	0,86	0,20	-0,05	0,06	-0,20
151 Laundries and Cleaners	0,06	0,10	0,04	0,02	0,02	-0,02	0,00	0,02
152 Other Personal Services	0,00	0,01	0,01	0,01	0,00	-0,00	0,00	-0,00
153 Photographers	0,01	0,04	0,02	0,00	0,02	0,01	0,00	-0,00
154 Misc. Service Industries	0,80	2,80	2,00	-0,10	1,57	0,80	0,06	-0,33

Table A.6B Decomposition of Changes in Employment Shares: 1961 to 1992 – 161 Industries

Sorted by Size of Change	1961	1992	Change 1961-92	Due to:				
	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Change in Import Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
	148 Accom. and Food Services Industry	0,75	8,89	8,14	7,66	4,29	-0,51	0,32
142 Other Business Services Industries	1,19	5,23	4,04	1,50	1,70	1,64	0,92	-1,73
154 Misc. Service Industries	0,80	2,80	2,00	-0,10	1,57	0,80	0,06	-0,33
143 Professional Business Services	1,70	3,65	1,95	0,48	0,67	1,00	0,15	-0,35
135 Wholesale Trade Industries	3,26	5,08	1,83	-0,24	1,00	0,82	-0,15	0,40
078 Motor Vehicle Parts and Accessories	3,55	5,34	1,80	2,28	-0,81	-0,11	-0,37	0,80
041 Clothing Industry excl. Hosiery	1,53	2,71	1,18	1,12	0,04	-0,13	0,13	0,02
137 Banks, Credit Union and Oth. Dep. Inst.	0,73	1,83	1,11	0,25	-0,13	0,71	0,03	0,26
138 Trust, Other Finance and Real Estate	0,79	1,83	1,04	0,26	0,64	0,19	0,04	-0,10
086 Office, Store and Business Machines	0,74	1,64	0,90	1,12	-0,50	-0,08	-0,30	0,65
150 Other Amusement and Recreat. Serv.	0,03	0,89	0,87	0,86	0,20	-0,05	0,06	-0,20
031 Plastic Products Industries	0,67	1,51	0,84	0,45	-0,00	0,27	0,00	0,12
085 Electronic Equipment Industries	1,89	2,51	0,63	1,48	-2,55	0,25	-0,60	2,04
118 Air Transport and Incidental Services	0,23	0,80	0,57	0,59	-0,11	-0,00	-0,01	0,11
136 Retail Trade Industries	2,59	3,14	0,55	-0,21	0,90	-0,79	-0,00	0,66
125 Other Transport and Services to Transp.	0,04	0,51	0,47	0,18	0,25	0,27	-0,01	-0,22
124 Taxicab Industry	0,26	0,61	0,35	0,31	0,09	-0,00	-0,03	-0,02
033 Footwear Industry	0,45	0,79	0,34	0,30	0,02	-0,04	0,05	0,02
144 Advertising Services	0,24	0,56	0,32	0,05	0,06	0,20	0,02	-0,02
070 Machine Shops Industry	0,72	1,01	0,29	0,12	0,19	-0,01	-0,09	0,08
048 Household Furniture Industries	0,33	0,58	0,24	0,22	0,02	-0,03	0,03	0,01
076 Motor Vehicle Industry	0,91	1,14	0,23	0,61	-0,88	-0,08	0,09	0,49
134 Other Utility Industries n.e.c.	0,05	0,23	0,18	-0,02	-0,00	0,17	-0,00	0,03
105 Sporting Goods and Toys Industries	0,50	0,67	0,17	0,18	-0,07	-0,03	0,04	0,06
122 Urban Transit System Industry	0,02	0,18	0,16	0,15	0,08	-0,01	0,01	-0,07
102 Toilet Preparations Industry	0,03	0,18	0,15	0,13	0,03	-0,00	0,01	-0,02
132 Electric Power Systems Industry	0,52	0,64	0,13	-0,14	-0,19	0,29	-0,02	0,18
077 Truck, Bus Body and Trailer Industries	0,21	0,33	0,12	0,08	0,02	-0,01	0,02	0,00
016 Fish Products Industry	0,22	0,34	0,12	0,10	0,01	-0,01	0,01	0,01

Table A.6B (cont'd)

Sorted by Size of Change	1961	1992	Change 1961-92	Due to:				
	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Change in Import Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
	013 Services Related to Mineral Extraction	0,15	0,27	0,12	-0,26	0,12	0,12	0,03
045 Sash, Door and Other Millwork Ind.	0,10	0,21	0,11	0,10	0,02	-0,01	0,01	-0,01
073 Commercial Refrigeration Equipment	0,18	0,30	0,11	0,07	0,04	0,01	-0,01	0,01
139 Insurance Industries	0,51	0,62	0,11	0,23	-0,13	-0,04	0,01	0,04
099 Pharmaceutical and Medicine Industry	0,29	0,39	0,10	0,14	-0,15	0,02	0,02	0,07
050 Other Furniture and Fixture Industries	0,16	0,25	0,09	0,06	0,04	-0,02	0,02	-0,01
145 Educational Services Industries	0,04	0,12	0,08	0,07	0,01	-0,01	0,01	-0,01
131 Postal Service Industry	0,38	0,45	0,07	0,00	-0,02	0,05	-0,00	0,04
022 Bread and Other Bakery Prod. Industries	0,04	0,11	0,07	0,07	-0,01	-0,01	0,00	0,01
123 Interurban and Rural Transit Systems	0,02	0,09	0,07	0,08	-0,03	-0,01	0,00	0,02
130 Telecommunication Carriers and Other	0,72	0,77	0,06	0,17	-0,29	0,02	-0,01	0,16
029 Tobacco Products Industries	0,05	0,11	0,06	0,08	-0,05	-0,01	0,00	0,04
084 Record Players, Radio and TV Receivers	0,34	0,39	0,04	0,16	-0,17	-0,02	-0,04	0,11
151 Laundries and Cleaners	0,06	0,10	0,04	0,02	0,02	-0,02	0,00	0,02
039 Contract Textile Dyeing and Finishing	0,11	0,15	0,04	0,02	0,02	0,07	-0,01	-0,06
146 Hospitals	0,03	0,08	0,04	0,05	-0,01	-0,00	0,01	0,01
028 Wine Industry	0,05	0,09	0,04	0,03	0,01	-0,00	0,00	0,00
147 Other Health Services	0,00	0,04	0,04	0,03	0,02	0,01	0,00	-0,02
030 Rubber Products Industries	0,77	0,81	0,04	0,13	0,10	-0,11	-0,10	0,02
015 Poultry Products	0,04	0,08	0,04	0,02	0,02	-0,00	0,00	-0,01
106 Sign and Display Industry	0,10	0,14	0,03	0,02	0,04	-0,03	-0,00	0,01
082 Small Electrical Appliance Industry	0,26	0,29	0,03	-0,01	0,06	-0,03	0,01	0,00
101 Soap and Cleaning Compounds Industry	0,16	0,18	0,03	-0,00	0,04	-0,02	-0,00	0,01
027 Brewery Products Industry	0,02	0,04	0,03	0,03	-0,00	-0,01	0,00	0,00
153 Photographers	0,01	0,04	0,02	0,00	0,02	0,01	0,00	-0,00
040 Carpet, Mat and Rug Industry	0,09	0,11	0,02	0,03	-0,03	0,00	0,01	0,02
049 Office Furniture Industry	0,06	0,07	0,02	0,02	-0,00	-0,00	0,01	0,00
088 Battery Industry	0,07	0,08	0,01	0,01	0,01	-0,01	-0,00	0,00
152 Other Personal Services	0,00	0,01	0,01	0,01	0,00	-0,00	0,00	-0,00

Table A.6B (cont'd)

Sorted by Size of Change	1961	1992	Change 1961-92	Due to:				
	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Change in Import Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
	025 Soft Drink Industry	0,04	0,04	0,01	0,00	-0,04	0,02	0,00
117 Construction, Other Activities	0,01	0,02	0,01	0,00	0,01	-0,01	-0,00	0,00
093 Ready-Mix Concrete Industry	0,01	0,01	0,00	-0,00	0,01	0,00	0,00	0,00
014 Meat and Meat Prod (excl. Poultry)	0,31	0,31	0,00	-0,08	0,06	-0,06	-0,00	0,08
111 Non-Residential Bldg Construction	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
110 Residential Construction	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
140 Govt. Royalties on Nat. Resources	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
116 Other Engineering Construction	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
141 Owner Occupied Dwellings	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
115 Railway and Telephone Teleg. Constr.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
112 Road, Highway and Airstrip Constr.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
113 Gas and Oil Facility Construction	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
114 Dams and Irrigation Projects	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
018 Dairy Products	0,12	0,12	-0,00	0,02	-0,04	-0,01	0,00	0,02
042 Hosiery Industry	0,06	0,05	-0,00	-0,01	0,01	-0,01	0,00	0,00
126 Highway and Bridge Maintenance Ind.	0,01	0,00	-0,00	0,00	-0,00	-0,00	-0,00	0,00
129 Telecomm. Broadcasting Industry	0,27	0,27	-0,00	0,05	-0,27	0,07	0,00	0,14
004 Gold Mines	0,13	0,13	-0,00	0,06	-0,25	0,01	-0,00	0,18
068 Hardware Tool and Cutlery Industries	0,95	0,94	-0,01	-0,30	0,19	-0,06	0,03	0,13
091 Cement Industry	0,02	0,02	-0,01	-0,00	0,00	-0,00	0,00	0,00
079 Railroad Rolling Stock Industry	0,18	0,17	-0,01	0,05	-0,07	-0,01	-0,00	0,02
149 Motion Picture and Video Industries	0,25	0,24	-0,01	-0,08	-0,00	0,03	0,01	0,03
087 Communic., Energy Wire and Cable	0,19	0,18	-0,01	0,04	0,00	-0,04	-0,02	0,02
127 Pipeline Transport Industries	0,08	0,07	-0,01	-0,05	0,01	0,01	0,00	0,02
009 Salt Mines	0,02	0,02	-0,01	-0,00	-0,00	-0,00	-0,00	0,00
054 Other Converted Paper Prod. Industries	0,34	0,33	-0,01	0,02	0,01	-0,07	-0,00	0,03
100 Paint and Varnish Industry	0,21	0,20	-0,01	0,03	-0,04	-0,01	-0,02	0,01
065 Ornamental and Arch. Metal Products	0,19	0,17	-0,02	-0,02	0,01	-0,00	0,00	-0,00
092 Concrete Products Industry	0,04	0,02	-0,02	-0,02	0,00	-0,01	0,00	0,00

Table A.6B (cont'd)

Sorted by Size of Change	1961	1992	Change 1961-92	Due to:				
	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Import Employ't as a % of Total Import Employ't	Change in Import Shares	Change in Employ't /Output Ratio	Change in Input/ Output Coeff's	Change in Import Coeff's	Residual /Interaction
	056 Plate making, Typesetting and Bindery	0,35	0,33	-0,02	-0,07	0,03	-0,05	0,01
081 Misc. Transport. Equip. Industries	0,17	0,15	-0,02	0,03	-0,10	-0,00	0,01	0,04
052 Asphalt Roofing Industry	0,04	0,01	-0,02	-0,01	-0,01	-0,01	-0,00	-0,00
023 Cane and Beer Sugar Industry	0,05	0,02	-0,03	-0,02	0,00	-0,01	0,00	0,00
007 Asbestos Mines	0,03	0,00	-0,03	-0,03	0,00	-0,01	-0,00	0,01
034 Misc. Leather and Allied Prod. Ind.	0,28	0,25	-0,03	-0,06	0,02	-0,02	-0,01	0,03
019 Feed Industry	0,16	0,13	-0,03	-0,02	-0,01	-0,01	-0,00	0,01
032 Leather Tanneries	0,14	0,11	-0,03	-0,01	0,00	0,00	-0,06	0,03
063 Other Metal Rolling, Casting, etc.	0,21	0,18	-0,03	-0,10	0,06	-0,04	-0,03	0,07
020 Vegetable Oil Mills (excluding Corn)	0,06	0,02	-0,04	-0,04	-0,00	-0,00	0,00	0,00
058 Steel Pipe and Tube Industry	0,18	0,14	-0,04	-0,20	0,05	0,00	0,00	0,11
046 Wooden Box and Coffin Industries	0,11	0,07	-0,04	-0,01	-0,02	-0,01	-0,01	0,00
021 Biscuit Industry	0,10	0,05	-0,04	-0,04	-0,01	0,00	0,00	0,00
062 Copper Rolling, Casting and Extruding	0,16	0,11	-0,05	0,01	0,05	-0,08	-0,05	0,03
098 Plastic and Synthetic Resin Industries	0,39	0,33	-0,05	0,01	-0,14	0,03	-0,03	0,07
133 Gas Distribution Systems Industry	0,13	0,08	-0,06	-0,04	-0,04	0,01	-0,00	0,01
128 Storage and Warehousing Industries	0,17	0,11	-0,06	-0,03	0,03	-0,11	0,00	0,05
104 Jewelry and Precious Metals Industry	0,38	0,31	-0,06	-0,08	0,02	-0,02	0,00	0,02
069 Heating Equipment Industry	0,19	0,12	-0,07	-0,10	0,02	-0,02	0,00	0,03
061 Alum. Rolling, Casting and Extruding	0,30	0,23	-0,07	0,05	-0,17	0,04	-0,09	0,11
002 Fishing and Trapping	0,44	0,36	-0,08	-0,32	0,10	-0,07	0,06	0,14
047 Other Wood Industries	0,15	0,06	-0,09	-0,03	-0,04	-0,01	0,00	-0,02
089 Other Elect. and Electronic Products	1,80	1,69	-0,11	-0,06	0,05	-0,12	-0,12	0,14
107 Floor Tile, Linoleum, Coated Fabrics	0,22	0,11	-0,11	-0,09	0,00	-0,02	-0,01	0,01
026 Distillery Products Industry	0,18	0,07	-0,11	-0,13	0,01	-0,01	0,00	0,02
121 Truck Transport Industries	1,22	1,10	-0,12	-0,10	-0,28	0,11	-0,03	0,18
037 Broad Knitted Fabric Industry	0,24	0,11	-0,13	-0,12	-0,02	0,02	0,00	-0,01
096 Refined Petroleum and Coal Products	0,29	0,16	-0,13	-0,04	-0,09	-0,00	-0,00	0,00
012 Quarries and Sand Pits	0,23	0,09	-0,14	-0,15	-0,00	-0,01	0,00	0,02

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	044 Veneer and Plywood Industries	0,21	0,07	-0,14	-0,11	-0,01	-0,03	0,00
053 Paper Box and Bag Industries	0,51	0,36	-0,15	-0,03	0,02	-0,13	-0,02	0,01
108 Other Manufacturing Industry n.e.c.	2,74	2,58	-0,16	-0,43	0,14	-0,10	-0,02	0,24
024 Miscellaneous Food Industries	0,70	0,50	-0,21	-0,29	0,03	-0,04	0,03	0,07
059 Iron Foundries	0,58	0,36	-0,23	-0,18	-0,11	0,03	0,01	0,02
103 Chemicals and Chemical Products	0,92	0,67	-0,24	-0,15	-0,14	0,02	-0,05	0,07
095 Non-Metallic Mineral Products n.e.c.	0,57	0,32	-0,25	-0,17	-0,02	-0,09	-0,02	0,04
060 Non-Ferrous Smelting and Refining	0,67	0,42	-0,25	-0,15	-0,04	-0,01	-0,09	0,03
051 Pulp and Paper Industries	0,86	0,58	-0,28	-0,06	-0,03	-0,16	-0,03	0,01
006 Iron Mines	0,39	0,10	-0,29	-0,24	-0,03	-0,02	0,02	-0,01
005 Other Metal Mines	0,58	0,28	-0,30	-0,04	-0,07	-0,07	-0,06	-0,06
008 Non-Metal excl. Coal and Asbestos	0,41	0,10	-0,30	-0,15	-0,12	-0,00	0,03	-0,06
067 Wire and Wire Products Industries	0,75	0,44	-0,30	-0,16	0,04	-0,17	-0,05	0,04
090 Clay Products Industries	0,53	0,19	-0,34	-0,26	-0,03	-0,03	0,01	-0,03
080 Shipbuilding and Repair Industry	0,46	0,11	-0,35	-0,28	-0,03	-0,01	0,01	-0,04
066 Stamped, Pressed and Coated Metals	1,19	0,83	-0,36	-0,34	0,09	-0,14	-0,05	0,08
083 Major Appliances (Elec. and Non-Elec.)	0,73	0,33	-0,40	-0,39	-0,02	-0,02	0,01	0,02
017 Fruit and Vegetable Processing	0,70	0,30	-0,40	-0,38	-0,05	-0,01	0,02	0,02
043 Sawmills, Planing and Shingle Mills	0,65	0,24	-0,41	-0,17	-0,14	-0,05	0,01	-0,06
055 Printing and Publishing Industries	2,35	1,94	-0,41	-0,17	-0,15	-0,31	0,05	0,16
064 Power Boiler and Struct. Metal Ind.	0,69	0,26	-0,43	-0,38	0,03	-0,14	0,01	0,06
036 Wool Yarn and Woven Cloth Industry	0,59	0,16	-0,43	-0,33	-0,00	-0,10	-0,01	0,01
094 Glass and Glass Products Industries	0,92	0,40	-0,52	-0,37	-0,07	-0,10	0,00	0,01
011 Crude Petroleum and Natural Gas	1,12	0,57	-0,56	-0,51	-0,17	0,05	0,08	-0,00
109 Repair Construction	1,46	0,89	-0,57	-0,15	-0,20	-0,28	-0,01	0,06
071 Other Metal Fabricating Industries	1,28	0,71	-0,57	-0,51	0,01	-0,09	-0,04	0,05
038 Misc. Textile Products Industries	1,26	0,69	-0,57	-0,65	0,09	-0,12	0,01	0,09
097 Industrial Chemicals Industries n.e.c.	1,22	0,62	-0,61	-0,18	-0,42	0,05	-0,05	0,00
003 Logging and Forestry	1,06	0,38	-0,69	-0,18	-0,29	-0,10	0,00	-0,12

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	120 Water Transport and Related Services	1,00	0,30	-0,70	-0,35	-0,12	-0,12	0,01
074 Other Machinery and Equip. Industries	4,12	3,36	-0,76	-1,08	0,02	-0,13	0,10	0,33
057 Primary Steel Industries	2,44	1,48	-0,95	-0,60	-0,13	-0,09	-0,17	0,04
119 Railway and Transport and Rel. Services	1,63	0,48	-1,14	0,04	-0,18	-0,69	-0,02	-0,29
075 Aircraft and Aircraft Parts Industries	2,34	0,96	-1,38	-1,21	-0,13	-0,02	0,01	-0,02
072 Agricultural Implement Industry	2,01	0,42	-1,58	-1,86	0,02	-0,04	0,04	0,25
010 Coal Mines	3,23	0,19	-3,04	-0,49	-0,73	-0,03	0,01	-1,79
001 Agriculture and Related	12,42	4,77	-7,64	-4,68	-2,19	-0,58	0,23	-0,42

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