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Is Canada De-industrializing?:
The Industrial Restructuring of the Manufacturing Sector, 1961-1995

by

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Abstract

This study assesses critically the conceptualisation and operationalisation of variants of the de-industrialization thesis that have been proposed in Canada, the United States, and United Kingdom. A series of operational measures are identified and then applied to the case of Canada to determine if it has been losing its manufacturing base. Long term data on employment, output, investment, and trade are examined for the manufacturing sector as a whole. Certain general trends are also contrasted with those of other G-7 countries. Further, the study considers trends in the major manufacturing industries (two digit SIC) and in the sub-industry groups: automotive, steel, and pulp and paper. The data are mainly from Statistics Canada publications and U.S. Bureau of Labor Statistics. The evidence runs counter to the expectations of the de-industrialization thesis. Canada's manufacturing base has generally grown.

Résumé

Cette étude est une évaluation critique de la conceptualisation et de l'opérationnalisation des variantes de la théorie de désindustrialisation proposées au Canada, aux États-Unis et au Royaume-Uni. Une série d'indicateurs sont dégagés et concrétisés afin de déterminer s'il y a eu une érosion du secteur manufacturier canadien. Des donneés à long terme pour le secteur manufacturier concernant l'emploi, la production, les investissements, et le commerce international sont examinées. Une comparaison est établie avec d'autres grands pays industrialisés (le G-7) relativement à certainnes tendances générales. De plus, cet ouvrage examine les changements dans les grands groupes des industries manufacturiéres (classification type des industries à deux chiffres) et trois sous-branches d'activité: "l'automobile," "l'acier," et les "pâtes et papier." Les données utilisées dans cet ouvrage proviennent principalement des publications de Statistique Canada et le U.S. Bureau of Labor Statistics. La preuve va à l'encontre des attentes des tenants de la thèse de la désindustrialisation car, en générale, la base manufacturier canadienne a augmenté.

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TABLE OF CONTENTS

List of Tables

List of Figures

Chapter One

INTRODUCTION

In advanced capitalist democracies "industrial restructuring" has been a main theme in academic, journalistic, and public policy debates for the better part of two decades. Many observers believe that deep-rooted structural difficulties in some of these countries, including Canada, have eroded their industrial base. The fear is that these countries are "de-industrializing."

But what is de-industrialization? The term has promptly entered the language of industrial restructuring, as is evident from its inclusion in specialized dictionaries from various disciplines. However, as the sample of dictionary definitions in Table 1.1 illustrates, there is no common agreement on the meaning of de-industrialization. The MIT Dictionary of Modern Economics uses the term to refer to the tertiarization of the economy and the labour force. The Penguin Dictionary of Economics points specifically

TABLE 1.1: Excerpts of Dictionary Definitions of De-industrialization.

Dictionary	Excerpt (definition)
Penguin Dictionary of Economics (Bannock, Baxter and Davis 1992)	"A decline in the share of manufacturing in national income."
MIT Dictionary of Modern Economics (Pearce, 1992)	"A development in a national economy towards an increasing share of the gross domestic product or of employment being accounted for by services."
Dictionary of Economics (Rutherford 1992)	"The decline of a country's manufacturing industry absolutely or relatively."
Harper Collins Dictionary of Economics (Pass, Lowes, Davies, and Kronish 1991)	"A sustained fall in the proportion of national output accounted for by the industrial and manufacturing sectors of the economy, a process often accompanied by a decline in the number of people employed in industry."
Oxford Dictionary for the Business World (no author, 1993)	"Substantial fall in the importance of the manufacturing sector in the economy of an industrialized nation as it becomes uncompetitive with its neighbours."
Canadian Dictionary of Business and Economics (Crane 1993)	"A contraction in manufacturing activity in a country due to its lack of competitiveness and the ability of investors to earn a better return from manufacturing in other parts of the world."
International Business Dictionary and Reference (Presner 1991)	"Is the sustained flight of capital from a developed country (where returns are less advantageous) to other industrial developed countries (where the returns are better)." The Canada-US Free Trade Agreement is given as a cause of Canada's "considerable deindustrialization."
McGraw-Hill Dictionary of International Trade and Finance (Gipson 1994)	"A decline in a nation's manufacturing productivity and output. The decline can result from poor labor relations, inadequate capital investment, or short-term management bias. Government policies can also contribute to misallocated resources and poor national investment strategies."
Penguin Dictionary of Sociology (Abercombie, Hill, and Turner 1988)	"The importance of manufacturing industry has declined in a number of industrial societies, when measured by the share of manufacturing in total output or the proportion of the population employed in manufacturing."

to a rise in the share of manufacturing in total output. The Harper Collins Dictionary of Economics and The Penguin Dictionary of Sociology refer to the relative drop of the industrial, or manufacturing sector, in total output and labour force. Instead, The Dictionary of Economics points to either a relative or absolute decline in manufacturing activity. The Oxford Dictionary for the Business World defines it as a "substantial fall" in manufacturing activity because the sector is uncompetitive. According to The Canadian Dictionary of Business and Economics, de-industrialization is a "contraction in manufacturing activity" because investors are able to achieve better returns elsewhere in the world. The International Business Dictionary and Reference is more explicit; it emphasizes the "sustained flight of capital" from one developed country to other developed countries, and also names the Canada-US Free Trade Agreement as a cause of Canada's de-industrialization. Hence, while the term de-industrialization is part of economic parlance, the dictionary definitions suggest there is more than one meaning of the term.[1] In many respects the confusion over the meaning of de-industrialization found in the dictionaries reflects the confusion that exists in the de-industrialization literature.[2]

Nonetheless, there is in the de-industrialization literature a general consensus, as is stated or implicit in the dictionary definitions, that de-industrialization involves a

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[1] It is of interest to note that earlier editions of some of the dictionaries listed in Table 1 did not include the term de-industrialization. For example, the first edition of The Penguin Dictionary of Sociology published in 1984 has no mention of de-industrialization, while a definition is provided in the second edition published in 1988 (Abercombie, Hill, and Turner 1984, 1988).

[2] The term is also spelled various ways both in the dictionaries and the literature, with or without the hyphen, and a second "s" instead of a "z." Throughout this study it is spelled "de-industrialization," as does The Oxford Dictionary of the English Language. The exception is when the spelling is that of an author of a quote or title of a source.

substantial and nonclyclical decline in manufacturing. It is seen as more than simply derived from a recession.

The de-industrialization thesis is advanced by persons of different political persuasions. For example, for some de-industrialization is due to governments failing to put forth the necessary policies that would arrest and even reverse the process. Instead, others believe it reflects fundamental problems with the industrial market system. Nonetheless, the de-industrialization literature points mainly to four separate trends: decline in manufacturing employment; decline in manufacturing output; decline in manufacturing investments; and a decline in manufacturing trade performance. Many researchers mention the "industrial" sector but since the manufacturing sector makes up a large proportion they often limit their analysis to the manufacturing data. Therefore, throughout this study de-industrialization is discussed in terms of the manufacturing sector.

But why worry about the declines in manufacturing? Agriculture in advanced countries, for example, accounts for a smaller proportion of the workforce and contributes to a smaller proportion of the GDP today than in the past. Yet there is very little concern for "deagriculturalization" (Singh 1977; Matthews 1985; Krugman 1994a). Underlying the concern over de-industrialization is the belief that a healthy modern economy is in large part derived from a healthy manufacturing base. Proponents of the de-industrialization thesis believe that the loss of manufacturing signifies a structural change in the economy that results in social and economic hardships (Laxer 1973; Singh 1977; Bluestone and Harrison 1982; Cohen and Zysman 1987; Myles 1991; Merrett

1996).

The aim of this study is to critically assess the conceptualisation and operationalization of de-industrialization in the United States, United Kingdom and Canada and to apply the key concepts and operational measures to the case of Canada in the past three decades. The primary focus is to find out if in the industrial restructuring of the past decades Canada has been de-industrializing. The remainder of this chapter will highlight the relevance of this study and provide an outline of the subsequent chapters.

In Canada a de-industrialization thesis was first advanced in the early 1970s, before such arguments appeared in the U.K. and U.S.. Although the context has changed, the same main arguments are put forth today as over twenty years ago. However in the late 1980s and early 1990s the earlier thesis has been largely ignored, while the cited literature on the de-industrialization thesis is British and mainly American sources (see, e.g., Krahn and Lowe 1993; Masi and Del Balso 1991; Drache 1989a; Matthews 1985; Merrett 1996). One is left with the incorrect impression that the main themes of the de-industrialization thesis were first advanced in the U.K. and U.S. and built on each other. Instead, the de-industrialization theses in the three countries were formulated independently of each other.

Researchers in the three countries, were initially unaware of, or ignored, each other's formulations of the de-industrialization thesis, judging from references cited. The focus was on the specific country in question, and researchers implied that the

phenomenon and its causes had characteristics unique to that particular country's manufacturing sector. At first the emphasis was mainly in Canada on the high level of foreign ownership, in Britain on the balance of payment, and in the United States on capital mobility.

The term de-industrialization is today widely used in all three countries without a second thought. Many simply assert that the country is experiencing de-industrialization, but provide little or no data to support their claims. Part of the confusion surrounding the de-industrialization problem is that there is no agreement on the meaning. There is also no agreement on the measurements of de-industrialization, even among writers who have given the issue serious attention.

In Canada the issue is further complicated with researchers relying on U.K. or especially U.S. works on de-industrialization for theoretical guidance. By restricting themselves to a certain perspective, they may fail to recognize the many dimensions of the de-industrialization debate. Surprisingly, many ignore the fact that a de-industrialization debate in Canada was initiated more than two decades ago and that the thesis focussed on some similar issues present in the U.K. and particularly U.S. debates.

Over two decades ago Robert Laxer (1973, p. 10) described the de-industrialization thesis as a "major thesis" in Canada which would engage the population in a "practical dialogue on the country's economic alternatives." Less than a decade ago Drache and Clement (1985, p. xx) listed it as one of the key issues "political economists have a special contribution to make to public debate." Stanford (1991, p. 3)

believes that it "has become a major economic concern." Likewise Krahn and Lowe (1993) highlight de-industrialization as a main feature of industrial restructuring and suggest it is a trend that emerged in the past decade or two that deserves closer attention.

Various commentators believe the consequences of de-industrialization are devastating for Canada. According to Mahon (1984, p. 3) it puts into question "the very survival of the Canadian state." Drache (1989a, pp. 7, 11) claims that Canada is "in grave danger of losing the race to survive economically" with de-industrialization threatening "the fabric of our country." Similarly, Hurtig (1991) puts forth the apocalyptic view that partly because of de-industrialization Canada is "disappearing" and "disintegrating." For some, the concern over de-industrialization has taken on a certain urgency with at first the implementation of the Canada-US Free-Trade Agreement (FTA) and then the North American Free Trade Agreement (NAFTA). They argue that the trade agreements have accelerated, or will accelerate, the de-industrialization of Canada (Barlow 1991; Hurtig 1991; Federal Liberal Party 1991.) Their impacts have been so devastating that according to Merrett (1996) Canada is being transformed into "an underdeveloped nation."

In the early 1970s some believed de-industrialization was only occurring in Canada (J. Laxer 1973). Although this view is rejected today, there is a general belief that because of the structure and organization of its economy, Canada is more vulnerable to de-industrialization than other advanced industrial countries, as for example the U.S. (Kahn and Lowe 1993). Canada's high degree of foreign ownership in manufacturing, its reliance on natural-resource exports to maintain a positive balance of trade in

merchandise items, and its dependency on the U.S. market for exports, have raised many questions about its level of industrialization and place among advanced industrial countries (see Masi 1993; Howlett and Ramesh 1992). The high degree of foreign ownership, mostly American, has been generally blamed for the de-industrialization of Canada (J. Laxer. 1973; Krahn and Lowe 1993). As part of their restructuring strategies American firms are accused of cutting down production in Canada and moving their operations elsewhere, mainly to the U.S. (Merrett 1996).

Despite the concern over the de-industrialization of Canada, the thesis has not been well developed or closely scrutinized. The issue is further complicated with proponents of the de-industrialization thesis generally providing insufficient data. They commit some of the same methodological errors today as two decades ago, by focussing on changes in a manufacturing firm, industry or region over a few years that cover an economic downturn (see, e.g., J. Laxer 1973; Drache 1989a; Hurtig 1991).

This study contributes to our understanding of industrial restructuring by testing the de-industrialization thesis with long term data. It focuses on three decades of employment, output, investment, and trade statistics, to the extent that the available data permit. The study is mainly a descriptive analysis since the approach is sufficient to test the de-industrialization thesis. Further, proponents of the thesis have restricted themselves to descriptive data whenever they pointed to evidence to support their thesis. The data in this study are mainly taken from Statistics Canada publications and from U.S. and international agencies.

The next two chapters are on the conceptualization and operationalization of

de-industrialization. Chapter two examines the de-industrialization debates in the U.S. and U.K.. These debates have influenced discussions on industrial restructuring in Canada and have guided researchers in their study of de-industrialization in advanced industrial countries (e.g., Masi 1991; Masi and Del Balso 1991; Keeble 1991; Rodwin and Sazanami 1991; Wild and Jones 1991). Chapter three focuses on the features and explanations of the de-industrialization thesis put forth in Canada and critically assesses the evidence provided by its proponents. Chapter four comments on the importance of manufacturing in general and specifically for Canada, and provides the propositions of the de-industrialization thesis that guide the research in the subsequent chapters. The empirical analyses are carried out in chapters five to eight and are based mainly on interpretations of government data sources. Chapter five to seven concentrate on changes at the aggregate level for the manufacturing sector as a whole, while chapter eight considers developments primarily at the level of the major manufacturing industries. Chapter five focuses on the employment trends, chapter six on output and productivity, and chapter seven on investments and trade. Chapter eight considers the changes in the major manufacturing industries, and developments in the "automobile," "steel," and "pulp and paper" industries. Chapter nine provides a summary and conclusion, speculates on whether the standard boundaries between manufacturing and other sectors are still appropriate, and considers the implications of the present study for future research.

Chapter Two

The De-industrialization Thesis: United Kingdom and United States

As noted in the preceding chapter a pessimistic outlook has emerged about the future of the manufacturing sector in industrialized countries. Academics and political commentators in Canada, the U.K. and the U.S., fear that their countries have been "de-industrializing" (Bluestone and Harrison 1982; Blackaby 1979; Laxer 1973). They consider manufacturing essential for economic growth and believe a weaker manufacturing sector results in serious social and economic difficulties for society. Yet, there is no clear sense of what is meant by de-industrialization or how to measure it.

This chapter focuses on the conceptualization and operationalization of de-industrialization in the U.K. and the U.S.. In each of the countries a de-industrialization thesis was formulated independently from the other with the focus being on the developments in the specific country. The thesis was first advanced in the U.K. and later the U.S.. But at first the main proponents of the U.S. thesis of de-industrialization made no mention of the U.K. thesis (see, e.g., Bluestone and

Harrison 1982). And later when the U.S. thesis was advanced, little mention of it was made in the U.K. literature (see, e.g., Singh 1987). In Canada both theses, but especially the U.S. thesis, have been acknowledged. However, in the process, the Canadian thesis, which was formulated before the U.K. and the U.S. theses and advanced many of the same dimensions, was generally ignored (see, e.g., Drache 1989a). The aim of this chapter, as well as the next one on the Canadian de-industrialization thesis, is to better understand the meaning of de-industrialization put forth in the three countries. The purpose is to determine the indicators that can test the main propositions of the de-industrialization thesis in Canada.

The De-industrialization Thesis in the United Kingdom

The de-industrialization thesis in the U.K. was an outgrowth of discussions over why the country had lower postwar rates of economic growth than other industrialized countries.[1] In the 1970s politicians and others preoccupied about the future course of the industrial or manufacturing sector began to describe the changes as de-industrialization. Over the years the term has gained popularity as a label of the industrial restructuring of the U.K.. Many share the view expressed by Martin and Rowthorn (1986, p. xv) that, "In

[1] According to Singh (1989), Kaldor claimed to have coined the term "de-industrialization" which government ministers used to emphasize the contraction of manufacturing. However, this may have been only true in reference to discussions describing the situation in the U.K.. The term already existed in development studies. For example, as early as 1962 Thorner applied the term in describing the possible reversal of industrialization in India by British rule at the turn of the century (see Bagchi 1976, 1987).

the same way that Britain was the first country to industrialise, so it has been the first to de-industrialise." (See also Goddard 1983; Champion and Townsend 1990; de Souza and Stutz 1994.)

But no general agreement exists on the precise meaning of the term de-industrialization in the U.K. As Blackaby (1979, p. 1) remarks the term "...gatecrashed the literature, thereby avoiding the entrance fee of a definition, and also avoiding critical scrutiny at the door." Cairncross (1979) notes that the meaning of the term is "ambiguous" since there exist several definitions.

A widely accepted definition of de-industrialization is the decline in the share of manufacturing in the workforce (Rowthorn and Wells 1987). But many also view the straightforward loss in manufacturing jobs as tantamount to de-industrialization (Thirlwall 1982). The number of manufacturing jobs in the U.K. fell from an historic peak of 8.5 million in 1966 to 5.7 million in 1983. And the share of manufacturing in total employment dropped from an historic peak of 36.1 per cent in 1955 to 24.7 per cent in 1983. Many consider the drops in manufacturing employment as sufficient evidence in support of the de-industrialization process (see, e.g., Driver and Dunne 1992).

But although employment is an important indicator, others like Cairncross (1979, p. 6) believe, "The fact that industrial employment is falling need not be of any special significance if output is increasing satisfactorily." Cairncross points out that while from 1966 to 1977 manufacturing employment fell, manufacturing output rose by 16 per cent. From the late 1950s until 1973 the share of manufacturing in GDP declined when measured in current prices. But there was a steady upward trend in constant dollars.

Singh (1987, 1989) agrees on the importance of manufacturing output. He notes that the main measures of de-industrialization are the trends in the relative share of manufacturing in total production in constant prices and current prices, as well as relative and absolute changes in manufacturing employment. He points out that the share of manufacturing in total production at constant prices for the period 1950 to 1973 did not decline, but did fall between 1973 and 1984. In his view the performance of U.K. manufacturing was "abysmal" when compared to the performance of the manufacturing sectors of other leading industrial economies.

Thirlwall (1982) however believes that the main measure of de-industrialization should be the absolute drop in manufacturing jobs. He argues it is an "unambiguous definition" which is cause free, is neither time nor place specific, and points to potential social and economic difficulties, including unemployment. Further, a "worrying feature of the U.K. economy" has been the absolute drop in manufacturing employment. He notes that by 1981 there were three million fewer jobs in manufacturing than the peak year 1966.

Advocates of the de-industrialization thesis also place much importance on the performance of manufacturing trade. However, there is some disagreement over whether trade is part of the definition or an explanation of the phenomenon (see Thirlwall 1982). Nonetheless, those who agree with what has been categorized as the "Cambridge view" see trade performance as a key indicator of de-industrialization. In the words of Kaldor (1979, p. 18), de-industrialization is "a state of affairs in which there is a continued decline in a country's share of world trade in manufacturers and/or a continued increase

in the share of imported manufacturers in domestic expenditure." The Cambridge view originated in the series of (economic) "laws" presented by Kaldor (1978) which stressed the importance of the manufacturing sector as the "engine of growth" (see also Thirlwall 1983). He identifies the lack of competitiveness and demand for products manufactured in the U.K. as constraining the expansion of the manufacturing sector and thereby affecting overall production and total output (Kaldor 1978).

Singh (1977) takes the issue a step forward by providing a definition of an "efficient" manufacturing sector which takes into account U.K. manufacturing in the international markets (see also Stafford 1989). The manufacturing sector is "efficient" if there exists enough surplus of manufactured exports over imports. The manufacturing sector has to satisfy domestic demand and sell enough products abroad to pay for necessary imports "at socially acceptable levels of output, employment and exchange rates" both currently and in the long run (Singh 1977, p. 128). The restrictions are essential since the manufacturing sector could meet the criterion of efficiency at low levels of output and employment and at sufficiently low exchange rates (Singh 1979).[2]

Singh (1977; 1979) characterizes U.K. manufacturing as "inefficient" mainly because of its deterioration in the performance of the U.K. industries in the world economy, despite currency devaluations. The drops in manufacturing employment and weak performance in manufacturing trade are a "structural maladjustment" which affect economic growth (Singh (1977, 1987; see also Stafford 1989).

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[2] Singh does not explain what constitutes "socially acceptable levels" of either output, employment, or exchange rate (or inflation and inequality of income distribution). For a discussion of Singh's definition of "efficient manufacturing sector" for the U.K. see Singh (1989) and Cairncross (1979).

A related issue is that de-industrialization can occur when the country's balance of trade improves because of the discovery and export of a scarce natural resource. The improved balance of payments may lead to, for example, a stronger exchange rate and undermine the manufacturing sector by depressing the price of imports and creating difficulties for exports (Ballance 1987). The development of the North Sea oil, beginning in 1976, raised questions about its impact on manufacturing. Rowthorn and Wells (1987, p. 268, emphasis in original) argue that the North Sea oil development "caused a *transfer* of labour from manufacturing to other sectors" because it influenced the appreciation of the real exchange rate which in turn led to drops in net manufactured exports. But, they maintain that the North Sea oil alone was not the cause of the "collapse of manufacturing industry." Other factors, such as the 1973 rise in oil prices, operated in the opposite direction of the North Sea oil resulting in a combined effect on manufacturing that was quite small and of minor importance. However, they believe that the macroeconomic effect of the North Sea oil may have harmed the U.K.'s economic development, including total employment.

Rowthorn and Wells (1987; see also Rowthorn 1986) believe that the manufacturing sector plays a key role in achieving economic growth. But they criticize what in their view are "three commonplace indicators" in discussions on the weaknesses of U.K. manufacturing: the drop in the relative share of manufacturing in total employment; the deterioration in the manufacturing trade balance; and the growing trade deficits with most industrialized countries. They note that the deterioration in the manufacturing balance of trade was largely unavoidable and mainly resulted from an

improvement in non-manufacturing balance of trade. The U.K. deficits with most industrialized countries are not signs of weaknesses because of the rising importance of other countries, such as those of OPEC, as markets for manufactured exports. And the drop in the share of manufacturing in total employment may have been actually sharper if U.K. industries were more dynamic.

Another widely discussed indicator of de-industrialization in the past, which had been used also as an explanation, is the rise in public expenditures accompanied by an increase in service employment and drop in manufacturing employment. The increase in government public sector expenditures was assumed to have "squeezed-out" or "crowded-out" the private sector of investments and workers (see Brown and Sheriff 1979). According to Bacon and Eltis (1978, p. 24) government activities contributed to the "large numbers of workers to move out of industry and into various service occupations." From 1960 to 1975 central and local government employment increased by 1.2 million and their share of total employment from 14.6 per cent to 18.9 per cent (Brown and Sheriff 1979). Public expenditure as a proportion of GNP also increased from 1950 to 1975 (Brown and Sheriff 1979). Nevertheless, this argument faced numerous criticisms and has been largely dismissed for lack of appropriate empirical support (see, e.g., Singh 1977; Thatcher 1979; Cairncross 1979; Thirlwall 1982; and Rowthorn and Wells 1987). Despite the rise in public expenditure, the gross fixed capital formation per head of employed labour force in manufacturing grew (Brown and Sheriff 1979). However, the U.K. had a lower rate of investment per head than other advanced countries. In addition, government demands on labour resources in the 1970s

were largely offset by female employment entering the labour force, while male unemployment rates increased (see Cairncross 1979).

As noted earlier, one of the more widely used definitions of de-industrialization is the drop in the share of manufacturing in total employment. Rowthorn and Wells (1987; see also Rowthorn 1986) who examine such a definition provide three possible explanations: the "maturity thesis," "specialisation thesis" and "failure thesis." The maturity thesis locates the decline in the development and structural change of the economy and views the drop as "inevitable." The specialization thesis explains the decline as the outcome of improvements in non-manufacturing trade. The failure thesis sees the decline as resulting from low levels of output or difficulties in international competitiveness.

The maturity thesis asserts that the structure of employment evolves in a sequence. As the economy develops the share of agriculture in total employment slowly declines and eventually makes up a small fraction of the workforce. In contrast, the share of service in total employment rises and becomes a higher proportion of total employment than agriculture and industry combined. Meanwhile the share of manufacturing employment rises in the early and intermediate stages of economic development then stabilises and finally in the advanced stage faces a prolonged decline. The share of manufacturing in total employment inevitably drops. But the trend in absolute employment depends on what happens to total employment. Rowthorn and Wells (1987) note that in 1955 the U.K. was the least agrarian nation among the

advanced countries, in terms of employment, and the first to reach the stage of maturity.[3] The rise in the shares of service employment came at the expense of manufacturing and thereby resulted in relative and later absolute falls in manufacturing employment.

The specialization thesis focuses on foreign trade and the country's role in the international division of labour. As non-manufacturing trade improves, the country no longer needs a large surplus of manufacturing trade and thereby requires fewer people to work in manufacturing. According to Rowthorn and Wells (1987), the U.K. balance of trade in non-manufactures improved since the early 1950s mainly because of developments in other areas of the economy. The vast improvement in non-manufacturing trade made the economy less specialized and was accompanied by a deterioration in manufacturing trade and a fall in manufacturing employment.

The failure thesis sees the drop in manufacturing employment as a symptom of an economic failure. The failure is mainly the result of the difficulties manufacturing faces in international competitiveness or in achieving the output necessary for a thriving and fully employed economy. Rowthorn and Wells (1987) point to various weaknesses that reflect this failure. The U.K. had a slower rise in real per capita income since 1973 then other major industrialized countries. In 1953 the GDP per head in the U.K. was amongst the "richest" advanced capitalist countries (twelve OECD countries), but in 1983, it was amongst the "poorest." Furthermore, the growth in the GDP of the U.K. was in later years mainly due to North Sea oil development. In the 1950s the U.K. almost achieved

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[3] Rowthorn and Wells (1987) argue and provide some data indicating that a "typical capitalist economy" reaches maturity when the per capita income is 4,000 U.S. dollars.

"full employment," but by 1984 there were more than three million unemployed and the U.K. had one of the highest unemployment rates among advanced countries. In addition, manufacturing faced a relative drop in output until 1973 and afterwards also experienced an absolute drop. Between 1973 and 1982 manufacturing output fell 18 per cent in the U.K., while it increased on average 15 per cent in the U.S., Canada, Japan, France, Germany and Italy. In the same period labour productivity grew 22 per cent in the U.K., but 34 per cent for the other countries.

Rowthorn and Wells (1987) believe that a better performance by U.K. manufacturing would have encouraged nearly every economic sector to achieve higher output and a rise in manufacturing and total employment. But, as they point out, it is not possible to determine "how the *share* of manufacturing in total employment would have behaved." Higher labour productivity in manufacturing would have likely resulted in the addition of only a few jobs in that sector. Most additional jobs would have been created in non-manufacturing and the share of manufacturing in total employment would have still dropped. A modest rise in labour productivity in manufacturing would have likely created many additional jobs in that sector and a larger share of manufacturing in total employment.

Rowthorn and Wells (1987) conclude there is strong support for the specialization thesis and maturity thesis and only "ambiguous support" for the failure thesis as explanations of the drop in the share of manufacturing in total employment. They note that many manufacturing jobs were lost because of plant closing, and the like, but just as many would have been lost from higher manufacturing productivity. They write: "...the

net impact of industrial failure on manufacturing employment was rather small" (Rowthorn and Wells 1987, p. 228, emphasis in original).

According to Rowthorn and Wells (1987) the decline in the share of manufacturing employment in total employment in the U.K. was unavoidable. "Manufacturing employment was bound to decline over the coming decades, no matter how good or bad the performance of British industry" (Rowthorn and Wells 1987, p. 248). Thus, the behaviour of manufacturing employment is not necessarily an appropriate indicator of overall industrial performance. The share of manufacturing in total employment can drop because of various factors. They suggest two extreme types of de-industrialization: "positive de-industrialization" and "negative de-industrialization." The former is characteristic of a "successful mature economy" in which manufacturing productivity and output rise and the service sector creates enough employment to absorb displaced workers from manufacturing. Negative de-industrialization is found in an "unsuccessful mature economy" in which output declines or rises slowly, manufacturing employment is likely to fall, and the increase in service employment is insufficient to avoid growing unemployment. Rowthorn and Wells (1987) argue the U.K. is a case of negative de-industrialization.

The De-industrialization Thesis in the United States

The de-industrialization debate in the U.S. was carried out after and

independently of the U.K. debate. However, in the late 1980s two leading exponents of the thesis in the U.S., Harrison and Bluestone (1988), credited the political economists at Cambridge University, and in particular Singh, for first putting forth the idea of de-industrialization. But their own focus was different from that of the "Cambridge view" and the U.S. debate centred mainly on U.S. concerns (see Bluestone and Harrison 1982). Nonetheless, judging from sources cited in the American works, the British discussions on the conceptualization of de-industrialization are generally neglected in the U.S. (see, e.g., Clarida and Hickok 1993; Robinson 1991). And the American debate is largely neglected in the U.K. (see, e.g., Singh 1987).

The concern over de-industrialization in the U.S. was an outcome of a larger controversy in the early 1980s over the possible decline of the American economy, calls for "reindustrialization" and the need for a national industrial policy. The debate continues and no general consensus exists over whether the U.S. is de-industrializing (see, e.g., Mishel 1989; Clarida and Hickok 1993; Krugman and Lawrence 1994; Krugman 1994a, 1994b). Proponents of the thesis however believe the process of de-industrialization has "accelerated" since the early 1980s (e.g., Schwartz and Zukin 1988; Wallace and Rothschild 1988; Mishel 1989).

But the de-industrialization debate in the U.S. is often complex and confusing. There is disagreement over the definition, indicators, units of analysis, and the reliability of official aggregate data. There exist two opposing perspectives that have directed the debate (see Rodwin 1989). On one side are those who stress the developments in manufacturing at the regional level. They believe the difficulties of the manufacturing

sector are due to the inadequacies of the market. They maintain that policies, including national public policies, can correct the problem, especially the allocations of investments. On the other side are those who stress national aggregate trend data. They believe that the existence of declining and growing regions are characteristic of the transformations faced by open economies. They oppose policies intended to change the market, including those to stop firms from closing or relocating plants or to impose protective barriers against competition.

Much of the de-industrialization debate in the U.S. was sparked in the early 1980s by Bluestone and Harrison (1982), whose work is widely cited in Canada. In their view de-industrialization is "a widespread, systematic disinvestment in the nation's basic productive capacity" (Bluestone and Harrison 1982, p. 6). Disinvestments can take various forms, including plant closings and plant relocations in "basic" manufacturing industries in the different regions (Bluestone 1984). De-industrialization erodes the industrial base of society and results in hardships for the displaced workers, their families and communities. Among other developments, structural unemployment rises, family income declines, and dislocated workers and their families face a strain on their physical and mental health (see, e.g., Harrison and Bluestone 1982 and 1988; Schwartz and Zukin 1988; Wallace and Rothschild 1988). The declining community in turn faces losses in tax revenues, lower spending by individuals, neglected public services, and increasing demand for social services. These developments can lead to more decay of the community and the quality of life. Thus, they argue that government policies are necessary to stop this process.

According to Bluestone and Harrison (1982), because of the human consequences of de-industrialization, the main indicator is the "gross" loss of jobs, regardless of whether new jobs are created and there is a net increase in total jobs. Bluestone (1984, p. 51) argues that de-industrialization can be "evaluated only in terms of how rapidly and how successfully workers dislocated from so-called sunset industries are reemployed in growing, sunrise industries." The emphasis is therefore on "trends in specific industries and regions."

Bluestone and Harrison (1982) insist that de-industrialization has affected numerous workers and communities. Drawing from data of the credit rating service, Dun and Bradstreet Corporation, they estimate that 32 to 38 million jobs were lost from 1969 to 1976 because of private disinvestment (see also Harrison 1994). All regions were affected with disinvestments and job losses, but some were hit harder than others. In the "Midwest" and "Sunbelt" regions new businesses created more new jobs than job losses from shutdowns. In the "Northeast" plant closings destroyed more new jobs than created from new openings. In the "New England region" plant closings eliminated two to four jobs for every new job created and disinvestments were not restricted to "old mill-based industries." Further, nearly half the jobs lost to plant closings (and relocations) occurred in the "Sunbelt states" of the "South and West." And the odds of a plant closing down were slightly higher for "establishments" in the "North" than for "southern" manufacturing plants. They stress the human cost of the job losses and provide numerous cases, many from media reports, of workers displaced in various firms and industries.

In answering the critics of the de-industrialization thesis, Bluestone (1984, p. 46)

provides percentage changes in employment between 1973 and 1980 for nine selected industries in eight selected states to show that "regional shifts in the location of particular industries" occurred. Notwithstanding that the evidence is questionable, since percentages without the absolute data are difficult to interpret, the migration of manufacturing industries is viewed as evidence of de-industrialization (see also Bluestone, Harrison, and Clayton-Matthews 1986).

Proponents of the de-industrialization thesis recognize that the loss of jobs and intra-regional and inter-regional shifts are not new phenomena. Wallace and Rothschild (1988, p. 2) note that "...the dynamics underlying deindustrialization are old as capitalism itself." But recent advances in transportation and communication have contributed to the "hypermobility of capital" which has quickened the process of de-industrialization during the 1980s. Similarly, Schwartz and Zukin (1988) believe that in the last two decades, de-industrialization has become "more prevalent, more sudden."

The thesis put forward by Bluestone and Harrison, however, is open to several criticisms. There is no clear explanation of the criteria to determine that a disinvestment is "widespread and systematic." Furthermore, they do not explain the appropriate geographic unit (nation, states, regions such as the "Frostbelt," or municipality) for analysis of the disinvestments in the "basic" industry. It is also unclear what operationally constitutes a "basic" industry, although Bluestone and Harrison identify "autos, steel, and tires," as the "country's most basic industries" (Bluestone and Harrison 1982, p. 35). Others too, believe the situation in these industries exemplifies the process of de-industrialization (see, e.g., Schwartz and Zukin 1988). But the definition of an

industry is itself problematic. For example, the broad category "aircraft industry," is a basic industry in Seattle, Washington, but is in fact mainly the Boeing company. And Bluestone and Harrison (1982) further confuse the issue by referring to job losses in firms such as General Electric, Ford Motor Company, and RCA Corporation as examples of de-industrialization.

Another difficulty with the Bluestone and Harrison thesis is the key indicator "gross loss of jobs." The indicator does not take into account jobs created by new plant openings and plant expansions. It is also worth noting that the 32 to 38 million jobs lost were across all sectors and not just manufacturing. Further, the information was estimated from data compiled by Dun and Bradstreet for other purposes; the data were never intended to monitor the trend in jobs lost. In addition, there exist various other limitations with the Dun and Bradstreet data that were generally ignored by Bluestone and Harrison (1982; see also Harrison 1994). Nevertheless, Bluestone and Harrison (1982) themselves estimate that new plant openings created 110 jobs for every 100 lost by plant closures in the 1969-76 period. Indeed, the economy showed a net increase of nearly 20 million jobs in the 1970s (Norton 1986). Moreover, since job losses always occur, the indicator gross loss of jobs "makes deindustrialization a universal outcome" (Norton 1986, p. 14).

The Bluestone and Harrison thesis also rests on the questionable premise that corporate strategies of major companies are able to bring about economic structural changes (see Norton 1986). Corporate managers carry out disinvestments by closing plants, moving profits from one profitable plant into another located elsewhere,

subcontracting work formally done in-house, and diverting capital into unproductive activities such as mergers and acquisitions (Harrision 1994). Others have theorized that the process usually begins with a decline in "core industries" that spread into dependent "peripheral industries" (see Romo, Korman, Brantley, and Schwartz 1988; Schwartz and Zukin 1988; Wallace and Rothschild 1988). However, it is disputable that corporate strategy can result in economic changes such as the de-industrialization of the U.S..

The main criticism of the de-industrialization thesis in the early 1980s was put forward by Lawrence (1983a; 1984). His ideas and that of others associated with the Brookings Institution make up what has been categorized by Bluestone, Harrison and Clayton-Matthew (1986) as the "Brookings position." According to those associated with this position, the dynamics of the economy are such that some regions and industries grow while others decline. Numerous factors cause this to happen, including changes in technology and spending patterns. Moreover, in an open economy there is a constant pressure for improving goods and services and dropping those for which demand has fallen. The result is painful for regions and communities that experience the losses, but is a necessary distress of structural change (see Rodwin 1989). The changes are largely viewed as due to cyclical factors and not to secular changes to the economy.

Lawrence (1984) notes that the dislocations in the 1970s were primarily due to a slow growth in aggregate demand which hurts goods more than services. His main indicators are absolute trends in manufacturing employment, output, and investments. He also considers the situation in major manufacturing industries, particularly the steel and auto industries. And he compares some changes in manufacturing with countries of

the Organization for Economic Cooperation and Development (OECD).

Lawrence (1984, p. 18) concludes that although some industries were in difficulty "... the United States did not experience absolute deindustrialization over either the 1950-1973 period or the 1973-1980 period." The manufacturing sector in the U.S. fared as well as or better than that of other major industrialized countries. He also questions the popular perception that international trade weakened U.S. manufacturing in the 1970s, since "International trade is neither the sole nor the most important source of structural change" (Lawrence 1984, p. 4).

Lawrence (1984) notes that absolute manufacturing employment rose by nearly 5.1 million workers from 1950 to 1980 and the dispersion in employment growth rates across manufacturing industries were quite similar in the 1960s and 1970s. However, a shift in the regional location of some manufacturing jobs did occur. Further, in the 1973-80 period manufacturing employment grew modestly in the U.S., but declined in various industrial countries, except in Canada and Italy (cf. Masi and Del Balso 1991; Masi 1989).

As for manufacturing output, Lawrence (1984) points out that the ratio of goods in the gross national product (GNP) remained stable from 1960 to 1980. Therefore, the U.S. "could not be characterized as a service economy in 1980 any more than in 1960" (Lawrence 1984, p. 19). The average annual percentage increase in manufacturing output in the 1973-80 period was slower than in the 1960-73 period, but higher than in Germany, France, U.K., or the OECD. In addition, when for the 1973-80 period the rate of growth of the total economy and manufacturing are compared, manufacturing output

was at a predictable level. Lawrence (1984) also points out that the productivity growth in U.S. manufacturing in the 1973-80 period was slower than in 1960-73 period and below that of major industrialized countries. Nonetheless, the U.S. remained "the world's most productive [output per worker-hour] manufacturing nation" (Lawrence 1984, p. 20).

Investments in manufacturing continued to grow as measured by the rise in capital stock and R&D spending. Net capital stock in manufacturing grew at a higher annual rate in the 1973-80 period than in the 1960-73 period. The ratio of net capital stock to full-time equivalent employees in manufacturing grew more rapidly in the 1970s than in the 1950s and 1960s. Gross fixed investment grew in U.S. manufacturing from 1963 to 1980, while in Germany, Japan and the U.K. the 1979 level was lower than in 1970. In addition, real R&D spending in manufacturing in the U.S. grew over the 1960s and 1970s, and the U.S. had the highest share of R&D spending in value added for manufacturing among industrialized countries.

Lawrence (1984) especially criticizes the widely held impression that international trade caused difficulties for the manufacturing sector. He argues that the appropriate measure of trade performance is trade volume and not the falling U.S. share in world manufactured goods. He points out that in the 1970s manufactured exports grew by 101.5 per cent and imports rose by 72 per cent. Between 1973 and 1980 the trade balance in manufactured goods rose by 18.3 billion dollars and contributed to net increases in output and jobs in manufacturing. Moreover, he notes that trade competitiveness is also a function of exchange rates. From 1973 to 1980 foreign trade

contributed to a net addition in output and employment in manufacturing because of the real devaluation of the dollar.

Kutscher and Personik (1986) of the U.S. Bureau of Labor arrive at roughly the same conclusion as Lawrence (1984) that the U.S. was not de-industrializing. They note that the controversy is mainly over trends in the manufacturing sector. They focus on manufacturing employment and output and point out that absolute declines are more serious than relative ones, drops in production are more alarming than employment declines, and production needs to be measured in quantity or real terms. In their view there is little evidence of de-industrialization at the macro level between 1959 and 1984. Manufacturing employment declined in relative terms but remained fairly stable in absolute terms while real manufacturing output rose. A few manufacturing industries were in "deep trouble" between 1969 and 1984. But these were generally industries that had been long facing declines. Moreover, most industries, including "heavy" manufacturing, were "expanding production, if not employment" (Kutscher and Personik 1986, p. 12).

Some researchers believe that the long term stability in the share of manufacturing in total output is a clear refutation of the de-industrialization thesis. According to McKenzie (1984, see also 1987, 1993), since the share of manufacturing to GDP showed little change in the 1970s, the U.S. economy was not de-industrializing but rather was "industrializing." And Crandall (1986, p. 129) notes that the changing regional composition of manufacturing was accompanied by a stable share of manufacturing in the gross national product (GNP) and thus, "There was little basis for

maintaining the United States is de-industrializing."

Developments in manufacturing since the early 1980s including the fall in manufacturing employment, possible drop in manufacturing output, trade deficit, and media reports on plant closings, kept alive the spectre of de-industrialization. Those who rebut the claim that the U.S. has been de-industrializing since the late 1970s generally focus on two national trends: the stability in the share of manufacturing in total output and the rising rate of growth in productivity (output per man-hour) in manufacturing (O'Neill 1987; Clarida and Hickok 1993; Crandall 1993). They recognize that the fall in manufacturing jobs has coincided with an aggregate trade deficit, especially in finished manufactured goods. But in their view the downturns also coincided with a stable share of manufacturing in total output and a rise in the rate of productivity growth in manufacturing.

O'Neill (1987) concludes that in the first half of the 1980s the relative drop in manufacturing employment was "a normal by-product of economic growth" that seems to be characteristic of "all developed economies." The U.S. was not losing its industrial base since the share of manufacturing in total output showed "no sign of shrinking." The continuing drop in the share of manufacturing in total employment reflected the rise in productivity. He moreover argues that the trade deficit had little impact since in the post World War II period the U.S. only began to have a manufacturing trade deficit in 1982, while the share of manufacturing employment has been dropping since the late 1950s.

But while the data on manufacturing employment is straightforward and generally undisputed, the data on the share of manufacturing in the total economy has been

disputed (Mishel 1989; see also Clarida and Hickok 1993). Mishel (1989) argues that the official data show a steady share of manufacturing in total output in the 1973-87 period. But a disaggregated view of the data suggest the trend was due to the rising output in the computer industry (Standard Industrial Classification 35, Non-Electrical Machinery). The computer industry accounted for more than half of the reported manufacturing output growth from 1979 to 1987. In most industries output fell between 1979 and 1986. Thus when the computer industry (SIC 35) is excluded, the manufacturing share of GDP shows a 2.4 percentage point drop from 1973 to 1987.

According to Mishel (1989) there exist several other problems with the official data including the failure to capture the effect of falling import prices and increase in imported inputs in the early 1980s. He argues that the combined effect of the various measurement problems resulted in a distortion of the data on manufacturing output and productivity growth. His "corrected" estimates suggest a drop in the share of manufacturing in GDP from 24 per cent n 1973 to 22.5 per cent in 1979 to 20.8 per cent in 1985. And while labour productivity growth increased, its performance in the 1979-85 period was lower than that shown in the published data. In consequence, the corrected measures suggest the "shrinkage in manufacturing employment is as much due to the shrinkage of manufacturing *output* as to productivity growth" (Mishel 1989, p. 40, emphasis in original). The corrected trends in manufacturing output and productivity, the loss in manufacturing jobs, and the deficit in manufacturing trade, indicate that the manufacturing base of the U.S. is eroding. And, he remarks, "The primary reason for manufacturing's shrinkage is the deterioration in ... manufacturing trade deficit" (Mishel

1989, p. 43).

Clarida and Hackok (1993) agree that errors existed with the official data. They recognize that the fall in manufacturing jobs and manufacturing wages combined with a rise in manufactured imports over exports leave the impression that the industrial base is eroding. But they argue that the trend in manufacturing output and productivity in the 1980s suggests a different interpretation. They found, as did Mishel (1989), that the computer industry, accounted for a large part of the growth in manufacturing value added in the 1980s. Indeed, in 1988 the growth in the share of manufacturing industries in real GNP excluding SIC 35, was lower than the average recorded between 1957 and 1979. They also recognize that the official data ignored inflation adjustments of imported inputs and neglected certain inputs. But in their view the improved official data in 1991 that took these complaints into account, portray an overall picture of the manufacturing share of real GNP generally similar to that of the original estimates. Not only was the share of manufacturing in GNP stable, but in the 1979-90 period manufacturing output grew more rapidly than did real GNP. Moreover, the average annual rate of labour productivity growth in manufacturing grew faster in the 1979-89 period than in the 1947-79 period. And the U.S. productivity growth ranked seventh amongst twelve major industrialised countries in 1989 compared to eleventh in the 1970s. A further indication that the U.S. is not de-industrializing and is competitive at home and abroad is in their view the rise in manufactured exports since 1985. However, they note that in many industries this has been possible because of price and not innovation and quality (see also Dertouzos, Lester and Solow 1989).

Like Clarida and Hickok (1993), Crandall (1993) maintains that the real share of manufacturing in the GNP remained stable since the 1950s. He shows however that the industrial migration of the 1970s continued unabated in the 1980s with manufacturing shifting to the "South" and "West." But while for some the shift is proof of de-industrialization, for Crandall (1993, p. 9) the national trend in manufacturing output instead suggests that "... it is far from clear that the United States is deindustrializing."

Nonetheless, certain slumps in manufacturing in the 1980s may have spurred some to argue that de-industrialization has clearly occurred. For example, the share of U.S. output accounted for by value added in manufacturing fell from 29.6 per cent in 1950 to 18.4 per cent in 1990, and the share of manufacturing employment dropped from 34.2 per cent to 17.4 per cent. And these trends have been accompanied by a trade deficit in manufacturing since 1980. Krugman and Lawrence (1994) imply that for some the term de-industrialization is simply the relative drop in employment and output. But they argue that imports have had little impact on the contraction of the manufacturing sector (see also Lawrence 1983b; Bosworth and Lawrence 1988/89; Krugman 1994a; 1994b). From 1970 to 1990 imports grew from 11.4 per cent to 38.2 per cent of the manufacturing contribution to GDP, but exports also rose from 12.6 per cent to 31 per cent. They note that "most of the de-industrialization would still have taken place" even if there had been balanced trade in manufactured goods from 1970 to 1990 (Krugman and Lawrence 1994, p. 46). Krugman (1994a) points out that if the U.S. would have eliminated its trade deficit or, as he sarcastically remarks, "if it could have made the world disappear," its share of manufacturing in total employment in 1991 would have

been 17.5 per cent instead of 17 per cent.

Thus for Lawrence and Krugman (1994) de-industrialization did not occur in absolute terms. Krugman (1994a) emphatically states that "deindustrialization never happened." For Lawrence and Krugman (1994) and Krugman (1994a) the emphasis should not be on the relative drops. The relative drops of manufacturing in total output and employment in the U.S. have occurred because U.S. factories have become more productive, at a higher rate than service businesses. The share of manufacturing in GDP is falling because of a drop in the relative demand of goods to services. The public increasingly spends more of its income on services instead of manufactures. Meanwhile, the slow rate of increase in the demand for manufactures has been accompanied by a quick rise in manufacturing productivity. Consequently, demand is satisfied with less or a static number of manufacturing workers as companies replace workers with machines and make more "efficient" those they retain. And as Krugman (1994a) points out, the same occurred in the agricultural sector decades ago.

Conclusion

Although the term de-industrialization is widely used, there exists no common definition in either the U.K. or the U.S.. The de-industrialization literature in both countries points to a series of indicators, of which the more relevant are those regarding employment, output, trade, and investment in the manufacturing sector, as noted in Table

2.1. There exists however much confusion and controversy over the usage of these indicators. Some simply measure de-industrialization in terms of a single indicator while others combine a few indicators. For example, most see the trend in manufacturing employment as a relevant indicator of de-industrialization. But not everyone gives it the same weight of importance or focuses on the same measure of employment. Thirlwall (1982) argues that de-industrialization is the absolute decline in manufacturing employment. Bluestone and Harrison (1982) stress the gross loss of jobs and disregard net differences. Instead, Singh (1987) emphasizes the absolute and relative drops in employment together with drops in manufacturing output, a rise in imported goods, and a fall in exported goods. Likewise, while some in the U.S. point to the relative and absolute drops in employment, Clarida and Hickok (1993) downplay the trends in employment and stress the trends in manufacturing output and productivity.

There is also confusion over whether certain indicators are a measure, effect, or cause of the phenomenon. This is especially evident with how various researchers view the role of trade in the process of de-industrialization. Some consider the trade deficit a key indicator of de-industrialization (Kaldor 1979); some regard it a cause of de-industrialization (Mishel 1989); some believe it has little or no impact on the slumps in manufacturing (Krugman and Lawrence 1994, see also Burtless 1996); and still some others point to the rise in manufacturing exports as a sign of strength of manufacturing and a rejection of de-industrialization (Clarida and Hickok 1993).

Moreover, de-industrialization has been discussed in terms of changes at the national and regional levels (see, e.g., Rodwin and Sazanami 1989, 1991). In the U.K.

Table 2.1: Main Indicators of De-industrialization: Selected U.K. and U.S. Literature

Main Indicators	References
Employment:	
1) relative drop in manufacturing jobs	Rowthorn & Wells (1987); Krugman & Lawrence (1994); Singh (1977; 1987)
2) absolute drop in manufacturing jobs	Thirlwall (1982); Lawrence (1984); Kutscher & Personik (1986)
3) "gross" loss of jobs in manufacturing and in the total economy, and regional shift in locus of manufacturing	Bluestone & Harrison (1982); Wallace & Rothschild (1988); Schwartz & Zukin (1988)
Output:	
1) drop in the proportion of manufacturing in GDP or GNP (current and/or constant dollars)	Cairncross (1979); Krugman & Lawrence (1994); Clarida & Hickok (1993)
2) drop in annual growth rates of labour productivity in manufacturing	Mishel (1989); Clarida & Hickok (1993); Rowthorn & Wells (1987)
Trade:	
1) trade deficit:	
a) the drop in the volume of exports of manufactures	Singh (1977; 1987); Lawrence (1984); Clarida & Hickok (1993)
b) the rise in the volume of imports of manufactures	Singh (1977; 1987); Lawrence (1984); Mishel (1989)
c) deterioration in the trade balance in manufactured goods	Singh (1977; 1987); Lawrence (1984); Mishel (1989)
2) the drop in the share of "world" trade in manufactures	Singh (1977; 1987); Kaldor (1979)
Investment:	
1) rise in plant closing; plant relocation; and regional shift of manufacturing industries	Bluestone & Harrison (1982); Wallace & Rothschild (1988); Schwartz & Zukin (1988)
2) drop in gross fixed capital in manufacturing, net capital stock, and R&D spending	Lawrence (1984); Cairncross (1979); Brown & Sheriff (1979)

proponents of the de-industrialization thesis initially focussed on national aggregate data, but they have gradually given more attention to the situation in the regions (see, e.g., Rhodes 1986; Wells 1989; Rodwin and Sazanami 1991; Driver and Dunne 1992). In the U.S. proponents of the de-industrialization thesis have generally viewed it as a regional phenomenon (see, among others, Hill and Negrey 1987; Romo, Korman, Brantley and Schwartz 1988; Jaffee 1988). However, developments in manufacturing in the U.S. since the 1980s have prompted some to use aggregate national data as empirical evidence of de-industrialization (Mishel 1989; Krugman and Lawrence 1994).

In Canada a de-industrialization thesis was put forward nearly two decades ago. The thesis was formulated as part of the dependency theory which viewed Canada as a branch plant economy, mainly dominated by subsidiaries of American corporations. The earlier de-industrialization thesis however has been largely forgotten or ignored. More attention is given to British, but especially American sources, and particularly the work of Bluestone and Harrison (1982). But the de-industrialization controversies in these two countries should caution against restricting oneself to a particular source or perspective of de-industrialization. The data examined and the interpretations made of the data may be influenced by the de-industrialization literature considered.

Chapter Three

The De-industrialization Thesis in Canada

Over the past two decades there has been a growing concern in Canada that it is losing its manufacturing base. While the focus here is on the de-industrialization thesis, as Williams (1994, p. 13) points out: "For more than two decades, Canadians of contending ideological persuasion have been writing in increasingly apocalyptic terms about the short-comings of Canada's manufacturing sector" (see also Williams 1989). Those who believe Canada is de-industrializing fear that the loss of the manufacturing sector weakens and jeopardizes Canada's economic growth and standard of living. Some, as noted in Chapter one, even fear that de-industrialization threatens the very existence of Canada, unless something dramatic is done to reverse the trend.

Although a de-industrialization thesis was first formulated in Canada more than two decades ago, it has been largely ignored in recent years with more attention given to the de-industrialization literature in the U.K. and especially the U.S.. Thus one is often

left with the impression that the term has been borrowed from non-Canadian sources (see. e.g., Merrett 1996, Masi and Del Balso 1991; Drache 1989a; Bellon and Niosi 1987; Matthews 1985). Nonetheless, while the political and economic context has changed, the recent discussions on de-industrialization are not much different from those of the earlier debate over two decades ago.

While the earlier de-industrialization thesis is generally ignored, the term has become part of popular discussions on the state of the economy. According to Vice (1988) there is such a widespread belief that Canada is de-industrializing that, "a good many people from all sectors of our society accept it as a truism." Nevertheless, as in the U.K. and the U.S., there is no common agreement on its meaning and indicators. Further, the issue is complicated by supporters of the de-industrialization thesis who have given little thought to the definition. Yet, they provide anecdotal evidence or limited, questionable, and even contradictory data to support their claims. They basically hold on to a predetermined belief that de-industrialization has occurred or is occurring. They advance various questionable propositions, which are usually not properly examined but are assumed to be factual (e.g., Drache 1989a).

The aim of this chapter is to critically examine the conceptualization and operationalization of de-industrialization in Canada. Most of the focus is on the case made, and evidence provided, by proponents of the de-industrialization thesis. The first section explores the de-industrialization thesis advanced in the late 1960s and early 1970s. The second section examines the de-industrialization thesis in the 1980s and early 1990s and highlights the key indicators: employment, investment, output, and trade.

The De-industrialization thesis, 1970s

The de-industrialization thesis formulated in the late 1960s and early 1970s was an offshoot of the ongoing debate over the effect of the high level of foreign ownership in Canada. Many feared that Canada's economic growth was hindered because a large proportion of manufacturing plants were foreign-owned, and mainly American-owned. Various government reports, as the Watkins Report in 1968 and Gray Report in 1972, reflected these concerns.[1]

Many perceived the high level of American direct investments as the result of Canada's hinterland-metropolis relations with the U.S.. A widely discussed book in this tradition was Silent Surrender: The American Economic Empire in Canada by Levitt (1970).[2] The author claimed Canada was, "the world's richest underdeveloped country" whose private corporations were mainly U.S. controlled (Levitt 1970, p. 25, 39). Such a dependency burdened Canada with enormous economic and social costs.[3] She noted

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[1] The various government reports recommended more monitoring of foreign ownership in Canada. One result of the Gray Report was the creation in 1974 of the Foreign Investment Review Agency (FIRA) which reviewed all proposals of foreign takeovers of existing businesses or the creation of new businesses on the basis of what benefits there were for Canadians. Herb Gray became FIRA's first chairman. FIRA's mandate was revised in 1984 by the newly elected Progressive Conservative government and in 1985 its name was changed to Investment Canada.

[2] The preface was written by Mel Watkins. Clement and Williams (1989) date a "new Canadian political economy" from the popularization of nationalist issues noted in the Watkins Report and the book by Levitt.

[3] Various researchers question the dependency thesis which argues that Canada's economic elite was mainly commercial. Instead, they point out that there were interlocking directorships between Canadian industrial and financial corporations. They also raise doubts about the claim that Canadian financial corporations were closely tied to American multinationals. Research shows that Canadian financial corporations have been more likely to share directorships with industrial corporations controlled by Canadians than by Americans. For a critical analysis of this research see Carroll (1986).

that Canadian manufacturing consisted of mainly small American-owned branch plants which produced for the domestic market and whose parent firms could implement policies that disfavoured Canadian workers. Although published in 1970 the "skeleton" of the main arguments was first presented to the National Council of the New Democratic Party (NDP) in 1966 and a monograph was published in 1968. The thesis received much support from members of the Waffle, a group established as a caucus within the NDP in 1969, and founded by James Laxer and Mel Watkins.[4]

From these discussions resulted the de-industrialization thesis characterised by Robert Laxer (1973) as a "major thesis" and by Moore and Wells (1977, p. 34) as "the king-pin of left nationalist theory." R. Laxer (1973, p. 9) argued that the theory had "more practical consequences for the future of jobs, economic security, and the quality of life for Canadians than any single explanatory concept on the Canadian horizon." And he believed that "deindustrialization is the most important result to Canada of integration in the American Empire." According to this perspective, Canada, the hinterland, was kept in an underdeveloped state. Canada had a weak manufacturing sector which was threatened when economic conditions in the U.S., the metropolis, deteriorated. Branch plants were closed in the hinterland to improve the job situation in the metropolis. Clement (1975, p. 124) summarized the de-industrialization thesis as the "withdrawal of

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[4] The group presented a Manifesto for an Independent Socialist Canada which called for more Canadian public ownership. In 1971, their candidate, James Laxer, was runner-up to David Lewis for the leadership of the federal NDP. The group was also organized at the provincial level, but by the mid-1970s it had disintegrated as a political force (Watkins 1995). Laxer and Watkins have also been outspoken critics of the FTA and the NAFTA (see J. Laxer 1987b; Watkins 1993).

U.S. manufacturing plants from Canada to the U.S.."[5]

The most explicit description of the de-industrialization thesis was put forth by J. Laxer (1973) and Laxer and Jantzi (1973). They believed, like many others, that Canada had a "truncated manufacturing sector"-- a "warehouse assembly operations" dependent on foreign technology and on foreign manufacturing in completing many stages in the production of goods. Canada had the lowest proportion of its workforce in manufacturing among advanced countries, imported much of its manufactured goods, and was vulnerable to decisions taken by parent firms of the branch plants. According to J. Laxer (1973) weaknesses in the U.S. economy led the Nixon administration in 1971 to pass policies that ended the "special relationship between Canada and the U.S. which allowed Canada to be a relatively industrialized hinterland between 1945 and 1971" (J. Laxer 1973, p. 141). The new "U.S. agenda for the Canadian economy" was to have the U.S. gain more access to Canadian resources and have Canada purchase more manufactured goods from the U.S..[6] American firms would close their branch plants in manufacturing and shift the capital into resource extraction or largely back into the U.S.. Consequently, Canada would face increasing "de-industrialization" and "permanent high unemployment" (J. Laxer 1973, p. 144).

J. Laxer (1973) and in general supporters of the de-industrialization thesis provide

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[5] Clement (1975) commented in a footnote that the drop in employment and standard of living would lend support to the de-industrialization thesis. But he pointed out that there was not much evidence to support the thesis.

[6] In later works Laxer upholds the thesis that the U.S. is declining (J. Laxer 1987a). One of his main reasons for opposing the FTA is because Canadians have to "choose" the U.S. economic model (J. Laxer 1987b). This reasoning is somewhat different than his earlier view that implies the U.S. dictated Canada's economic agenda.

a peculiar view of the link between American-owned branch plants and de-industrialization. Irrespective of whether the number of branch plants rises or falls they are perceived as threatening Canada with de-industrialization. On the one hand branch plant closures, drops in the number of workers in branch plants, or both, are seen as signs of de-industrialization. On the other hand, an increase in the number of branch plants is viewed as making the Canadian economy more dependent on the metropolis and thereby more vulnerable to being de-industrialized.

In support of the de-industrialization thesis Laxer and Jantzi (1973) compared American-owned and Canadian-owned manufacturing plants in Ontario in 1966 and 1972 that employed 100 or more workers. Together the plants made up 45 per cent of all manufacturing employment in Ontario. However, the study had numerous weaknesses which the authors ignored. Laxer and Jantzi (1973) used data of a limited sample of manufacturing plants in Ontario to make assertions about the state of manufacturing at the national level. They had a predetermined belief in the thesis and had no intention to question it. Indeed, their data showed that in the 1966-72 period, among the 511 American-owned establishments 85 had closed and 122 had opened, and employment grew by 8.1 per cent, and among the 296 Canadian-owned establishments 35 had closed and 75 had opened, and employment rose by 21.1 per cent. Yet, despite the limitation of their sample of firms and the rise in overall employment and establishments, Laxer and Jantzi (1973, p. 150) concluded that the "American ownership of Canadian manufacturing leads to de-industrialization for Canada - the quantitative and qualitative undermining of this country's manufacturing sector."

Moreover, Laxer and Jantzi (1973) failed to recognize that their own data contradicted their claims. The data show that American-owned plants were in general not leaving Canada, or rather Ontario, since there was among American-owned plants a net gain of 37 plants. Canadian-owned plants strengthened their position compared to American-owned plants, including in "vital sectors of Ontario manufacturing." For example, employment in the machinery industry in 1972 compared to 1966 grew by 49.2 per cent in Canadian-owned plants and only 7.5 per cent in American-owned plants. Further, since they date the beginning of the process of de-industrialization as 1971, then their evidence was based only on what occurred in 1972. But data for one year are insufficient, especially since they are likely to have been influenced by the 1969-70 recession.

Throughout, Laxer and Jantzi (1973) left the impression that their assertions were quantifiable or supported with substantive evidence. They noted that "it is evident" that manufacturing employment "growth was centred in the large establishments and decline was evident in the small establishments" and that some large firms "migrated from old industrial regions to newer ones." But no appropriate data were provided and it is unclear how they arrived at such interpretations from the data examined. Likewise, J. Laxer (1973, p. 35) stated that "From 1966 to 1972 virtually no jobs were created in manufacturing in Canada. Plant shut-downs and layoffs occurred on a massive scale, particularly in foreign-owned industries." And Canadian manufacturing had lost jobs to American manufacturing. Yet in the 1966-72 period manufacturing employment grew in Canada by more than 100,000, but fell in the U.S. by more than 300,000, suggesting that

Canadian manufacturing did not lose jobs to American manufacturing (Moore and Wells 1977).

A critical assessment of the "left nationalist case for Canadian de-industrialization" was carried out by Moore and Wells (1977) who identified themselves with the political left. They disagreed with the general premise of the thesis which blamed U.S. imperialism for Canada's economic problems. The U.S. was in their view a "strong link" and Canada a "weak link" in the "world imperialist system," but "the system, itself, could adversely affect both the strong and the weak" (Moore and Wells 1977, p. 46). They argued that the "main problem" was capitalism and de-industrialization was a "myth." Left-nationalists had mistaken a "typical cyclical recession" of the capitalist system for a long-term de-industrialization.

To test the de-industrialization thesis, Moore and Wells (1977) examined aggregate data on the manufacturing sector over a period of about two decades, but especially the 1963-72 period. They considered the changes for the manufacturing sector in Canada and compared some of the changes with those of other "imperialist countries" which besides Canada included the U.S., France, Germany, Sweden, U.K., Japan, Denmark, and Norway. They did not provide a definition of de-industrialization. They focussed mainly on employment and output in manufacturing but were confusing as to which trends had to exist for de-industrialization to occur. And, unlike Laxer and Jantzi (1973), they disregarded a comparison of changes in gross manufacturing employment between Canadian-owned and American-owned plants.

Moore and Wells (1977) criticized the "left-nationalist" perspective, but their

interpretation of the data was based mainly on their own political ideology and less on the data examined. They recognized that there had occurred relative drops of manufacturing in the GDP and in the labour force. The share of manufacturing in the GDP dropped from 29 per cent in 1950 to 22 per cent in 1969, and in the share of manufacturing in the labour force fell from 24 per cent in 1963 to 22 per cent in 1970. But, contrary to the claim of left-nationalists, Moore and Wells (1977) argued that these trends were neither signs of de-industrialization nor due to American imperialism. They argued that the trends were not "unique" to Canada as the left-nationalists suggested, but "part of an international trend in the imperialist world." The relative declines would have occurred irrespective of the level of foreign ownership. The trends reflected the "contradictions (structural changes) in capitalism" and resulted from the dramatic growth of the service sector and increases in manufacturing labour productivity. They pointed out that the U.K. and the U.S., for example, were facing similar trends.

According to Moore and Wells (1973) the de-industrialization theory could not be taken seriously since one would have to wrongly conclude that the U.K. was also de-industrializing. But this was an awkward conclusion. They reject the thesis in part because the case of Canada was not "unique." But this suggests that if all "imperialist countries" faced similar drops in manufacturing then they were not de-industrializing. They arrived at such a conclusion mainly by way of their political perspective which led them to argue that it was impossible for a country like the U.K. to be de-industrializing. But their own cited data and their arguments contradicted their claim. They stressed the importance of the absolute trend in manufacturing employment as a measure of

de-industrialization, suggesting it was in itself a sufficient measure to test the de-industrialization thesis. But they did not explain why. Nonetheless, the trend in absolute manufacturing employment suggested that, unlike Canada, the U.K. was de-industrializing. At the end of the 1963-72 period the number of workers in manufacturing reached an all time high in Canada but fell by nearly one million in the U.K..

Moore and Wells (1977, p. 39) also examined the "strength and weaknesses of the capitalist world's manufacturing sector" measured by: average annual rates of growth of manufacturing; comparative indices of industrial production; and comparative indices of manufacturing labour productivity. In all cases Canada did as well as, or better than, most of the advanced countries examined. They pointed out that percentage declines of Canada's manufacturing sector from 1947 to 1973 occurred only in periods of recession and were followed by a recovery. By 1973 the manufacturing sector was already recovering from the 1969-70 recession. The number of workers had increased, the level of investment activities in dollar terms was rising, and the sector was growing faster than the total real domestic product. Thus for Moore and Wells (1977) Canada's manufacturing sector was not in serious trouble. Instead, "international capitalism" was in decline and therefore the "problems" Canada faced were a manifestation of "the instability of world capitalism."

However, whatever the perceived cause or one's political persuasion, there was a widespread concern about the health of the manufacturing sector. The Science Council of Canada (1977), the former national advisory agency on science and technology, feared

Canada's "technological capability" was diminishing with the result being sluggish industrial growth and "perhaps even the de-industrialization of Canadian society." The Council believed that unless an effort was made to change the situation, Canada had a bleak future as an industrialized nation. A generally similar view was expressed by the Committee for an Independent Canada, formed in 1970 by Walter Gordon and Abraham Rezone, and of which at one time Mel Hurtig became its national chairman (see Danson 1978, p. 1).[1] Even an undated federal government discussion paper of the 1970s noted that the Canadian economy was unstable and that it was "particularly acute for manufacturing" (Department of Industry, Trade and Commerce, undated, p. 1). It questioned whether manufacturing could "continue to contribute to the fulfilment of Canadian aspirations for satisfying jobs and rising real incomes." And writing on the status of the manufacturing sector in the late 1970s, Starks (1978) argued it was in a "crisis" and threatening "future prosperity" and the well-being of individuals. He agreed with the Canadian Manufacturers Association that in consequence Canada was turning into a "poorer nation."

Thus the de-industrialization thesis in Canada preceded the U.K. and U.S. debates, and pointed to some of the same indicators and issues. This is particularly evident when compared to the U.S. debate on de-industrialization. For example, Bluestone and Harrison (1982) in the U.S., like J. Laxer (1973), emphasized plant

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[1] The Committee for an Independent Canada disbanded in 1981, but in 1985 Hurtig set up the Council of Canadians to continue some of the same activities. The Council of Canadians was mainly set up to oppose the Progressive Conservative government attempts to establish a free-trade agreement with the U.S. and to allow more foreign investments in Canada.

closures in manufacturing as a sign of disinvestment in manufacturing and each provided a nationalistic outlook. J. Laxer (1973) argued that American-owned branch plants cut down on their investments in Canada and redirected capital back into the U.S.. Therefore, the U.S. benefited at the expense of Canada. In contrast, Bluestone and Harrison (1982) believed American corporations were moving much of their capital outside the U.S. and moving some of it into their existing foreign-owned branch plants, which presumably included those in Canada. Therefore, Canada benefited at the expense of the U.S.. Moreover, in both countries, for different reasons, critics turned to other indicators than those put forth by proponents of the thesis and gave importance to international comparisons. And they concluded that de-industrialization was a "myth". Interestingly, the study by Moore and Wells (1977) was titled "The Myth of Canadian De-industrialization," while that of Lawrence (1983a) in the U.S. was titled "The Myth of U.S. Deindustrialization."

Old Wine in New Bottles: The de-industrialization thesis, 1980s-90s

For whatever reasons, over the years the earlier Canadian de-industrialization thesis was largely neglected. Instead, some assumed or implied that de-industrialization was a new concept, and credited U.S. or U.K. sources. Williams (1994, p. 11), for example, remarks that in the early 1980s, "Government researchers introduced new concepts like 'deindustrialization' into the national economic discourse." Matthews

(1985) credits Bacon and Eltis (1978) as possibly the originators of the term de-industrialization. But most Canadian commentators turn to the work by Bluestone and Harrison (1982) in the U.S. for theoretical guidance (e.g., Gertler 1985; Muszynski 1985; Drache 1989a; Krahn and Lowe 1993; Merrett 1996).

Although as time passed the earlier debate on de-industrialization was largely ignored, the concern over de-industrialization remained and in the mid-1980s some called on social scientists to give the issue more attention. Mahon (1985a, p. 212), one of the few to point out that the "spectre of deindustrialization" was raised in earlier years in Canada, remarked that "political economists have not kept pace with their British and American counterparts, who are involved in a lively debate on the question."[2] And Drache and Clement (1985, p. xx) stated that de-industrialization was an issue on which "political economists had a special contribution to make to public debate."

Canada is still viewed as particularly vulnerable to de-industrialization, especially because of overall changes in the world economy and the implementation of recent free trade policies. Some argue that over the years it has become easier for investments to be moved out of the country and into the U.S., Mexico, and low wage countries in the Third World. The result is disinvestment, plant closures, and higher unemployment. Hurtig (1991), for example, called the Canada-U.S. Free Trade Agreement the "Deindustrialization of Canada Agreement." Stanford (1991, p. 3) remarked that de-industrialization had "become a major economic concern in Canada" by the early

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[2] Mahon (1984, 1985a, 1985b) credited the Waffle for first pointing out "the spectre of deindustrialization."

1990s. And the concern has grown with the implementation of NAFTA (see Stanford 1993; Cameron 1993). For Merrett (1996) the situation has become serious to the point that Canada is being transformed into "an underdeveloped nation."

Proponents of the more recent de-industrialization thesis commit similar errors as in the earlier thesis proposed by Laxer and Jantzi (1973). They provide limited data that are mainly for the purpose of lending credibility to their preconception that de-industrialization exists. They fail to recognize, or they purposely ignore the fact, that their evidence is insufficient and that there exist data that contradict or raise doubts about their claims.

Various indicators of de-industrialization are noted in the literature, but there is no agreement on how to measure them and whether to focus on a single or a combination of measures. In addition, there is no agreement on how low a trend must drop or for how long the drop must occur for de-industrialization to exist. The conceptual puzzle is further complicated with no agreement on the appropriate geographic unit (national, provincial, or municipal) and industrial unit (sector, specific industry, or firm) of analysis.

As noted in the previous chapter covering the U.S. and U.K. literature, four broad indicators have received fairly wide acceptance as measures of de-industrialization: employment; investment; output; and trade. Given the intellectual history of the Canadian debate on de-industrialization, these same broad indicators are widely used in the Canadian literature. The next sections will elaborate on the four key indicators and focus primarily on the claims and data put forth by proponents of the de-industrialization

thesis and weaknesses and complexities of the thesis.

Employment

Employment change is the most widely mentioned indicator of de-industrialization. Four measures are noted in the literature: the decline in the share of manufacturing in total employment; the drop in the absolute number of manufacturing workers; the gross loss of manufacturing jobs; and the rise in unemployment. Some also combine changes in employment in the manufacturing sector with changes in other sectors.

Various measures of employment are used by Drache (1989a, p.1-2), a key proponent of the de-industrialization thesis.[3] He defines de-industrialization as "either a process of relative job loss in industrial employment or the systematic erosion of investment in a country's industrial capacity." He lists five characteristics of de-industrialization, three of which pertain to employment: the decline in the proportion of "industrial employment" in the work force; the increase in "structural unemployment"; and the rise in the poorer quality service jobs. The other two characteristics, discussed later, are the "erosion of export-performance" and the increase in "import penetration."

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[3] Drache published two articles on de-industrialization in 1989 that are almost identical except for the titles, and some minor editorial differences. One titled "New Work Processes, Unregulated Capitalism and the Future of Labour" is published outside Canada in a collection of works by various authors (see Drache 1989b). The other is a single publication by the Canadian Centre for Policy Alternatives and titled The Deindustrialization of Canada and its Implications for Labour (Drache 1989a).

Despite his emphasis on the relative drop in manufacturing employment, Drache (1989a) provides no explanation of why it should be described as de-industrialization and no supporting data. Nonetheless, Statistics Canada data show that the share of manufacturing in total employment fell from just under 25 per cent in 1960 to less than 16 per cent in 1990 (see Akyeampong and Winters 1993). However, the drop was mainly the result of a relatively faster growth in the number of workers in the service sector and slower growth in the number of manufacturing workers. In the 1960-90 period overall employment grew in Canada by 111 per cent with employment rising only 36 per cent in the manufacturing sector but 178 per cent in the service sector (Akyeampong and Winters 1993). Consequently, the number of manufacturing workers increased. Interestingly, Drache (1989a) does not include changes in absolute manufacturing employment in his list of characteristic of de-industrialization, but he gives it much importance in his argument. He claims that Canada faced a remarkable net loss of "industrial" or manufacturing jobs in the 1980s, but he provides no appropriate evidence.[4]

For Muszynski (1985) de-industrialization is the absolute loss of manufacturing jobs. But he adds another complexity to the de-industrialization thesis by focussing on "urban de-industrialization." He examines the losses in the Metropolitan Toronto area

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[4] Surprisingly, Drache (1989a) partly turns to American data to support his claim. Without providing a comparative analysis, he considers the U.S. situation as "not atypical." Relying on information in a 1985 New York Times article he points out that manufacturing employment fell by nearly 900,000 below the 1980 level. But as the previous chapter shows there is much controversy over what is happening to U.S. manufacturing, and a longer term view of manufacturing employment shows that the number of jobs in the U.S. rose between 1959 and 1984. Drache(1989a) also disregards the definitional and measurement differences that may exist between the two countries in determining unemployment (see Zagorsky 1996).

(Metro Toronto) consisting of six municipalities of which the City of Toronto is the largest. He plays down the changes occurring in the four municipalities which together with Metro Toronto make up the Toronto Census Metropolitan Area (CMA). The data show that from 1976 to 1984 the number of manufacturing jobs in the Metro Toronto area reached a high in 1981 but by 1984 fell below the 1976 level. But as Muszynski (1985) recognizes the Toronto CMA experienced a "relatively strong growth" between 1983 and 1984, and in the same years manufacturing in Ontario and Canada was recovering from the job losses of the 1981-82 recession. It is therefore unclear why he argues that de-industrialization in Metro Toronto is a serious problem. It begs the question whether Metro Toronto, or any metropolitan area, needs to maintain an industrial base, especially when it is surrounded by a large industrial base. Moreover, a closer look at the Census of Canada data for 1971 and 1981 that Muszynski (1985) cites show that the major loss of manufacturing jobs occurred in the City of Toronto and that the losses were replaced by increases in service sector jobs (see also Gertler 1985). Yet, Muszynski (1985) argues that "urban deindustrialization" results in structural changes that have "substantial ill-effects" on Metro Toronto.

Like Muszynski, Gertler (1985) emphasizes the regional perspective of the de-industrialization thesis. But he focuses on the relocation of manufacturing activity and the drop in manufacturing as an important source of employment in the Toronto CMA. He concentrates on the 1975-80 period, a time of "relative prosperity," and the recessionary period of 1980-82. He argues the data "are somewhat consistent with the process of de-industrialization ...in that the overall importance of manufacturing as a

source of employment in the region has declined, and whatever manufacturing activity has remained in the region has tended to favour peripheral locations over the old central core of the city" (Gertler 1985, p. 361). But it is unclear why the relocation of manufacturing within the boundaries of Toronto CMA, a process he suggests has long existed, should be described as de-industrialization. The data he cites show that: the share of national manufacturing employment in the Toronto CMA grew from 18.7 per cent in 1975 to 19.6 per cent in 1982; manufacturing employment in the 1975-80 period grew 6.5 per cent in Toronto CMA compared to 5.2 per cent in Canada; in the 1980-82 period manufacturing employment fell 3 per cent in Toronto CMA, but 6.4 per cent in Canada; and the number of workers in manufacturing grew from 286.5 thousands in 1975 to 296.1 thousand in1982.

Nonetheless, contrary to what Drache (1989a) implied, and the impressions left by Muszynski (1985) and Gertler (1985), Labour Force Survey (LFS) data examined in a later chapter show that the number of workers in manufacturing at the national level was higher in the 1980s than the 1970s. The number of workers in manufacturing peaked in 1981, fell in the years following the 1981-82 recession and then slowly recovered and reached a new plateau in mid-1989. But since then the attention has mainly turned to job losses and free trade.

Many point out that hundreds of thousands of manufacturing jobs have been lost in the few years following the implementation of the FTA in January 1989 and they believe the same is happening because of the NAFTA (e.g., Barlow and Campbell 1993; Campbell 1993; Jackson 1993). The trade agreements are blamed for causing or

accelerating de-industrialization (see, e.g., Canadian Labour Congress 1991; Merrett 1996). Although a recession occurred after the FTA was implemented, some point out that job losses in manufacturing preceded the recession (see, e.g., Jackson 1993). They believe, as did a Federal Liberal Party (1991) task force on de-industrialization in Ontario, that the FTA is mainly to blame and many of the job losses are permanent.

Opponents and supporters acknowledged that some firms and industries would suffer and that job displacements would occur because of the FTA (see Smith 1992a). However, supporters predicted, mainly on the basis of economic models, that overall employment would rise (see Crispo 1988; Department of Regional and Industrial Expansion 1988; Economic Council of Canada 1988; Harris 1988; Watson 1994a, 1994b). But the reverse occurred in the immediate years following the implementation of the FTA. Opponents of the FTA were quick to blame the agreement for the losses and some pointed to the losses as evidence of de-industrialization. However, it is doubtful anyone can accurately determine the job losses or gains that were due to the FTA in early 1990s. There were other developments that had an impact on employment changes, particularly the cyclical problem of the recession, the restructuring among firms that was already occurring before the FTA went into effect, the increasing internationalization of trade in an ever expanding global economy, higher interest rates, and higher Canadian dollar. Yet certain critics of the FTA, and later the NAFTA, blame the agreement for the job losses, plant closures and relocations of factories to the U.S., and even Mexico, and generally ignore the fact that the changes could have been also provoked by other factors (see, e.g., Barlow 1991; Hurtig 1991; Healy 1993).

Longer term data are needed to determine the developments in manufacturing employment. For example, in 1994 thousands of jobs were created of which a large proportion were in manufacturing. Indeed, one popular newspaper talked about the "boom in manufacturing" (see, e.g., Globe and Mail, October 8, 1994). Hence, if short term data are sufficient to make wide-sweeping conclusions about the state of manufacturing, should one conclude the "boom" is due to the FTA and the NAFTA? Of course, that would be a foolish and premature conclusion. In the same vain, it is foolish to claim that the losses in the early 1990s were largely due to the FTA and resulting in the de-industrialization of Canada.

Proponents of the de-industrialization thesis see a strong correlation between the loss of manufacturing jobs and the rise in unemployment (e.g., Muszynski 1985). But they do not fully explore the issue. Instead, like Drache (1989a) they stress that the unemployment situation in Canada is "alarming." Drache (1989a), for example, notes that in the 1980-87 period unemployment increased in Canada.[11] But he is also unclear about why the rise in overall unemployment is a sign of de-industrialization, since the unemployment rate reflects the situation in all economic sectors. Moreover, he writes: "Between 1980 and 1983, approximately one in five jobs disappeared from the manufacturing sector; unemployment rose by 68%; and hundreds of long-established firms closed their doors forever" (Drache 1989a, p. 12, emphasis in original). He does

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[11] Drache (1989a) also adds that in the same period unemployment dropped in the U.S.. But he is unclear why the comparison would help in understanding de-industrialization in Canada. It is also of some importance to note that certain differences in the measurement of unemployment in the two countries tend to bias the Canadian unemployment rate upward compared to the U.S. rate (see Grant 1992).

not give the source of his information, but LFS data show that these were exceptional years and influenced by the 1981-82 recession, an issue Drache (1989a) chooses to ignore. The number of unemployed manufacturing workers peaked in 1982 and again in 1983, and the overall unemployment rate peaked in 1983. Drache (1989a) does not provide the actual rates of unemployment, but the LFS data show that the rate of unemployment for Canada for 1980 was 7.5 per cent and 8.8 per cent in 1987. However, the rate dropped in 1988 and again in 1989 when it returned to the 1980 level of 7.5 per cent (see Parliament 1994).

Moreover, as will be further examined in a later chapter, labour force data indicate that manufacturing has usually had a lower unemployment rate than that of the labour force. For example, whereas the overall unemployment rate was 11.9 per cent in 1983 and 7.5 per cent in 1989, in the same years the manufacturing unemployment rate was 10.2 per cent and 6.3 per cent. More recently, in 1995, the unemployment rate in the labour force was 9.5 per cent compared to 6.3 per cent in manufacturing.

A popular assumption is that the manufacturing sector has been eliminating high paying jobs while the service sector has been creating low-paying dead end jobs (e.g., Muszynski 1985). Drache (1989a, p. 16) claims that the jobs lost in manufacturing are "better paying and more skilled than average jobs." He provides neither data nor an explanation of "average jobs." However, a cursory examination of wage and employment data shows there is a considerable variation in the wages and jobs lost in different manufacturing industries. For example, in 1987 the average annual wage in manufacturing was $27,807, but among the manufacturing industries the lowest wage

was in the clothing industry at $16,484 while the highest was in the petroleum refining at $46,759 (Masi 1993). Moreover, the clothing industry had six times more workers than the petroleum refining industry; it lost jobs in the 1980s; and has been seen as particularly vulnerable to job losses under the free trade agreements (see, e.g., Cohen 1987).

Many argue the job losses in manufacturing are accompanied, in the words of Drache (1989a) by "an increase in poorer quality jobs in service, clerical and sales." He adds that there has been a shift from blue collar to white collar jobs and a rise in part-time jobs to the point that they are "overtaking" full-time jobs. And he remarks that "the real job machine is the public sector" since the government alleviated the unemployment problem by creating jobs in the social and public services. But, little or no data are provided and no explanation is given about why these perceived changes are part of the process of de-industrialization.

A cursory overview of labour force data suggests that the assertions made by Drache (1989a) deserve closer scrutiny. The service sector made up 71 per cent of the labour force in 1987 compared to 67 per cent in 1980. But clerical, sales and service jobs dropped from 54 per cent of all service jobs in 1980 to 50 per cent in 1987 (Lindsay 1990; O'Neill 1994). Over the same period managerial and professional occupations, which are generally viewed as higher paying secure jobs, increased from 29 per cent to 35 per cent.

Clearly the number of white collar jobs has over the years grown, but the number of blue collar jobs has been generally transitory. As Little (1994, p. A11) points out blue

collar jobs, "appear and disappear as the economy expands and contracts." Since 1975 blue collar jobs advanced and retreated twice, with each decline eliminating the gains that were achieved in the preceding few years. White collar occupations have been growing at least since the beginning of this century, and their growth has over the years been mainly because of job losses in agriculture and not at the expense of blue collar occupations (Rinehart 1996; see also Krahn and Lowe 1993). Indeed, the proportion of blue collar occupations in total occupations did not change much from 1901 to 1981 (Grabb 1993). However, the blue collar proportion of the labour force fell from 42.2 per cent in 1981 to 36.7 per cent in 1991 (Rinehart 1996). But the relative drop does not necessarily imply an absolute drop. Indeed, in 1993 the number of blue collar jobs was actually slightly more than in 1975 (see Little 1994).

Drache (1989a) is unclear about what he means by part-time jobs "overtaking" full-time jobs. Perhaps he means that part-time work has been expanding more rapidly than full-time employment in the 1980s. Between 1981 and 1989 the number of part-time workers grew by nearly half a million to reach about two million at the end of the decade (Duffy and Pupo 1992). This represented a 27 per cent increase in part-time employment compared to a 11 per cent growth in full-time employment in the same period.[12] However, while the proportion of the labour force holding part time employment in the 1980s was higher than the 1970s, it remained steady at above 15 per

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[12] The expansion in part-time employment has been occurring since the 1950s. From 1953 to 1986 the number of workers employed part-time grew on average 7 per cent annually. By the end of the 1980s an estimated one in seven workers held a part-time job. In addition, the rise in part-time work has been largely among women. In the early 1990s women made up about 70 per cent of part-time workers (Duffy and Pupo 1992).

cent in the 1980s (see Parliament 1994). And most were "voluntary" part-time workers, although the proportion of "involuntary" part-time workers was higher in the 1980s than the 1970s (see Akyeampong 1987).[13] More importantly for the purpose of this study, part-time manufacturing employment remained steady at less than 4 per cent throughout the 1980s. And figures examined in a later chapter show that part-time workers have generally made up a small proportion of manufacturing workers.

Drache (1989a) also claims that the government created jobs in the public sector to reduce overall unemployment. But it is worth noting that the exceptional rise in public sector employment occurred in the 1950s when unemployment rates were lower than in the 1980s (see Picot 1986). Moreover, between 1980 and 1987 the share of the federal public administration in total employment fell from 2.5 per cent to 2.3 per cent (Lindsay 1990).

Investment

Another key indicator noted by proponents of the de-industrialization thesis, is the drop in investments, measured mainly by the number of plant closures in manufacturing. As in the 1960s and 1970s, Canada in the 1980s and 1990s has been

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[13] The official defintion of part-time work consists of working less than 30 hours a week. Voluntary part-time workers are those who choose to be employed part-time, while involuntary part-time workers would prefer to hold full-time employment. Over the years the involuntary part-time workers have been making up an increasingly larger proportion of part-time workers. As data cited in Chapter five show, their proportion grew from about 13 per cent in the late 1970s to nearly 32 per cent in the mid-1990s. The issue is further complicated in that there are also, for example, workers who hold temporary or part-year employment that can be either part-time or full-time (see Krahn and Lowe 1993).

viewed as vulnerable to changes in "American economic strategy" because of the high level of U.S. direct investments (Drache 1989a). American firms are accused of closing plants or reducing their workforce and moving much of their capital abroad. Thus plant closures and job losses should be prevalent in industries that had, or still have, high levels of American-owned branch plants. But proponents of the de-industrialization thesis complicate the argument by leaving the impression that whatever corporate strategies American firms carry out, they will have a negative impact on Canada. American firms that shut down branch plants are blamed for the de-industrialization of Canada. On the other hand increases in American direct investments are viewed as making Canada more dependent on decisions taken by parent firms. And the perceived result is, among other factors, "fewer" and "poorer jobs for Canadians" and higher unemployment (see, e.g., Hurtig 1991, p. 75). The implication is that whether the number of American branch plants rises or falls, Canadian workers lose out. But over the years many have accused also Canadian firms of moving plants abroad and contributing to de-industrialization, especially since the implementation of the FTA and the NAFTA (see, e.g., Mahon 1984; Barlow 1991; Stanford 1993).

Like Laxer and Jantzi (1973) in the past, and Bluestone and Harrison (1982) in the U.S., many argue or imply that branch-plant closures are part of a corporate restructuring strategy that results in a country's economic structural change . However, it is questionable that corporate strategies work in unison and can have such a dramatic impact on the economy. The issue is also complicated in that supporters of the de-industrialization thesis consider different geographic and industrial units of analysis.

The focus has been on the situation in the whole of Canada (e.g., Drache 1989a); a specific area (e.g., Muszynski 1985); and in a particular industry (e.g., Van Ameringen 1985).

As in the case of employment, supporters of the de-industrialization thesis that turn to plant closures generally deal with insufficient and questionable data, and cover a short period that includes an economic downturn. They give also little importance to the possible reemployment of workers displaced by plant closures. But emphasizing plant closures and the jobs lost and disregarding the net changes provides a distorted or incomplete picture of what is occurring in the manufacturing sector. More important, if plant closures and the accompanying loss of jobs are sufficient evidence of de-industrialization, as some seem to suggest, then de-industrialization is a universal phenomenon since plant closures are always occurring. Indeed, as the Economic Council of Canada (1983) noted, in the 1970s when manufacturing employment was growing, "death rates" of plants were very high in the manufacturing industries and other industries (see also Baldwin and Gorecki 1990).

For Drache (1989a, p. 2) part of the definition of de-industrialization is "the systematic erosion of investment in a country's industrial capacity." He asserts that there has been an "epidemic of plant closures" particularly among branch plants since in the corporate strategy of American firms "subsidiaries are prime candidates to be phased out." He maintains that the losses in the "machinery, electrical equipment and autos" industries have mainly occurred in American branch plants. Again Drache (1989a) makes assertions that give the impression they are supported by empirical evidence, but

he provides no such data. He cites an unpublished 1984 study on 2,500 workers laid off from 19 plants in Ontario between 1979 and 1981. The data tell us nothing about the trend in plant closures and job losses. The sample was unrepresentative of either the situation in Canada or Ontario and the results were influenced by the 1981-82 recession. Moreover, as noted in later chapters, in 1989 the machinery, electrical, and auto industries had higher employment levels than in 1981.

Muszynski (1985) and his collaborators provide case studies on plant closures in Metropolitan Toronto to defend their thesis of de-industrialization. But their own employment data suggest the closures were mainly restricted to the City of Toronto. Manufacturing employment grew in the rest of Metropolitan Toronto suggesting that there were plant "births." Gertler (1985) shows that in the 1971-78 period the number of manufacturing establishments and manufacturing employment grew in the Toronto CMA but the distribution changed. Metro Toronto faced drops in the shares of establishments and employment, but still made up by far the largest proportions of establishments and employment in manufacturing. The shares of manufacturing establishments of three municipalities contiguous with the boundary of Metro Toronto grew and those of the fourth remained steady. This suggests that data restricted to plant closures in a particular area as Metro Toronto may leave the incorrect impression that investments have dropped. Data examined by Gertler (1985) show that annual capital expenditures in manufacturing in the Toronto CMA in nominal and real terms rose from 1950 to 1981. The establishment and investment data suggest that there was a spatial restructuring of manufacturing in the Toronto CMA. Thus, the significance of focussing on

de-industrialization at the regional level is unclear.

Van Ameringen (1985) adds to the conceptual confusion over de-industrialization, by pointing to plant closures and loss of jobs at the industry level. He claims the "automotive sector" faced de-industrialization because of the restructuring strategies of the American multinational vehicle and parts manufacturers (cf. Olsen 1988; Holmes 1991a, 1991b). He argues the automotive manufacturers were "rationalizing" their operations and establishing a "global system of vertical integration." He points out that in the "global restructuring program" of the Big Three (GM, Ford, and Chrysler) some Canadian operations were relocated to lower-waged countries. He refers to a 1983 federal task force report which showed that in the previous four years twenty-five plants shut down causing twenty thousand "lay-offs." But there are at least two serious weaknesses with the data. They do not take into account new investments and the period covered includes the 1979 oil price shock and the 1981-82 recession.

Moreover, contrary to what Van Ameringen (1985) expected, the 1986 report on the Canadian automotive industry provided a more optimistic picture of the industry's future (Industry, Science and Technology Canada 1988). After falling in the late 1970s motor vehicle production began to recover in the early 1980s. Vehicle production rose from less the 1.3 million in 1981 to about 1.9 million in 1986. In the same period among the Big Three employment of only assembly workers grew from 55,500 to 64,000. And the number of vehicles produced per employee went from 23.1 to 29.1.

In passages of his text Van Ameringen (1985) focuses on GM, Ford, and Chrysler and implies that the term de-industrialization also describes changes at the level of a

firm. This further complicates what is meant by de-industrialization. Nevertheless, the employment data over the period considered by Van Ameringen (1985) did not support his pessimistic outlook. Employment at the Big Three increased from more than 66 thousand in 1981 to nearly 76 thousand in 1985 (Industry, Science and Technology Canada 1988). At GM Canada, for example, employment continuously grew from 1975 to 1985 except for a dramatic drop in 1982 (Shantz 1988). Thus, even if one were to accept that the term de-industrialization could be applied at the level of a firm, there is a need for a more rigorous examination of the data.

Krahn and Lowe (1988; 1993) also stress plant closures and changes in specific firms in their brief description of de-industrialization in the first and second editions of their book on work and industries in Canada. They point out that the concept of de-industrialization " describes the absolute decline, through plant closures or relocation, of once prominent manufacturing industries; automotive, steel, textiles, clothing, chemicals, and plastics are examples" (Krahn and Lowe 1988, p. 249; 1993, p. 48). They do not provide supporting evidence, but point to an assertion made by Drache and Gertler (1991) that by 1990 dozens of multinationals had considered or implemented plant closures. Interestingly, the edited work by Drache and Gertler (1991) includes a study by Masi (1991) on the steel industry and one by Holmes (1991a) on the auto industry which show that both industries went through a generally successful restructuring in the 1980s. Moreover, in the first edition of their book, Krahn and Lowe (1988) claim that the textile industry, dominated by Canadian capital, "experienced de-industrialization." But their main source, Mahon (1984), said the industry had faced a "threat of de-industrialization."

They point out also that 485 plants shut down in Ontario between 1981 and 1983 for a loss of 83,213 jobs. But the data consisted of only gross losses, covered recession years, and was restricted to Ontario. They confuse the issue further by implying that the relocation of a plant by a multinational firm is a sign of de-industrialization. They remark, without explanation, that a "more typical" case of de-industrialization is the closure in 1983 of a Canadian General Electric plant whose operations were shifted to Brazil, resulting in the layoffs of 429 skilled workers. However, it is questionable that the closure of a plant by a multinational like General Electric is sufficient evidence of de-industrialization.[14]

The concern over plant closures has been especially evident since the signing of the FTA, and various lists of plants that have relocated to the U.S. and Mexico have been published by the critics of the agreement (e.g., Healey 1993; Barlow 1991; Canada Labour Congress 1991; Merrett 1996). However, not all of the establishments closed have been in the manufacturing sector. Moreover, little importance is given to "births" of plants and the expansions and contractions occurring in existing plants. Indeed, there is the paradox that while proponents of the de-industrialization thesis point to anecdotal evidence of U.S. owned branch plant closures that suggest a fall in American direct investment, foreign direct investment dollars entering Canada in the early 1990s were higher than in the 1980s (see Watson 1994a).

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[14] Interestingly, Bluestone and Harrison (1982) also point to the restructuring of General Electric. They however complain that GE increased its worldwide work force in the 1970s by decreasing employment in the U.S.. Krahn and Lowe (1993) note that "Canada has been more vulnerable than the United States to deindustrialization," since American-owned plants make up 40 per cent of its manufacturing industry and produce for a small market. They also remark that corporations may have moved their operations to the U.S. because of lower labour costs.

Output

Supporters of the de-industrialization thesis expect manufacturing output to fall but they give it less attention in their discussions than they give to employment and investments. Drache (1989a) does not even list it as a characteristic of de-industrialization. Instead critics question the thesis mainly because the share of manufacturing in GDP has in general remained steady from the 1960s to the 1980s (e.g., Luciani 1996). However, for Niosi (1988) de-industrialization is the absolute drop in industrial production, and distinguishes it from "industrial (and economic) decline" which he defines as a country's relative drop in world industrial production (see also Bellon and Niosi 1986). Nonetheless, in the early 1990s manufacturing output dropped both in relative and absolute terms. The drop has been perceived as a sign of de-industrialization (Hurtig 1991; see also Jackson 1993).

Luciani (1996) focuses specifically on manufacturing output in his criticism of the de-industrialization thesis. He defines de-industrialization as, "A sustained fall in the share of national income accounted for by the industrial and manufacturing sector" (Luciani 1996, p. 250). He notes that from 1960 until the late 1980s the share of manufacturing in total output remained at about 20 per cent of GDP. In his view the relative drop in manufacturing employment does not imply that the contribution of manufacturing to the economy has fallen, especially since the absolute number of manufacturing jobs increased. He points out that the manufacturing sector has become more capital intensive and requires fewer workers. Luciani (1996, p. 55) writes: "Many

believe that manufacturing in Canada is dead or dying, and that our economy is being deindustrialized. The reality, however, is that manufacturing is just as important to the economy today as it was 30 years ago."

Like Luciani (1996) others point to manufacturing output in questioning the de-industrialization thesis (e.g., Economic Council of Canada 1990). However, they note that there was a small relative decline in output. Masi and Del Balso (1991) contrast the percentage of manufacturing in GDP of the 1960-70 period with the 1970-81 period and find a slight decline occurred over time. The average annual growth rate of manufacturing output was lower in the second decade. They also point out that the average percentage changes in hourly productivity in manufacturing were lower in the 1973-86 period than in the 1960-73 period. Further, the slow down in manufacturing productivity occurred in all advanced industrial countries.

The works by Luciani (1996) and Masi and Del Balso (1991) do not take into account changes in manufacturing output since 1990. Jackson (1993) agrees that de-industrialization did not occur in the 1980s in terms of manufacturing output. But he argues that since the FTA went into effect the manufacturing sector has been facing a "crisis." In the immediate years following the FTA manufacturing output fell, and so did manufacturing employment in both relative and absolute terms. In 1987 and 1988, real manufacturing output grew by 4 per cent and 4.8 per cent, respectively; "a near industrial boom," according to Jackson (1993, p. 106). In the next years until the end of 1992, manufacturing output dropped by nearly 11 per cent. But although Jackson (1993) believes the drops are structural the years examined were influenced by a recession and

longer term data are necessary to determine if the drops are permanent.

Hurtig (1991) too, points out that between 1988 and 1991 the share of manufacturing in GDP dropped in Canada. And he notes that in 1989 Canada had the lowest yearly percentage change in industrial production among thirteen industrial countries. However, Hurtig (1991) selects and interprets the data in a manner to leave the impression that the FTA is mainly to blame for many problems facing Canada. He fails to recognize that correlation is not the same as causation. It is also quite a stretch of one's imagination to see such data as signs that Canada is "disintegrating" and de-industrializing. He dismisses the fact that the data were muddled by a recession, and that it takes far longer than one or two years to determine the impact of the FTA. For example, the volume of shipments in manufacturing from February 1991 to February 1994 grew 9.6 per cent, but in the first six months of 1994 the value of shipments grew 14 per cent, which The Globe and Mail (October 19, 1994, p. B-10) described as an "explosion in factory output." As with employment, should one now conclude that the "explosion" in output is due to the FTA and the NAFTA?

Trade Performance

Over the years proponents of the de-industrialization thesis have placed increasing emphasis on manufacturing trade performance. As already noted, more recently they have focussed on the FTA and the NAFTA which they accuse of costing Canada jobs, among other factors. The main measure of de-industrialization advanced

with regard to trade is a deterioration in exports and increases in imports. The reasons would seem quite obvious: rising imports and declining exports result in plant closures and workers laid off.

Drache (1989a) lists the "erosion of export-performance" and "significant import penetration of the domestic market" as two characteristics of de-industrialization. He does not explain why this should be so, and he is less than rigorous in his use of the data. He notes that in the 1980s Canada imported 36 per cent of all manufactured goods while the U.S. only imported 10 per cent. It is unclear why he compares Canada to the U.S., especially since imports and exports have long represented a far smaller proportion of GDP in the U.S. than in Canada. Nevertheless, he does not consider the historical trend in Canada to determine if import penetration of manufactured goods increased and export performance eroded.

Trade data, however, show that both "export orientation" and "import penetration" in manufactured goods from 1973 to 1986 increased for the sector as a whole and for most manufacturing industries (Department of Regional Industrial Expansion 1988). In addition, Canada's involvement in world trade expanded in the 1980s. Canada's proportion of world merchandise trade ranked tenth largest in 1980 but eight largest in 1990 for exports as well as imports (de Souza and Stutz 1994). It is also worth noting that at least since Canada became a founding member of GATT in 1947, its tariffs, and those of industrialized countries, have been rolled back. By the 1980s tariffs in Canada and other industrialized countries fell to historically low levels. Further, the overall increase in imports has been accompanied by an overall increase in exports

(Lipsey 1995).

Drache (1989a) remarks that the drops in "tariffs" on goods entering Canada have resulted in job losses in "key industries." In his view the U.S. acted differently by increasing the percentage of manufactured goods protected by tariffs from 1980 to 1983, while in Canada 85 per cent of goods entering in 1987 were tariff free. But such data are highly questionable. He is unclear which are the "key industries," provides no data that show that tariff reductions result in job losses, and neglects the impact of non-tariff barriers. His cited data contrasting the tariffs of the U.S. and Canada are not particularly helpful. The Canadian data was for 1987 and included all goods, while the U.S. data was for 1980 to 1983 which included recessionary years and only referred to manufactured goods. It is also of interest to note that in the early 1980s tariffs on goods averaged less than 5 per cent in the U.S. but about 10 per cent in Canada (see Lipsey 1995).

Data published by the Department of Regional Industrial Expansion (1988) on the average rates of tariff protection in 1987 leave a different impression than the one Drache (1989a) promotes. The data show that in Canada and the U.S. the average rates of tariffs varied across manufacturing industries and that the same manufacturing industries tend to be highly protected in both countries. Also in 1987 the average rate of tariff protection of total manufacturing in Canada was 5.2 per cent and in the U.S. it was 3.2 per cent. In addition, when the average rate of tariff protection of manufacturing industries is contrasted with their employment levels, the more protected industries have had employment losses and less protected industries have had employment gains.

For Matthews (1985) the overriding measure of de-industrialization is the trade

performance of the manufacturing sector. He describes de-industrialization as the "net shrinkage of the manufacturing sector relative to other sectors -- because of its experience in the international marketplace" (Matthews 1985: p. 38). He found that in the 1960s and 1970s the manufacturing sector on the whole faced a trade deficit. However, the performance was uneven with some industries facing growing deficits and others large surpluses. Foreign producers increased their penetration into the Canadian market, but Canadian manufacturers increased their presence in foreign markets. And Canadian industries that gained shares in the domestic market also established a presence in export markets. Moreover, Canada's share of the total manufactured goods exported from the developed economies remained generally stable from 1960 to 1981. Therefore, Matthews (1985) believes Canada is not de-industrializing. He gives little or no attention to other indicators, but concludes that whatever the changes in manufacturing employment might suggest, at least until the start of the 1981-82 recession, the trade data show that Canada is not de-industrializing (see also Harris 1985).

While most proponents of the de-industrialization thesis stress developments in branch plants, Mahon (1984) remarks that the "threat of deindustrialization" in Canada was first noticeable in the textile sector in which foreign-owned branch plants did not dominate, and that it is largely due to trade. She describes the "threat of deindustrialization" as "the progressive erosion of the domestic manufacturing base as a result of the inability of domestic forces to respond effectively to challenges emanating

from the international environment" (Mahon 1984, p. 3).[15] She neither elaborates on the meaning of "progressive erosion" nor points to the necessary trade indicators that would show that the textile industry was threatened, or was one of the first to be threatened, by de-industrialization. Mahon (1984) asserts that industries are moving out of Canada and into the "low-wage economies in the Third World" and giving way to a "new international division of labour." But she offers no evidence. It is however worth noting, as will be shown in a later chapter, that while Canada does some of its trade with low-wage countries, the bulk of its trade is with the U.S. and other leading industrialized countries. Mahon (1984) is also confusing about the stage of de-industrialization Canada is in. She describes Canada as "undergoing" as well as "will undergo" the process of de-industrialization (Mahon 1985b, p. 221 and 223).

More recently proponents of the de-industrialization thesis have turned their attention to the perceived impact of the FTA and the NAFTA. But it is of interest to note that even before the signing of the FTA in late 1987, critics argued that such free trade agreements would de-industrialize Canada (see, e.g., Drache and Cameron 1985). They leave the impression that they hold to the general presumption that free trade is bad economic policy, whatever the rest of the world is doing.

The FTA and the NAFTA are blamed for creating opportunities that encourage firms to close plants, especially branch plants, in Canada and move them to the U.S. largely because of taxes, labour costs, and rates of unionization. As in the earlier

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[15] Mahon (1984, p. 3) adds: "At stake are the quantity, quality, and location of future jobs, the size (and distribution) of the national income, and even the very survival of the Canadian state in the face of continental and regional pressures."

de-industrialization thesis of the 1970s, but for different reasons, many believe Canadian workers are either losing their jobs or have to accept lower wages, and Canada has to rely strongly on its exports of natural resources. They point to plant closures in Canada and cases of Canadian businesses opening plants in the U.S. and Mexico. The cases are however restricted to the years since the implementation of the FTA in January 1989. But many of the perceived advantages for moving plants to the U.S., as well as Mexico, have long existed. Moreover, Canadian investors have long had a presence in the U.S..

Nonetheless, as Barlow (1991) admits, accurate data on plant closures do not exist, although she believes that in recent years plant closures have been accelerating the de-industrialization of Canada. But she also acknowledges that in 1990 non-Canadians accounted for the start of 213 new businesses and the takeover of 683 companies. Regardless of the economic sector(s) of the plants, the data show that new plants were opened and foreign investors continued to be attracted to Canada. The question is not whether investments were lacking, but whether the pace of U.S. investments in Canada had slowed down and that of Canadian investments to the U.S. grown.

Declines of U.S. investments in Canada did not have to necessarily start with the FTA. Tariff reductions on Canadian and American goods have been occurring at least since the GATT round of the late 1940s. According to Niosi (1988) the freer trade has over time resulted in overall U.S. investments to decline in Canada.[16] Concomitantly,

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[16] The drop in U.S. investments has contributed to what Niosi (1988; see also Bellon and Niosi 1987) calls the "economic and industrial decline" of Canada. As pointed out earlier, he distinguishes the decline from the phenomenon of de-industrialization. According to Niosi (1988) the American economy is declining and since Canada has strong ties with the U.S. economy, Canada too has faced a decline.

overall Canadian investments in the U.S. have grown. In the late 1970s Starks (1978, p. 52-53) remarked that over the years the number of Canadian firms and the amount of money invested in the U.S. had "risen considerably." Moreover, Canadian direct investments in the U.S. grew by more than 56 per cent between 1982 and 1986 (Howlett and Ramesh 1992). Indeed, before the FTA was implemented, Niosi (1988, p. 16) pointed to data which showed that Canadian investments in the U.S. had grown "at a rapid pace, much quicker than the U.S. investment in Canada." Thus, Canadian firms did not have to wait for the FTA or the NAFTA to move investments to the U.S., but the agreements may have speeded the process and encouraged more firms to do the same.

It is still too early, and certainly not an easy task, to estimate the full impact of the FTA and especially the NAFTA. However, there are a few points of interest to our discussion: foreign direct investments in Canada were higher in the early 1990s than in the 1980s; since 1989 Canada and the U.S. have had job losses in virtually the same industries; and imports from the U.S. into Canada and exports from Canada to the U.S. have been particularly strong in industries that have been liberalized (Watson 1994b; Del Balso and Masi 1996).

Conclusion

In Canada, as in the U.S. and the U.K., there is confusion over the definition and operational measurements of de-industrialization. As Table 3.1 illustrates there is no

consensus on the appropriate indicators, the time frame, and levels and units of analysis. The evidence provided by supporters of the thesis is weak. Limited and questionable data are usually presented to simply reinforce a predetermined belief in the phenomenon, without first demonstrating that it exists. The data are often restricted to a time frame that includes recessionary years, but the downturn is generally ignored.

Notwithstanding that the term de-industrialization is not well defined, the de-industrialization literature in Canada generally expects either one or all of the following to have happened: loss of manufacturing employment; decline in manufacturing investments; decline in manufacturing output; fall in manufacturing exports; and increase in manufacturing imports. The thesis also rests on the premise that manufacturing is crucial for the growth of the economy and jobs. Thus before examining the empirical evidence, it is essential to explore why manufacturing matters, and thereby why the de-industrialization thesis deserves closer scrutiny.

Table 3.1: Selected definitions and measures of de-industrialization in Canada

Author(s)	Definition	Main Indicator(s) -Measure(s)	Main level & Time Span	Main Data Examined
J. Laxer (1973) Laxer & Jantzi (1973)	"quantitative and qualitative undermining of the manufacturing sector"	*Investment & Employment*: plant closures; gross job losses in manufacturing plants	Canada 1966-72	employment in Canadian and American owned manufacturing plants in Ontario
Moore & Wells (1977)	No stated definition; imply manufacturing sector is contracting	*Employment & Output:* drop in the share of manufacturing in total employment; drop in the absolute number of jobs in manufacturing; drop in the share of manufacturing in GDP	Canada 1963-72	manufacturing employment and output in Canada and other advanced countries
Matthews (1985)	"...net shrinkage of the manufacturing sector relative to other sectors – because of its experience in the international marketplace"	*Trade*: import penetration of manufactured goods; export orientation of manufactured good; share of world markets of manufactured goods	Canada 1960-81	Import penetration & export orientation of manufactured goods; Canada's share of world markets of manufactured goods
Gertler (1985)	Relocation of production facilities and drop of manufacturing in total employment	*Employment, Investment, and Output*: relative and absolute drops in manufacturing employment; growth rates of manufacturing; annual levels of manufacturing investments	Regional (Toronto) 1971-82	share of manufacturing in total employment; absolute number of jobs in manufacturing; growth rates of manufacturing; annual levels of manufacturing investments
Muszynski (1985)	No stated definition; implies a relocation of production facilities accompanied by plant closures and "a major loss of manufacturing jobs"	*Investment & Employment:* absolute loss of manufacturing jobs; plant closures	Regional (Toronto) 1976-84; and January 1981 to March 1984	absolute loss of manufacturing jobs and plant closures in Metropolitan Toronto

Table 3.1: Selected definitions and measures of de-industrialization in Canada (Continued)

Author(s)	Definition	Main Indicator(s) -Measure(s)	Main level & Time Span	Main Data Examined
Van Ameringen (1985)	No stated definition; implies shrinkage of manufacturing industry (e.g., auto industry)	*Investment & Employment*: plant closures; job losses from plant closures	Industry and firm early 1980s	plant closures in auto industry and accompanying job losses
Drache (1989a)	"...either a process of relative job loss in industrial employment or the systematic erosion of investments in a country's industrial capacity."	*Employment, Investment, and Trade*: drop in the share of manufacturing in total employment; rise in structural unemployment; rise in "poorer quality service jobs"; erosion of export performance; rise in import penetration	Canada first half of 1980s	manufacturing employment, unemployment, and import penetration in Canada & U.S.
Hurtig (1991)	No stated definition; implies overall loss of manufacturing sector	*Employment, Output, and Investment*: gross loss of manufacturing jobs; relative drop in manufacturing employment; drop in the share of manufacturing in GDP; drop in capacity utilization in manufacturing	Canada 1987-90	gross loss of manufacturing jobs; share of manufacturing in total employment; share of manufacturing in GDP; capacity utilization in manufacturing
Masi and Del Balso (1991)	"...implies that the manufacturing sector has been contracting..."	*Output, Employment, Investment, and Trade*: drops in the share of manufacturing in GDP and in average annual rates of manufacturing productivity; relative and absolute declines in manufacturing employment; rising government net debt as a percentage of GDP; drops in capacity utilization rates in manufacturing; rising manufacturing trade deficit	Canada (and Italy) 1960-86	share of manufacturing in GDP; average annual rates in manufacturing productivity; relative and absolute changes in manufacturing employment; government net debt as a percentage of GDP; capacity utilization rates in manufacturing; deficit in manufacturing trade

Table 3.1: Selected definitions and measures of de-industrialization in Canada (Continued)

Author(s)	Definition	Main Indicator(s) -Measure(s)	Main level & Time Span	Main Data Examined
Jackson (1993)	No stated definition: implies contraction of manufacturing sector	*Employment, Output, Trade, and Investment*: relative and absolute drops in manufacturing employment; drop in the share of manufacturing in GDP; real value added in manufacturing; labour productivity in manufacturing; export orientation and import penetration of manufactured goods; exports as a share of nominal GDP; merchandise trade; investment in machinery and equipment in manufacturing total manufacturing investment; plant closures	Canada 1980s and 1989-92	share of manufacturing in total employment; absolute number of jobs in manufacturing; share of manufacturing in GDP; real value added in manufacturing labour productivity in manufacturing; exports as a share of nominal GDP; merchandise trade with U.S.; investment in machinery and equipment in manufacturing; total manufacturing investment
Luciani (1996)	"A sustained fall in the share of national income accounted for by the industrial and manufacturing sector."	*Output*: drop in the share of manufacturing in GDP	Canada 1960-90 1980s	share of manufacturing in GDP and total employment; number of manufacturing jobs
Merrett (1996)	No stated definition: implies overall loss of manufacturing sector	*Employment, Output, Trade, and Investment*: drop in rate of growth in RGDP; decline in manufacturing output; decline in domestic investments; decline in capacity utilization; increase in plant closures and resulting gross loss of jobs; weakened trade performance, especially with the U.S.	Canada 1984-94	growth of total RGDP; manufacturing output; net jobs created in manufacturing and the labour force; domestic investments; capacity utilization; plant closures and gross loss of jobs; merchandise trade with U.S.; compares changes in Canada with U.S. on capacity utilization production, and growth in RGDP

Chapter Four

Manufacturing Matters

The concern over de-industrialization and the justification for giving the thesis much attention rests largely on the premise that manufacturing matters. The aim of this chapter is to examine why manufacturing matters. It focuses on two broad explanations: (1) the contribution of manufacturing to the growth of the economy in general with special reference to the Canadian case; and (2) the historical importance of the manufacturing sector for Canada's economy. The chapter ends with a brief justification of why the de-industrialization thesis deserves so much attention, and provides a summary of the main propositions derived from the thesis that will be further examined in subsequent chapters.

Why Manufacturing Matters

To state that "manufacturing matters" for economic growth, begs the question of "by how much?" Indeed, the phrase "manufacturing matters" has most often been used simply as a rhetorical device to engage the debate on de-industrialization. This assertion is often made without reference to empirical evidence. On rare occasions, some numbers are presented in support of this claim. While recognising that an answer to "by how much" is the decisive question, it is nonetheless useful to explore the reasons that have been put forward to sustain the hypothesis that "manufacturing matters."

Manufacturing has certain distinctive characteristics that make it essential to economic growth. Its contribution to the economy extends beyond the official GDP and labour force figures. There exist various interrelated factors of how manufacturing contributes to economic growth (see, among others, de Souza and Stutz 1994; Crane 1992; Hall 1991; Canadian Manufacturers' Association 1989; Dertouzos, Lester, and Solow 1989; Cohen and Zysman 1987; Eatwell 1984). In particular:

(1) the demand for manufactured goods is continuous and the sector is partly able to create its own demand;

(2) technological innovations in manufacturing help maintain and increase demand;

(3) manufactured products help generate higher productivity in all sectors of the economy;

(4) world demand in manufactured goods keep expanding and manufacturing can help support a positive trade balance;

(5) there exist linkages and interdependence, directly and indirectly, between manufacturing and other sectors of the economy

In what follows I outline each of these areas separately, but point out important linkages among them.

Continuous Demand

The demand for manufactured goods appears to be never ending. A cursory examination of the products in one's household today reveals that many of them have only become standard fixtures within the last decade. This is evident with the many home leisure products now found in Canadian households which in turn create demand for other products. For example, the videocassette recorder, which expands the television medium by allowing one to record television programs or view rented movies and requires, of course, a videocassette, was in more than 82 per cent of households in 1995 compared to about 23 per cent of households in 1985. Another example is the compact disc player which was in more than 47 per cent of households in 1995 compared to only 8 per cent of households in 1988. There has also been a growing demand for time saving and convenience items. Microwave ovens were in more than 83 per cent of households in 1995 compared to about 23 per cent a decade earlier. In addition, certain items seem to have become so essential that households now have more

than one. For example, in 1995 nearly 38 per cent of households had three or more phones, compared to about 16 per cent in 1985. Moreover, there is a constant demand for the improved and newer model of the items. In part, it may explain why in 1995 nearly half the households in Canada had two or more colour televisions, compared to about 22 per cent in 1985 (Statistics Canada, Catalogue No.13-218, 1996).

Not only is there a continuous demand for consumer products, but the manufacturing sector and other sectors are purchasers of manufactured goods. The need for manufactured goods can be illustrated by the case of the agricultural sector in Canada. Agriculture has remained a major sector of the Canadian economy, in spite of the drop in agricultural employment. About one out of three workers was employed in agriculture in 1911 compared to about one out of thirty in 1991. Yet the drop in agricultural employment has not elicited the same level of heightened concern as has the loss of manufacturing employment; or stated differently, there has been little concern for "de-agriculturalization." This can be partly explained by the boost in agricultural productivity. There has been a rise in the amount of improved farmland and rise in productivity (see Furniss 1995). While a farmer in the mid-1850s produced enough to feed four people, nowadays a farmer produces enough to feed 78 people. This has become possible in large part because of manufacturing, since farms rely heavily on inputs from manufacturing. And as Statistics Canada (Catalogue No. 11-402, 1993, p. 458) notes: "The linkages between farm business and non-farm sector are . . . assuming increased importance."

Investments in farm machinery in the 1951-81 period rose from 3.8 billion dollars to 6.9 billion dollars. In terms of machinery to land ratio in constant dollars, investments

in machinery grew from 96 dollars a hectare in 1951 to 151 dollars in 1981 (Furniss 1995). Aside from machinery other inputs have helped boost productivity. The 1991 Census of Agriculture found that chemical inputs as fertilizers and herbicides are used on a large proportion of farms; 59 per cent were using commercial fertilizers and 49 per cent herbicides in 1990 (Statistics Canada, Catalogue No. 96-303-SPE, 1993).

Thus there is a continuous demand for manufactured products by the agricultural sector, and these products have contributed to increasing productivity. The world demand for manufacturing products that increase food production is likely to grow. The concern for the environment and the degradation of land, accompanied by the rise in population, means that food supply needs to expand in a way that it relies on limited agricultural land and does little damage to the natural environment.

Although the Canadian economy is highly reliant on the natural resources, there exists a strong manufacturing component in the importance of resources. Developments in manufacturing have created demand for power and raw material and increased the productivity of natural resources (see Baumol and Blachman 1993). The demand for gasoline, for instance, has in part grown with the increasing use of automobiles. Many manufacturing industries consist of processing resource-based commodities, as in the case of the pulp and paper industry, primary metal industry, and petroleum and coal industry. And the resource industries have relied on manufactured goods to increase productivity. Mining in Canada, for example, has become less labour intensive and more productive largely because of improvements in equipment and mechanization of tasks

(see Patching 1995).

Moreover, natural resources are finite, as with minerals and rocks; once removed and used new deposits must be found. Therefore, there is a constant effort to increase the stock of available natural resources, and this is partly done with the contribution from manufacturing. One effort is to reduce waste in the extraction and processing of resources. New machinery for example may reduce the waste in the mining and smelting of iron ore, and consequently increases the productivity of the available supply. Another effort is that of substituting, at least partially, the natural resources, thereby dropping, or even eliminating, the demand.

The stock of available natural resources is also increased through improvements in manufactured products. Improvements in automotive technology, for instance, such as lighter cars, better aerodynamics, more efficient engines and parts, have increased the number of kilometres to the litre, and reduced the demand for oil by the individual car. Recycling, is also a popular method of limiting the demand for natural resources, but it is mainly a manufacturing activity. The techniques of recycling rely heavily on manufacturing technology as is the case of recycled paper in the pulp and paper industries and scrap iron in the mini-mills of the steel industry. Thus, the stocks of natural resources are continually expanded in part because of technological developments in manufacturing (see Baumol and Blackman 1993).

Because of the growth of the service sector, it is tempting to ignore the importance of manufacturing. But as with other sectors, the service sector requires manufactured products that allow it to exist and improve efficiency and productivity. An

office, for example, creates demand for, and depends on, inputs from manufacturing, from the chair one sits on to the phone one uses to communicate with clients to the computer to help manage the office. And because of improvements in these inputs, such as the upgrades in the hardware and software of computers, the demand remains constant.

The demand for manufactured goods of course also exists among manufacturing industries. The inputs required to make the final product, including particular products and machinery, are themselves manufactured goods. For example, to assemble an automobile alternator a manufacturer buys from suppliers many of the 100 or so parts that go in the unit. The alternator in turn becomes one of thousands of parts required in assembling the vehicle (see Womack, Jones, and Roos 1990). And there is the need for specific machinery to make it all happen.

Technological Innovations

The fact that the demand for manufactured goods appears to be never ending has become especially evident since the industrial revolution -- there is no boundary to technical innovations, and these innovations are mainly in manufacturing. The dramatic changes in society this century have in large part been technological developments in manufacturing. And these developments have in turn stimulated more demand for manufactured goods. Consider the impact of the automobile and aircraft on transportation and the telephone on communication at the turn of the century, the jet aircraft and television in the 1950s, or the manufacturing of new medications throughout

the century. More recently the computer has gained widespread adaptation to the point that it is transforming industrial society and the nature of work (see Aronowoitz and DiFazio 1995; Rifkin 1995; Hedley 1992; Golob and Brus 1990; Smith 1989). The computer has posed new demands throughout the industries whether it is the replacement of machines, the reorganization of production, or the retraining of personnel. And the computer has also led to the development of a variety of new products and thereby created new demand. Moreover, the computer has helped generate higher productivity, in all sectors of the economy.

It is virtually impossible to initially foresee the full extent of an innovation. What at first might be seen as a minor development may over time have ramifications on industries, the workplace and society beyond anyone's expectation. Who could have predicted that the computer would have evolved from a 30-ton marvel occupying 15,000 square feet after WWII to today's far more powerful ubiquitous desktop computers or laptops that can fit in a briefcase (see Golob and Brus 1990)? Who could have imagined the progress in the development of the integrated circuits and the accompanying changes in the electronics industry? And who could have known the computer would have changed the way goods are designed and produced, reshaped the operations of firms, and lead to sweeping changes in offices and even farms?

The changes occurring from innovations in manufacturing show that the sector has also the means of creating its own demand. Manufacturing "embodies a peculiar internal dynamic, whereby change promotes demand, which in turn promotes change" (Eatwell 1984, p. 52). The computer again is a useful example. The success of the

computer has created demand for components, as well as for products such as printers, modems, CD-ROMs and even specific furniture. In addition, there is a constant effort to achieve more breakthroughs which can result in demand for newer or improved products and the discontinuity of older products. Computer "hardware" and "software," for example, have been constantly changing in the past years.

There exists a constant pressure on manufacturing to develop innovations and in turn maintain continual demand for the manufactured goods. Take the case of the automobile. The car today is designed for fuel economy and requires more reliable engines and parts. The causes of the innovations are numerous, including the rise in oil prices in the past, the concern for the environment, and competitiveness. The result is that cars today contain far different products than cars in the recent past, and thus the demand for the type and quality of parts needed has changed. Indeed, nowadays they are filled with microprocessors!

Research and development (R&D) is essential to developing new products and to achieve higher productivity. And manufacturers far outspend on R&D than non-manufacturers. Among advanced industrialized countries a large proportion of R&D expenditures are in the manufacturing sector (see, e.g., Advisory Council on Adjustment 1989). In Canada in 1988, R&D expenditures per employee in manufacturing were 1,500 dollars compared to only 150 dollars per employee spent by non-manufacturers (Canadian Manufacturers' Association 1989).

Higher Productivity

A consequence of many of the innovations in manufacturing is their ability to increase productivity in both manufacturing and other sectors. As noted earlier, over the years agriculture has shown a tremendous rise in productivity in large part because of the manufactured goods used on the farm, while the number of workers dropped. And there seems to be no end in the efforts to boost productivity, again thanks to manufacturing technology. In summarizing some results of the 1991 Census of Agriculture, Statistics Canada (Catalogue No. 11-402, 1993, p. 452) noted "Today's farmer may have one hand on a computer and one on the wheel of a 100-or-more horsepower's worth of tractor."[1]

Unlike most other sectors, the service sector has various industries, such as personal services which have limited potential in achieving large increases in productivity. For example, in the 1982-86 period the percentage change in GDP per employment hour in manufacturing was 32 per cent, and was only surpassed by forestry and mining. In contrast, productivity grew by 15 per cent in finance, insurance, and real estate services and 11 per cent in community, business, and personal services (Canadian Manufacturing Association 1989). Productivity growth in services is closely tied to manufacturing, as is obvious in transportation and communication. Innovations developed in services are generally in terms of structure, as with the popularity of

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[1] However, the actual percentage of farmers that use computers is less than what the statement suggests. The 1991 Census of Agriculture found that 11 per cent of farms were using computers to manage the business, but this was nearly four times the number in 1986. The Census also found that the number of four-wheel drive tractors had increased by a third since 1986, and that more than half of these had 100-or-more horsepower (see Statistics Canada, Catalogue No. 96-303-SPE, 1993).

megastores or extending shopping hours. The structural changes usually require inputs from manufacturing, such as computer, transportation, and communication technology. Hence despite the importance gained by the service sector in the domestic economy, manufacturing remains an essential contributor to economic growth. This is especially evident in the growth of international trade.

World Trade

In the early 1990s manufacturing alone accounted for 60 per cent of world exports by value. In 1990 world exports and imports in commercial services totalled 1,600 billion U.S. dollars while exports and imports in merchandise trade totalled 7,093 billion U.S. dollars (de Souza and Stutz 1994). The contrast in trade between manufacturing and services is mainly due to the fact that only a small percentage of service output can be traded or is traded. In Canada, for example, an estimated 99 per cent of manufactured products and 97 per cent of primary sector products are likely to be in "traded sectors," that is, in industries exposed to international markets, including competition from imports. In contrast, only 3 per cent of service businesses are traded, such as tourism and consulting engineering services. And some service industries are nearly totally non-traded, such as government and education services (see Canadian Manufacturers' Association 1989).

With exports accounting for about one quarter of its GDP, Canada is closely tied into the international market (see Porter 1991). It is especially tied to the U.S. market which accounts for most of its exports and imports. The composition of its exports is

largely made up of merchandise trade. And while Canada has a trade surplus in merchandise trade it has a trade deficit in services. In 1990 Canada was the eight largest trading nation in merchandise exports and imports. Moreover, the composition of its merchandise trade consisted of 131.7 billion U.S. dollars in exports and 124.4 billion U.S. dollars in imports. In contrast, Canada's world trade in commercial services was far smaller and was in deficit with 15.1 billion U.S. dollars in exports and 22.7 billion U.S. dollars in imports (de Souza and Stutz 1994). Consequently, manufacturing also matters for Canada in helping sustain a positive trade balance. Moreover, the existence of a high level of foreign ownership in Canada is likely to contribute to the service trade deficit, with subsidiaries paying their foreign parents for such services as engineer consulting, training, and so on.

The success of manufacturing in the international markets, not only earns Canada export dollars to pay for imports, but can help reduce its foreign debt. Crane (1992, p. 251) argues that "Canada needs a healthy manufacturing industry" since no other sector is able to generate increased exports that can help pay its foreign debt. In his view " . . . manufacturing matters because a declining manufacturing sector would increase Canadian manufacturing imports and Canada's chronic balance of payments deficit" (Crane 1992, p. 185). He adds that a more efficient manufacturing sector that is able to achieve bigger trade surpluses is Canada's best hope of breaking out of its growing foreign debt.

The importance of manufacturing for economic growth is also evident on the international scene as in the case of Japan. The rapid emergence of Japan since the

1960s in the world economy has been in large part possible because of its exports of manufactured goods, particularly the automobile. The Japanese automobile manufacturers have made spectacular gains since 1960 when they were producing about 1 per cent of world production to the early 1980s when they accounted for one quarter of world production (Ballance 1987). From 1960 to 1990 Japanese auto production rose by 5000 per cent and the Japanese captured about 26 per cent of the automobile and truck market in the U.S. (de Souza and Stutz 1994). Thus Japan went from having an economy that was 20 per cent of Canada's GNP in 1960 to becoming the third largest industrial economy in the world. In addition, its success in manufacturing is closely linked to the growth in the size of its banks. In 1992, for example, the eight largest banks in terms of total assets were all Japanese. Among the 25 largest banks in the world that year, sixteen were Japanese (Colombo 1994). It is therefore not surprising that according to MITI, manufacturing is of prime importance "in supporting the technological innovation that is essential for driving Japan's progress." (cited in Crane 1992, p.96).

Linkages

The importance of manufacturing for the economy exists through its linkages and interdependence with other sectors also in terms of its own demand for their output. Manufacturing, generates demand for such services as transportation, communications, business travel, insurance, finance and so on. The design and building of manufacturing plants link it closely to construction. And there are the obvious links to the primary sectors which provide manufacturing with the needed raw materials.

The expansion of the service sector in Canada may have encouraged the impression that services drive most of the economy. But a study by the Canadian Manufacturers' Association (1989) that considered the linkages and interdependence between manufacturing and other sectors shows otherwise. In 1985 Canada's total output consisted of 47 per cent of goods-producing output and 53 per cent service output. However, nine percentage points of service output were destined for goods producers. Consequently, an estimated 56 per cent of total output was driven by manufacturing and other goods-producing industries. Further, certain services are closely linked to manufacturing and goods production in terms of their output. The study found the following proportions of service industry outputs that were directed to goods-producing industries: 51 per cent of utilities; 33 per cent of community, business and personal services; 30 per cent of communications; 17 per cent of finance, insurance, and real estate; and 16 per cent of transportation and storage.

The linkages and interdependence between manufacturing and services result in the existence of various service jobs. For example in Canada, in 1985 while 31 distillers employed more than 2,500 workers, another 10,000 jobs were estimated to be tied to them in the supplying industries (Kendall 1995). Likewise the brewery industry that year employed about 20 thousand persons, but another 169 thousand jobs counted on them through distribution, production, and sales of beer (Lavery 1995). The impact on employment from the linkages between the two sectors is apparent in a study carried out by the Canadian Manufacturers' Association (1989). The study focussed on five member firms in 1987 in different manufacturing industries to determine the type of services they

purchased and the number of service jobs they generated. The different firms ranged from 200 to 45,000 employees in size. They purchased services that ranged from one million dollars to 1,390 million dollars purchased by a motor vehicle manufacturer. The results show an extensive array of services were purchased, from advertising to warranties. The number of jobs generated from the services purchased ranged from 15 to 17,208, depending on the firm. It is also worth noting that the demands for services also exist through the manufacturing workforce; manufacturing workers too, require health care, personal services, contribute to pension funds, and so on. Therefore, if manufacturing goes the demand for services drops and many service jobs are eliminated. Many service firms, generally small ones, exist to provide specialized services to manufacturing firms.

The linkages and interdependence between manufacturing and services also exist by manufacturers increasingly contracting out tasks previously done in house. The study by the Canadian Manufacturers' Association cited earlier found, for instance, that a metal manufacturer with a long history of contracting out, had increased its service purchases from a few million a year in the past to recently more than 100 million dollars. And in his analysis of the growth of services in the Canadian economy, Philip Cross (1988, p. 38) of Statistics Canada notes: "The strong growth of output and employment in the business services industry in the past decade provides some corroborating evidence that goods-producing firms now purchase some services (professional skills such as computing, lawyers, or strategic advice) which were formerly done by permanent employees in the firm."

This raises questions about how the official data has categorized establishments and workers by industries. Some of the drops in manufacturing may be a statistical illusion (see also Masi 1989; Cohen and Zysman 1987). Establishments are categorized in an industry according to the Standard Industrial Classification (SIC) which classifies the establishment in an industry on the bases of its end product. The workers in the establishments are in turn categorized in the same industry, regardless of their occupations. Maintenance workers employed by a manufacturing establishment are categorized as in manufacturing. Workers employed by a contractor and whose tasks include doing maintenance at the manufacturing establishment are categorized as in the service sector. Thus the restructuring of a large manufacturing firm whereby activities formerly conducted in-house are contracted out, reduces the number of workers employed in manufacturing. Similarly, the restructuring of a manufacturing firm can result in placing divisions, say the engineering, accounting, and marketing departments, in an establishment whose principal activities are services. Consequently that establishment and the workers in it, are categorized as in the service sector and not in manufacturing. If instead the divisions were in the same establishment in which the main activity was manufacturing, those divisions and their workers would be categorized in the manufacturing sector. If indeed the manufacturing firms have carried out such restructuring as suggested in the popular press, then some of the declines in manufacturing are more on paper than in reality. It is surely of little concern to engineers, for example, if official data categorizes them in the service or manufacturing industry.

Moreover, there exist activities in which both a service and manufacturing activity are both a main part of the establishment, and thereby pose problems in the categorization of the establishments. A retail store, for example, may assemble computers in one room and sell them in another. Whatever, the official categorization of such an establishment, it has both a manufacturing and service component.

The contracting out of former in-house activities, the existence of service establishments that are part of manufacturing firms, and the fine line that can exist between categorizing certain establishments as in one or another economic sector, point to the importance of linkages and interdependence between manufacturing and other sectors.

Thus, manufacturing matters. Its ability to increase productivity and create demand, its importance in international trade, and linkages and interdependence with other sectors, makes it essential for, if not the engine of, economic growth, at least in industrialized societies. The loss of manufacturing would therefore have negative consequences, including direct and indirect loss of jobs, higher imports, and possibly a drop in the quality of life (see Crane 1992; Cohen and Zysman 1987; Eatwell 1984).

Manufacturing in Canada

One may be tempted to argue that in the case of Canada manufacturing matters little, since Canada has mainly achieved its economic growth because of its vast supplies

of natural resources, including forest products, iron ore, metals, and natural gas. Indeed, the popularized image of Canadians, at least to themselves, is that of "hewers of wood and drawers of water." Whenever manufacturing is discussed, it is usually in terms of its weaknesses, such as the loss of jobs and the high level of foreign ownership. Too often forgotten is that Canada is the seventh most industrialized country in the world, and has long had a manufacturing sector which ranked among the largest in the world. This in itself is a fundamental reason of why manufacturing matters for Canada. This section briefly examines the aggregate growth of manufacturing in the past up to the 1960s and early 1970s when many expressed concern over the high level of foreign ownership in manufacturing, made dire predictions about its future, and some put forward the de-industrialization thesis.

Although the early development of Canada was largely based on the exploitation of its natural resources, even before Confederation manufacturing accounted for a large share of economic activity. In 1851 manufacturing comprised an estimated 18 per cent of the GNP, a proportion about equal to that of today (Howlett and Ramesh 1993). In his study on the history of Canadian business, Bliss (1987, p.245) remarks that " . . . the speed and breadth of the development of domestic manufacturing by the Confederation years is surprising."

By 1870 Canada was by one study's estimates the world's eight largest manufacturing power (see G. Laxer 1989). Moreover, Canadian manufacturers dominated the domestic market (Bliss 1987). Manufacturing firms were generally small and produced for a local market with a few large firms mainly in transportation

equipment, agricultural machinery, and textile production (Marr and Paterson 1980). However, Canada was still largely agrarian with about 50 per cent of the labour force in agricultural pursuits (Firestone 1969). But by then there were already about 182 thousand workers employed in the manufacturing sector on the basis of the 1948 standard industrial classification -- of which more than 104 thousand were employed in leather, wood, or iron and steel industries (see Table 4.1).

An interest in protecting and developing manufacturing industries was also already evident before Confederation. The Cayley-Galt Tariff of 1858-59 was in part intended to protect Canadian manufacturing from imports. At about the same time an Association for the Promotion of Canadian Industry was set up (Marr and Paterson 1980).

Following Confederation governments continued to encourage the expansion and protection of Canada's industrial base. And, especially with the financial panic of 1873, there were concerns that Canadian manufacturing was in difficulty because of increases in American and British imports and failures among Canadian manufacturers (see Bliss 1987). Some called for higher tariffs to protect Canadian manufacturing, including the Ontario Manufacturers' Association created in 1874 and later renamed the Canadian Manufacturers Association. More important was the "National Policy" proposed by Sir John A. Macdonald for the 1879 election, which recommended higher tariffs on manufactured products to maintain as well as stimulate Canadian manufacturing growth

Table 4.1: Selected statistics on manufacturing, 1870-1970

	Number of Establishments	Total Number of Employees	Census Value Added: Manufacturing Activity* ($'000)
		Based on 1948 SIC	
1870	38,898	181,679	93,904
1880	47,079	248,042	126,982
1890	69,716	351,139	203,989
1900	—	422,824	245,388
1910	—	509,977	550,075
1920	22,376	576,417	1,492,722
1930	22,586	697,214	1,479,642
1940	25,471	761,639	1,941,282
1945	28,979	1,118,015	3,560,533
1950	35,942	1,183,297	5,942,058
1955	38,182	1,298,461	8,753,450
		Based on 1960 SIC	
1960	32,852	1,275,476	10,371,284
1965	33,310	1,570,299	14,927,764
1970	31,928	1,637,001	20,047,801

* Census value added is more inclusive than GDP at factor cost. It is calculated before the deduction of purchased services.

Source: Compiled from, Statistics Canada, Historical Statistics of Canada, 2nd ed. Catalogue No. CS11-516, 1983, Series R1, R8, R9, R12, R18, R21

and create jobs.[2] He also supported the completion of the transcontinental railway and encouraged western settlements in order to create a larger internal market for manufacturers (see Smucker 1980). Macdonald placed much importance on manufacturing as he remarked in a speech: "If we had a protective system in this country, if we had a developed capital, we could, by giving our manufacturers a reasonable hold on our home trade, attain a higher position among nations our national prosperity would be enhanced.... No nation has arisen which had only agriculture as its industry..." (cited in Bliss 1987, p. 250-51).

By 1890 most manufacturing goods were protected from foreign competition and the average rate of duty increased from about 25 percent to 30 percent in the 1870-90 period. It is widely accepted that the tariffs allowed certain manufacturing industries to expand (see Marr and Paterson 1980). Nonetheless, the linkages and interdependence between manufacturing and other sectors were already in evidence. The need for railroad services encouraged a railroad boom which created a demand for railway equipment and also expanded markets for existing manufacturers.[3]

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[2] Many have viewed the National Policy as encompassing various policies including tariff increases, the construction of a transcontinental railroad, Homestead Act and immigration. However, according to Bliss (1982) the National Policy was concerned with tariff protection. He argues that "The imputation of a clear, planned and effective relationship between the National Policy of protective tariffs and Canada's other national policies is actually an intellectual construct, imposed after the fact by economists looking backward through glasses tinted by a preference for rationality and clarity" (Bliss 1982, p. 18).

[3] Railroad construction depended heavily on government subsidies. In 1880 the federal government provided the Canadian Pacific Railway 25 million dollars in cash, 25 million acres of land, and 38 million dollars of existing rail lines (Howlett and Ramesh 1993). Provincial governments and municipalities also provided cash subsidies and other benefits to manufacturers. For example, to promote iron and steel, particularly pig iron, the federal government provided over 17 million dollars on subsidies from the early 1880s until the end of 1912 (Bliss 1982). The railroad also facilitated western settlement, but large scale immigration did not occur until the turn of the century.

At the start of the century the number of workers in manufacturing had grown to nearly 423 thousands and manufacturing made up about one quarter of GDP. Since Confederation manufacturing output had grown nearly threefold in gross value and net value, and output per man-year had increased by about 25 percent (see Firestone 1969). In the same period, exports of partially and fully manufactured products rose threefold in gross value.

By 1900 Canada was the world's seventh largest manufacturing power, according to later estimates (see G. Laxer 1989). As Canada entered the new century, there was increasing demand for various goods as steel rails, farm implements, and construction material which contributed to further its growth and expansion. Manufacturing innovations and products in transportation and farming, together with changes in the terms of trade, contributed to a prairie wheat boom. In consequence, note Bothwell, Drummond, and English (1987, p. 55), between 1896 and 1913, "Canada experienced the greatest economic boom in its history."

Manufacturing kept expanding and by 1910 had twice the value added of 1900 and employed nearly 510 thousand workers (see Table 4.1). Productivity was also rising; manufacturing output per man-year increased by more than 40 percent in the 1900-1910 period (Firestone 1969; Bothwell, Drummond, and English 1987). The manufacturing sector was also diversifying. For example, the 1871 census has no mention of pulp mills and the 1881 census states there were five mills, employing sixty-eight men. But by the turn of the century large investments were placed in pulp and paper making production for foreign markets. By the end of WWI Canada had become a leading exporter of pulp

and paper (Minnes 1995, see also Firestone 1969). The number of workers in the paper allied industries grew from more than nine thousand at the start of the century to more than 39 thousand in 1920 (Statistics Canada, Catalogue No. CS-11-516, 1983).

The expansion and diversification of manufacturing were also encouraged by the demands created from the construction that came from urbanization. Indeed, for Ostry and Zaidi (1979, p. 57) urbanization is "the most visible manifestation of Canada's industrialization." By 1911, more than three million persons or nearly 42 per cent of the total population in Canada resided in areas with a population of 1,000 or more (Statistics Canada, Catalogue No. CS-11-516, 1983, p. A67-74). Rising urbanization stimulated the demand for residential dwellings and in turn construction materials. In the mid 1890s less than 20,000 residential dwellings were completed each year, but by 1906 the figure grew to almost 50,000 and in 1912 to more than 80,000. The result was increasing demand for construction material. For example, in Ontario, brick production rose from 117 million in 1896 to 490 million in 1913 and in the same period that of Portland cement rose from 78,000 barrels to 3.8 million barrels (Bothwell, Drummond, and English 1987).

Further demand for manufactured goods came from the construction and electrical equipment needed in the development of hydro-electric power. Electric power would in turn create new demands on manufacturing for new machineries and a wide variety of new products. At about the same time the automobile industry was emerging

and fuelling demand for products as steel, rubber tires, and glass.[4] The expansion continued into the WWI period when because of the war effort the steel industry nearly doubled its capacity, the shipbuilding industry expanded, and the aircraft industry was started.

The expansion had partly benefited from the increase in foreign capital invested in Canada. The 1907-13 period has been estimated to have had the most rapid increase in foreign capital, with an annual average rise of 13.6 per cent (Statistics Canada, Catalogue No. CS-11-516, 1983). Moreover, while the U.K. was the major supplier of capital, mostly in portfolio investments, the proportion invested by U.S. residents kept rising, and was increasingly in direct investments. By 1914 there were already an estimated 450 American-owned branch plants. These investments, according to Laxer G (1989), were largely attracted by the industrial development of Canada. Laxer G (1989, p. 12) writes "Canadian industry had a promising start, and then the branch plants came - not the other way round." However, many American branch plants had been also set up to circumvent tariffs and take advantage of the preferential treatments Canada had with British colonies (Bothwell, Drummond, and English 1987). The presence of American firms in turn attracted their suppliers to also set up plants in Canada. Moreover, the growing presence of American direct investments was generally encouraged by

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[4] Manufacturing growth was mainly confined to British Columbia and central Canada. The Prairies largely benefited from the wheat boom. Meanwhile the Maritimes were facing a different situation. "They exported population and attracted few immigrants; their shipping and shipbuilding received no stimulus, and their fisheries were aided indirectly or not at all" (Bothwell, Drummond, and English 1987, p. 68). Some railway development helped create construction work and the iron and steel industry of Nova Scotia. In those days the federal government "had no idea about 'regional balance,' 'the equalization of regional disparities through industrialization,' or whatever," according to Bothwell, Drummond, and English (1987, p. 69-70).

governments of the day (see Smucker 1980; Bliss 1982). And Canadian entrepreneurs played a key role in its development, as is partly evident in the case of the automobile industry (see Bliss 1987).

In a short period the automobile industry became one of Canada's major industry. Although it became predominately foreign owned much of the credit for starting the industry goes to Canadian entrepreneurs such as Gordon M. McGregor. In 1904 McGregor founded the Ford Motor Co of Canada, a corporation in which Canadians then held a majority of interest and which was set up a year after Henry Ford started production in Detroit (Dykes 1995; Bliss 1987). The corporation benefited from the expertise and technology of the Ford Motor Company in the U.S.. It also had the right to make and sell Fords in all of the British Empire except Britain. About 40 per cent of its production was for export, which comprised about two or three times more cars than exported by Ford U.S. (Bliss 1987). Several other American firms eventually assembled in Canada, including General Motors in 1918 (Dykes 1995). By 1926 the automobile industry included eleven auto plants, twelve thousand workers and a production of two hundred thousand cars. Canada had become the second biggest producer of cars after the U.S..

Canada's manufacturing sector continued to grow after WWI and into the 1920s. Meanwhile, the pace of foreign investments slowed down after 1913 until the end of the 1940s. But foreign capital continued to have a strong presence in the overall economy and especially manufacturing, as illustrated in Table 4.2. Further, while U.K. residents were in the early part of the century the main supplier of foreign capital, in 1922 and ever

since, the main suppliers have been U.S. residents and increasingly through direct investments. In 1926 nonresident investments totalled six billion dollars of which about 1.8 billion were direct investments and another 4.2 billion portfolio investments. U.S. residents accounted for 53 per cent and U.K. residents 44 per cent of total foreign investments. In addition, nearly 53 per cent of direct investments were in manufacturing. That year the manufacturing sector was 30 per cent controlled by U.S. residents and 5 per cent by other foreign residents (see Table 4-2).

But the postwar prosperity ended with the depression that followed the collapse of the stock market in 1929 and whose impact lasted until the outbreak of WWII. Canada's gross national product (GNP) in current dollars was 6,134 million dollars in 1929, but fell to 3,492 million dollars by 1933 and at the end of the decade was only 5,621 million dollars. Merchandise exports fell from nearly 1.3 billion dollars in 1926 to 880 million dollars in 1930 and 732 million dollars in 1935. In 1940 the level of merchandise exports was still below that of 1926 (see Table 4-3).

The painful impact of the depression on manufacturing is seen in the output and employment drops. Between 1930 and 1935, manufacturing GDP at factor cost dropped from about 1.2 billion dollars to 865 million dollars; value added in current dollars fell from about 1.5 billion dollars to 1.2 billion dollars; and the number of manufacturing workers fell from more than 614 thousand to more than 556 thousand. There were drastic drops in the quantity and value of shipments of various manufacturing commodities. For example, the number of freight and passenger railroad cars produced fell from more than 13 thousand in 1929 to about eight thousand in 1930 to only 31

thousand in 1934 (Statistics Canada, Catalogue No. CS11-516, 1983).

If the dramatic drops in manufacturing in the 1930s were viewed out of context, many would certainly interpret them as signs of de-industrialization. But understood in the context of the depression, and looked over the long term, a different picture emerges of what happened to manufacturing. Canada did not de-industrialize, but instead in later years the manufacturing sector expanded. (This cautions against making hasty dire claims from data based on a restricted number of years. History does not repeat itself, but we can learn from the lessons of history.)

The war years contributed to the end of the depression with the surge of investments that went into industries that were directed to the war effort. Some manufacturing industries redirected their activities to produce such war materials as producing more than 4,000 aeroplanes. According to Bliss (1987) such developments contributed to a myth of wartime industrialization which was partly promoted by C.D. Howe, the Minister of Munitions and Supply. Howe wrote that during the war years Canada had become "a highly industrialized state."

Notwithstanding whether wartime industrialization was a myth, by 1944 Canada's GNP reached 11.9 billion dollars, more than double what it was in 1939. As for manufacturing between 1940 and 1945, its GDP at factor cost and its real domestic product showed remarkable gain (see Table 4.4). By 1945 the number of workers had increased to more than 1.1 million (see Table 4.1). These had been exceptional years, not only in growth, but in government involvement and causes of the demand. Much of the war effort had expanded the industrial base and triggered growth in the economy and

Table 4-2: Foreign Ownership and Control of Manufacturing, 1926-70

*Ownership and control of Manufacturing**(billions of dollars)

	Total Capital Employed	Resident Owned Capital	Non-resident Owned Capital	U.S. owned investment
1926	3.1	1.9	1.2	0.9
1930	3.9	2.3	1.6	1.3
1939	3.5	2	1.5	1.2
1948	5.7	3.3	2.4	2
1951	7.3	4.1	3.2	2.7
1955	8.9	4.7	4.2	3.3
1960	12.2	5.8	6.4	5.1
1965	16.7	7.8	8.9	7.3
1970	25	11.7	13.3	11.3

*Foreign Control***(percentage)

	Foreign Control		**Control by U.S. residents**	
	Manufacturing	Total (including manufacturing)	Manufacturing	Total (including manufacturing)
1926	35	17	30	15
1930	36	20	31	18
1939	38	21	32	19
1948	43	25	39	22
1951	48	27	42	24
1955	52	30	42	26
1960	59	33	44	26
1965	59	34	46	27
1970	61	36	47	28

* Ownership includes both direct and portfolio capital invested in an enterprise.

** An enterprise was defined as foreign controlled if at least 50 per cent of its voting stock was known to be held by one investor outside Canada. If effective control was held with less than 50 per cent of the voting stock, then the enterprise is classified as controlled by the group holding the controlling block of stock.

Source: Compiled from, Statistics Canada, Historical Statistics of Canada, 2nd ed., Catalogue No. CS11-516, 1983, Series G249, G256, G263, G270, G291, G297

Table 4-3: Canadian Balance of International Payments, Current Account, 1926-1970

(millions of dollars)

	1926	1930	1935	1940	1945	1950	1955	1960	1965	1970
EXPORTS										
Merchandise	1272	880	732	1202	3474	3139	4332	5392	8745	16921
Service Transactions*	361	392	397	547	928	1019	1405	1590	2437	4246
Total Goods & Services	1633	1272	1129	1749	4402	4158	5737	6982	11182	21167
Transfers*	32	25	23	50	84	126	189	233	466	765
Total Current Receipts	1665	1297	1152	1790	4486	4284	5926	7215	11648	21932
IMPORTS										
Merchandise	973	973	526	1006	1442	3132	4543	5540	8627	13869
Service Transactions**	500	606	474	600	1447	1360	1847	2549	3714	6345
Total Goods & Services	1473	1579	1000	1606	2889	4492	6390	8089	12341	20214
Transfers**	65	55	27	42	908	111	233	359	437	612
Total Current Payments	1538	1634	1027	1648	3797	4603	6613	8448	12778	20826
BALANCE										
Merchandise	299	-93	206	196	2032	7	-211	-148	118	3052
Service Transactions	-139	-214	-77	-53	-519	-341	-442	-959	-1277	-2099
Goods & Services	160	-307	129	143	1513	-334	-653	-1107	-1159	953
Current Account Balance	127	-337	125	151	689	-319	-687	-1233	-1130	1106

* Service Transactions is made up of: gold production available for export, except for 1970; travel; interest and dividends; freight and shipment; and other service receipts.
Transfers is made up of: inheritance and immigrants' funds; personal and institutional remittances; and with-holding tax, except for 1926 and 1930.

** Service Transactions is made up of: travel; interest and dividends; freight and shipping; other service receipts; and with-holding tax, except for 1926 and 1930.
Transfers is made up of: inheritance and emigrants' funds; personal and institutional remittances; and official contributions, except for 1926-1940; and withholding tax, fro 1926 and 1930.

Source: Compiled from, Statistics Canada, Historical Statistics of Canada, 2nd ed., Catalogue No. CS11-516, 1983, Series G57, G63, G64, G69, G70, G76, G77, G81, G82, G83

in manufacturing. (Indeed, Canada had the world's third largest navy and fourth largest air force. See Morton 1987.)

With the war over, Canada faced a drop in total output for a couple of years and then resumed its growth partly because of the industrial reconversion that followed. Canadians had now more money and the demand grew for manufactured goods that had been beyond the reach of many since the start of the Depression, such as cars, home appliances, and furniture. The expansion in manufacturing contributed to the overall growth of the economy. After remaining at about 11.9 billion dollars immediately after the war, by 1947 total output grew to about 13.5 billion dollars and continued to climb over the next decade. By 1960 it reached more than 38 billion dollars and by 1970 was nearly 87 billion dollars.

The manufacturing sector meanwhile registered increases in GDP, exports, and labour force. The GDP of manufacturing dropped immediately after the war, but picked up by 1947 and continued to rise for most years in the 1950s. In 1960 it totalled more than nine billion dollars, and again grew to about 17.6 billion dollars by 1970 (see Table 4.4). The manufacturing sector was by 1970 spending nearly 3.2 billion dollars on new durable physical assets, including construction and machinery and equipment, compared to less than 1.2 billion dollars in 1960 (Statistics Canada, Catalogue No. CS11-516, 1983).

Merchandise trade also grew after a slight drop immediately following the end of the war. In 1950 merchandise exports totalled in current dollars nearly 3.1 billion dollars and grew to nearly 5.4 billion dollars in 1960 and to about 17 billion dollars in 1970 (see

Table 4.4: Manufacturing Output, selected years

	Manufacturing GDP at factor cost ($'000,000)	Manufacturing % of total GDP	Index of real domestic product 1971=100	Index of output per person 1971=100	Index of output per-man hour 1971=100
1926	1,050	21.6	12.4		
1930	1,231	23	12.3		
1935	865	22.7	12.6		
1940	1,608	26.6	19.5		
1945	2,954	27.5	30	40.0*	36.4*
1950	4,913	29.2	34.5	44.6	42
1955	7,301	28.5	44.7	52.8	51.7
1960	9,020	26.4	52.3	62.1	61.1
1965	12,751	26.1	75.8	78.4	76.3
1970	17,606	23.3	94.5	94	93.4

* Refers to 1946

Source: Compiled from, Statistics Canada, Historical Statistics of Canada, 2nd ed., Catalogue No. CS11-516, 1983, Series F60, F71, F290, F291, R490

Table 4.3). Moreover, the share of merchandise exports grew from 75 per cent in 1950 to nearly 80 per cent in 1970. Merchandise imports also rose in current dollars from about 3.1 billion dollars in 1950 to nearly 13.9 billion dollars in 1970. However, their share of total imports remained at about 69 per cent. Unlike service trade which faced a deficit throughout the years examined, for most of the 1950s Canada had a deficit in merchandise trade, but a surplus in the 1960s. The majority of merchandise exports were destined for the U.S., which in 1970 accounted for nearly 65 per cent of all merchandise exports in current dollars. And merchandise imports were mainly from the U.S., which in 1970 accounted for nearly 71 per cent of merchandise imports in current dollars (Statistics Canada, Catalogue No. CS11-516, 1983).

The growth in manufacturing was accompanied by increases in manufacturing employment. The number of manufacturing workers, based on the 1948 SIC, totalled about 1.2 million in 1945 (see Table 4.1). In the 1950s and 1960s the number of manufacturing workers steadily grew, although it faced some drops in certain years. By 1960, on the bases of the 1960 SIC, the number of manufacturing workers totalled less than 1.3 million and by 1970 more than 1.6 million.

With the prosperity of the 1950s came also increasing foreign investments in the economy. Following the war and especially by the start of the 1950s, foreign investments grew dramatically, and were mostly direct investments by U.S. residents. In 1950 nonresident investments totalled about 8.7 billion dollars but by the end of the decade reached nearly 20.9 billion dollars (Statistics Canada, Catalogue No. CS11-516, 1983). Moreover, while in 1950 most were portfolio investments, by 1959 most were direct

investments. And 76 per cent of foreign investments were by U.S. residents.

The rise in foreign investments was evident in the manufacturing sector. Despite the drop in total nonresident investments in the 1930s, and the slight drop in nonresident owned capital in manufacturing, the proportion of manufacturing under foreign control slightly rose from 36 per cent in 1930 to 38 per cent in 1939 (see Table 4.2). Following the war, nonresident owned capital, mainly by U.S. residents, in manufacturing continuously grew to the point that by 1970, nonresidents accounted for about 53 per cent of the total capital employed in manufacturing. But the proportion of manufacturing under foreign control was even higher and much greater than existed in the total economy. The proportion of manufacturing under foreign control totalled 48 per cent in 1951, compared to 27 per cent of the economy under foreign control (see Table 4.2). By 1970 manufacturing was 61 per cent foreign controlled and the total economy 36 per cent foreign controlled. U.S. residents alone controlled 47 per cent of manufacturing and 28 per cent of the total economy.

Canada's manufacturing sector had not only become more dependent on foreign investments, but was seen as falling further into the orbit of U.S. influence. Many worried over what impact the high level of foreign ownership would have on the future development of the manufacturing sector. In an attempt to understand Canada's economic growth, and the development of the manufacturing sector, some in the 1960s put forth new perspectives of the "staples thesis." The staples thesis was first advanced by Innis and Mackintosh in the 1920s. They agreed that Canada's economic development was shaped by its dependency on the discovery, extraction, and export of staples,

commodities such as fish, wheat, lumber, and coal, first to the metropolitan economies of Europe and later the U.S. (see Howlett and Ramesh 1993). However, Innis argued that the dependency on staples exports hurt Canada's long term industrial development. In contrast, Mackintosh believed staples exports would eventually lead to investments in manufacturing.

According to Innis the dependency on staples exports necessitated large investments in such infrastructures as transportation which in turn deprived manufacturing of investments. Therefore, Canada had a staples driven economy which relied on countries that bought its natural resources and provided it with much of the capital and technological capabilities to process the resources. Mackintosh instead believed that Canada depended on staples exports in its early stages of development. But over time the benefits gained from staples exports would lead to investments in manufacturing.

In the 1960s and early 1970s a prevalent perspective of the staples thesis combined the work of Innis with that of the dependency theory (See Howlett and Ramesh 1993). Much discussed was the work by Levitt (1970) noted in the previous chapter, who perceived Canada as the "world's richest underdeveloped country" with its reliance on staples and high level of foreign ownership. She blamed Canadian capitalists, who in her view had in the past profited from keeping Canada dependent on staples exports and thereby encouraged a high level of foreign, mainly U.S., ownership of the economy. According to Levitt (1970, p. 25) U.S. multinationals organized or extracted "the raw material staple required in the metropolis and supplied the hinterland with manufactured

goods, whether produced at home or 'on site' in the host country." The manufacturing branch plants were not export oriented, had little interest in developing innovations, and relied mainly on the research and development carried out by the parent firm. And they would send much of their profits to the parent firm which used a part of it to further expand their presence in Canada.

Others inspired by the work of Mackintosh on the role of staples also expressed concern of the high level of foreign-ownership and placed much emphasis on the manufacturing sector (See Howlett and Ramesh 1993). Watkins (1963), in an early work, noted that the impact of staples exports on economic development depended on three forms of linkages: backward linkage such as inputs as machinery and railroads; forward linkages such as the investments in processing the staples; and final demand linkage whereby the income gained from staples exports are invested in the country's manufacturing sector. The diversification of the country's economy mainly relies on the final demand linkage. But if staples exports are mostly controlled by foreign investors then diversification is less likely to occur. Foreign investors will leave little for investing in domestic manufacturing, preferring to make profits by selling manufactured goods to Canada. The result is a "staples trap" whereby the economy is dependent on countries that buy its staples and sell it manufactured goods.

But while the new perspectives of the staples thesis emphasized the weaknesses of the economy, the manufacturing sector was implicitly recognized as essential to its growth and expansion. The de-industrialization thesis in Canada was first formulated within a framework that denounced the dependency on staples exports, the high level of

foreign investments in the economy and the lack of a developed, mainly Canadian-owned, manufacturing sector (see Chapter 3). However, proponents of the thesis provided another point to the argument by claiming that Canada was losing the little manufacturing it had because of disinvestments by foreign owners. American multinationals were disinvesting in manufacturing and either taking their capital elsewhere or investing in Canadian resources. They were in effect de-industrializing Canada. As noted in the previous chapter, many still hold to this view, especially with regard to what they perceive as the impact of the recent free trade agreements with the U.S. and Mexico.

Why the De-industrialization Thesis Matters

As the first section above showed, manufacturing is important for economic growth in ways that are not necessarily evident by looking at its contribution solely in terms of such traditional measures as output and employment. Nonetheless, even on the basis of such data, as shown in the second section, manufacturing has been essential for Canada at least until two decades ago when the de-industrialization thesis was first proposed. Given the importance of manufacturing, and the dire claims that many have made over the past two decades about the changes in manufacturing, and even its impact on the future of Canada, the de-industrialization thesis deserves closer examination.

However, as discussed in the previous chapter, there exist confusion and

disagreement over the definition and operational measurements of de-industrialization. There is no consensus on the appropriate indicators, the time frame, and levels and units of analysis. The evidence provided is weak or consists of limited data that are used to mainly strengthen predetermined beliefs about the phenomenon.

It is therefore unclear from the literature in Canada what level have to exist in the indicators before being able to diagnose the condition as de-industrialization. Some are content to point to a single indicator as evidence that Canada is de-industrializing, such as the gross loss of manufacturing jobs. Likewise, it is tempting to simply dismiss the thesis on the basis of a single trend.

The above discussion on why manufacturing matters, however, clearly indicates that single indicator analyses can never be sufficient to detect the presence of de-industrialization. A simple drop in absolute or relative fall in manufacturing employment, may be explained by various factors, such as a rise in manufacturing output or a restructuring of manufacturing firms whereby some workers are no longer counted in official data on manufacturing. If the purpose of the de-industrialization thesis is to provide an interpretation of developments in manufacturing, then a single indicator is insufficient. Thus, the next four chapters will empirically assess the main propositions (or generalizations) listed in Table 4.5, which have been put forth by proponents of the de-industrialization thesis in Canada about developments in manufacturing employment, output, investments, and trade.

Table 4.5: Main propositions in the de-industrialization literature in Canada

***Employment*:**

1)	There has occurred a relative drop of manufacturing employment in the labour force
2)	There has occurred an absolute drop in manufacturing employment.
3)	The "gross" loss of jobs in manufacturing has been rising.
4)	There has occurred an increase in the manufacturing unemployment rate.

***Output*:**

1)	There has occurred a relative drop of manufacturing output in total output.
2)	Labour productivity in manufacturing has been falling.

***Investment*:**

1)	Capital expenditures in manufacturing have been dropping.
2)	Foreign direct investments in manufacturing have been dropping.
3)	Canadian foreign direct investments in manufacturing have been increasing.

***Trade*:**

1)	Export orientation in manufacturing has been falling.
2)	Import penetration in manufacturing has been rising.

Chapter Five

Manufacturing Employment

The de-industrialization literature gives more attention to manufacturing employment than to any other indicator. But, as discussed earlier, there is no consensus on appropriate measures for this concept. This is especially true in Canada where proponents of the thesis have provided insufficient and questionable definitions and evidence.

There exist four interrelated propositions regarding employment from the perspective of de-industrialization:

- a drop in the share of manufacturing in the sectoral distribution of the labour force;
- a fall in the absolute number of manufacturing workers;
- a rise in the "gross" number of jobs lost in the manufacturing sector;

- a rise in the incidence and prevalence of unemployment for those working in manufacturing.

In Canada a fifth factor has been highlighted, particularly in the early de-industrialization thesis -- drops in the number of manufacturing workers in U.S.-owned branch plants are presumed to be higher than in Canadian-owned plants. This argument has been put forth in conjunction with the expectation that U.S. parent firms are disinvesting in Canada, and therefore will be considered in Chapter 7. In this chapter the other four propositions are examined empirically and their appropriateness as measures of de-industrialization questioned. Before focusing on the data, the main sources and operational definitions are explained, and their weaknesses noted.

Sources

The data on employment are compiled from three sources: the Census of Population (herewith referred to as census), Labour Force Survey (LFS), and the Manufacturing Industries of Canada survey, commonly known as the Census of Manufacturers. The census and LFS are household surveys and are especially helpful in indicating the growth and make-up of the labour force. The Census of Manufacturers is an establishment survey and contains more detailed information on the manufacturing sector. Unlike the census and LFS, which categorize workers into an industry on the basis of a respondent's answers, the Census of Manufacturers is an annual mail survey of

establishments previously classified as belonging to the manufacturing sector.[1]

The census and LFS have used similar definitions of labour force since 1951. The latest definition includes persons 15 years of age and over who are either employed or unemployed, excluding inmates. The census includes but the LFS excludes persons in the Yukon and Northwest Territories, Indian reserves, members of the armed forces, and overseas households. The employed consist of individuals who in the week prior to the survey worked for pay or salary, or were self employed. The unemployed are individuals who are not working, but were actively looking for work in the four weeks prior to the survey, or were out of work in the last 26 weeks but expected either to return to their former job or to start a new job in the next four weeks.

Thus, the labour force is a technical term utilized by governments for purposes of gathering and comparing statistical data across time. Consequently, as noted from the above discussion, many persons resident in Canada are considered to be not in the labour force. This includes many workers who have become "discouraged" meaning that for various reasons they are no longer looking for work because they believe none is available.

In Canada the census is helpful in determining long term trends and shifts in the labour force. It is carried out every ten years (decennial census, in years ending in one), and a less detailed one every five years (quinquennial census, in years ending in six)

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[1] Another source on employment is the monthly mail survey of employers in firms and organizations of all sizes, the Survey of Employment, Payrolls and Hours (see Statistics Canada, Catalogue No. 72-001, 1997). It has a few shortcomings for the purpose of this study, including that of excluding businesses in agriculture, among others. The survey is especially useful in providing data on the average hourly earnings of employees.

following the major census. Regular decennial censuses have been taken in Canada since the mid-nineteenth century, but the earliest census with satisfactory information to compile industrial categorizations was that of 1911 (see Statistics Canada, Catalogue No. CS11-516, 1983). And the first quinquennial census to contain questions on occupation and industry was in 1986.

Unlike the census the aim of the LFS is to collect a range of data on the characteristics of individuals employed, unemployed, or not in the labour force. The sample survey is designed to be representative of the Canadian population 15 years of age and over across the provinces and census metropolitan areas. Each month, interviews are carried out with less than 1 per cent of households, chosen by area sampling methods throughout the country, and weighted to provide estimates for the entire population. The more recent LFS surveys include about 60,000 representative households and involve more than 106,000 respondents. A household remains in the sample for six consecutive months, and is then replaced by another. The LFS has a non-response rate of only 5 per cent classifying it as one of the highest response rates for surveys of this type in the world.

The LFS was started in 1945 and over the years has undergone various changes. It was substantially revised in 1976. The sampling frame of the LFS is also redesigned every ten years on the basis of the latest decennial census data. Starting in January 1995 the LFS began to reflect the 1991 census data and labour force data since 1976 have been

revised accordingly.[2] Most trends are generally similar to those originally published; the unemployment rates are about the same, but employment and participation rates are slightly higher. The revisions to population estimates, have resulted in increases in the absolute levels of employment, unemployment and persons not in the labour force. Therefore, in using LFS time series data, it is necessary to assure that they reflect a similar census base. Mixing them results in distorted views of the Canadian labour force. For example, the revision shows a rise in employment growth from April 1992 to December 1994 of 697,000 compared to the earlier published figure of 637,000. In the case of manufacturing earlier data placed the number of employed workers in December 1993 at about 1.8 million while the revised data indicate the number to be closer to about 1.9 million.

The census and LFS classify the employed or unemployed in an industry according to information provided by respondents about the establishment in which they work or worked. The establishment is classified in an industry according to the Standard Industrial Classification (SIC) on the basis of "end products." It is important to note that the classification of workers in an industry is by establishment and disregards the worker's job activity or occupation. An accountant working in the offices of an auto-assembly plant is classified as in manufacturing, while an accountant in a hospital is classified as in services. Moreover, the establishment is assigned a code on the basis of its main activity. An establishment in which the main activity is to make kitchen

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[2] Since January 1997 the LFS has implemented a redesigned questionnaire with new questions on the individual's work experience.

cabinets, but also sells and places them, is likely to be classified as in manufacturing. Another establishment whose main activity is to sell and place them, but also makes some kitchen cabinets, is likely to be classified as in services.

Thus, the SIC is a technical classification of industries and workers. The classification of the establishment should not be taken as an indication of the activities of all its workers. An establishment is given a single classification based on its main end products, even if it conducts many different business activities. Furthermore, in the process of restructuring, manufacturing firms may set up new establishments or change the main activities of existing ones. An establishment that switches from assembling computers to servicing and selling computers should be reclassified from the manufacturing to the service sector. The classification of an establishment is likely to become even more confusing with advancements in technology and organizational changes of the firm and workplace. Distinctions between certain service and manufacturing activities in establishments are increasingly blurred (see Economic Council of Canada 1990). In addition, the latest SIC is of 1980, and may therefore apply outdated classifications to establishments involved in previously undefined activities. Statistics Canada is in the process of revising the 1980 SIC with the cooperation of agencies in the U.S. and Mexico to arrive at a common North American Industrial Classification System. Notwithstanding some weaknesses, the SIC is the only official classification method for establishments and will be used in this study.

Unlike the census and LFS, the Census of Manufacturers is an annual mail survey of establishments previously classified as in a manufacturing industry on the basis of the

SIC (see Statistics Canada, Manufacturing Industries of Canada, Catalogue No. 31-203, 1994). In general, large establishments, are sent a "long" questionnaire that asks for more detailed information than a "short" questionnaire sent to small establishments.[3]

The Census of Manufacturers covers more disaggregate data on manufacturing employment than other surveys. The principal statistics collected, irrespective of whether the establishment is a firm or part of a firm, include number of employees, salaries and wages, person-hours worked and paid, and shipments for sales. Some information on the establishment may be lost depending on whom the respondent is, how much attention the respondent gives to the questionnaire, and the precision with which the company keeps its records.

When dealing with long term data it is important to maintain consistency in the SIC base year. This is especially the case when utilizing the Census of Manufacturers with its disaggregate data. Mixing data from different SIC years, especially when the data are disaggregate, can lead to inaccurate conclusions. This is so because certain industries may have been reclassified, establishments may have changed in their classification, and over time different techniques may have been emphasized in collecting information. Furthermore, over the years Statistics Canada has improved its coverage of smaller establishments. For example, in 1982 the total number of workers in the clothing industries based on the 1970 SIC was 91,306, while based on the 1980 SIC it

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[3] The distinction between large and small is based on shipments and varies across provinces. For some smaller establishments data are obtained from Revenue Canada Taxation. For most establishments the fiscal year covers the calender year. Small establishments account for the majority of establishments, about 57 per cent in 1990, but large establishments are responsible for most of the shipments, about 93 per cent of manufactured shipments in 1990.

was 106,887. The 1970 SIC showed a drop of 4,544 workers between 1981 and 1982. But if the 1970 SIC data were used for 1981 and the 1980 SIC data for 1982, then one would wrongly conclude that the number of workers had increased by 15,581.

Given the different techniques in administering the census, LFS, and Census of Manufacturers, the data from those sources must not be mixed in determining long term changes in manufacturing employment. Each provides a particular view of what has been happening to manufacturing employment. According to the census the average annual number of manufacturing workers in 1990 was nearly 2.3 million, while the LFS indicated that number to be about 2.1 million, and the Census of Manufacturers listed only 1.87 million workers. It should be noted that even though the census and the LFS are household surveys, there exist slight differences in the data they recount. For instance, the 1991 census shows that on the reference day on which it was taken (the first Tuesday in June, i.e., June fourth) there were about 2.08 million manufacturing workers. In contrast the LFS figures for June 1991 (the reference week is usually the one containing the 15th day) show that there were nearly 2.27 (seasonally unadjusted) or 2.23 (seasonally adjusted) million manufacturing workers.

The census is helpful in understanding the growth in the labour force and the shift in distribution of employment at a high level of industry aggregation over the century. Census data are mainly used to cover the period 1911 to 1971, based on a SIC that maintained an approximate consistency of industry definitions. The census years 1951 to 1986 on the experienced labour force are examined because the data are available and

classified according to a similar SIC, that of 1970.[4] The 1991 data based on the 1980 SIC are also occasionally used in the present study. The LFS is used to explore changes in employment on a year-to-year basis from 1977 to 1995 and to reflect the 1991 census population. The classification of workers refers to the 1970 SIC for the years previous to 1984 and to the 1980 SIC for other years (Statistics Canada, Catalogue No. 71-528, 1992). The differences in classification have little impact on the level of detail used here. The Census of Manufacturers serves to examine year-to-year changes in employment for the last three decades up until the last year for which complete information is available (i.e., 1960 to 1990). Even though the years examined are based on different SICs, since aggregate employment data for the sector are used, the differences have little influence.[5] The Census of Manufacturers is the main Statistics Canada source on the economic performance of the manufacturing industries, and therefore its employment data are used to examine the impact of recessions.

Employment

The proportion of the labour force in manufacturing has been falling. This is an undisputed employment trend. The census data in Tables 5.1 and 5.2 show that after

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[4] The 1991 data based on the 1970 SIC were not yet available at the time of writing

[5] The number of absolute workers in manufacturing in 1982 on the basis of 1970 SIC totalled 1,709,418 and on the basis of 1980 SIC it totalled 1,702,303 (Statistics Canada, Catalogue No. 31-203, 1994).

Table 5.1: Share of work force by industrial category, 1911- 1971

	1911 %	1921 %	1931 %	1941 %	1951 %	1961 %	1971 %
Primary Sector	***39.2***	***36.8***	***33.0***	***31.5***	***21.0***	***14.0***	***8.3***
Agriculture	34.2	32.8	28.7	25.8	15.6	9.9	5.6
Forestry	1.6	1.3	1.3	2.2	2.5	1.7	0.9
Fishing & trapping	1.3	1.1	1.2	1.2	1.0	0.5	0.3
Coal & other mining	2.1	1.6	1.8	2.2	2.0	1.9	1.6
Secondary Sector	***24.7***	***22.5***	***23.3***	***27.1***	***31.5***	***29.0***	***26.4***
Manufacturing	17.4	16.8	16.9	21.9	24.9	21.8	19.8
Construction	7.3	5.7	6.4	5.2	6.6	7.2	6.6
Tertiary Sector	***32.9***	***36.5***	***39.3***	***40.3***	***46.2***	***54.6***	***57.4***
Electricity & gas	0.4	0.3	0.6	0.6	0.9	1.0	0.9
Railway / other transport	6.7	7.9	7.1	6.4	7.6	7.0	5.8
Retail & wholesale trade	9.5	10.3	10.8	11.8	14.1	15.3	14.7
Finance/insurance/real estate	1.4	1.9	2.4	2.1	2.7	3.5	4.2
Education	1.7	2.5	2.6	2.6	2.9	4.1	6.6
Health / welfare services	1.3	2.2	2.0	2.2	3.3	4.8	5.9
Food & lodging	2.1	1.8	2.7	2.9	2.9	3.7	3.8
Personal & recreational	5.1	4.5	6.0	6.3	3.5	3.6	2.9
Other services	2.0	2.0	2.2	2.2	2.2	3.3	4.3
Government	2.9	3.1	3.0	3.3	6.0	8.2	8.2
Industry Unspecified	***3.2***	***4.3***	***4.3***	***1.1***	***1.3***	***2.4***	***7.9***

Notes i) Data for 1911 to 1941 are for "gainful workers." Later years adhere to the "labour force" concepts.
ii) The age coverage for 1911 to 1931 was for those aged 10 and over, for 1941 and 1951 those aged 14 and over, and for later years those aged 15 and over.
iii) The figures are exclusive of the Yukon Territory and the Northwest Territories as currently defined. Newfoundland is included for 1951 and later years.
iv) Indians on reserves engaged in fishing and trapping were excluded from the 1921 and 1951 censuses.
v) The data are based on a standard industrial classification that was specifically developed to maintain an approximate consistency of industry definitions over the years examined.

Source: Calculated from data compiled by Statistics Canada, Historical Statistics of Canada, Catalogue No. CS11-516, 1983: Series D8 to D85.

Table 5.2: Share of Experienced Labour Force by Industry Divisions (1970 SIC)*

	1951 %	1961 %	1971 %	1981 %	1986 %
Primary Sector	***20.9***	***13.9***	***8.4***	***6.8***	***6.6***
Agriculture	15.5	9.8	5.6	4.0	3.9
Forestry	2.5	1.7	0.9	0.8	0.9
Fishing & trapping	1.0	0.6	0.3	0.3	0.3
Mines, quarries & oil wells	1.9	1.8	1.6	1.7	1.5
Secondary Sector	***30.6***	***28.4***	***26.0***	***24.8***	***22.5***
Manufacturing	24.5	21.6	19.8	18.5	16.8
Construction	6.1	6.8	6.2	6.3	5.7
Tertiary Sector	***47.2***	***55.3***	***57.8***	***65.0***	***67.5***
Transportation, Communication, & Other Utilities	9.9	9.4	7.8	7.8	7.5
Trade	14.3	15.4	14.7	16.3	16.4
Finance, Insurance, & Real Estate	2.7	3.5	4.2	5.2	5.2
Community, Business & Personal Services	15.0	19.6	23.7	28.3	31.0
Public Administration & Defence	5.3	7.4	7.4	7.4	7.4
Industry Unspecified	***1.3***	***2.5***	***7.9***	***3.4***	***3.2***

* The labour force here consists of the employed and unemployed who worked in the previous eighteen months. The latter were coded in the industry last employed.

Source: Calculated from data compiled by Statistics Canada, Industry Trends, 1951 - 1986, Catalogue No. 93-152, 1988.

peaking in 1951 at about 25 per cent, the share of manufacturing in the labour force dropped. The 1991 census places the share of manufacturing at under 15 per cent (Statistics Canada, Catalogue No. 93-326, 1993). According to the LFS year-to-year data in Table 5.3, manufacturing employment faced a relative drop throughout the 1977-95 period, falling from about 20 per cent to about 15 per cent.

But it is questionable that a relative drop in manufacturing employment is in itself a sign of de-industrialization. The drop does not necessarily imply that the sector is facing difficulties or that manufacturing workers are being displaced, and it tells us nothing about the economic performance of the manufacturing sector. The relative drop could be the result of manufacturing employment rising at a slower pace than total employment. This can occur in a growing economy with full employment and improved living standards.[6] However, if the size of the labour force is dropping and economic growth is stagnant or declining, then a relative drop in manufacturing employment can be a reflection of serious economic and social difficulties. But such has not been the case in Canada.

The relative drop in manufacturing employment in Canada appears to be due mainly to the slower growth of manufacturing employment than that which is occurring to the labour force as a whole. In addition, the rise in manufacturing productivity (discussed in the next chapter) probably plays an important role. More importantly, the

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[6] Thirlwall (1982), for example, pointed out that in some periods Austria and the U.K. suffered large drops in the share of industrial employment among industrial market countries. But while the U.K. economy was weak, Austria had one of the healthiest economies in Europe, as measured by various indicators. For a contrary view, see Smith (1992b).

Table 5.3: Share of Labour Force by Industry, 1977-95

(percentage)

	Agriculture	Other Primary	*Manufacturing*	Construction	Transportatiion, Communication, & Other Utilities	Trade	Finance, Insurance, & Real Estate	Community, Business, & Personal Services	Public Administration
1977	4.6	2.6	19.7	7.1	8.4	17.3	5.4	27.9	7.1
1978	4.5	2.7	19.6	6.9	8.5	17.3	5.3	28.1	7.0
1979	4.5	2.7	19.9	6.6	8.6	17.3	5.2	28.5	6.7
1980	4.3	2.9	19.9	6.3	8.3	17.1	5.6	28.8	6.9
1981	4.3	3.0	19.5	6.3	8.1	17.0	5.3	29.6	6.8
1982	4.2	2.7	18.8	6.3	8.1	17.2	5.5	30.4	6.9
1983	4.3	2.7	17.9	6.1	7.9	17.1	5.4	31.5	7.1
1984	4.2	2.8	18.0	5.9	7.6	17.4	5.6	31.5	7.1
1985	4.0	2.5	17.7	5.8	7.7	17.6	5.5	32.3	7.0
1986	3.9	2.6	17.3	5.9	7.6	17.9	5.5	32.6	6.8
1987	3.8	2.5	17.1	6.1	7.5	17.6	5.7	32.9	6.7
1988	3.5	2.5	17.3	6.4	7.3	17.7	5.8	33.0	6.6
1989	3.3	2.4	17.1	6.6	7.6	17.5	5.7	33.2	6.7
1990	3.3	2.4	16.2	6.8	7.4	17.8	5.8	33.8	6.4
1991	3.4	2.4	15.4	6.5	7.3	17.5	5.9	34.9	6.5
1992	3.3	2.2	14.8	6.4	7.4	17.6	6.0	35.6	6.6
1993	3.4	2.1	14.7	6.1	7.3	17.3	6.0	36.5	6.8
1994	3.1	2.2	14.7	6.3	7.2	17.3	5.7	37.0	6.5
1995	3.1	2.3	15.2	5.9	7.5	17.0	5.8	37.1	5.9

Source: Compiled and calculated from, Statistics Canada, Historical Labour Force Statistics, 1995, Catalogue No. 71-201, 1996

relative drop in manufacturing employment was not accompanied by a similar trend in absolute manufacturing employment. The census and LFS data in Tables 5.4, 5.5 and 5.6 show that when the share of manufacturing in the labour force started to drop, the absolute trend in manufacturing employment was quite different. In 1989 when according to the LFS data the number of manufacturing workers peaked, the sector had faced a relative drop of 2.6 percentage points since 1977.

Thus the absolute data question the claim that the relative drop in manufacturing employment is a clear sign of de-industrialization. The 1971 census data show that the share of manufacturing in the labour force had been falling for two decades and was nearly five percentage points lower than in 1951. However, the number of manufacturing workers kept rising and had increased by nearly 394 thousand in the two decades. The LFS data for the 1977-95 period show that the relative and absolute trends in manufacturing followed different patterns (see Figure 5.1). Absolute manufacturing employment did not grow smoothly: it peaked in 1989 then fell sharply in subsequent years, demonstrating signs of recovering only since 1993. Likewise, the number of manufacturing workers fell sharply after 1981 when it achieved a previous peak, but recovered a few years later and achieved a new peak. It is also worth noting that there were more manufacturing workers in 1995 then in 1977.

Obviously, an absolute drop in manufacturing employment would indicate that the sector is employing fewer workers. But such a drop does not in itself tell us what has happened to the workers or why it has happened. The possible displacement of workers should be treated as an empirical question. This is not to downplay the importance of the

Table 5.4: Work Force by Industrial Category, 1911- 1971

	1911	1921	1931	1941	1951	1961	1971
Total	**2,725,148**	**3,173,169**	**3,927,230**	**4,195,951**	**5,286,153**	**6,458,156**	**8,626,925**
Primary Sector	***1,067,653***	***1,167,478***	***1,297,851***	***1,319,808***	***1,111,293***	***901,994***	***720,040***
Agriculture	931,602	1,041,618	1,128,154	1,082,074	827,030	639,221	481,190
Forestry	42,917	40,026	49,952	93,792	129,832	108,497	74,380
Fishing & trapping	34,885	34,088	47,782	50,902	50,853	34,576	25,435
Coal & other mining	58,249	51,746	71,963	93,040	103,848	119,700	139,035
Secondary Sector	***672,687***	***712,586***	***915,454***	***1,137,215***	***1,664,474***	***1,874,648***	***2,275,615***
Manufacturing	473,705	530,453	665,455	916,994	1,313,578	1,408,685	1,707,330
Construction	199,182	182,133	249,999	220,221	350,896	465,963	568,285
Tertiary Sector	***896,837***	***1,158,113***	***1,544,678***	***1,692,933***	***2,442,831***	***3,523,341***	***4,949,320***
Electricity & gas	10,587	10,443	22,485	23,089	47,802	62,426	74,105
Railway / other transport	181,290	249,174	277,600	266,590	402,707	453,132	496,780
Retail & wholesale trade	259,859	327,879	425,159	496,150	745,904	990,598	1,269,290
Finance/insurance/real estate	36,853	61,425	92,340	89,680	143,995	228,811	358,060
Education	47,479	77,946	100,781	110,946	152,817	266,394	569,485
Health / welfare services	34,466	70,465	79,382	91,812	173,948	308,432	513,090
Food & lodging	56,330	58,076	107,057	120,320	155,452	238,094	331,500
Personal & recreational services	138,314	142,243	236,870	263,395	187,113	234,889	253,555
Other services	53,416	62,888	86,187	91,315	114,809	210,597	373,750
Government	78,243	97,574	116,817	139,636	318,284	529,968	709,705
Industry Unspecified	***87,771***	***134,992***	***169,250***	***45,995***	***67,557***	***158,173***	***681,940***

Notes: i) Data for 1911 to 1941 are for "gainful workers." Later years adhere to the "labour force" concepts.
ii) The age coverage for 1911 to 1931 was for those aged 10 and over, for 1941 and 1951 those aged 14 and over, and for later years those aged 15 and over.
iii) The figures are exclusive of the Yukon Territory and the Northwest Territories as currently defined. Newfoundland is included for 1951 and later years.
iv) Indians on reserves engaged in fishing and trapping were excluded from the 1921 and 1951 censuses.
v) The data are based on a standard industrial classification that was specifically developed to maintain an approximate consistency of industry definitions over the years examined.

Source: Calculated from data compiled by Statistics Canada, Historical Statistics of Canada, Catalogue No. CS11-516, 1983: Series D8 to D85.

Table 5.5: Total Number of Workers by Industry Divisions (1970 SIC)*

	1951	1961	1971	1981	1986
Total	**5,286,407**	**6,471,850**	**8,626,925**	**12,005,320**	**12,783,510**
Primary Sector	***1,106,928***	***894,385***	***720,035***	***828,935***	***845,950***
Agriculture	821,807	633,325	481,185	481,275	504,245
Forestry	129,690	108,580	74,380	100,765	109,390
Fishing & trapping	53,103	36,263	25,435	36,870	44,070
Mines, quarries & oil wells	102,328	116,217	139,035	210,025	188,245
Secondary Sector	***1,615,194***	***1,837,573***	***2,245,550***	***2,971,750***	***2,885,905***
Manufacturing	1,293,949	1,399,019	1,707,330	2,219,380	2,153,965
Construction	321,245	438,554	538,220	752,370	731,940
Tertiary Sector	***2,496,843***	***3,581,299***	***4,979,390***	***7,800,295***	***8,639,815***
Transportation, Communication, & Other Utilities	524,563	610,231	671,065	935,570	958,750
Trade	754,617	997,336	1,269,290	1,957,575	2,096,875
Finance, Insurance, & Real Estate	144,006	228,905	358,060	621,115	668,495
Community, Business, & Personal Services	795,487	1,268,847	2,041,390	3,399,435	3,965,590
Public Administration, & Defence	278,170	475,980	639,585	886,600	950,105
Industry Unspecified	***67,422***	***158,593***	***681,950***	***404,340***	***411,840***

* The labour force here consists of the employed and unemployed who worked in the previous eighteen months. The latter were coded in the industry last employed.

Source: Calculated from data compiled by Statistics Canada, Industry Trends, 1951 - 1986, Catalogue No. 93-152, 1988.

Table 5-6 : Total Number of Workers in the Labour Force by Industry, 1977-95

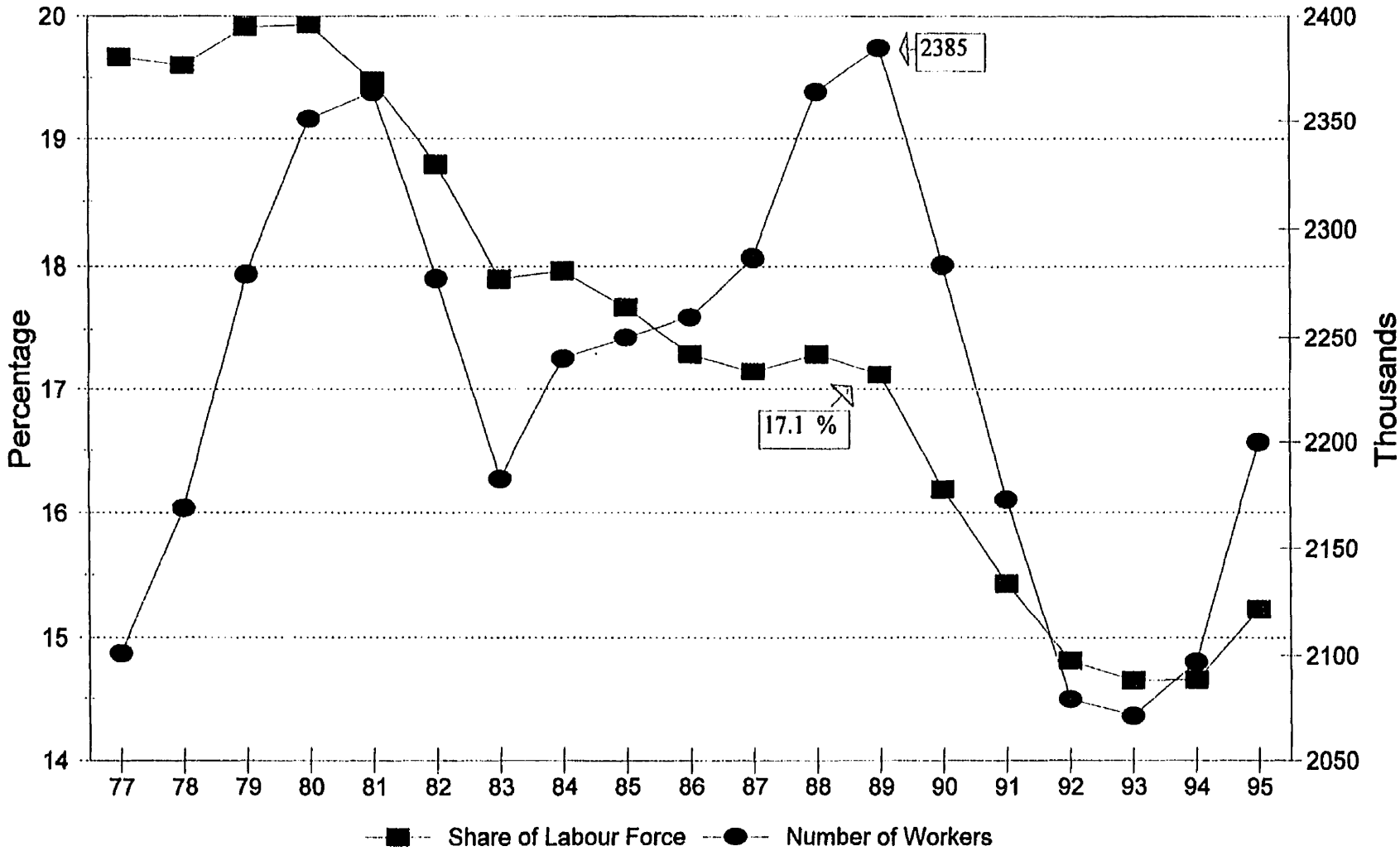
(thousands)

	Agriculture	Other Primary	*Manufacturing*	Construction	Transportatiion, Communication, & Other Utilities	Trade	Finance, Insurance, & Real Estate	Community, Business, & Personal Services	Public Administration
1977	490	276	2,101	754	893	1,850	575	2,979	761
1978	500	297	2,169	765	937	1,917	590	3,112	776
1979	513	310	2,280	755	979	1,979	598	3,268	767
1980	509	338	2,351	739	983	2,018	656	3,391	808
1981	519	364	2,364	766	988	2,066	644	3,598	830
1982	509	324	2,278	761	979	2,085	661	3,681	841
1983	526	332	2,183	741	965	2,089	660	3,837	861
1984	524	344	2,240	739	948	2,169	693	3,923	887
1985	514	314	2,250	736	976	2,243	694	4,113	888
1986	507	339	2,260	773	994	2,338	719	4,254	883
1987	504	337	2,287	817	994	2,351	760	4,392	897
1988	478	345	2,364	868	1,003	2,413	787	4,513	897
1989	462	338	2,385	916	1,054	2,433	796	4,618	928
1990	462	336	2,284	966	1,049	2,514	818	4,768	908
1991	483	337	2,173	920	1,030	2,468	829	4,921	921
1992	467	313	2,079	896	1,038	2,470	839	4,999	930
1993	478	299	2,071	859	1,025	2,441	845	5,159	957
1994	450	312	2,097	902	1,034	2,482	821	5,288	923
1995	455	332	2,200	859	1,089	2,463	837	5,368	848

Source: Compiled from, Statistics Canada, Historical Labour Force Statistics, 1995, Catalogue No. 71-201, 1996

Figure 5.1

Manufacturing Workers
1977 -1995



Source: Calculated from data compiled by Statistics Canada, Historical Labour Force Statistics, 1995, Catalogue No. 71-201, 1996
(see also Tables 5.3 and 5.6)

issue, but rather to better understand it. If workers are finding employment in other growing sectors then short term hardships may not necessarily lead to long term pain. Moreover, if manufacturing firms have been restructuring their activities in a manner such that some establishments are reclassified into the service sector, or if they have increasingly been contracting out activities formerly conducted in-house, the decline in manufacturing employment could be very misleading indeed.

Like the relative drop in manufacturing employment, a drop in absolute manufacturing employment does not in itself imply that the sector is facing financial difficulties or is contracting. Drops in manufacturing employment can be accompanied by rising manufacturing output and a growing economy.

Nonetheless, some proponents of the de-industrialization thesis in Canada give only scant attention to absolute levels of manufacturing employment, and instead point to gross losses of manufacturing employment (see Chapter 3). But this is an awkward measure. Gross losses of jobs are a constant occurrence and therefore, if we were to follow such reasoning, it would imply that Canada is in a permanent state of de-industrialization, even if net changes were actually gains.

The gross loss of jobs has of course been higher in certain periods than others. The gross loss of jobs, for example, was especially high during the early 1980s, as the proponents of the de-industrialization thesis emphasize (e.g., Drache 1989a). Indeed, between 1981 and 1984 an estimated 289,000 manufacturing workers lost full-time jobs. They made up about 29 per cent of all permanently laid off workers in the labour force (Picot and Wannell 1987a; 1987b). But it is important to remember that the years

covered an economic downturn. The overall employment situation in manufacturing improved in the following years. By 1988 there were as many workers in manufacturing as in 1981 and in 1989 the number peaked, according to the LFS data presented in Table 5.6 and illustrated in Figure 5.1. Thus, the gross loss of jobs is an inappropriate indicator of the trend in manufacturing employment.

Proponents of the de-industrialization thesis say little about overall changes in the labour force. They neither specify the depth nor the duration of the loss in manufacturing employment as significant criteria for "de-industrialization." A fall over a period of few a years is for some [such as Drache (1989a), Hurtig (1991), and Merrett (1996)] sufficient to establish a trend, irrespective of economic conditions. If so, then Canada has long been de-industrializing in relative terms. It has on and off been de-industrializing in absolute terms. Further, if the analysis is restricted to relatively short periods covering recessionary years then the gross losses in employment are over-interpreted to mean de-industrialization.

But since de-industrialization implies structural change, it is essential that the data cover a period not solely influenced by an economic downturn or upturn. When data on manufacturing employment are examined over the long term, and changes in the labour force and economy are taken into account, a different picture emerges than that advanced by the de-industrialization thesis.

The relative drop in manufacturing employment is partly explained by the expansion of the labour force, particularly the rise in the service sector, accompanied by a large influx of women. Notwithstanding the various difficulties in compiling statistical

information over many decades, census data indicate that the work force grew from more than 2.7 million in 1911 to 4.6 million in 1941 to 8.6 million in 1971 to about 14.5 million in 1991 (see Table 5.4 and 5.5, see also Statistics Canada, Catalogue No. 93-326, 1993).

The overall participation rate has over the years increased. It grew, for example, from 56 per cent in 1961 to 68 per cent in 1991 (Statistics Canada, Catalogue No. 93-324, 1993).[7] The rise has been due to the dramatic surge in the participation rate of females in the last four decades. The female labour force participation rate slowly grew with each decennial census from 1901 to 1951 rising from about 16 per cent to 23 per cent (Statistics Canada, Catalogue No. CS11-516, 1983). But by 1961 the rate of participation rose to about 29 per cent and jumped to about 39 per cent in 1971 to 52 per cent in 1981, to nearly 60 per cent in 1991 (Statistics Canada, Catalogue No. 93-324, 1993).[8] In contrast, the male participation rate steadily dropped from about 90 per cent in 1911 and 1921 to about 76 per cent in 1971, where it has roughly remained for the past two decades. These converging trends are slowly leading to a convergence in the male and female proportions of the labour force. According to LFS data the participation rate for the labour force in 1977 was 62.1 per cent, for females it was 46.7 per cent and for males 77.8 per cent (Statistics Canada, Catalogue No. 71-201, 1996). By 1995 the

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[7] Of course, one must not assume that the weekly hours spent at paid work have been necessarily the same over the period examined. For example, in manufacturing average weekly hours dropped from 42.7 in 1946 to 40.6 in 1961, based on the 1948 SIC (Statistics Canada, Catalogue No. CS11-516, 1983).

[8] Data of the different census years were adjusted to reflect 1971 census concepts. The census labour force activity concepts have remained generally consistent for the various years. But fewer and different questions were asked in the 1971 census than other years. The data cited here takes this into account and maintains a consistency in the processing of the data.

participation rate for the labour force was slightly higher at 64.8 per cent, but sharply higher for women at 57.4 per cent, and lower for men at 72.5 per cent. The rise of female labour force participation has coincided with the growth of the service, or tertiary, sector. In fact the vast majority are employed in the service sector, where they now outnumber men.

The share of the service sector in the labour force grew from about 66 per cent in 1977 to nearly 73 per cent in 1995 (see Table 5.3). Growth in the service sector and in female employment were especially evident in community, business, and personal service industries. These industries accounted for almost 42 per cent of all service workers or about 28 per cent of the labour force in 1977. By 1995, these industries accounted for more than 51 per cent of all service workers and nearly 37 per cent of the labour force. Approximately 50 per cent of female workers in the labour force are employed in these industries (Statistics Canada, Catalogue No. 71-201, 1996).

Of particular interest to some proponents of the de-industrialization thesis, is the rise in public sector workers (see Chapter 3). Drache (1989a) stated that, at least in the early 1980s, "the real job machine is the public sector." Bacon and Eltis (1978), argued mainly for the case of Britain, but suggested the same was true in Canada, that a rise in public sector employment and a general shortage of available workers deprives the manufacturing industries of workers, resulting in de-industrialization. The rise in the share of "government" workers mainly occurred in the 1940s and 1950s (see Tables 5.1 and 5.2). Census data show that after maintaining a steady share of the labour force for the years 1911 to 1941 at around 3 per cent, their share rose to 6 per cent in 1951 and to

more than 8 per cent in 1961, and stayed at that level in 1971 (see also Picot 1986). The rise in "government" workers in the 1941-61 period did not deprive the manufacturing sector of workers, since the number of manufacturing workers also increased. Moreover, the share of public administration workers in the labour force according to LFS data was about 7 per cent in 1977 and dropped to under 6 per cent in 1995 (see Table 5.3).

The low growth rate in government workers is clearly evident when the labour force is divided into three classes of workers: private sector; government (or public sector); and self employed. As Table 5.7 shows, overall employment rose by 37.3 per cent in the 1976-94 period. But while private sector employees increased by 2.3 million, a rise of 35 per cent, the number of government workers grew by 282 thousand, a 14.7 per cent gain. The most spectacular growth occurred among the self employed, almost doubling in number. The data clearly show that the private sector is the dominant type of employment, in 1994 it accounted for nearly 68 per cent of jobs, slightly below the 1976 proportion. In contrast, the share of government employees fell from nearly 20 per cent in 1976 to under 17 per cent in 1994. Thus the suggestion or claim that the public sector has in the past two decades been the principal creator of jobs is questionable, to not say unfounded.

In Canada the service sector has long been a key recruiter of new employment; it is not a recent phenomenon. Canada did not experience a sequential shift in employment from primary to secondary to tertiary, or from agriculture to manufacturing to services, as

Table 5.7: Employment by class of workers

	1976	1994	Change
	('000)	('000)	%
Private Sector	6,656	8,985	35.0
Government	1,914	2,196	14.7
Self-employed	1,069	2,055	92.3
Total	9,639	13,236	37.3

Source: Statistics Canada, Labour Force Annual Averages, Catalogue No. 71-529, 1995

some may have assumed.[9] As Tables 5.1 and 5.4 show, in 1911 the tertiary sector accounted for more workers than the secondary sector, but less than the primary sector. And while over the years the share of primary sector employment continuously fell, that of the tertiary sector rose. In 1921 the two sectors had virtually the same number of workers, but by 1931 the tertiary sector accounted for a larger proportion. Meanwhile the share of the labour force in the secondary sector has always been less than that of the tertiary sector, and only surpassed that of the primary sector in 1951. However, following 1951, a peak year in secondary sector employment, its share of the labour force began to fall. By 1961 the service sector made up nearly 55 per cent of the labour force,

[9] The claim that a sequential shift in the labour force by sector occurs in the course of economic development has been closely associated with Fisher (1935) and Clark (1951). For example, Clark (1951, p. 395) argued that labour shifted "from agriculture to manufacture and from manufacture to commerce and services." This view of labour force transformation is not fully confirmed by evidence in Canada and various other countries (see Fuchs 1968; Singelmann 1978).

compared to 29 per cent in the secondary sector and 14 per cent in the primary sector. By 1991 the service sector had faced further growth in its share of the labour force reaching 65 per cent, with 21 per cent in the secondary sector and 5 per cent in the primary sector (Statistics Canada, Catalogue No. 93-326, 1993).

The trends in agriculture and manufacturing, parallel those of the primary and secondary sectors, respectively. The census data show that the share of agriculture continuously dropped from nearly 34 per cent in 1911 to around 6 per cent in 1971. Further drops were minimal, and by 1991 only about 3 per cent of the labour force was employed in agriculture (Statistics Canada, Catalogue No. 93-326, 1993). Likewise the LFS data show that the share of agriculture in the labour force has fallen from 4.6 per cent in 1977 to 3.1 per cent in 1995. In contrast, the share of manufacturing remained stable from 1911 to 1931 until it grew slightly in 1941 and then peaked in 1951 at about 25 per cent. In 1961 the share returned to the 1941 level of nearly 22 per cent. By 1971, when the early de-industrialization thesis was being formulated, the share of manufacturing employment in Canada had dropped to about 20 per cent, nearly five percentage points less than 1951. The drop continued over the years and by 1991 the share of manufacturing in the labour force fell to 15 per cent (Statistics Canada, Catalogue No. 93-326, 1993). The LFS data show that manufacturing accounted for nearly 20 per cent of the labour force in the late 1970s. Over most of the next years the share of manufacturing fell and has in recent years been around 15 per cent (see Table 5.3 and Figure 5.1).

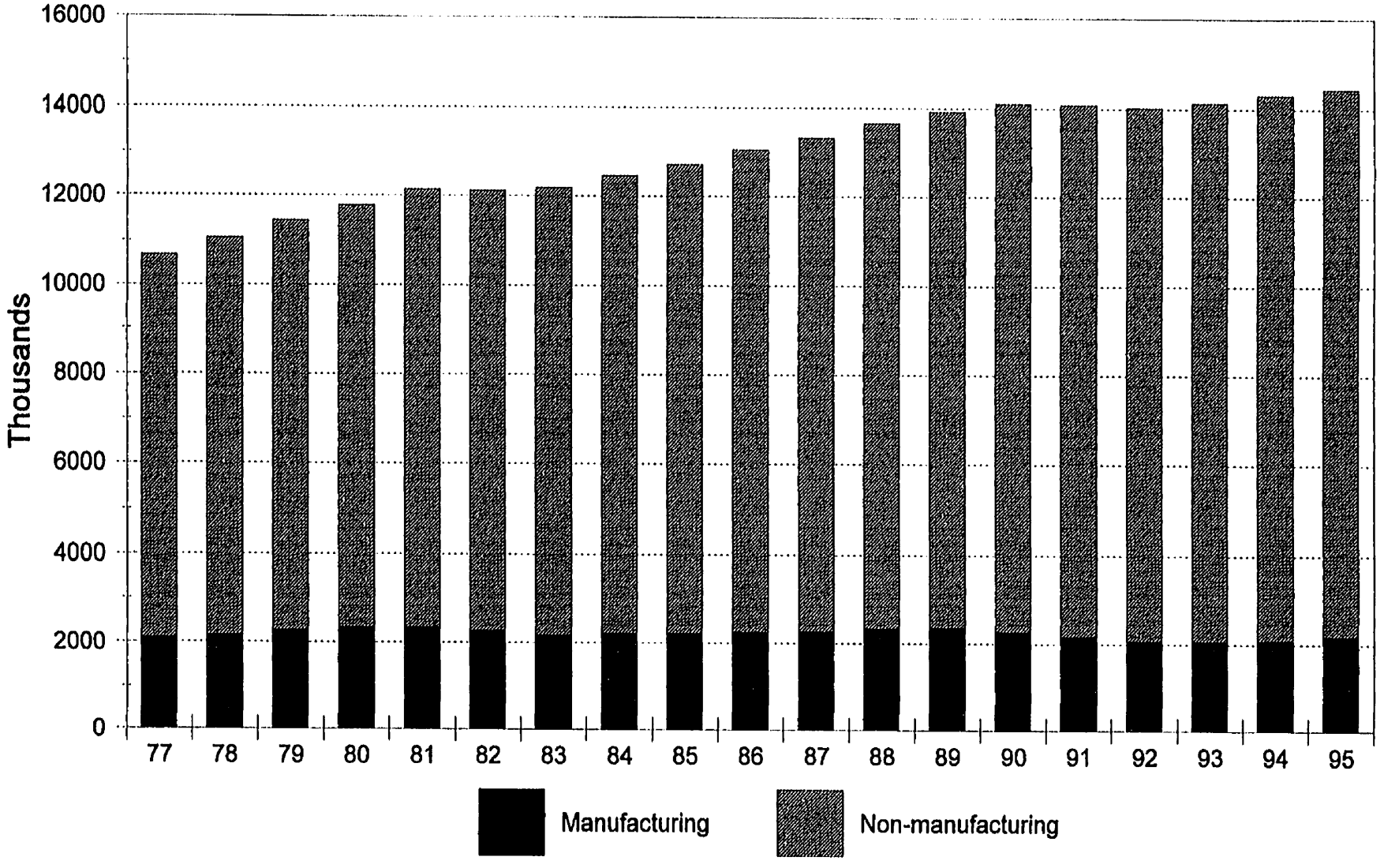
The changes in the proportion of manufacturing and agriculture demonstrate that

there is no ideal share that a sector must hold in the labour force for it to contribute to economic growth, or job growth. The decline in agriculture is striking, yet there has not been much preoccupation expressed over such a drop, since there has been a rise in agricultural productivity (see Chapter 4). Likewise, while manufacturing accounted for a lower share of the labour force in recent decennial years, it is also true that in 1911 and 1921 when its share of the labour force was nearly as low, it made major contributions to economic industrial growth. Moreover, although the drop in the share of agricultural workers has been accompanied for most decennial years with a drop in the absolute number of agriculture workers, in manufacturing the reverse has happened. In the census years from 1911 to 1971 the number of manufacturing workers constantly grew. The LFS data show that in the 1977-95 period, the absolute level of employment in manufacturing actually peaked in 1989 while the share of manufacturing in the labour force was until then at its lowest level at 17.1 per cent (see Figure 5.1).

Clearly as Figure 5.2 illustrates for the 1977-95 period the rate of growth of manufacturing employment has been lower than that for the labour force, consequently resulting in a lower share of manufacturing in the labour force. Further, in certain years the manufacturing sector experienced some marked declines, particularly in the 1981-83 period and 1989-92 period. These time frames have especially captured the attention of proponents of the de-industrialization thesis. But they were also recessionary years and to dwell on them would provide a distorted picture of the long term situation, as evident from the turnaround that followed the 1981-82 recession.

Figure 5.2

Labour Force
1977 - 1995



Source: Calculated from data compiled by Statistics Canada, Historical Labour Force Statistics, 1995, Catalogue No. 71-201, 1996
(see also Table 5.6)

The de-industrialization thesis suggests that there has been a rising distribution of the labour force over the years. Research by Picot (1986) and Charette, Henry, and Kaufman (1986) show that about 1 per cent, or less, of total employment has permanently changed industry or sector each year in the three decades following WWII. Using different levels of aggregation of employment data, they found changes in the distribution of workers were greater in the 1950s than in the 1970s (see also Baldwin and Gorecki 1990). These findings are contrary to the expectations of the early proponents of the de-industrialization thesis in Canada.

The shifts in the labour force can be measured by the index of dissimilarity which takes into account the change in the share distribution of workers among industries between years. It is calculated by totalling the absolute value of differences in the distributions of industries or sectors and divided by two. Per cent changes are used to overcome the problem of large industries dominating the calculation (see Picot 1986). The larger the index the greater the change in distribution. At least one drawback of the index is that the industries or sectors may face a relative change but not necessarily an absolute one.

A dissimilarity index to the labour force is applied to the census data from 1951 to 1986 for the industries indicated in Table 5.5. The data in Table 5.8 illustrate that the distribution of workers among the industries was greater in the 1950s and 1960s than in the 1970s and the 1980s. The de-industrialization thesis suggests that there was a large movement out of manufacturing in the 1970s and 1980s. But even when manufacturing is removed from the calculation, the redistribution of workers remained higher in the

1950s and 1960s.

Table 5.8: Index of Dissimilarity, 1951-1986

	1951 1961	1961 1971	1971 1981	1981 1986
All Industries	10.5	10.2	7.5	3.0
Excluding Manufacturing	9.0	9.3	6.8	2.1

The index of dissimilarity is formed by summing the changes in the shares over two periods being compared. It is half the sum of the absolute value of the difference between the shares of two sectors:

$$I = 0.5 \sum_{i=1}^{n} |Pi1 - Pi2|$$

where Pi1 - Pi2 are the percentage shares of sector (or industries) i in time period 1 and 2, and n = number of sectors (or industries).

As noted earlier, the share of the labour force in manufacturing, as well as agriculture, has been falling, while it has grown in the service industries. The census data based on the 1970 SIC show that after the share of manufacturing in the labour force peaked in 1951 at 24.5 per cent and dropped in the next census years to reach 16.8 per cent in 1986 (see Table 5.3). Thus, the census data show that since the 1950s there has been nothing unusual about the drop in the share of manufacturing. Indeed, in the 1951-61 period the share of manufacturing in the labour force fell 3.1 percentage points, when

the economy was growing and there was no concern expressed about the possible de-industrialization of Canada.

Recessions

A closer examination of year-to-year manufacturing employment over the past four decades shows that employment usually declines during economic downturns. Manufacturing employment was especially hurt by the last two recessions. The common definition of recession is two consecutive quarters of a decline in the real gross national product. Statistics Canada uses a more refined measurement which generally considers monthly data on the depth, duration, and diffusion of a downturn in economic activity to determine whether a recession has occurred (see Canadian Labour Market and Productivity Centre 1991). The former definition of a recession yields three recessions and the Statistics Canada approach six recessions, in the postwar period. For the purpose of this study, I have excluded the latest recession which began in the second quarter of 1990.

Manufacturing employment for the 1960-90 period in Table 5.9 compiled from the latest data available from the Census of Manufacturer show that the negative yearly percentage changes mostly occurred during economic downturns, with the most severe during the 1981-82 recession. The 1960s were generally prosperous with only a mild recession at the start of the decade and another beginning at the end of the decade. Thus

TABLE: 5.9: Manufacturing employment and post-war recessions, 1960-90

	MANUFACTURING		RECESSIONS					
			Statistics Canada definition			*Common definition*		
Year	Employment '000	Yearly %change	Peak	Trough	No of quarters	Peak	Trough	No of quarters
1960	1,275	-0.9	1960Q1					
1961	1,353	6.1		1961Q1	4			
1962	1,390	2.7						
1963	1,425	2.5						
1964	1,491	4.6						
1965	1,570	5.4						
1966	1,646	4.8						
1967	1,653	0.4						
1968	1,642	-0.7						
1969	1,675	2.0	1969Q4			1969Q4		
1970	1,637	-2.3		1970Q2	2		1970Q2	2
1971	1,628	-0.5						
1972	1,676	2.9						
1973	1,751	4.5						
1974	1,786	2.0	1974Q1					
1975	1,741	-2.5		1975Q1	4			
1976	1,743	0.1						
1977	1,705	-2.2						
1978	1,791	5.0						
1979	1,855	3.6	1979Q4					
1980	1,850	-0.3		1980Q2	2	1980Q1	1980Q3	2
1981	1,854	0.2	1981Q2			1981Q2		
1982	1,702	-8.2		1982Q4	6		1982Q4	6
1983	1,671	-1.8						
1984	1,722	3.0						
1985	1,767	2.6						
1986	1,809	2.4						
1987	1,865	3.0						
1988	1,947	4.4						
1989	1,969	1.1						
1990	1,869	-5.1	1990Q2			1990Q2		

The data covering 1960 to 1969 are compiled on the basis of the 1960s SIC: for 1970 to 1982 on the 1970 SIC; and subsequent years on the 1980 SIC.

Sources: Compiled and calculated from,

Statistics Canada, Manufacturing Industries of Canada. National and Provincial Areas, 1990, Catalogue No., 31-203, 1994

Quarterly Labour Market & Productivity Review, Winter/Spring, 1991, p. 14.

manufacturing employment, except for 1968, grew throughout the decade and kept reaching new highs.

The 1970s, however, began with a recession and faced a drop in manufacturing employment. It was at about the same time that the early de-industrialization thesis was being advanced. But proponents of the thesis disregarded the recession (see Chapter 3) and claimed that the change in manufacturing employment was structural and generalized the findings as demonstrating Canada's "de-industrialization." Yet manufacturing employment recovered and reached a new high by 1974, fell again during the 1975 recession, and recovered by the end of the decade and surpassed its pre-recession level. But after remaining at that level for three years, manufacturing employment was affected by the 1981-82 recession, the most severe since the Great Depression of the 1930s. In 1983 manufacturing employment fell to a level that was about equivalent to that of the early 1970s. But by 1984 it had begun to recover and peaked in 1989, only to be followed by another inevitable recession. Thus, focussing on employment data restricted to a few years and neglecting an economic downturn is apt to give a deceiving impression of the long term trend.

Information on job searches of manufacturing workers who have lost their jobs during the recession is generally scarce. Some evidence is however available from a Survey of Displaced Workers included as a supplement to the January 1986 Labour Force Survey.[10] The survey was restricted to a particular group of workers and covered

[10] The survey was sponsored by Employment and Immigration Canada and was analysed by Picot and Wannell (1987a; 1987b) of the Social and Economic Division of Statistics Canada.

recessionary years. It focussed on workers from 25 to 65 years old who permanently lost full-time jobs between January 1981 and December 1984 and who had not been recalled or rehired by the same employer. The researchers estimated that there were roughly one million such workers, irrespective of the time spent at the lost job (Picot and Wannell 1987a). An estimated 289 thousand had been in manufacturing. The likelihood of workers in manufacturing being displaced was however lower than in some other industries, including construction, mining, miscellaneous services and services to business management.[11]

However, during a recession more workers lose their jobs and there is a delay in the process matching jobs and qualified workers. In January 1986, when the Survey of Displaced Workers was administered to workers who had lost full-time jobs between 1981 and 1982, 57 per cent held full-time jobs, 6 per cent part-time jobs, 21 per cent were unemployed and 17 per cent had left the labour force. The situation was much the same for former manufacturing workers: 59 per cent held full-time jobs, 5 per cent part-time, 19 per cent were unemployed, and for various reasons, including retirement, 18 per cent were no longer in the labour force. According to the study's researchers, Picot and Wannell (1987a; 1987b), no single generalization could describe the job search experience of the permanently laid-off workers who found new full-time jobs. On average it took 24 weeks to find a full-time job, but for former manufacturing workers it

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[11] Workers in agriculture, forestry, fishing, and service industries, especially those in public administration, were less likely to be permanently laid off. The highest likelihood of job loss among permanently laid-off workers was for those aged 20 to 34, with one to three years of job tenure in construction, mining or certain manufacturing industries, in provinces especially hit by the recession.

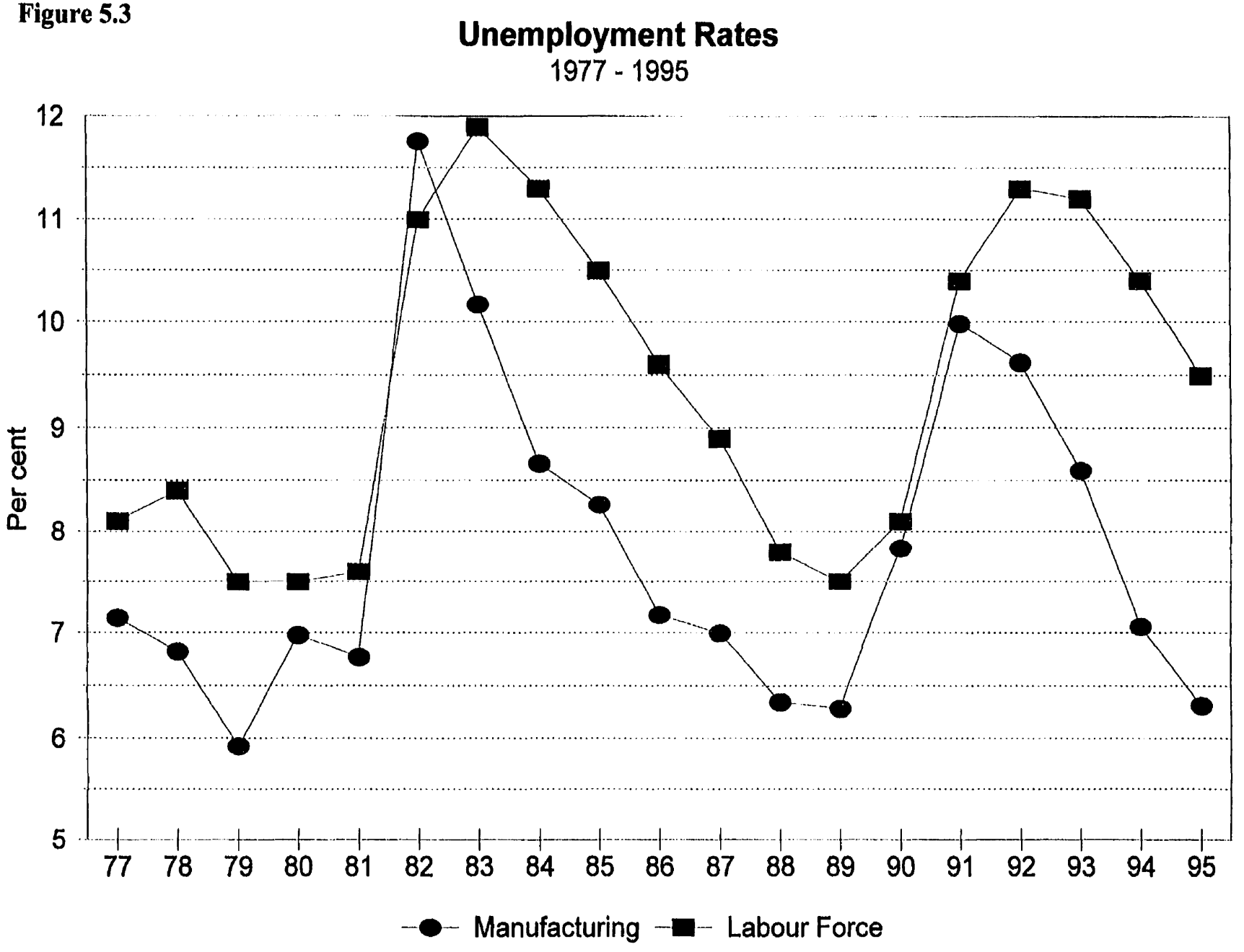
took 28 weeks. Of the 194 thousand workers who had lost full-time jobs in manufacturing and on whom information was available, only 85,000, or 44 per cent, had found new jobs in manufacturing. The survey found that laid off manufacturing workers were generally paid lower in their new job.[12] However, the variables best able to predict wage gains or losses included the wage level the worker held in the lost job, length of job search, and level of education, and not the industry in which one had worked. Picot and Wannell (1987a, p. 18) concluded that in finding employment, ". . . laid-off manufacturing workers, while not faring as well as their counterparts in some areas of the service sector, did about as well as permanently laid-off workers in general."

Unemployment

The labour force data examined earlier did not differentiate between employed and unemployed. Proponents of the de-industrialization thesis, however, stress that unemployment in manufacturing is especially severe. The implication is that the unemployment rate in manufacturing is rising and that it is higher than that of the labour force as a whole. But the LFS data in Figure 5.3 show otherwise. The unemployment rate of the manufacturing sector generally parallelled that of the labour force. More

[12] For workers who remained in the manufacturing sector total weekly earnings was 7 per cent lower than the lost job. The total weekly earnings for manufacturing workers who found new jobs in other goods producing industries was about equal to the lost jobs. The loss in total weekly earnings was especially high for new jobs in the service sector – over 14 per cent lower then the lost manufacturing jobs.

Figure 5.3



Source: Calculated from data compiled by Statistics Canada, Historical Labour Force Statistics, 1995, Catalogue No 71-201, 1996

importantly, the unemployment rate of the manufacturing labour force has been lower than that of the labour force, with the exception of 1982.

However, overall unemployment rates are influenced by the unemployment rates in manufacturing. But the situation is not much different when the unemployment rates in manufacturing are compared to those of the non-manufacturing labour force. The unemployment rates among non-manufacturing workers were for most years higher than among manufacturing workers. A partial explanation of the rise of unemployment among the non-manufacturing workers is that workers who entered the labour force for the first time were more likely to enter the service sector and thereby add to the unemployment of the non-manufacturing workforce.

Nevertheless, the unemployment rate and the number of unemployed workers in manufacturing demonstrates that manufacturing was severely affected by the last two recessions. In 1982, the unemployment rate in manufacturing was 11.2 per cent for a total of 268 thousand unemployed manufacturing workers. In contrast the previous year the unemployment rate in manufacturing rate was 6.8 per cent and the number of unemployed was 160 thousand. The situation in 1991 was less severe with an unemployment rate of 10 per cent for a total of 217 manufacturing workers unemployed compared to an unemployment rate of 7.8 per cent, or 179 thousand unemployed workers the previous year. After the 1981-82 recession the situation changed with the unemployment rate and the number of unemployed workers dropping. In 1995 the unemployment rate fell to 6.3 per cent. The total of 139 thousand unemployed workers was the second lowest level in the 1977-95 period, slightly above the 1979 level of 135

thousand unemployed workers. The decline in the number of unemployed workers could be due to various factors, including workers leaving the labour force. However, it is also true that the absolute number of unemployed workers is not an indication of the overall employment situation in the manufacturing sector. In 1989 when the total labour force in manufacturing peaked, or the total employed workers (excluding the unemployed) peaked, there were nonetheless 150 thousand unemployed workers and the unemployment rate was 6.3 per cent.

Thus like the employment data examined earlier, an assessment of changes in unemployment is distorted when focussing on short-term fluctuations, whether recessions or recoveries. The long-term picture suggests a close relationship between the changes in economic growth and changes in unemployment, both in the labour force as a whole and in manufacturing. From 1983 to 1989, years in which the economy was emerging from the terrible slump of the 1981-82 recession, the overall unemployment rate fell from 11.9 per cent to 7.5 per cent, a decline of 4.4 percentage points. In manufacturing the unemployment rate fell from 10.2 per cent to 6.3 per cent, a fall of 3.9 percentage points. More recently, the unemployment rate in manufacturing dropped from 9.6 per cent in 1992 to 6.3 per cent in 1995, a 3.3 percentage point drop. In contrast, the overall unemployment rate dropped from 11.3 per cent to 9.5 per cent, a 1.8 percentage point drop. Thus the employment and unemployment data suggest that the manufacturing sector is slowly recovering from the latest recession.

Proponents of the de-industrialization thesis also emphasize the rise in the growing level of structural unemployment. Drache (1989a) views it as a key

characteristic of de-industrialization (see Chapter 3). Structural unemployment, refers to long term unemployment usually resulting from such factors as declines in industries and changes in production processes. There is a mismatch in the labour market between the availability of labour and the demand for labour.

Unfortunately, the LFS data do not allow for a more complete analysis of structural unemployment among manufacturing workers. The data on duration of unemployment provide some insight into the difficulty workers are experiencing in finding employment. But they are based on information collected from respondents at the time of the survey, and only follow up on a respondent for six months. Beyond six months it is impossible to determine how long the respondent remained unemployed, unless assumptions that are not necessarily correct are taken into account (see Corak 1990).[13]

The length of time an individual spends on unemployment influences the unemployment rate, not to mention the personal hardships, and indicates whether workers are facing more difficulties in finding employment. If unemployment is of short duration then the rates are high, but the situation is not as drastic as when increasing unemployment is accompanied by long durations of unemployment. The data show that the average duration of overall unemployment has grown from 14.8 weeks in 1979 to

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[13] Corak (1990) explored the duration of unemployment using longitudinal data derived from the Annual Work Patterns Survey (AWPS) for the years 1978-80 and 1982-85. The AWPS contains retrospective information on the time an individual spent in unemployment, employment and not in the labour force. The time horizon is for one year. Unfortunately, the co-variates are restricted to demographic, educational, and regional variables: industry was not included. One result of the study is that over the post-recession years the average duration on unemployment dropped for workers under twenty four years of age but deteriorated for workers over 55 years of age. Corak (1990: 17) also notes there was "no simple relationship between education levels and unemployment spell durations."

17.9 weeks in 1989. In addition, from 1979 to 1984 the increasing national unemployment rate was largely due to the rise in the length of unemployment spells (Picot 1986).

But unemployment rates are not only affected by permanent layoffs, but also temporary layoffs and quits. The distribution of the labour force is generally characterized in terms of proportions of employed and unemployed by industry, gender and so on. In such discussions mobility in the labour market is often missed. This is so whether such mobility was initiated by the firm or by the worker. Until recently little information was available on labour turnover in Canada (see Baldwin and Gorecki 1990). However, a Statistics Canada (Catalogue No. 71-539, 1992) study recently shed light on this issue (see also Picot and Baldwin 1990a; 1990b).[14] It found tremendous mobility in the labour market which is either firm or worker initiated. For example, in 1988, one in five workers was either permanently laid off or left their firms. When temporary separations are included, the ratio results in one in three workers separating permanently or temporarily from their firms. The number of hirings was also large. It accounted for about one third of all jobs at any time in the year.

The mobility in the labour market is bound to have an impact on unemployment rates. Moreover, it raises questions about using gross loss of jobs as a measure of de-industrialization. From 1978 to 1989, in all industries permanent separations

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[14] The study used new or untapped data sources to shed light on the issue. The two sources were: 1) the Longitudinal Worker Files based on data from administrative records from Employment and Immigration Canada and Revenue Canada; and 2) the Labour Market Activity Survey, a longitudinal survey conducted in two panels: the 1986-87 and 1988-90. (It has been discontinued and been replaced by the Survey of Labour and Income Dynamics.)

consisting of layoffs initiated by the firm, quits initiated by the worker, and other factors (strikes, retirement, returned to school, illness, etc.) were generally stable and about equally split. The exception is during the recession when, not surprisingly, layoffs rise and quits fall. As Table 5.10 shows, such is the case also in manufacturing. In 1982 permanent layoffs rose 17 per cent while quits dropped 58 per cent. If permanent layoffs are used as a proxy of "gross" loss of jobs, then clearly 1982 was an exceptional year, with 255 thousand permanent layoffs. But permanent layoffs always exist. Indeed, even in years which overall manufacturing employment grew, as in 1988, there were about 191 thousand permanent layoffs. It is worth noting that in the same year there were about 348 thousand quits.

Labour reallocation is moreover heavily concentrated among the young, workers holding low-paying jobs, and more frequently among workers in small firms. For example, in 1988 the chance of permanently separating from a manufacturing firm was more than 55 per cent for someone who earned from five to less than seven dollars. The probability was about 11 per cent for a manufacturing worker earning from sixteen to less than twenty dollars,

Another form of worker separation is the temporary layoff. As with permanent layoffs, temporary layoffs are affected by the business cycle. In 1982 temporary layoffs totalled 922 thousand. But in the next years the number dropped sharply. In 1988 with manufacturing employment rising, temporary separations initiated by the firm numbered over 451 thousand.

On the other side of the work turnover picture are the hirings, which can be either

Table 5.10: Number of Permanent & Temporary Separations (1978-88), and Hirings (1979-89): All Industries & Manufacturing, (in thousands)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
ALL INDUSTRIES												
Permanent												
Total	2947.9	3154.8	3095.6	3499.8	2915.5	2659.7	3142.3	3419.8	3607.1	3913.5	4255.8	
Layoffs	1035.1	937.7	900.6	1049.4	1212.7	1105.9	1168.7	1162.2	1156.8	1155.4	1159.7	
Quits	1032.1	1237.8	1197.0	1371.4	768.8	702.5	944.1	1152.8	1302.2	1546.7	1797.7	
Other	880.7	979.3	997.9	1079.0	933.9	851.4	1029.6	1104.8	1148.1	1211.4	1298.4	
Temporary												
Total	2174.5	2199.5	2378.3	2673.6	3338.7	2614.2	2901.1	2879.3	2955.0	2875.1	3003.7	
Layoffs	1169.1	1150.1	1284.9	1524.3	2038.7	1608.1	1698.5	1634.8	1662.0	1574.9	1577.4	
Other	1005.4	1049.4	1093.4	1149.3	1300.1	1006.0	1202.6	1244.6	1293.0	1300.2	1426.2	
Hirings												
Total		3293.7	3116.5	4192.1	2003.8	2992.9	3249.2	3966.0	4056.2	4466.5	4649.5	4761.4
MANUFACTURING												
Permanent												
Total	610.1	697.5	645.9	708.6	530.3	440.5	539.2	589.9	624.6	692.7	765.6	
Layoffs	186.3	179.4	183.5	217.2	254.5	193.6	202.0	201.8	193.7	182.5	190.5	
Quits	242.5	303.5	262.3	281.1	118.2	113.7	167.7	205.7	241.3	298.5	347.5	
Other	181.2	214.6	200.2	210.3	157.6	133.3	169.4	182.4	189.6	211.7	227.6	
Temporary												
Total	674.0	713.5	837.9	943.4	1382.6	832.5	874.1	826.6	825.4	766.0	769.0	
Layoffs	378.6	421.9	534.9	648.2	921.9	560.0	547.0	509.9	524.5	466.7	451.4	
Other	295.4	291.7	303.0	295.2	460.7	272.4	327.1	316.8	300.9	299.3	317.5	
Hirings												
Total		709.2	608.6	727.8	285.9	503.1	573.7	644.3	673.5	767.3	779.9	709.5

Source: Compiled from, Statistics Canada, Worker Turnover in the Canadian Economy, 1978-1989, Catalogue No. 71-539, 1992

for a new job, one resulting from a quit, or other reasons. Hirings in manufacturing have been generally stable in the 1979-89 period, except of course during the recession. In 1982, for example, hirings dropped to 286 thousand from about 728 thousand the previous year. But the situation changed in the next years and in 1988 there were 780 thousand hirings.

Thus, by focussing on only permanent layoffs, one would have to conclude that Canada has been in a continuous state of de-industrialization. By taking into account all separations and hiring activity one should conclude that there exists a large volume of worker turnover and reallocation in manufacturing.

An additional concern about the level of unemployment is that of "discouraged" workers, who do not appear in the official unemployment figures. Their numbers tend to rise during low economic activity and decline in an economic recovery (see Akyeampong 1989; Cote 1990). The de-industrialization literature, however, leaves the impression that their numbers have been rising regardless of whether there is a recession and that the increase is a symptom of de-industrialization. The LFS data on persons not in the labour force because they believe no work is available, however, show a decline in their numbers when the economy is in recovery. For example, the number of discouraged workers jumped threefold in the 1979-82 period but dropped during the recovery and by the end of the 1980s they numbered less than in the late 1970s. During the recession of the early 1990s the number of discouraged workers again increased and then began to slowly decline.

Non-standard Employment

A few years ago the now defunct Economic Council of Canada (1990, p.13) noted there were signs of "a long-term trend towards more nonstandard employment." Non-standard forms of employment include part-time employment which are jobs that are less than 30 hours a week, short-time (temporary) employment of less than six months duration, own-account self employment work by the self-employed who have no employees, and temporary-help agency work. These four forms of employment made up about 30 per cent of total employment and accounted for almost half of all new jobs between 1981 and 1986 (see Economic Council of Canada 1990).

The focus on non-standard employment has however largely concentrated on part-time and temporary employment. But non-standard employment is mainly concentrated in the service sector. Nonetheless, Drache (1989a) believes that part-time jobs are overtaking full-time jobs in services, and implies that because of de-industrialization the same is occurring in manufacturing.

Part-time employment in the labour force has grown in both absolute and relative terms. In 1977 part-time employment totalled about 1.3 million workers and accounted for almost 13 per cent of total employed workers (Statistics Canada, Catalogue No. 71-201, 1996). In 1995 part-time employment grew to over 2.5 million and made up 18.6 per cent of the employed labour force. The increases have occurred especially during recessions and largely in the service sector, and mainly in the community, businesses, and personal services which accounted for one out four part-time workers in

1994. Further, the percentage of part-timers who could only find part-time work, has sharply grown rising from 12.9 per cent in 1977 to 31.9 per cent in 1995.

But despite the overall rise in part-time employment, there has not been a tremendous growth in the share of part-time workers in manufacturing. The LFS data show that over the years the rise in part-time employment in manufacturing has been mainly during recessions. In the early 1980s the declines in full-time manufacturing employment led to an increase in the share of part-time workers in manufacturing. But, with the recovery, full-time employment slowly grew while the number of part-time workers remained steady. In 1989, data from the General Social Survey showed that among manufacturing workers 10 per cent were part-time, part-year, or temporary workers, the lowest proportion compared to all other sectors (Krahn 1993). Thus the rise in part-time employment, or non-standard employment, in manufacturing do not reflect the developments for the whole labour force.

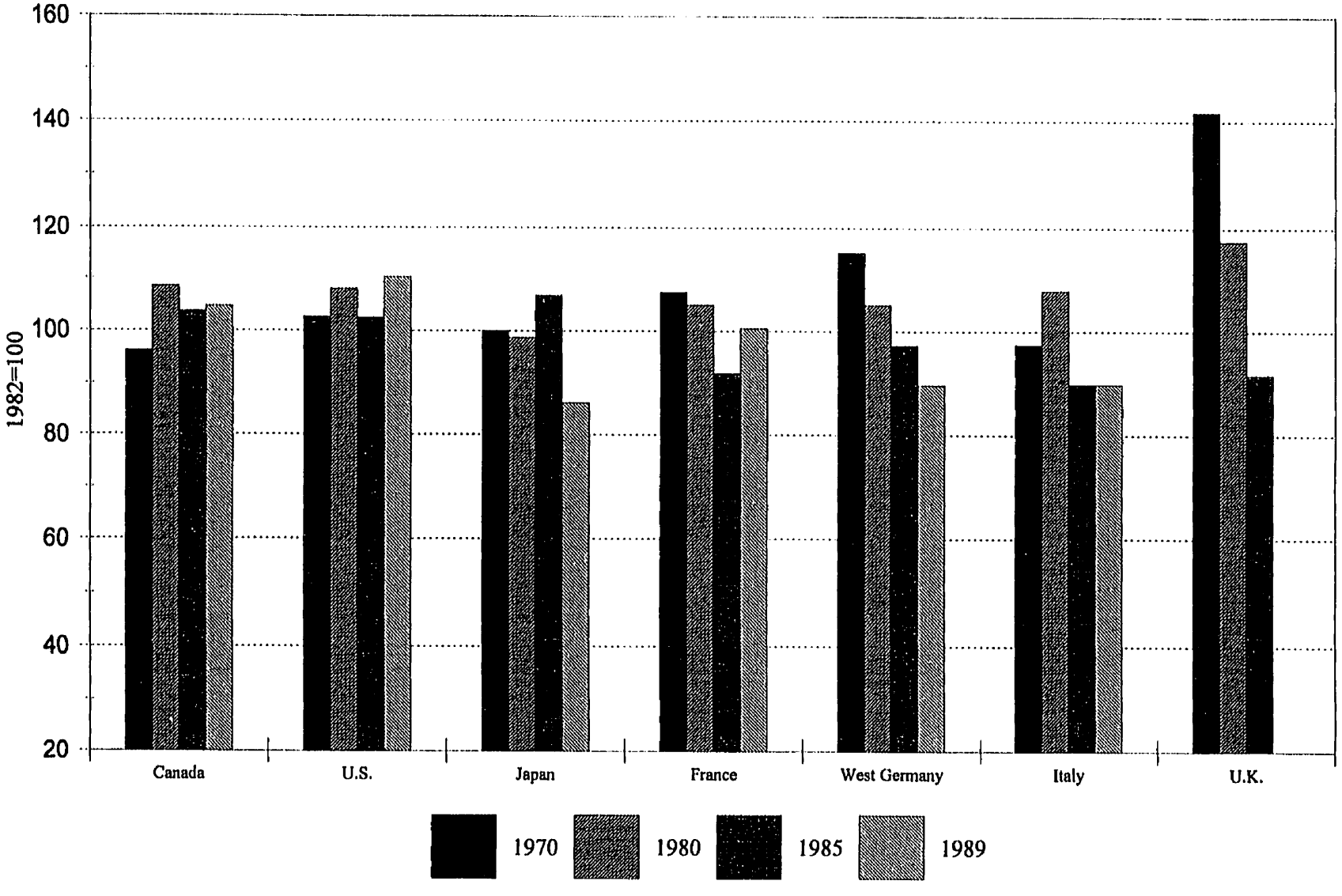
International Comparisons

International comparisons show that Canada is not alone in facing changes in manufacturing employment. As Figure 5.4 illustrates the relative drop in manufacturing is similar to trends in major industrialized countries, including Japan and Germany. The drops have been occurring for many years, and in some countries such as France and the U.K., the drops are much steeper than in Canada. However, these other industrialized

Figure 5.4

Manufacturing Employment

Selected Countries, 1970-89 (1982=100)



Note: Data relate to all employed persons in Canada and the U.S. and all employees in other countries.
No data are available for the U.K. in 1989.

Source: Compiled from U.S. Bureau of the Census, Statistical Abstract of the United States, 1991

countries have larger manufacturing sectors relative to their economies than Canada. Therefore, despite their relative drops in manufacturing employment, their shares of manufacturing in their labour force have remained higher than that of Canada.

But again the de-industrialization thesis is unclear about the depth and duration of the fall in manufacturing necessary to give birth to a process of de-industrialization. However, it can be just as confusing when trying to define a nation as industrialized using relative contributions to the labour force as one measure. For example, Hedley (1992) states that one of various measures that qualifies a country as industrialized is to have at least 30 per cent of its labour force in industry, that is mining, manufacturing, construction, and electricity, water, and gas. Such a measure would have in 1991 excluded Canada, the U.S., France, and the U.K., according to OECD data (OECD, 1994).

Nonetheless, while Canada faced a relative drop, it experienced an absolute rise in manufacturing employment. Canada has had also higher growth in absolute manufacturing employment than all of the major industrialized countries in the past two decades, as Figure 5.4 illustrates. Indeed, except for Canada and Japan, manufacturing employment has declined in the U.S. and Italy since about 1980 and earlier in France and Germany (see also Greiner, Kask, and Sparks 1995). If de-industrialization is defined as the combination of losses in relative and absolute manufacturing employment, countries like Germany, France and the U.K. would qualify. Yet, the share of manufacturing in their labour forces are higher than in Canada.

Concluding Remarks

The view of proponents of the de-industrialization thesis that the loss of manufacturing jobs is a clear sign that Canada is losing its industrial base is wrong. It is true that the share of manufacturing in the labour force has been falling, but it has been falling for many years, at least since 1951. Further, the reason for its fall (in relative terms) and fluctuations (in absolute numbers) differ sharply from the expectations put forward by "de-industrialization" theorists.

The absolute level of manufacturing employment achieved new highs, the latest being 1989. The drops in employment and increases in unemployment have occurred mainly during recessionary periods. During the latest recession manufacturing employment fell in both relative and absolute terms. But it is still premature to claim that a secular declining trend has been established. In 1995 manufacturing employment totalled about 2.2 million, about 103 thousand workers more than in 1994.

The relative drop in manufacturing employment is likely to be resulting from rising manufacturing productivity and falling rates of increase in the demand for manufactured goods. Consumers may be spending a larger share of their income on services than on buying manufactured goods. If productivity in manufacturing is rising then absolute manufacturing employment may remain static or gradually fall.

Manufacturing may be going the way of agriculture. The number of people living and working on farms eventually dropped as farms became more productive and reached a level that they could satisfy demand. Thus employment data in themselves are

insufficient to understanding the changes in manufacturing or to claim that a country has been losing its industrial base. It is also necessary to consider manufacturing output and productivity -- issues for the next chapter.

Chapter Six

Output and Productivity in Manufacturing

Changes in employment are only part of the picture of developments in manufacturing. The employment situation alone does not necessarily reflect the economic health of an industry. In addition to employment, there are other measures often used that keep tabs on what is happening to an industry, particularly output and productivity. Unquestionably, the loss or lack of growth in manufacturing jobs is disturbing and painful for the displaced workers and their families, and is a cost to society. But the loss of the manufacturing base in a nation's economy implies more than a drop in manufacturing jobs. Again, the developments in agriculture caution against relying on employment data to conclude anything about the future of a sector. Farms have been turning out more food with fewer people working the land, thanks to, among other things, advances in farm equipment. Despite the drop in agricultural employment, Canada still retains an important agricultural sector.

The rising share of service employment in the labour force in Canada, suggests that the role of manufacturing in the economy has diminished. This seems to lend credence to the claim of the de-industrialization thesis that Canada is losing its manufacturing base. But if this is true then presumably national output is increasingly composed of services and manufacturing output is gradually fading away.

Yet, while output, as well as productivity, are widely perceived as rough estimates of the health of an economy or industry, they receive little attention by proponents of the de-industrialization thesis. As shown in Chapter 3, in the 1970s the main advocates of the de-industrialization thesis stressed the loss of jobs (e.g., J. Laxer 1973). More recently, Drache (1989a) does not include either manufacturing output or productivity in his definition and characteristics of de-industrialization. Hurtig (1991) focuses on the share of manufacturing in GDP, but covers a limited period which includes a recession, and stresses the loss of manufacturing jobs. Meanwhile, critics such as Luciani (1996) simply dismiss the thesis on the basis that the share of manufacturing in national output has remained steady over the last three decades. The now defunct Economic Council of Canada (1990, p. 1) argued that Canada was not "deindustrializing" since "goods production remains an important component of overall output."

The main objective of this chapter is to examine manufacturing output and productivity over the last three decades. The changes are considered in light of claims put forth by the de-industrialization thesis. This chapter is divided into three sections: the first considers key indicators and conceptual issues; the second examines official

trends in Canadian manufacturing in the past three decades; and the third compares Canada's performance with that of other major industrialized countries (U.S., Germany, Japan, France, U.K., and Italy, which together with Canada comprise the "G-7"). The data are from official sources, for the most part published by Statistics Canada and the U.S. Bureau of Labor Statistics.

Concepts and Measurements

A main measure of production in Canada, and other industrialized countries, is the all-encompassing gross domestic product (GDP) which takes into account the total output of goods and services in the economy. Furthermore, "real GDP" is usually considered since it is adjusted for inflation and thereby provides a better sense of a country's economic health. Real GDP is determined by Statistics Canada involving a complicated adjustment process. The more recent available data are valued at 1986 prices. In calculating output measures Statistics Canada uses 1961 prices for the 1961-71 period, 1971 prices for the 1971-81 period, 1981 prices for the 1981-86 period, and 1986 prices for subsequent years. The series are then rescaled to correspond to 1986 dollars.

The effect of one price-base year rather than another in measuring real output is generally viewed as small enough to ignore. However, if there are dramatic swings in relative prices over the period covered, changes in real output can be influenced by the choice of the price-base year. In recent years products such as computers, for example,

have seen dramatic changes in prices and quantities which may have made real output more sensitive to the choice of price weight (see Greiner, Kask and Sparks 1995).

Nonetheless, there are general drawbacks with the GDP and consequently the real GDP. Among others, the GDP hinges on the accuracy of numerous pieces of information that are collected to calculate it. There are also anomalies in terms of the information that is included or excluded. For instance, household chores as mowing the lawn, cooking, washing windows, and the like, are not counted as part of the GDP when carried out by members of the household, but are counted if someone is hired to do them. Further, malfunctioning activities may actually make a positive contribution to GDP, such as shoddy products that require many repairs. It is also a matter of personal judgement as to whether certain developments that lead to increases in GDP are actually good for the nation. For example, an increase in the number of smokers and sales of cigarettes is likely to raise GDP: tobacco manufacturers would install new equipment to meet demand; the need for medical services would rise because of increasing health problems; pharmaceutical manufacturers would have to supply more medication; and throughout more workers would be hired.

Determining national or industry output is obviously no easy task. Few plants produce a single homogeneous commodity whose output is easily measured by simply counting the units. A factory that makes only dresses, for example, usually puts out a variety of styles and sizes which require different levels of effort in producing. Thus, the number of dresses produced in a year can only be a rough estimate of output. Comparing one year to another would have to assume that production efforts were concentrated on

making the same styles and sizes of dresses. The issue is further complicated by, among other factors, the price of the dresses sold. The owner of the factory is likely to be more concerned with profits achieved than simply the number of dresses sold. Adding up the number of dresses sold is no indication of profits and prices -- and how a price is assigned is in itself a complex issue. Nonetheless, even if it were possible to accurately determine the output of a firm, there would still be many other problems to confront in determining overall national or industry output. Statistics Canada considers final goods and services in dollar terms to arrive at a more aggregate level of output. Even this is not an easy and precise task considering the complications that are involved in determining the appropriate prices of the goods and services.

Therefore, the GDP should be regarded with some caution. Moreover, an improvement in GDP does not imply a corresponding improvement in an individual's well being. It is also important to note that since the GDP is vulnerable to miscalculations and errors in compilation, as well as various adjustments, the GDP is often revised. But, notwithstanding its imperfections, the GDP, and particularly real GDP, is generally recognized as the best overall measure of a nation's or industry's economic performance over time.

Statistics Canada breaks down the GDP into various industrial categories, including manufacturing and its major industries. An industry's GDP is the value that is added when inputs purchased from other industries are transformed into outputs. If Canada is indeed losing its manufacturing base, as the de-industrialization thesis claims, then manufacturing output should be falling.

An often cited yardstick of the well being of an industry, and one used by some proponents of the de-industrialization thesis, is its share of the country's GDP. But relative change is affected by the rate of growth of the total economy. A drop in the share of manufacturing in the GDP, for instance, does not in itself imply that the sector is in difficulty. Its rate of growth may be simply less than that for the whole economy, resulting in the manufacturing sector comprising a smaller share of the economic pie.

More useful estimates of changes in manufacturing output are change to its absolute level in constant dollars and annual rates of growth. If the de-industrialization thesis is correct, then the absolute level of manufacturing output should have dropped, and so should have annual rates of growth. It is also clear that trying to draw an inference about a trend from output data for a restricted number of years, say two to four years, is meaningless. Such data must cover a period that is long enough to be able to distinguish if the trend in the contribution of manufacturing to national output is secular or cyclical.

A key element of output growth is productivity. Many argue that a country's standard of living (usually measured in terms of income per capita) is closely tied to its ability in raising productivity (see, e.g., Galarneau and Maynard 1995; Galarneau and Dumas 1993; Rao and Lemprière 1992; Canadian Labour Market and Productivity Review 1991; Baumol, Blackman and Wolff 1989). In the words of Krugman (1994a, p. 13-14): "Productivity isn't everything, but in the long run it is almost

everything."[1] He adds, at least for the U.S., "Compared with the problem of slow productivity growth all our other long-term economic concerns - foreign competition, the industrial base, lagging technology, deteriorating infrastructure and so on - are minor issues." Productivity data for one year is pointless, as with output it is necessary to examine changes over a period of time.

But what is productivity? Productivity depicts the relationship between output (quantity of goods and services produced) and input (quantity of labor, capital, or other resources that produce it). There are however several types of productivity measures, each tapping different sorts of information. Productivity is estimated by taking into account the output of a firm, industry, or economic sector and a single input, such as labour or capital, or a composite of inputs whereby the relative importance of each is noted.

Labour productivity is by far the most commonly used productivity indicator. It is merely output divided by the number of hours worked or persons employed. The more widely used of the two in Canada, and for a long time the only measure of productivity published by Statistics Canada, is that which uses hours worked as the labour input (see Galarneau and Maynard 1995). Hours worked are the total working hours at the place of employment by all persons engaged in the production of output, including self-employed workers and unpaid family workers. Excluded are the hours spent on vacations, holidays, illnesses, and so on. There are of course numerous obstacles in determining hours

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[1] Similarly, according to Baumol, Blackman and Wolff (1989), in the long run the rate of productivity growth is key to an economy's welfare.

worked. For example, what constitute the hours worked by a self-employed? More important, hours worked does not relate to different skills of workers and labour is not solely responsible for productivity. Among other factors, technological innovations, the organization of the workplace, economies of scale, and capacity utilization, all have a role to play.

Thus, labour productivity is basically a partial productivity measure; a statistical construct calculated by Statistics Canada and expressed by the ratio:

$$\frac{\text{Real GDP}}{\text{hours worked}} \times 100$$

Since it is a ratio, its value depends on what happens to either the numerator or denominator, or both. A rise in labour productivity is not necessarily a sign that things are improving. Labour productivity moves upward if, for example:

1) hours worked declines while the real GDP is unchanged;

2) hours worked is unchanged while the real GDP increases;

3) the drop in the rate of growth in hours worked is greater than the drop in the rate of growth of real GDP;

4) the increase in the rate of growth in hours worked is lower than the increase in the rate of growth of real GDP;

Hence productivity is affected by whatever contribution is made to the numerator or denominator, regardless of the quality of products or impact on society. Despite the rise in productivity in the first three situations, total working hours would either drop or stay

stable, and only in the second situation would there be an improvement in real GDP. Thus although productivity would rise, it is debatable whether the nation is richer. The third situation would clearly lend support to the de-industrialization thesis, since output and labour input are falling. The first situation would provide mixed support for the thesis.

But labour productivity probably tells us less about the input of workers than the investments in machinery, research and development, interest rates and exchange rates, and other factors that can affect output. The amount of labour required, in say making a dress, may have little to do with the final price of the dress which in turn affects real GDP.

In an effort to provide a broader measure of productivity, Statistics Canada in 1989 began to publish, on an experimental basis, multifactor or total factor productivity, which includes other factors of production in addition to labour input. But multifactor productivity still faces some similar weaknesses to those noted for output and labour input, and it excludes a myriad of factors that are not quantifiable but that can have an impact on production, such as economies of scale and the efforts of management.

Clearly, productivity measures are only estimates and must be interpreted with caution. But despite the limitations of productivity statistics, they do provide insights into the developments of a firm, industry, or economy. They are often used in comparing economic performance over time, across industries, and among countries.

Trends in labour productivity receive greater attention in this study mainly because they have long existed and give particular importance to employment and

output. And labour productivity is widely recognized as pertinent to economic analyses. Multifactor productivity is basically used here as a complementary measure to labour productivity. The contributions of labour, capital and multifactor productivity to output growth are also examined.

To better understand the trend in labour productivity, it is essential to determine the impact of the numerator and denominator on the ratio. As previously noted, a rise in labour productivity does not signify a rise in output or hours worked. A higher declining rate in hours worked than output increases labour productivity. But despite the increase, manufacturing is not growing; it is actually shrinking. Thus, from the perspective of the de-industrialization thesis, labour productivity ratios in themselves tell us little. Changes in output and labour input have to be taken into account. If the thesis is correct, there should be both a drop in output and hours worked, as well as a decline in the number of persons employed.

Productivity statistics are issued in index form, of which the latest use 1986 as the base year (see Statistics Canada, Catalogue No. 15-204, 1995). The data on Canada examined in the next sections are mainly from Statistics Canada publications and are dependent on the quality of the input and output information collected by that agency.

In examining productivity it is also important to distinguish between its level and growth rates. While productivity levels are the ratios of real output to input(s), growth rates are the changes in the levels over time. Hence, poor productivity can refer to either lower levels or declining growth rates.

Output and Productivity

In the last three decades total output and manufacturing output have increased. As Table 6.1 shows, from 1961 to 1995, in constant 1986 dollars, Canada's total output grew by about 247 per cent and manufacturing output by nearly 229 per cent. Both total output and manufacturing output have faced declines in certain years, but the overall trend is of continuous growth. With regard to the last decline, the total economy recovered by 1993 and has been expanding to reach a peak level of nearly 543 billion constant dollars in 1995. Manufacturing output recovered in 1994 and has expanded to reach a peak level of more than 102 billion constant dollars in 1995.

However, manufacturing output has increased at a slightly lower rate than total output, resulting in a drop in the relative contribution of manufacturing to total output. This is illustrated graphically in Figure 6.1. Whereas the share of manufacturing to total output averaged about 21 per cent annually in the 1960s and 1970s, it averaged 19 per cent annually in the 1980s and 18 per cent annually in the early 1990s.

It is still too early to conclude that the relative drop in manufacturing output is definitely secular. In 1982, for example, the share of manufacturing in the total economy dropped to 17.7 per cent, but then slowly recovered in the next years, although it never reached the same proportion as in the 1970s. In 1991 and 1992 the share of manufacturing fell to 17.5 per cent, but began to recover the next years and by 1995 increased to 18.8 per cent.

The relative decline in manufacturing output is somewhat consistent with overall

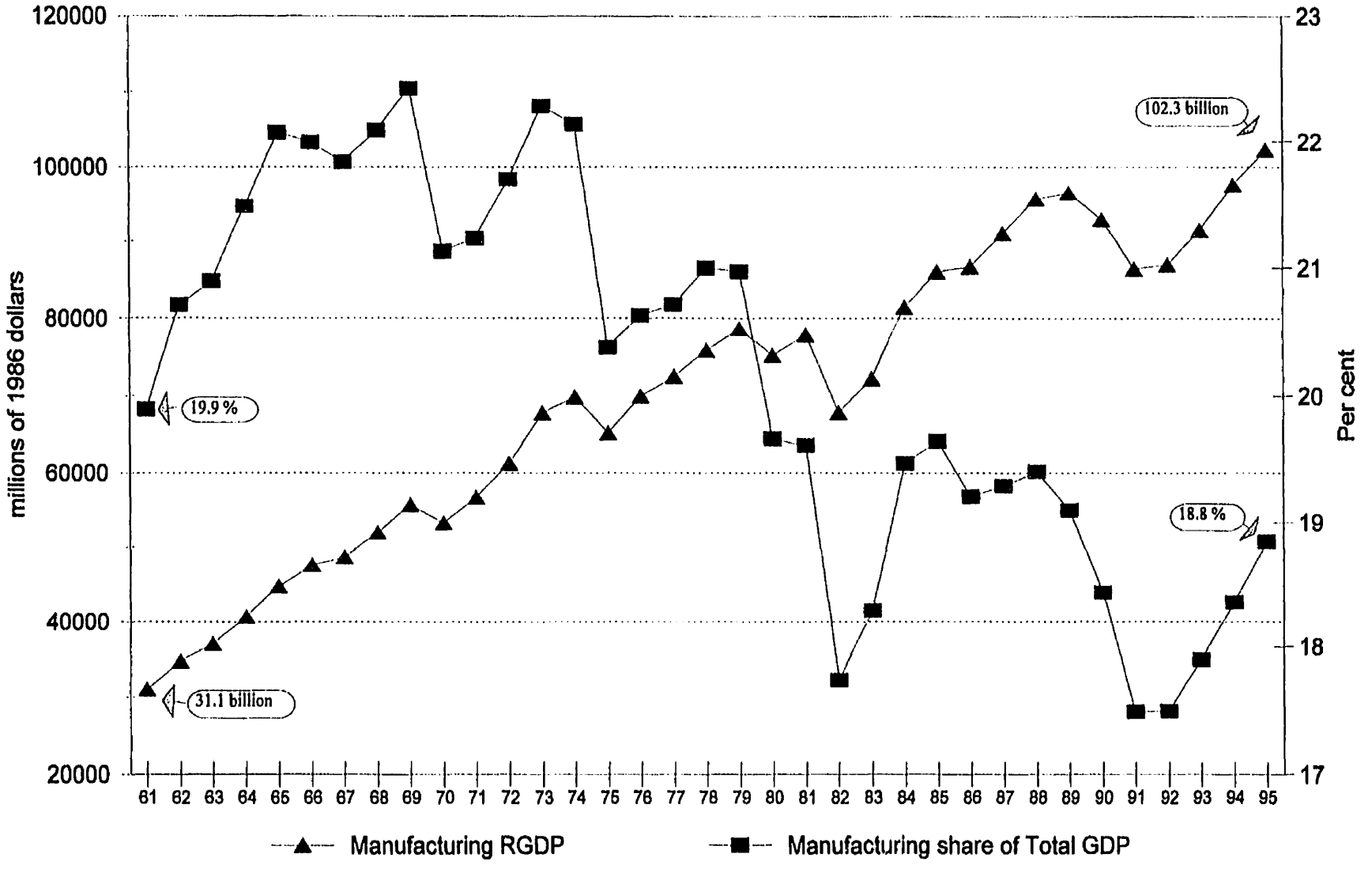
Table 6.1: Gross Domestic Product at Factor Cost (1986 dollars)

	Total Economy	*Manufacturing*	
		Total	**Share of total economy**
	`000,000	`000,000	%
1961	156,428	31,126	19.9
1962	167,573	34,705	20.7
1963	177,089	37,007	20.9
1964	189,443	40,691	21.5
1965	202,964	44,799	22.1
1966	216,771	47,686	22.0
1967	223,149	48,743	21.8
1968	235,312	51,979	22.1
1969	248,309	55,679	22.4
1970	252,299	53,288	21.1
1971	267,060	56,669	21.2
1972	282,176	61,244	21.7
1973	304,410	67,827	22.3
1974	315,621	69,868	22.1
1975	320,035	65,201	20.4
1976	339,251	69,978	20.6
1977	350,145	72,517	20.7
1978	361,078	75,822	21.0
1979	375,112	78,662	21.0
1980	381,992	75,132	19.7
1981	397,090	77,896	19.6
1982	382,575	67,856	17.7
1983	394,995	72,236	18.3
1984	418,716	81,552	19.5
1985	438,450	86,150	19.6
1986	451,839	86,789	19.2
1987	471,520	90,967	19.3
1988	492,587	95,600	19.4
1989	505,050	96,454	19.1
1990	503,661	92,857	18.4
1991	494,532	86,483	17.5
1992	497,791	87,092	17.5
1993	510,947	91,434	17.9
1994	531,273	97,533	18.4
1995	542,851	102,321	18.8

Source: Calculated from data compiled by
Statistics Canada, Gross Domestic Product by Industry, Catalogue No. 15-512, 1991
Gross Domestic Product by Industry, April 1996, Catalogue 15-001, July 1996
Bank of Canada, Bank of Canada Review, February 1995

Figure 6.1

Manufacturing Output, 1961 - 1995
(1986 dollars)



Sources: Compiled and calculated from, Statistics Canada, Gross Domestic Product by Industry, Catalogue No. 15-512, 1991
Gross Domestic Product by Industry, April 1996, Catalogue No. 15-001, July 1996
Bank of Canada, Bank of Canada Review, February 1995

expectations of the de-industrialization thesis. The de-industrialization thesis, however, provides no explanation of how low the share of manufacturing must fall for the situation to be a clear sign that Canada is losing its manufacturing sector. Nonetheless, contrary to their expectations, the absolute growth in manufacturing output indicates that the manufacturing sector has expanded and continues to grow.

The level of labour productivity has also increased, since the rate of growth in manufacturing output has been higher than the rate of growth in hours worked in manufacturing, as well as the rate of growth in persons at work. As the data in Table 6.2 show, whereas from 1961 to 1994 output grew on average 3.5 per cent yearly, persons at work and hours worked each grew on average only 0.7 per cent yearly. However, both the growth in manufacturing output and manufacturing employment slowed down over the years. The average annual rate of growth was in the 1961-75 period 5.4 per cent for manufacturing output, but only 1.7 for hours worked and 1.9 for persons at work. All faced drops in the average annual rate of growth in the 1975-82 period, but while manufacturing output had a rate of growth of only 0.6 per cent, the rate of growth was negative for hours worked (-0.9 per cent) and for persons at work (-0.5 per cent). The situation improved in the 1982-91 period for manufacturing output with an average annual rate of growth of 2.7 per cent. But persons at work and hours worked registered only slight improvements with average annual rates of growth of 0.2 per cent and 0.4 per cent, respectively. In more recent years, manufacturing output has continued to rise at a faster rate of growth than either hours worked or persons at work.

More important, despite the slight improvements in the rate of growth of hours

Table 6.2: Measures of Labour Productivity, Manufacturing, 1961-1995

(indices 1986=100)

	Real GDP	Persons at work	Hours worked	Real GDP per hour worked
1961	35.9	74.8	77.7	46.1
1974	80.5	99.8	101.7	79.2
1975	75.1	97.5	98.3	76.5
1976	80.6	97.9	98.6	91.9
1977	83.6	95.9	96.8	86.3
1978	87.4	98.9	100.1	87.3
1979	90.6	102.5	102.9	88.1
1980	86.6	102.2	102.2	84.7
1981	89.8	102.2	101.0	88.9
1982	78.2	94.3	92.2	84.8
1983	83.2	92.4	91.5	91.0
1984	94.0	95.2	95.2	98.7
1985	99.3	97.6	97.7	101.6
1986	100.0	100.0	100.0	100.0
1987	104.8	103.0	103.9	100.9
1988	110.2	107.5	108.7	101.4
1989	111.1	108.8	109.2	101.8
1990	107.0	103.2	103.4	103.5
1991	99.4	95.9	95.6	104.0
1992	100.7	92.5	93.3	108.0
1993	105.5	93.2	95.5	110.6
1994	112.9	95.2	98.0	115.2

Annual rate of change (per cent)

1961-1995				2.7
1961-1994	3.5	0.7	0.7	2.8
1961-1975	5.4	1.9	1.7	3.7
1975-1982	0.6	-0.5	-0.9	1.5
1982-1991	2.7	0.2	0.4	2.3
1988-1989	0.8	1.2	0.5	0.4
1989-1990	-3.7	-5.1	-5.3	1.7
1990-1991	-7.1	-7.1	-7.5	0.4
1991-1992	1.3	-3.5	-2.4	3.9
1992-1993	4.8	0.8	2.4	1.8
1993-1994	7.0	2.1	2.6	3.7
1994-1995				1.6

Sources: Calculated from data compiled by Statistics Canada,
Aggregate Productivity Measures, Catalogue No. 15-204, February, 1995 and March, 1996 and
The Daily, Catalogue No. 11-001, April 21, 1995 and April 22, 1996

worked and persons at work, their levels have yet to achieve the highs of 1989. In contrast, as noted earlier, total manufacturing output reached new highs in 1994 and in 1995.

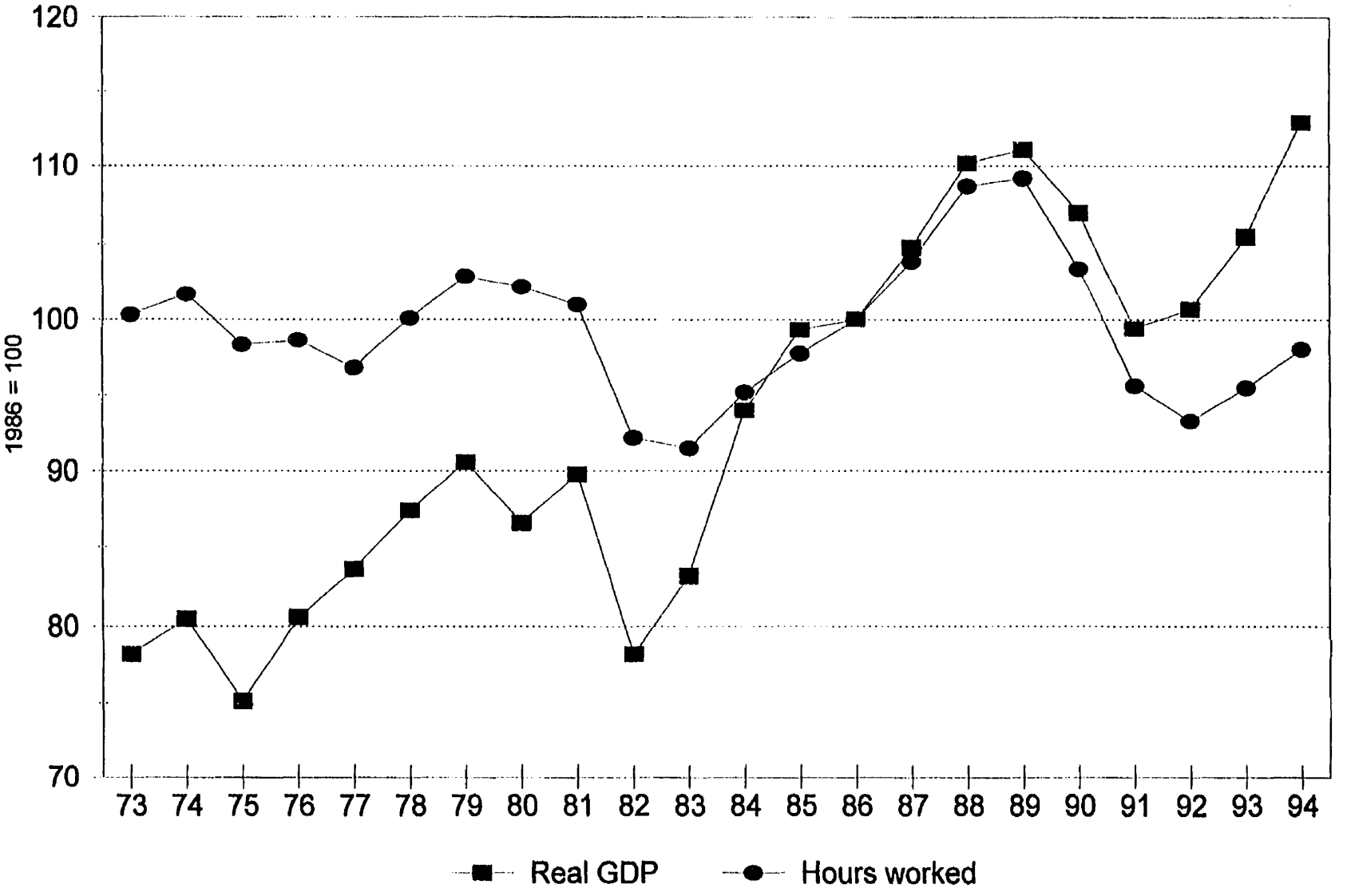
As Figure 6.2 illustrates, expressed in indices with 1986 as base year, manufacturing output and hours worked in manufacturing may fall or may even rise slightly in times of recessions, but they generally rebound at a faster rate over the recovery period or at the start of the expansion. In addition, the employment and output data leave different impressions on the state of manufacturing industries. Contrary to the claims made by proponents of the de-industrialization thesis, it is not possible to infer from employment data alone the state of the economic health of manufacturing. Likewise, it is not possible to properly infer from output data alone the state of manufacturing employment.

The developments in manufacturing output and employment have resulted in weaker productivity growth, whether measured as labour productivity or multifactor productivity. As the data on labour productivity in Table 6.2 show, over the years the level of labour productivity has steadily increased, peaking in 1994. But its rate of growth has slowed down. From 1961 to 1995 manufacturing labour productivity grew at an average annual rate of 2.7 per cent, but there were definite differences in the rate of change that occurred in this period. Whereas productivity on average increased by 3.7 per cent annually in the 1961-75 period, the increase was only 1.5 per cent annually in the 1975-82 period. The situation improved in the 1982-91 period rising on average 2.3 per cent annually.

Figure 6.2

Manufacturing Sector

Real GDP & Hours Worked, (1986=100)



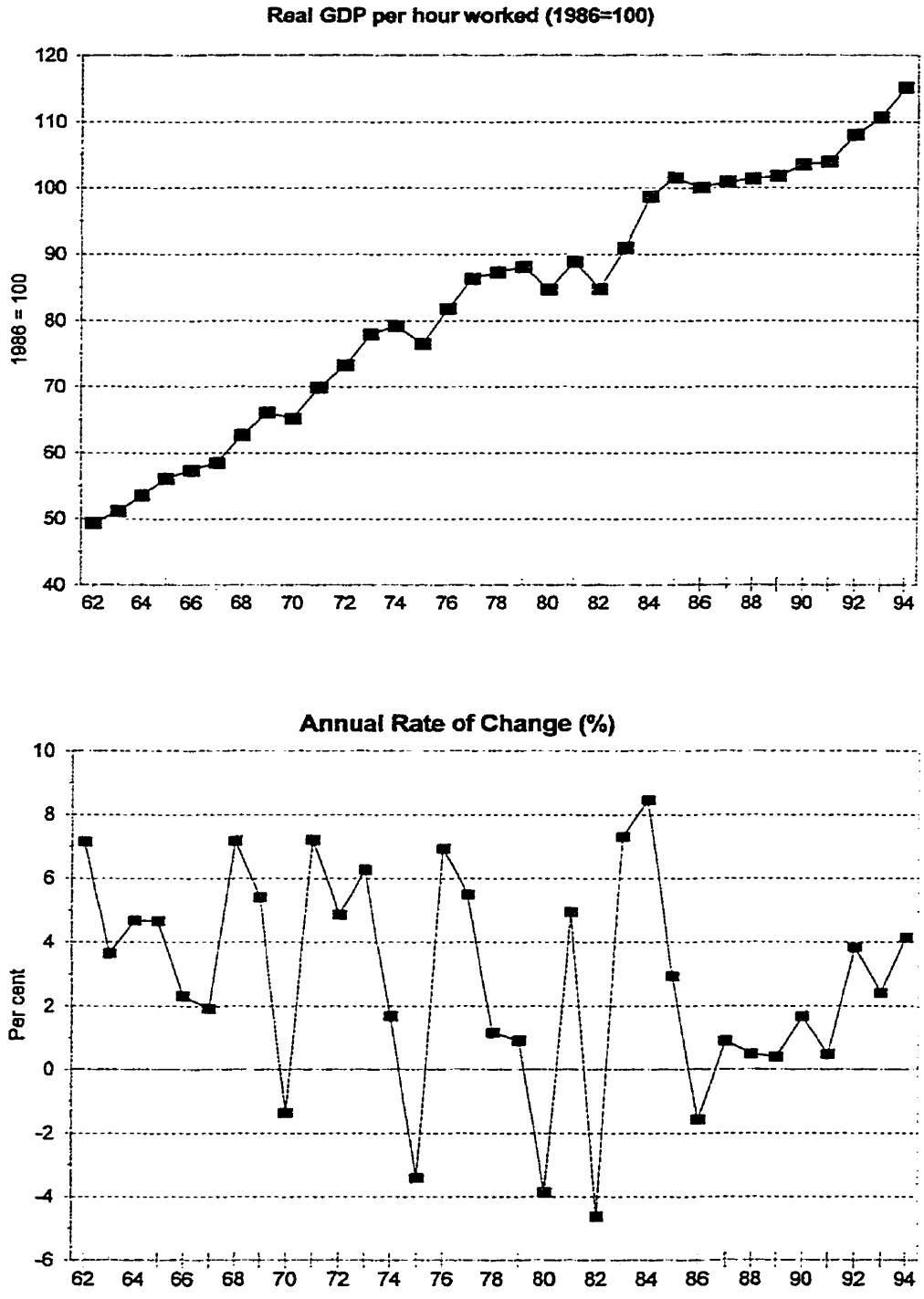
Source: Statistics Canada, Aggregate Productivity Measures, Catalogue No. 15-204, March 1996

As the previous data on employment and output suggest, labour productivity has over time predominately increased because the rise in output was accompanied by smaller rates of growth, and even declines, in the level of hours worked. As Figure 6.3 illustrates, in earlier years the change in productivity faced sharp highs, as well as sharp drops, including negative rates of change in certain years. Instead, in recent years, for example since 1988, the rate of change in labour productivity has been generally lower than earlier years. There has been a positive rate of change resulting in a steady increase in the level of productivity. But, again, in the long run, the level of labour productivity has increased.

The slowdowns in the rate of growth in productivity and output have occurred also for the whole business sector, as the data in Table 6.3 show. After rising on average 3.3 per cent annually in the 1961-75 period, labour productivity in the business sector fell to 1.5 per cent annually in the 1975-82 period and 1.3 per cent annually in the 1982-91 period. In addition, the business sector has had a slower rate of change in labour productivity than the manufacturing sector, including in recent years. The business sector also faced a slowdown in the rate of growth in output, but that rate of growth remained generally higher than that for manufacturing output, especially in the 1975-82 period. However, the more recent data show that since 1992 the rate of change in output has been higher for the manufacturing sector than for the business sector.

Much has been written on the slowdown in productivity, but no agreement exists on its causes (see, e.g., Economic Council of Canada 1992; Denny and Wilson 1993; Sharp 1993; Krugman 1994a; 1994b). There is of course another underlying but difficult

Figure 6.3: Labour productivity, Manufacturing, 1962-1994



Source: Calculated from data compiled by Statistics Canada,
Aggregate Productivity Measures, Catalogue No. 15-204, February, 1995 and March 1996

Table 6.3: Business Sector, Productivity, 1961-1995

Annual rate of change, %

Measures of labour productivity

	Real GDP	Persons at work	Hours worked	Real GDP per hour worked
1961-1995				2.2
1961-1994	3.9	2.1	1.6	2.2
1961-1975	5.3	2.6	2.0	3.3
1975-1982	2.5	1.9	1.0	1.5
1982-1991	3.0	1.7	1.6	1.3
1988-1989	2.4	2.2	1.4	0.9
1989-1990	-1.5	0.3	0.1	-1.6
1990-1991	-3.2	-3.0	-4.2	1.1
1991-1992	0.3	-1.3	-1.6	1.6
1992-1993	3.2	1.6	2.2	1.0
1993-1994	5.5	2.4	3.0	1.9
1994-1995				0.5

Contribution of multifactor productivity, labour and capital to output growth

	Multifactor Productivity	Labour Contribution	Capital Contribution	Real GDP
1961-1995	1.0	1.2	1.5	3.7
1961-1975	1.8	1.5	1.8	5.1
1975-1982	0.0	0.6	1.9	2.5
1982-1992	0.5	0.9	1.0	2.4
1988-1989	-0.5	1.0	1.9	2.4
1989-1990	-3.4	-0.1	1.7	-1.8
1990-1991	-1.2	-3.1	1.0	-3.3
1991-1992	0.2	-1.0	0.8	0.0
1992-1993	0.9	1.6	0.6	3.1
1993-1994	2.3	2.6	0.4	5.3
1994-1995	0.4	1.5	0.6	2.5

Sources: Calculated from data compiled by Statistics Canada,
Aggregate Productivity Measures, Catalogue No. 15-204, February, 1995 and March, 1996 and
The Daily, Catalogue No. 11-001, April 21, 1995 and April 22, 1996

question to address: What is an acceptable rate of productivity growth? Moreover, can we ever again achieve the high growth rates that occurred in the 1961-75 period, as well as those from the end of WWII to 1961? Since nobody knows for certain what caused the slowdown, it then stands to reason that it is difficult, if at all possible, to accurately predict the rate of growth of productivity in the future. Furthermore, how should higher labour productivity be achieved? For example, declining hours of work, and thereby the likelihood of higher unemployment, accompanied by higher output, increases labour productivity. But is this necessarily better for society?

For the de-industrialization thesis a rise in labour productivity is not necessarily a sign of improvement. Proponents of the thesis are critical of labour saving methods that may increase output at the expense of jobs. There is no denying that labour saving methods such as computer assisted manufacturing technology may eliminate jobs and maintain or increase the level of output, and thereby lead to higher labour productivity. But it is equally arguable that the same technology may, directly and indirectly, create jobs, which in turn lead to higher output (see, e.g., Francis 1986). Regardless of one's opinion on the impact of labour-saving devices at the aggregate level, once again, it is important to contrast the relative and absolute performance of manufacturing. Whatever the future holds, the past shows that labour saving methods have in the long run been accompanied generally by relative drops and absolute increases in manufacturing employment and especially manufacturing output.

Thus the data show that while there has been a weaker rate of growth in labour productivity, it has nevertheless continued to rise. However, these data do indicate that

labour is contributing relatively less than output to the labour productivity equation. Both in manufacturing and the business sector the productivity gains recorded in the last two decades have resulted mainly from a combination of rising output and only slight changes in labour input. Despite the ups and downs, in the long run, from 1975 to 1994 real output in manufacturing increased by about 38 index points, while the level of hours worked was in 1994 about the same as in 1975. It is worth noting that in the 1961-75 period when manufacturing recorded relatively higher rates of productivity, both output and hours worked, as well as persons employed, increased.

The trends in multifactor productivity have been broadly similar to those of labour productivity. It too has been affected by the recessionary phases of the business cycles (see Denny and Wilson 1993; Canadian Labour Market and Productivity Review 1991). However, multifactor productivity is more sensitive to economic cycles than labour productivity and therefore its index drops more sharply during recessions (Galarneau and Maynard 1995). This is largely due to its main inputs -- capital and labour. During an economic slowdown businesses hold on to their capital stock, while decreasing its utilisation. Decisions regarding investments in capital are made well in advance of an economic slowdown, and thus capital stock continues rising. In contrast, with labour it is generally easy to cut down on working hours. Thus, when the slowdown occurs the number of total hours is reduced. At least for a short while the result is a decline in the multifactor index since less is produced while capital stock is increasing. Instead, since adjustments to number of hours worked are usually done more quickly than with capital stock, labour productivity faces fewer abrupt drops. The

multifactor productivity index however rises rapidly when the economy recovers, since output grows quicker than capital stock. Output begins to recover while investment decisions lag behind the economic cycle. Consequently, there is usually a more rapid rise in the multifactor index than in labour productivity.

As with labour productivity, multifactor productivity faced higher growth in the 1961-75 period than the other periods examined. The data in Table 6.4 show that multifactor productivity grew at an average annual rate of 2.7 per cent in the 1961-75 period, but only 0.9 per cent annually in both the 1975-82 and 1982-92 periods. Nonetheless, after facing negative rates of change from 1988 to 1991, multifactor productivity has been positive and relatively higher. In 1995 multifactor productivity grew 3.1 per cent. It was a lower rate of growth than the 6.1 per cent in 1994. But it is worth noting that the manufacturing sector in 1995 was expanding. In 1994, manufacturing had a multifactor productivity level that was about equal to its earlier peak of 1984. Further, multifactor productivity growth in 1995 was about equal to that of 1985 when it was 3.3 per cent.

The breakdown of annual growth in real value-added show that from 1961 to 1995, labour's contribution to output growth (real GDP) was relatively weaker than the other components. Real GDP grew at an average annual rate of 3.5 per cent of which the contribution of multifactor productivity averaged 2 per cent annually and that of capital 1.0 per cent annually, while the contribution of labour was merely 0.5 per cent annually. In the 1961-75 period when output growth faced its highest rate of increase in the periods examined, all three components contributed more than in the other periods. Multifactor

Table 6.4: Manufacturing Sector: Contribution of multifactor productivity, labour, and capital to output growth, 1961 - 1995. (annual rate of change, %)

	Multifactor Productivity	Labour Contribution	Capital Contribution	Real GDP
1974	0.3	1.2	1.1	2.6
1975	-6.1	-2.4	1.5	-7.2
1976	6.7	0.4	0.6	7.8
1977	5.2	-0.8	-0.1	4.3
1978	2.0	2.3	0.2	4.5
1979	0.6	1.7	0.1	2.4
1980	-3.5	-0.4	0.9	-3.1
1981	3.9	-0.8	2.8	5.9
1982	-7.7	-5.9	2.3	-11.4
1983	8.4	-0.8	0.3	7.8
1984	9.2	2.7	-0.9	11.1
1985	3.3	1.4	-0.2	4.6
1986	-1.5	1.1	0.9	0.4
1987	0.7	2.2	1.8	4.8
1988	-0.4	2.9	2.1	4.6
1989	-1.6	0.2	2.3	0.8
1990	-4.0	-3.3	2.8	-4.7
1991	-3.8	-4.5	1.2	-7.2
1992	1.0	-1.2	0.3	0.0
1993	3.9	1.5	-0.8	4.6
1994	6.1	1.7	-1.1	6.7
1995	3.1	1.9	-0.6	4.4
1961-1995	2.0	0.5	1.0	3.5
1961-1975	2.7	1.2	1.3	5.2
1975-1982	0.9	-0.5	1.0	1.3
1982-1992	0.9	0.2	1.0	2.1

Sources: Calculated from data compiled by Statistics Canada,
Aggregate Productivity Measures, Catalogue No. 15-204, March, 1996
The Daily, Catalogue No. 11-001, April 22, 1996

productivity remained the principal contributor. But the situation changed in the next years. In the 1975-82 and 1982-91 periods capital was the main component of output growth. The contribution of labour actually fell in the 1975-82 period and barely played a part in the output growth of the 1982-91 period. Hence over the long run, the data show that labour contributes less to output growth than capital and multifactor productivity.

The output growth for recent years has however been largely due to higher rates of growth in multifactor productivity and labour. The contribution of capital instead made a negative contribution. While in 1993 and 1994 labour input increased 1.7 per cent and 1.9 per cent, the contribution of capital declined 1.1 per cent and 0.6 per cent. This is not necessarily indicative of disinvestments in manufacturing, but rather, as discussed earlier, may reflect investment decisions taken before and during recessions. For example, there may be first an adjustment to the change in the economy and then a lag in investing in new machinery and equipment.

As with labour productivity, manufacturing had higher rates of multifactor productivity than the business sector. Whereas multifactor productivity in the 1961-95 period average 2 per cent annually in the manufacturing sector, the business sector registered a rate of change of 1 per cent. Nevertheless, compared to the productivity performance of other industries in the business sector, that of manufacturing stands out. Statistics Canada has estimated that between 1961 and 1988 manufacturing contributed 55 per cent to aggregate multifactor productivity gains. It concluded that "aggregate productivity has been consistently dependent on the behaviour of manufacturing

productivity in the past" (Statistics Canada Catalogue No. 15-204, July 1992, p. 19).

From 1961 to 1995, and in the periods examined in between, capital was the principal component of output growth for the business sector. The data in Table 6.3 show that compared to other periods the increase in the growth rate of business output was at its highest in the 1961-75 period with multifactor productivity, labour, and capital each making about a similar contribution to output growth. However, in the next periods, capital was the main contributor to output growth. In recent years, labour has been the main contributor, but these years immediately follow a recession and, as noted earlier, investment decisions usually lag behind the economic cycle. In 1994, the business sector showed its best multifactor productivity performance in the years examined with a rate of growth of 2.3 per cent.

The cumulative number of person-years lost during the last recession was greater than during the 1982 recession. A greater proportion of employees were kept on the payroll during the shorter 1982 recession. As noted in the previous chapter, people were generally unemployed for longer periods in the last recession. Consequently, at the start of the latest recovery, businesses expanded hours and hired new employees more quickly than in the earlier recovery. The rapid increase in hours worked in 1993 and 1994 led to lower productivity gains than usually seen during a recovery. In 1993 and 1994, the first two years of recovery, multifactor productivity in the business sector rose 0.9 per cent and 2.3 per cent. In contrast, in 1983 and 1984, comparable years of a cyclical phase, multifactor productivity increased 3.9 per cent and 4.0 per cent.

Thus the long term data show a slowdown in growth, but one that is not exclusive

to manufacturing. Focusing on only data that cover recessionary years, as proponents of the de-industrialization thesis have done, would suggest there are signs of emerging downward trends. But if longer run developments are examined carefully, then manufacturing has continued to make a substantial contribution to the country's economic growth. Although the situations with manufacturing output and productivity have changed over the years, the output and productivity data reviewed here are far from suggesting that Canada has lost or is losing its manufacturing base.

International Comparisons

Productivity measures are widely used in discussions on international comparisons, especially manufacturing productivity, as an indicator of efficiency or competitiveness. The popular media often highlight the differences in productivity among industrialized countries and generally point to Japan as one of the more productive industrialized countries. But various complexities exist with international comparisons, including, but not limited to, the use of similar productivity measures and the conversion of certain inputs to a common currency. But this is not necessary with international comparisons that concentrate on labour productivity, since the measure involves output per unit of labour input, expressed in domestic currency and constant dollars. However, it is important to take into account the type of output and input measures in the various countries. A country which uses persons employed as labour

input and whose workers are employed long hours may show higher productivity than if hours worked was the labour input. Japan, for example, ranks relatively higher for output per worker than for output per hour.

The Bureau of Labor Statistics (BLS, U.S. Department of Labor) compiles trend indexes of labour productivity (output per hour) in manufacturing for purposes of international comparisons. The BLS takes into account the different methods and procedures used in deriving national data in each country. In some instances the BLS makes certain adjustments to achieve comparability.

The BLS data are however limited to trend comparisons and not level comparisons of labour productivity. And there exist technical difficulties and data limitations. Among other complexities, countries determine their manufacturing output in their own currency and therefore to compare among countries a common currency unit is needed. But market exchange rates are not suitable, since what is needed as information is how many units of a foreign currency are needed to buy a good that can be purchased with one unit of the currency used as a common measure. Nevertheless, the aim here is to compare the trends in Canada with those of other major industrialized countries, mainly with regard to total output, output per hour, and employment.

The labour input measure used by the BLS until recently was total hours, which was determined from statistics of manufacturing employment and average hours. For the U.S. and Canada all employed persons, including self-employed persons and unpaid family workers, are taken into account, but all employees (wages and salary earners) are

considered for other countries.[2] In addition, the measures relate to total manufacturing as defined by the International Standard Industrial Classification, except for France and Italy which include mining and exclude energy-related products. For most countries output is the value added in manufacturing in constant prices from their national accounts, but they use different price-base years.

Comparable manufacturing output data for the U.S. are not available before 1977 (see Greiner, Kask, and Sparks 1995). Moreover, since 1979 was a peak year for manufacturing output in Canada and the U.S., and either 1979 or 1980 for most other industrialized countries, it is an appropriate starting point. For purposes of analysis the 1979-93 period is also subdivided into different subperiods: 1979-85; 1985-90; and 1990-93.

In international comparisons labour productivity is only part of the picture of efficiency (or competitiveness). The focus of attention is usually on the cost of labour, or labour compensation, and unit labour costs. But since the focus in this chapter is with the performances in output and productivity, they are not examined here.

As noted in the previous chapter, manufacturing employment has fallen in most of the major industrialized countries. However, with the exception of Japan, Canada had the lowest rate of decline compared to the other countries. The data in Table 6.5 show that total hours in manufacturing in the 1979-93 period fell on average -0.6 per cent

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[2] The BLS has begun to introduce more comprehensive labour input measures for Japan, France, and Germany whereby their labour productivity will take into account all-employed persons (Greiner, Kask and Sparks 1995). The labour input for the U.K. and Italy is for now still on the basis of all employees. The long term data considered here however are not affected by these changes.

Table 6.5: Annual percentage changes in manufacturing productivity and related measures, 1979-93

	Canada	*U.S.*	*West Germany*	*Japan*	*France*	*U.K.*	*Italy*
Output							
1979-93	1.1	1.5	0.4	4.5	0.3	0.4	2.0
1979-85	1.5	0.7	0.2	5.8	-0.4	-1.2	1.8
1985-90	1.5	2.8	2.3	5.8	2.6	3.4	4.0
1990-93	-0.5	1.2	-2.2	0.0	-1.8	-1.6	-0.7
Total Hours							
1979-93	-0.6	-0.8	-1.4	0.3	-2.4	-3.5	-2.0
1979-85	-0.9	-1.2	-1.8	1.1	-3.3	-5.0	-3.1
1985-90	1.1	0.0	0.3	0.4	-0.8	-0.3	1.3
1990-93	-2.8	-1.3	-3.3	-1.7	-3.0	-5.8	-5.0
Employment							
1979-93	-0.8	-1.1	-0.5	0.9	-1.9	-3.2	-2.0
1979-85	-0.8	-1.4	-1.1	1.2	-2.3	-4.6	-2.9
1985-90	1.1	-0.1	1.1	0.8	-0.9.	-0.4	0.3
1990-93	-3.7	-1.9	-2.1	0.8	-2.9	-5.0	-4.0
Output per Hour							
1979-93	1.7	2.4	1.9	4.3	2.8	4.1	4.1
1979-85	2.4	2.0	2.1	4.6	3.0	4.1	5.0
1985-90	0.4	2.7	2.1	5.4	3.4	3.8	2.6
1990-93	2.4	2.5	1.2	1.8	1.2	4.5	4.6

Source: Greiner, Mary, Christopher Kask, and Christopher Sparks, "Comparative manufacturing productivity and unit labor costs," Monthly Labor Review February, 1995, p. 30

annually in Canada. The same occurred in the 1979-85 period, when the average annual rate of growth in the total hours in manufacturing fell 0.9 per cent in Canada, and except for Japan, was lower than the drops in the other countries. The data show that some countries, such as the U.K., faced particularly sharp drops in total hours in manufacturing. Over the 1979-93 period, hours worked in manufacturing decreased by 39.7 per cent in the U.K., 28.5 per cent in France, 24.8 per cent in Italy, 17.7 per cent in Germany, 10.9 per cent in the U.S., and 7.4 per cent in Canada. In Japan instead hours worked in manufacturing rose over the same period by 10.3 per cent. Thus again the decline in manufacturing employment is largely a worldwide phenomenon characteristic of the advanced industrialized countries and is not exclusive to Canada. Indeed, Canada's performance in manufacturing employment has been better than that of other countries.

Meanwhile, as is true for Canada, manufacturing output has increased in all of the major industrialized countries, as shown in Table 6.6. The most spectacular increases over the 1979-93 period have been in Japan where manufacturing output grew by 85.8 per cent. In contrast, France, the U.K., and Germany only had modest increases. Canada had a sharper increase with 17.4 per cent, but not as high as the U.S. with a rise of 26.3 per cent and Italy with a rise of 32.4 per cent.

The combination of higher manufacturing output and declines in hours worked in manufacturing, has resulted in higher productivity in all the major industrialized countries. But as Figure 6.4 illustrates Canada's growth was weaker than in the other countries. And as Table 6.5 shows the average annual productivity growth in the

Table 6.6: Indexes of Manufacturing Output, 1979-93
(1982=100)

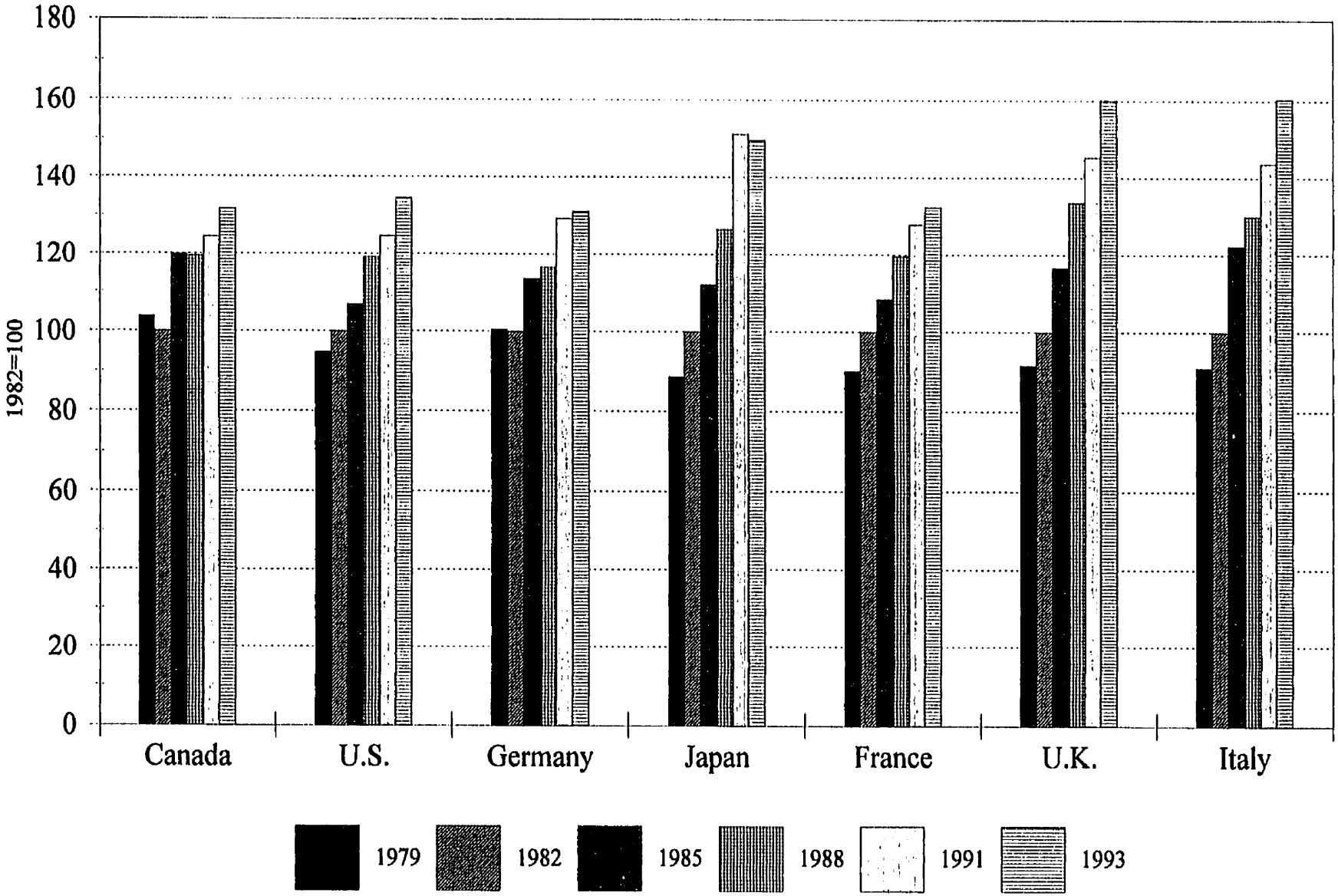
	Canada	*U.S.*	*West Germany*	*Japan*	*France*	*U.K.*	*Italy*
1979	115.9	109.3	106.9	86.5	101.3	116.8	97.9
1980	110.7	102.0	104.7	91.5	100.6	106.7	103.1
1981	114.8	105.0	103.6	95.7	99.0	100.1	101.1
1982	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1983	106.5	103.2	101.5	104.3	99.9	102.1	100.8
1984	120.2	111.3	104.6	113.2	98.7	105.9	105.4
1985	127.0	114.0	108.4	121.2	99.1	108.9	108.9
1986	127.9	115.2	110.1	117.9	99.1	110.3	111.5
1987	134.1	123.5	108.1	126.5	98.9	115.5	116.3
1988	104.9	130.0	111.5	138.2	104.6	123.6	125.0
1989	142.1	131.2	115.4	149.3	110.3	129.1	129.7
1990	137.5	130.6	121.7	160.6	112.4	128.9	132.3
1991	129.5	127.8	126.0	170.8	110.6	122.0	132.1
1992	129.8	131.7	124.1	167.7	109.8	121.0	132.4
1993	136.1	138.0	114.9	160.7	106.3	123.1	129.6

Sources: Compiled from
U.S. Department of Labor, Bureau of Labor Statistics, August 1994, press release, Online Internet.
U.S. Department of Labor, Monthly Labor Review, February, 1995

Figure 6.4

Manufacturing Industries

Output per hour (1982=100)



Source: Compiled from U.S. Department of Labor data, see Table 6.6

1979-93 period in Canada was lower than all the other countries and almost equal to that of Germany. In all the countries considered here the productivity gains recorded in this period resulted mainly from a combination of rising output and declining labour input. All faced higher rates of growth in output but drops, or in the case of Japan a slight rise, in manufacturing total hours and employment.

However, Canada faced a substantial drop in manufacturing labour productivity in the 1985-90 period compared to other countries. After growing on average 2.4 per cent annually in 1979-85 period, productivity grew on average a mere 0.4 per cent annually between 1985-90. The situation in Canada was mainly due to a higher output combined with higher total hours. In the 1985-90 period Canada's output grew at an annual rate of 1.5 per cent which was a higher rate than in the other countries. But except for Canada and Italy, the other countries faced lower average annual rates of working hours in manufacturing.

In the long run, the composition of productivity growth in some other countries compared to that of Canada has become more heavily weighted toward reducing labour input. Table 6.7 shows that the peak year in total hours in Canada was in 1989 while in the U.S., Germany, France, and the U.K. it peaked in 1979, in Italy in 1980 and in Japan in 1991. Moreover, the total hours worked in manufacturing in Germany, France, U.K., and Italy were at their lowest levels in 1993. Canada's average annual rate of productivity growth was the lowest among the countries examined in the 1979-93 period. But the poor performance is especially influenced by almost no growth in productivity in the 1985-90 period; the same period in which Canada's average annual rate of growth

Table 6.7: Indexes of Manufacturing Total Hours, 1979-93
(1982=100)

	Canada	*U.S.*	*West Germany*	*Japan*	*France*	*U.K.*	*Italy*
1979	111.6	115.1	106.5	97.4	112.4	127.5	107.4
1980	110.8	109.8	106.3	99.3	111.2	117.3	108.0
1981	109.6	109.2	103.1	100.2	106.2	105.3	103.4
1982	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1983	99.2	101.0	96.2	102.4	97.4	95.1	95.8
1984	103.3	107.6	95.8	106.6	94.6	94.2	91.1
1985	106.0	106.8	95.6	108.2	91.5	93.5	89.0
1986	108.5	105.2	96.5	106.9	90.0	91.5	90.1
1987	112.7	106.0	96.2	105.8	88.3	91.0	91.4
1988	117.9	109.0	95.8	109.3	87.4	92.6	96.1
1989	118.4	109.4	95.9	110.4	87.8	93.3	96.8
1990	112.2	107.0	97.0	111.2	88.1	92.0	95.0
1991	104.1	102.6	97.6	112.8	86.5	83.9	91.8
1992	100.5	102.0	96.9	111.4	84.0	79.5	87.8
1993	103.3	102.6	87.7	107.4	80.4	76.9	80.8

Note: The data relate to all employed persons (wage and salary earners and self-employed workers) in the U.S. and Canada, and all employees (wage and salary earners) in other countries.

Sources: Compiled from
U.S. Department of Labor, Bureau of Labor Statistics, August 1994, press release, Online Internet.
U.S. Department of Labor, Monthly Labor Review, February, 1995

was the highest in total hours and the lowest in output, compared to the other countries. In 1993 in most countries, including Canada, the level of output was below earlier peaks. But in all countries the level of manufacturing productivity peaked in 1993, except in Japan.

Thus whether Canada's lower rate in productivity growth in the 1979-93 period is troubling, depends on one's point of view. Upon closer examination labour inputs in Canada play a more important role in the composition of productivity than is the case in other advanced industrial countries. Proponents of the de-industrialization thesis who stress the employment situation would presumably consider Canada as better off than other countries. Even in the 1985-90 period when there was almost no growth in labour productivity, Canada faced both a rise in the level of output and working hours in manufacturing.

Concluding Remarks

The manufacturing output and productivity data raise serious questions about claims put forth by the de-industrialization thesis. Manufacturing no longer makes the same relative contribution to the total economy as it once did. But although there has been a relative drop in manufacturing output, it has not been as spectacular as the thesis might lead one to expect. Moreover the drop should not be taken as suggesting Canada is losing its manufacturing base. More important, manufacturing output has continued to

grow in absolute terms. Thus, irrespective of the trends in manufacturing employment and in relative manufacturing output, manufacturing industries as a whole continue to make an important contribution to overall output.

Canada has held its own when compared to the performance of other G-7 industrialized countries. Despite a lower rate of productivity growth in the 1979-93 period than other countries, Canada achieved its level of productivity mainly from a combination of rising output and more modest drops in working hours than other countries, except Japan. It is difficult to argue on the basis of international comparisons that Canada's manufacturing industries are in more serious trouble, if at all. Even if one dismisses labour productivity measures as irrelevant (e.g., Brockway 1993), the data on output and working hours, as well as persons employed, in manufacturing, show that Canada has done reasonably well.

Nonetheless, for many commentators, there is concern over the slowdown in productivity because of its potential effect it has on Canada's "efficiency" or "competitiveness" in the world market. Discussants often use the terms loosely and provide no operational definitions, but it is debatable whether productivity only is the appropriate measure (see, e.g., Krugman 1994a, 1994b). Among proponents of the de-industrialization thesis, concerns with the world market are mainly centered on Canada's international trade performance and capital flight. These issues are covered in the next chapter.

Chapter Seven

Manufacturing Investments and Trade[1]

Long term data on manufacturing employment and output over the last three decades or so, examined in the last two chapters, raise doubts about the de-industrialization thesis. Proponents of the de-industrialization thesis, however, largely ignore such long run data. They instead usually concentrate on limited, short term data, and especially emphasize cases of plant closures and gross job losses. These are generally given as evidence of falling investments in manufacturing and thereby de-industrialization.

The basic reasoning of the de-industrialization thesis concerning investments and trade has remained roughly the same over the past two decades. In essence, the thesis mainly rests on the expectation that there has been increasing disinvestment. The argument runs like this: Canada has had a small manufacturing base mainly dependent on

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[1] Some of the data in this chapter have been published in Del Balso and Masi (1996).

U.S. foreign direct investments. For various reasons, over the past two decades or so U.S. investors in Canada have been shifting their investments out of manufacturing. In more recent years Canadian investors have been doing the same by moving manufacturing plants or placing new investments abroad. The disinvestment results in plant closures and the gross loss of manufacturing jobs. Together with a lack of new investments, this undermines the country's industrial base and lowers its standard of living. And it follows that these developments result in declines in exports and increases in imports. Proponents of the thesis generally disregard economic fluctuations thereby implicitly suggesting that the declines are definitely secular. The latest element added to this argument is the impact of the FTA and the NAFTA, which have been blamed for encouraging the further de-industrialization of Canada.

This chapter focuses on investments and trade in manufacturing over the past three decades. The next section considers the arguments about changes in investments in manufacturing largely resulting from the FTA and the NAFTA. It is followed by an examination of the indicators of investments and trade in manufacturing that are considered relevant to the de-industrialization thesis. There are various indicators: total capital expenditures; capital expenditures on machinery and equipment; capital expenditures on construction; U.S. direct investment in manufacturing; Canadian direct investment abroad in manufacturing; merchandise trade; export orientation in manufacturing; and import penetration in manufacturing. The third section focuses on investment and trade patterns in manufacturing in the last three decades. Lastly, developments since the FTA and the NAFTA are considered in relation to changes that

occurred prior to their implementations.

Investments and the Trade Agreements

Closely related to the de-industrialization perspective on investment is the view that U.S. multinationals and Canadian corporations have been rationalizing production at the level of North America to the detriment of Canadian manufacturing. The FTA and the NAFTA are partly perceived as simplifying the process which has preceded the agreements (see Williams 1994). Rather than making Canadian manufacturing more internationally competitive, these trade agreements are supposedly causing or accelerating the de-industrialization of Canada (see, e.g., Hurtig 1991; Campbell 1993; Grinspun and Cameron 1993; Merrett 1996).

The FTA has been blamed for facilitating the shift of manufacturing investments from Canada to the U.S., especially to the Sunbelt region, as well as encouraging new investment to locate in the U.S.. With the eventual elimination of tariffs, firms would presumably prefer to invest in the U.S., because of the larger consumer market, lower rates of unionization and lower corporate taxes, among other factors. The NAFTA added a new component; it facilitated investments to shift from Canada and the U.S. to Mexico, as well as encourage new investment to go to Mexico, where the cost of production is far less costly. Hence, rather than creating a world-competitive manufacturing sector, the trade policies are accused of causing plant shutdowns and the loss of manufacturing jobs.

Rather than improving living standards, the policies are blamed for placing pressure on Canadian workers to accept lower wages and fewer benefits.

The arguments on the surface sound plausible, but the evidence provided is often sketchy, or restricted to a short period that is insufficient to determine if the expected trends in investment and trade exist. Furthermore, as discussed in Chapter 3, there are some inconsistencies in the reasoning. For example, disinvestments by U.S. firms have long been a concern of proponents of the de-industrialization thesis. But Canada, it would seem, is damned one way or the other. Increases in U.S. direct investments in manufacturing are viewed as making Canada more vulnerable to de-industrialization and dependent on decisions made by U.S. head offices. And declining levels of U.S. direct investments are viewed as evidence of de-industrialization or part of a rationalization process that weakens Canadian manufacturing.

It is difficult and too early, and not an easy task, to fully assess the impact of the FTA and the NAFTA on investments. However, it is worth noting that in the decisions of a large corporation to locate or relocate production activities, many factors are taken into account. It is not a simple matter of, for example, lower wages and lack of unionization, since these advantages can be easily canceled out by the lower productivity that may exist in the region considered. Adequate transportation and communication infrastructures, necessary suppliers, political and business climate, are also important (see Hart 1994).

Further, critics of the FTA and the NAFTA have pointed to the lowering of tariffs, among other aspects, as contributing to, if not causing, the loss of Canada's industrial

base. But U.S. branch plants have long existed in Canada and over the years trade between the U.S. and Canada was increasingly duty free, long before the FTA. At the time of the implementation of the FTA, about 80 per cent of exports were entering the U.S. duty free, or looked at differently 95 per cent were subject to at most 5 per cent tariff. As for U.S. imports, 65 per cent entered Canada duty free, or 91 per cent faced tariff rates of at most 5 per cent. Whatever restrictions existed were largely through non-tariff barriers between the two countries. Further, if one accepts the reasoning of the proponents of the de-industrialization in the early 1970s, then presumably large corporations have long embarked on a rationalization of production at the level of North America that has been disadvantaging Canada. Perhaps large corporations desired the FTA and the NAFTA because it simplified the process. But this also implies that large corporations neither waited nor necessarily needed the agreements to shift investments elsewhere. The trend in manufacturing disinvestments should therefore be evident before the implementation of the FTA in January 1989.[2]

As for the NAFTA, Mexican workers have long been earning wages far below Canadian workers. The "maquiladora" area, for example, with its relatively lower wages

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[2] Supporters of the rationalization of production at the level of the North American market believe it would benefit Canadian manufacturing. Canadian plants, including branch plants, would have access to a larger market and thereby restructure to become more productive and competitive. In consequence, manufacturing investments and trade would improve and the number of jobs increase. Thus despite the disagreements between opponents and supporters of the FTA, and later the NAFTA, both believed the policies would have a dramatic, although different, impact on the manufacturing industries and Canada's economic future. The focus of this study is mainly to test claims expressed by proponents of the de-industrialization thesis, but the expected effects of these trade agreements put forth by its supporters are also questionable. Perhaps the impact of the FTA on the restructuring of manufacturing plants may be negligible, especially if, as some believe, the process of rationalizing production at the continental level started long before the FTA (see Williams 1994). Nonetheless, whatever the claims made about the impact of the FTA, other events have in the meantime also had an impact on developments in manufacturing, including the last recession, interest rates, and exchanges rates.

and lower environmental standards has existed since the mid-1960s. The Mexican government has passed through the years various measures to attract more foreign investment into the area (see Hart 1994) Thus, if wage differentials are the main criterion for locating in Mexico, then the relative benefits for Canadians to have invested in Mexico existed long before the NAFTA which was implemented in January 1994. Yet there was in the past little trade between Canada and Mexico, and few Canadian corporations invested in the maquiladora area. Before the NAFTA less than twenty plants in the maquiladora area were owned by Canadian investors while U.S. multinationals owned most of the 1,600 plants (Calof 1991).

Consequently, if the de-industrialization thesis is correct, the process of disinvestment in manufacturing in Canada should be evident before the implementation of the FTA and the NAFTA. And the disinvestment should have continued, and possibly accelerated, since their implementation.[3]

Indeed, disinvestment in manufacturing is the crux of the de-industrialization thesis. But it has already been demonstrated that plant closures and the accompanying loss of jobs are questionable evidence of de-industrialization. As the data in Chapter 5 show, gross loss of jobs is a poor indicator of the employment situation, let alone of overall investments in manufacturing. Further, if gross job loss is an acceptable indicator of overall disinvestment, then it stands to reason that the rise in absolute output data,

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[3] Critics of the NAFTA in Canada and the U.S. have largely stressed the negative impact on workers and the economy of their respective countries. A popular notion has been that the agreement mainly benefits Mexico. However, Kopniak (1993) argues that Mexico has been facing "de-industrialization," whereby the growth in the "maguiladora" region, is not resulting in a broader modernization of the economy. He suggests the agreement will further the process of de-industrialization. Furthermore, some critics of the agreement believe it will hurt the agricultural sector in Mexico and uproot millions of agricultural workers.

examined in Chapter 6, is a sign that overall investments are rising. But this would be speculation, since higher output is possible without investments necessarily rising. Also, the number of jobs in manufacturing can rise or fall irrespective of the trend in investments. More importantly, since cases of plant closures and gross job losses have always existed, the implication is that Canada has been in a constant state of de-industrialization -- a very peculiar conclusion. Thus, to determine the changes in investments, it is necessary to examine more appropriate indicators of disinvestments in manufacturing.

Closely connected to the expected disinvestment in manufacturing are the expected increases in imports and drops in exports. But the de-industrialization thesis provides no clear sense of cause and effect. For example, have higher imports emerged because of disinvestment or have they sparked it? Or is it a recurring series of cause and effect, with no clear beginning? Is worsening trade performance a cause (see Mahon 1984) or characteristic of de-industrialization (see Drache 1989a)? Nonetheless, whatever has occurred to investments, some believe Canada's performance in merchandise and manufacturing trade has deteriorated, especially since the FTA and the NAFTA.

It is also important to note that foreign investments and trade are partly tied to currency exchange. A depreciation of the Canadian dollar in relation to the U.S. dollar makes exports less expensive in the U.S. and export sales to the U.S. would probably increase. On the other hand, U.S. imports will be more expensive, and probably result in a drop of U.S. imports into Canada. U.S. foreign investment in Canada would likely be

affected since Canadian property would be less expensive in terms of the U.S. dollar. In contrast, Canadian companies would find it less attractive to expand into the U.S.. An appreciation of the Canadian dollar is likely to have the opposite effect with exports dropping, imports rising, U.S. foreign investments falling, and Canadian investments in the U.S. rising.

The Canadian dollar has fluctuated since it was freed from a fixed rate in the early 1970s. The currency fluctuations have inevitably affected the overall economy in various ways. However, an examination of their effect on trade and investments is beyond the scope of this study. For example, some have argued that the "de-industrialization" occurring in the late 1980s and early 1990s was primarily due to the high dollar and high interest rate policies (see, e.g., Williams 1994). But whatever perspective one holds on the cause of de-industrialization, it is first essential to demonstrate whether the phenomenon occurred.

Sources and Concepts

Capital expenditures

If investments have declined in manufacturing as the de-industrialization thesis expects, then total capital expenditures in manufacturing should have been falling. The composition of capital expenditures should show drops in both construction and machinery and equipment. Capital expenditure on construction includes, among other

costs, erecting new permanent structures. A declining trend in construction expenditures would suggest that firms are not investing in new plants. A declining trend in machinery and equipment expenditures would suggest that firms have not been replacing these essential components of capital stock. Both trends would lend support to the view that investors have been losing interest in Canada's manufacturing base.

According to the logic of the de-industrialization thesis there should have been a consistent drop in manufacturing investments as firms disinvest in Canada to reinvest elsewhere where profits are higher. The manufacturing data on investments, examined later in the section on results, focuses on the trends in total capital expenditures, and investment expenditures in construction and machinery and equipment in manufacturing for the 1961 - 1994 period. The expenditures are expressed in 1986 constant dollars to show real changes rather than changes due to inflation. Also noted are the 1995 preliminary actual expenditures and the 1996 expected expenditures expressed in current dollars. The data are estimated by Statistics Canada through various complicated procedures, including a capital expenditure survey.

Foreign direct investments

There has long been a debate over the place of foreign direct investment in Canada's economic development. As noted in Chapter 4, the high level of foreign direct investment has over the years been both welcomed and despised. The extent and impact of foreign ownership on Canada's economy and society were being widely debated in the

early 1970s when the de-industrialization thesis was first advanced in this country. Many were concerned that economic decisions affecting Canada were being made by corporations in other countries. Since most foreign direct investment was by U.S. corporations, most of the criticisms were directed at them.

The high level of foreign direct investments was seen as creating a net outflow of capital that could affect the balance of payments and exchange rates, and have a negative impact on the overall condition of the economy. Foreign direct investments were accused of threatening Canada's sovereignty and limiting its decision making control over the economy. For example, government reports, including the Gray Report in 1969, pointed out that many U.S. owned branch plants faced export restrictions imposed by their parent firms. In addition, much of the trade carried out by branch plants was with their U.S. parent firms (see Williams 1994).

Proponents of the de-industrialization thesis have been among those who have stressed the disadvantages of foreign, and especially U.S., direct investments in Canada. When the thesis was first put forward, however, they added another preoccupation. U.S. corporations were blamed for withdrawing investments from manufacturing as part of a new "agenda for the Canadian economy" by the U.S. government to end the "special relationship" with Canada as an "industrialized hinterland" of the U.S. (J. Laxer 1973, see also Chapter 3). U.S. corporations would disinvest in manufacturing and Canada would buy more manufactured goods from the U.S.. While over the years the context has changed, some of the basic expectations have remained. U.S. multinationals are accused of shifting production out of Canada -- a process made more attractive with the

implementation of first the FTA and later the NAFTA.

Thus, from the perspective of the de-industrialization thesis, there should have long been drops in direct U.S. investments in Canada's manufacturing industries. Initially, only U.S. firms were expected to disinvest in Canadian manufacturing. Over time, however, Canadian firms also came to be accused of shifting investments or placing new investments out of Canada and into low wage areas. In the past few years the shift has been expected to be mainly toward areas of the U.S. and Mexico because of the FTA and the NAFTA. Hence, the de-industrialization thesis also implies that Canadian direct investments abroad should have increased, and in recent years especially in the U.S. and Mexico.

The focus in this chapter is on direct investments because unlike portfolio investments they are made with the intention of acquiring a lasting interest in an enterprise. The investment permits the investor to have an effective voice in the management of the enterprise.

Foreign direct investments in Canada and Canadian direct investments abroad are measured by Statistics Canada as part of Canada's international investment position in the system of national accounts. The data are derived from various surveys and administrative records and while a precise measure of their quality is difficult, Statistics Canada believes they are of good quality. The investment data examined in the results section cover the last three decades until 1995. The results partly focus on the trend in U.S. direct investments in Canada, especially in manufacturing, and the trend in Canadian direct investment abroad, especially in U.S. manufacturing. However, a

serious weakness with the official data on Canadian investments abroad is that they do not capture investments that have left the country along with the individual investor. An example would be Canadian manufacturers who emigrate to the U.S., disinvest in Canada, and reinvest in the U.S..

Trade

Leaving aside the question of whether weakening trade performance is a cause or characteristic of de-industrialization, the thesis expects trade performance in manufacturing to have deteriorated. Trade data on tangible goods are unfortunately compiled by commodity and not by industry. Thus while we have good published trade data by country of origin, industry estimates must be determined from commodity groups. Much of the discussions over what has happened to trade revolve around what has occurred to merchandise trade or some of its commodity groupings, and especially manufactured goods.

Trade data are compiled and categorized by Statistic Canada from information gathered from different sources. The import data consist of a census of all commercial merchandise which cross the Canadian border, except of course illegal imports. The information on import values is provided by Customs and Excises, with some other data obtained from the National Energy Board, and from General Motors, Ford, and Chrysler on complete automobiles (see Alhassan et al. 1991). Statistics Canada converts the data from a "Customs Basis" to a "Balance of Payments Basis" which are then aggregated and

seasonally adjusted for the System of National Accounts. Various steps are taken to determine the accuracy of the data, including the value of imports, classification of commodities, and country of origin.

Collecting and compiling export data are more difficult than with imports, since they are less rigorously controlled and therefore open to many more errors. In recent years there has been some improvement in the export data collected with the U.S.. Canadian exports to the U.S. since 1990 have been based on U.S. Customs documents of imports from Canada. Likewise the U.S. estimates their exports to Canada on the basis of import data compiled by Statistics Canada.

Given the abundance of information collected to determine the merchandise trade data, Statistics Canada revises all aspects of the more recent data to accommodate information received late, as well as other changes. Therefore more recent merchandise trade data are open to revisions and conclusions are subject to possible modification.

The de-industrialization thesis holds that there generally should be a weakened performance in manufacturing trade and possibly merchandise trade. At the least, proponents anticipate serious problems with some commodity groupings, with declines in exports and increases in imports. The drops should have been evident before the implementation of the FTA and later the NAFTA, and should be most evident in the trading pattern with the U.S..

A weakness with focusing on the broad category of merchandise trade is that it consists of more than just manufactured products. For example, it includes wheat and live animals together with alcoholic beverages and other commodities. Thus while some

of the attention is given to merchandise trade, the emphasis is placed on manufacturing trade. The data are compiled and calculated from Statistics Canada and Bank of Canada publications.

For a further understanding of developments specifically in manufacturing, data compiled by origin of industry for the 1966-87 period by the former Department of Regional Industrial Expansion are presented and analyzed.[4] Information exists on the export orientation and import penetration in manufacturing. Export orientation is defined as the value of exports over shipments. Import penetration as the share of imports of the Canadian market, which is in turn the value of shipments plus the value of imports minus the value of exports. These data are helpful in determining whether manufacturing faced noticeable declines in its export orientation and simultaneously increases in import penetration before the passage of the FTA and the NAFTA, as expected by the de-industrialization thesis (see, e.g., Drache 1989a).

Lastly, particular attention is given to the trading pattern between the U.S. and Canada because of their close link in international trade and in the arguments of proponents of the de-industrialization thesis. Canada and the U.S. are the world's largest bilateral trading partners with trade flows of nearly 204 billion U.S. dollars, or 5.3 per cent of world trade (Statistics Canada, Catalogue No. 11-001, January 19, 1995). The focus will be on the trends in merchandise and manufacturing trade between the two

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[4] Published data on import penetration and export orientation provided in such detail as in the documents of the Department and Regional Industrial Expansion do not exist after 1987. In addition, starting in 1988 a new classification procedure was used for import and export data which made the later trade data no longer fully compatible with earlier years.

countries. The published data is however restricted to the 1981-1991 period. While the period is insufficient to properly determine the impact of the FTA, the data do allow us to test the de-industrialization thesis to see if a discernible shift in the trading pattern occurred, and whether it was to the benefit of the U.S., Canada, or both. A main advantage of the data set is that it incorporates U.S. and Canadian information. The commodities are aggregated into their industries of origin according to a consistent classification between the two countries.

Results: Investment and Trade Patterns

Capital expenditures

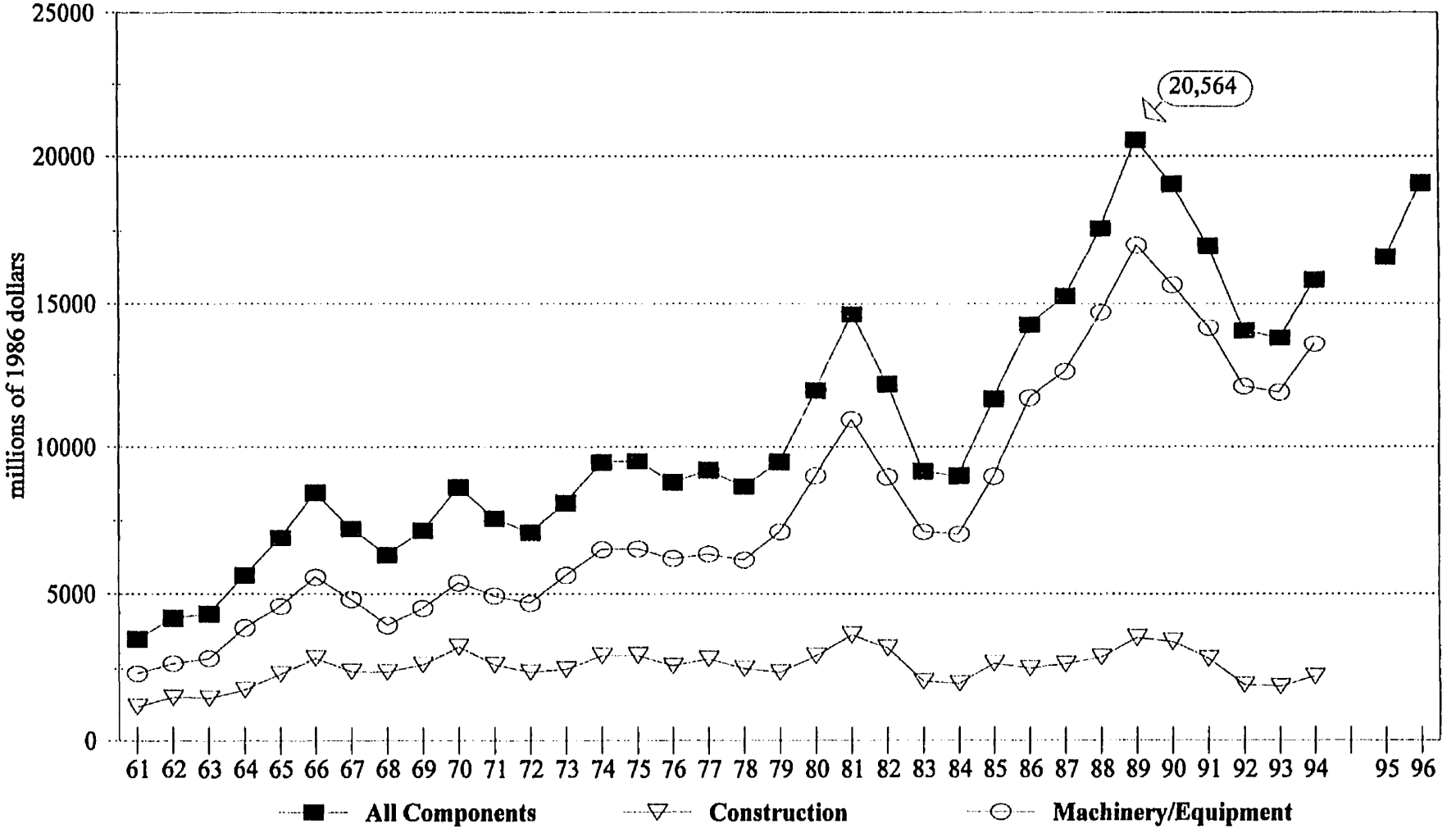
Contrary to the expectations of the de-industrialization thesis, investment expenditures in manufacturing in Canada have grown. The absolute levels of capital expenditures in constant dollars, and their percentage of gross domestic product in manufacturing, were in the 1980s and 1990s generally above the 1970 levels. Declines in investments have occurred mainly in times of recessions (see Koumanakos and Wood 1995).

As Figure 7.1 shows, total capital expenditures in constant 1986 dollars grew from about 8.6 billion dollars in 1970 to a peak level of nearly 20.6 billion dollars in 1989. While in the 1970s the average rate of growth in investment expenditure was 1.5 per cent annually, in the 1980s the rate grew on average 7.8 per cent annually. The rise

Figure 7.1

Capital Expenditures, 1961 - 1996

Manufacturing Industries



Note: For 1993 and earlier, actual expenditures and 1994 preliminary actual expenditures in constant 1986 dollars.
For 1995, preliminary actual expenditures, and 1996 intentions in current dollars

Sources: Compiled from Statistics Canada, Fixed Capital Flows and Stocks, 1961-1994 Historical, Catalogue No. 13-568, 1994;
Private and Public Investment in Canada, intentions 1995, Catalogue No. 61-205, 1995;
The Daily, July 31, 1996, Internet-Online, http://www.statcan.ca.

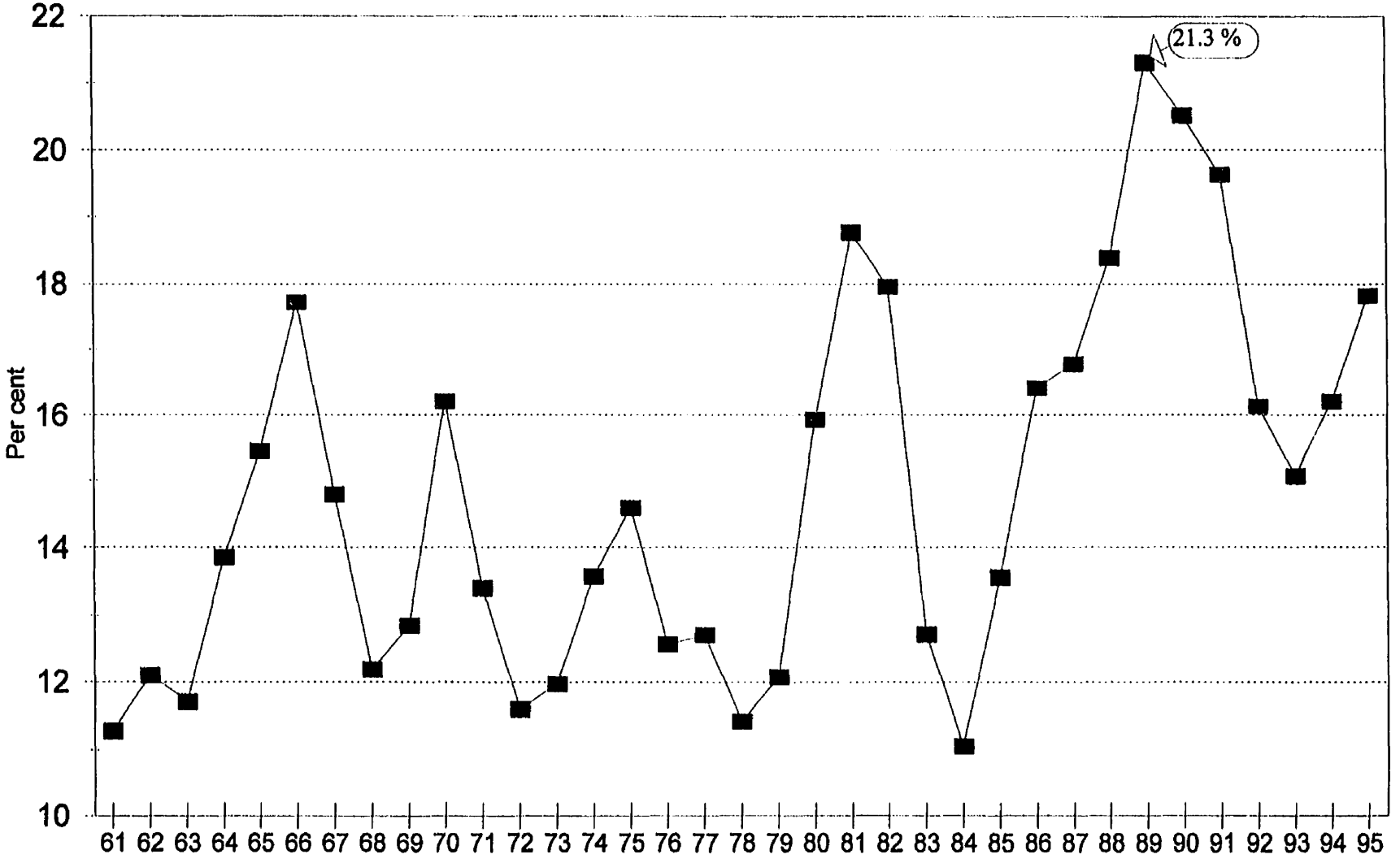
in investment expenditures was especially dramatic in the second half of the 1980s. After falling during the recession of the early 1980s capital expenditures turned upward in 1985. From 1985 to 1989 investments grew on average 18.2 per cent a year. Investments again declined in the last recession falling to about 13.8 billion dollars in 1993. However, in constant dollars the amount was still higher than in the 1970s. In addition, while the average annual drop in investments from 1981 to 1984 was 14.4 per cent, the average drop was 10 per cent annually from 1990 to 1993. In 1994 investments began to show signs of recovering with expenditures at about 14.8 billion constant 1986 dollars. The rising trend continued in 1995 with preliminary actual expenditures at over 16.6 billion current dollars and for 1996 expenditures are expected to be more than 19.1 billion current dollars (Statistics Canada, The Daily, Internet-Online, July 31, 1996).

Investment expenditures in relation to the gross domestic product in manufacturing have been also generally growing and followed an almost similar trend as the absolute levels. As Figure 7.2 shows, total investments in 1989 peaked at 21.3 per cent of GDP in manufacturing. Whereas the yearly average of investment expenditures as a share of GDP in manufacturing was 13.5 per cent in the 1960s and 12.7 per cent in the 1970s, the yearly average grew to 16.3 per cent in 1980s and to 17.6 per cent in the first half of the 1990s.

A closer examination of the data also shows that investments have increasingly been in new machinery and equipment. As Figure 7.1 illustrates, the rises in investments, and particularly since the mid-1980s, have been due to the rise in spending on machinery and equipment. Whereas absolute spending in constant dollars on

Figure 7.2

Capital Expenditures in Manufacturing
Share of RGDP Manufacturing, 1961-1995



Sources: Calculated from data compiled by
Statistics Canada,
Fixed Capital Flows and Stocks, 1961-1994 Historical, Catalogue No. 13-568, 1994;
Gross Domestic Product by Industry, Catalogue No. 15-512, 1991; Gross Domestic Product by Industry, April 1996, Catalogue No. 15-001, July 1996;
The Daily, July 31, 1996, Internet-Online http://www.statcan.ca
Bank of Canada, Bank of Canada Review, February 1995

construction has shown little change, except mainly during the recession years, investments in machinery and equipment have sharply grown. And the trend is likely to continue into 1996, since investment in manufacturing machinery and equipment are expected to have increased 13.5 per cent. The ratio of expenditures on machinery and equipment to those of construction has grown from 1.7:1 in 1970 to 3.1:1 in 1980 to 4.6:1 in 1990 to 8.4:1 in 1995. This suggests that manufacturing firms have placed an increasing proportion of their investments on modernizing their machinery and equipment which in turn is likely to contribute to increasing production and plant capacity.

Thus, in the long run there has been a rise in capital expenditures in manufacturing expressed in absolute terms and as a percentage of manufacturing output. Such data might be taken to indicate a continuing confidence in Canada's manufacturing sector. The claim that Canada has been losing its manufacturing base certainly does not find any argument in these data.

Direct investments

There is mixed support for the de-industrialization thesis with regard to U.S. direct investments in Canadian manufacturing and Canadian direct investments abroad in manufacturing. Over the years the level of direct investments from the U.S., including in manufacturing, has increased, but the U.S. share has dropped. Meanwhile, Canadian direct investments abroad, including manufacturing, have increased, with the U.S. as the

favoured place, but the U.S. share has dropped, as the share of other industrialized countries has grown.

The data in Tables 7.1, based on earlier estimates, and Table 7.2, that covers more recent and revised data, show that foreign direct investments in Canada in all industries have steadily increased over the years. In 1995 direct investments from abroad totaled more than 168 billion dollars, compared to about 17.9 billion current dollars three decades earlier. The bulk of direct investments has originated in the U.S.. But while U.S. direct investments in Canada have steadily increased in absolute terms, their share of total direct investments has dropped in more recent years.

For the years 1961 to 1991, in which published data on direct investments from abroad are available by sector (see Table 7.1), the share of manufacturing has ranged generally from slightly above 40 per cent to slightly below 45 per cent, except for 1990 and 1991 when its share was 45 and 46 per cent, respectively.[5] Thus direct investments in manufacturing in absolute terms have steadily grown, with the large proportion of the investments coming form the U.S.. Until the mid-1980s U.S. direct investments had accounted for at least 82 per cent of direct investments in manufacturing, with the exception of 1974. More recently, the proportion has dropped, but not the amount, as Table 7.1 shows. U.S. direct investments in manufacturing have continued to rise and in 1991 were nearly four times more than the early 1970s. In addition, since the mid-1980s,

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[5] It is important to note that the emphasis is placed on the relative changes in investments. Hence, it matters little whether current or constant dollars are used. Further, to properly determine the constant dollars of the investments one should take into account various factors on which information is difficult to obtain. For example, one would need to know the specific industry in which the investment is placed and then use the implicit price index in that industry to arrive at an appropriate estimate.

Table 7.1 : Direct Investments from Abroad , All sectors and in Manufacturing

	Total Direct Investments from Abroad			*Total Direct Investments from the U.S.*			
	All sectors	**Manufacturing**		All sectors	**Manufacturing**		U.S. share of Canada's direct investments from abroad in manufacturing sector
		Total	Per cent of all sectors		Total	Per cent of all sectors	
	'000,000	'000,000	%	'000,000	'000,000	%	%
1961	14,391	6,099	42.4	11,892	5,065	42.6	83.0
1962	15,381	6,361	41.4	12,661	5,266	41.6	82.8
1963	16,276	6,802	41.8	13,514	5,708	42.2	83.9
1964	16,473	7,029	42.7	13,308	5,743	43.2	81.7
1965	17,865	7,648	42.8	14,408	6,435	44.7	84.1
1966	19,550	8,357	42.7	15,942	7,053	44.2	84.4
1967	21,287	9,098	42.7	17,395	7,737	44.5	85.0
1968	23,234	9,736	41.9	18,975	8,323	43.9	85.5
1969	25,241	10,641	42.2	20,493	9,106	44.4	85.6
1970	27,374	11,392	41.6	22,054	9,660	43.8	84.8
1971	28,989	11,703	40.4	23,117	9,826	42.5	84.0
1972	30,563	12,582	41.2	24,305	10,550	43.4	83.8
1973	33,977	13,898	40.9	26,919	11,597	43.1	83.4
1974	37,557	16,540	44.0	29,870	12,987	43.5	78.5
1975	38,728	16,891	43.6	30,506	14,107	46.2	83.5
1976	41,623	18,131	43.6	32,726	15,218	46.5	83.9
1977	45,133	19,354	42.9	35,595	16,320	45.8	84.3
1978	50,089	21,443	42.8	39,592	18,305	46.2	85.4
1979	56,785	23,687	41.7	44,006	19,828	45.1	83.7
1980	64,708	26,793	41.4	50,368	22,320	44.3	83.3
1981	70,327	28,265	40.2	53,777	23,289	43.3	82.4
1982	72,814	29,203	40.1	54,457	24,104	44.3	82.5
1983	77,413	31,066	40.1	58,446	25,773	44.1	83.0
1984	83,385	33,439	40.1	63,355	27,930	44.1	83.5
1985	87,226	37,169	42.6	66,013	32,233	48.8	86.7
1986	92,401	41,275	44.7	67,025	33,330	49.7	80.8
1987	101,843	43,857	43.1	71,806	34,440	48.0	78.5
1988	110,545	47,887	43.3	73,710	35,419	48.1	74.0
1989	118,958	53,226	44.7	78,217	39,781	50.9	74.7
1990	126,588	57,010	45.0	80,931	41,674	51.5	73.1
1991	131,630	60,586	46.0	83,775	43,625	52.1	72.0

Note: Short term company accounts are included from 1983 on.

Source: Calculated from data compiled by Statistics Canada, Canada's International Investment Position, Historical Statistics, Catalogue No. 67-202, 1994

Table 7.2: Direct Investment from Abroad, Selected Industry Groups, from all countries and United States, 1983-1995

	Food beverage & tobacco	Wood and paper	Chemicals, & textiles	Metallic minerals & metal products	Machinery and equipment	Transportation equipment	Electrical & electronic products	Total seven industries	Total Direct Investments from abroad
All Countries (millions of dollars)									
1983	4,509	3,262	8,924	5,048	2,995	6,839	3,181	34,758	79,668
1984	4,837	3,390	8,157	3,879	3,313	7,937	4,984	36,497	85,984
1985	5,991	3,558	8,103	4,333	3,777	9,875	5,802	41,439	90,358
1986	7,190	3,526	8,880	4,608	4,189	11,458	5,803	45,654	96,054
1987	7,464	5,294	9,077	5,847	4,303	12,736	6,667	51,388	106,144
1988	8,414	5,472	10,168	7,857	4,456	12,104	7,024	55,495	114,480
1989	8,183	7,308	12,056	8,393	5,113	12,826	7,202	61,081	123,083
1990	9,223	7,615	13,579	9,750	5,224	13,142	7,287	65,820	131,131
1991	10,387	7,896	14,293	9,856	5,340	12,831	7,734	68,337	135,840
1992	11,636	8,891	15,173	9,595	5,650	12,804	7,630	71,379	138,696
1993	11,958	8,919	16,136	9,896	6,243	14,311	7,744	75,207	142,321
1994	12,746	9,145	17,693	9,643	6,633	17,813	8,486	82,159	152,784
1995	15,953	7,907	18,312	10,209	7,054	18,019	11,927	89,381	168,077
U.S. Direct Investments in Canada (millions of dollars)									
1983	3,481	2,238	7,295	4,289	2,803	5,901	2,707	28,714	59,706
1984	3,635	2,323	7,000	3,348	2,854	6,993	4,475	30,628	64,762
1985	4,565	2,439	7,007	3,630	3,179	8,416	5,175	34,411	67,874
1986	4,979	2,271	7,235	3,873	3,545	9,612	4,884	36,399	69,241
1987	5,426	2,454	7,133	4,282	3,492	10,731	5,651	39,169	74,194
1988	4,600	2,870	7,774	4,994	3,594	9,816	5,991	39,639	76,345
1989	4,947	5,173	8,557	4,467	3,913	10,363	6,080	43,500	80,877
1990	5,603	5,491	8,856	5,258	4,001	10,557	6,069	45,835	84,353
1991	6,712	5,496	9,628	5,327	4,015	10,443	6,061	47,682	86,996
1992	7,533	6,085	10,517	5,377	4,247	10,489	6,027	50,275	89,115
1993	7,934	5,943	11,378	5,614	4,729	12,033	6,059	53,690	91,620
1994	8,468	6,931	12,596	5,912	5,101	15,410	6,668	61,086	101,514
1995	9,393	5,826	13,142	6,629	5,470	15,258	9,882	65,600	113,092
U.S. Direct Investments in Canada (percentage of total direct investments)									
1983	77.2	68.6	81.7	85.0	93.6	86.3	85.1	82.6	74.9
1984	75.1	68.5	85.8	86.3	86.1	88.1	89.8	83.9	75.3
1985	76.2	68.5	86.5	83.8	84.2	85.2	89.2	83.0	75.1
1986	69.2	64.4	81.5	84.0	84.6	83.9	84.2	79.7	72.1
1987	72.7	46.4	78.6	73.2	81.2	84.3	84.8	76.2	69.9
1988	54.7	52.4	76.5	63.6	80.7	81.1	85.3	71.4	66.7
1989	60.5	70.8	71.0	53.2	76.5	80.8	84.4	71.2	65.7
1990	60.8	72.1	65.2	53.9	76.6	80.3	83.3	69.6	64.3
1991	64.6	69.6	67.4	54.0	75.2	81.4	78.4	69.8	64.0
1992	64.7	68.4	69.3	56.0	75.2	81.9	79.0	70.4	64.3
1993	66.3	66.6	70.5	56.7	75.7	84.1	78.2	71.4	64.4
1994	66.4	75.8	71.2	61.3	76.9	86.5	78.6	74.4	66.4
1995	58.9	73.7	71.8	64.9	77.5	84.7	82.9	73.4	67.3

Source: Calculated from data compiled by Statistics Canada, Canada's International Investment Position, Catalogue No. 67-202, 1994, 1995, 1996

an increasing proportion of U.S. investments went into manufacturing. While U.S. direct investments in manufacturing as a share of all direct investments from abroad dropped to 72 per cent in 1991, the level of U.S. direct investments in manufacturing had grown and made up more than 52 per cent of all U.S. direct investments in Canada.

Data categorized according to industry groups of which data for selected industries have been compiled in Table 7.2, show that in the past decade all have faced a rise in the level of direct investments from abroad. The bulk of the investments was from the U.S., but the U.S. share has dropped in some of the industry groups. Direct investments in machinery and equipment, and in metallic minerals and metal products, were in 1995 much more than the 1983 level. But in metallic minerals and metal products the U.S. share of direct investments dropped from 85 per cent in 1983 to 64.9 per cent in 1995, and in machinery and equipment the U.S. share dropped from 93.6 per cent to 77.5 per cent.

The U.S. share of direct investments in the selected manufacturing industries together, dropped from about 84 per cent in 1984 to nearly 70 per cent in 1991, but the proportion has since slightly grown reaching more than 73 per cent in 1995. However, while the share of U.S. investments in total direct investments in manufacturing or selected manufacturing industries fell, the absolute amount of U.S. investments has steadily increased. In 1995 U.S. direct investments reached more than 113 billion dollars, or 67.3 per cent of the total direct investments in Canada, compared to about 59.7 billion dollars in 1983 or 74.9 per cent of the total direct investments in Canada (see Table 7.2). Similarly, the U.S. amount in selected manufacturing industries grew from

28.7 billion dollars to 65.6 billion dollars. Further, the majority of U.S. direct investments are in manufacturing, and the proportion in manufacturing has increased in the past decade, as evident from data in Table 7.1 and 7.2. Based on data for the selected manufacturing industries in Table 7.2, the proportion of U.S. direct investments in these industries was about 48 per cent in 1983 but grew to 58 per cent by 1995.

The trend in direct investments from abroad in Canada is counter to that predicted by proponents of the de-industrialization thesis. Rather than moving investments out of Canada, or at least out of manufacturing, as the de-industrialization thesis expected, U.S. and other foreign investors, have increased their level of investments, including in manufacturing.

The rise in foreign direct investments in Canada has however been accompanied by an increase in Canadian direct investments abroad, including in manufacturing. As Table 7.3 shows for the 1960-1991 period, the last period for which published data included investments categorized as in manufacturing, the level of total direct investments abroad increased steadily. Total direct investments abroad in 1991 were nearly 2.8 times the 1981 level, and the part invested in manufacturing was in 1991 nearly 2.5 times the 1981 level. Thus whereas the proportion of direct investments abroad in manufacturing ranged from about 56 to 62 per cent in the 1960s, it ranged from about 46 to 54 per cent in 1970s, and dropped to a range of about 44 per cent to 48 per cent in the 1980s and early 1990s. The bulk of all Canadian investments abroad is placed in the U.S.. Both the direct investments placed in the U.S. and the share of total direct investments abroad placed in the U.S. were higher in the 1980s and early 1990s than in

Table 7.3 : Canadian Direct Investments Abroad, All sectors and in Manufacturing

	Canadian Direct Investments Abroad			*Canadian Direct Investments in the U.S.*				
	All sectors	**Manufacturing**		All sectors		**Manufacturing**		
	Total	Total	Per cent of all sectors	Total	Per cent of Cdn direct investments abroad	Total	Per cent of Cdn direct investments in U.S.	Per cent of total Cdn direct investments abroad in manufacturing placed in U.S.
	'000,000	'000,000	%	'000,000	%	'000,000	%	%
1961	2,596	1,458	56.2	1,724	66.4	932	54.1	63.9
1962	2,784	1,644	59.1	1,786	64.2	1,000	56.0	60.8
1963	3,082	1,850	60.0	1,922	62.4	1,109	57.7	59.9
1964	3,272	2,005	61.3	1,967	60.1	1,147	58.3	57.2
1965	3,469	2,111	60.9	2,041	58.8	1,186	58.1	56.2
1966	3,711	2,289	61.7	2,100	56.6	1,273	60.6	55.6
1967	4,030	2,446	60.7	2,190	54.3	1,358	62.0	55.5
1968	4,617	2,744	59.4	2,546	55.1	1,536	60.3	56.0
1969	5,211	3,050	58.5	2,979	57.2	1,733	58.2	56.8
1970	6,188	3,207	51.8	3,273	52.9	1,881	57.5	58.7
1971	6,538	3,448	52.7	3,399	52.0	1,979	58.2	57.4
1972	6,715	3,639	54.2	3,433	51.1	2,101	61.2	57.7
1973	7,835	3,941	50.3	3,926	50.1	2,145	54.6	54.4
1974	9,210	4,688	50.9	4,769	51.8	2,643	55.4	56.4
1975	10,526	5,315	50.5	5,559	52.8	3,068	55.2	57.7
1976	11,491	5,589	48.6	6,092	53.0	3,228	53.0	57.8
1977	13,509	6,570	48.6	7,116	52.7	3,742	52.6	57.0
1978	16,422	7,619	46.4	8,965	54.6	4,547	50.7	59.7
1979	20,496	10,247	50.0	12,165	59.4	6,078	50.0	59.3
1980	26,967	11,750	43.6	16,781	62.2	6,889	41.1	58.6
1981	33,847	16,351	48.3	22,356	66.1	10,879	48.7	66.5
1982	35,558	16,763	47.1	23,781	66.9	11,687	49.1	69.7
1983	39,859	18,169	45.6	26,576	66.7	12,956	48.8	71.3
1984	47,422	20,614	43.5	32,151	67.8	14,909	46.4	72.3
1985	54,123	24,808	45.8	37,074	68.5	17,921	48.3	72.2
1986	58,492	26,233	44.8	39,424	67.4	19,024	48.3	72.5
1987	66,794	29,083	43.5	43,365	64.9	20,092	46.3	69.1
1988	72,146	31,692	43.9	46,497	64.4	21,333	45.9	67.3
1989	80,779	37,064	45.9	50,341	62.3	24,836	49.3	67.0
1990	87,886	39,985	45.5	52,800	60.1	26,003	49.2	65.0
1991	94,435	41,393	43.8	54,639	57.9	26,596	48.7	64.3

Note: Short term company accounts are included from 1983 on.

Source: Calculated from data compiled by Statistics Canada, Canada's International Investment Position, Historical Statistics, Catalogue No. 67-202, 1994

the 1970s. However, the proportion of those investments in manufacturing industries were higher in the 1970s than in the 1980s and early 1990s. Whereas in 1971 more than 58 per cent of Canadian investments in the U.S. were in manufacturing, in 1981 and 1991 the share was about 49 per cent. But despite the drop, the U.S. attracted a larger share of Canadian investments abroad in manufacturing in the 1980s and early 1990s than in the 1970s. The peak year was 1985 when the U.S. was the destination of 72.5 per cent of the total Canadian direct investments abroad in manufacturing. Since then the share has dropped and was at 64.3 per cent in 1991, still at a higher level than in the 1970s.

As Table 7.4 shows, based on more recent revised published data, the amount of Canadian direct investments abroad has increased, and the U.S. is still the favoured destination. Direct investments abroad have increased from more than 42.3 billion dollars in 1983 to nearly 142.4 billion dollars in 1995. Canadian direct investments in the U.S. totaled over 76.5 billion dollars, compared to about 28.6 billion dollars in 1983. The amount of direct investments abroad placed in certain manufacturing industries, as shown in Table 7.4, grew from about 19.5 billion dollars in 1983 to 57.6 billion dollars in 1995. In the same period the amount placed in the U.S. increased from about 12.5 billion dollars to about 28.6 billion dollars. However, the proportion of all Canadian direct investments that are placed in the U.S. has fallen from about 67.6 per cent in 1983 to about 54 per cent in 1995. Similarly, the proportion of all Canadian direct investments in the selected manufacturing industries has fallen from nearly 64 per cent in 1983 to nearly 50 per cent in 1995. Likewise, in four of the seven industry groups, the share of direct

Table 7.4: Direct Investment Abroad, Selected Industry Groups, all countries and United States, 1983-1995

	Food beverage & tobacco	Wood and paper	Chemicals, chemical products & textiles	Metallic minerals & metal products	Machinery and equipment	Transportation equipment	Electrical & electronic products	Total seven industries	Total Direct Investments Abroad
Direct Investments Abroad (millions of dollars)									
1983	3,813	1,560	3,745	8,026	185	634	1,507	19,470	42,318
1984	3,846	1,875	4,041	8,782	171	961	2,267	21,943	50,092
1985	5,186	2,105	4,676	10,239	91	645	2,697	25,639	57,224
1986	5,376	2,339	4,981	10,776	214	975	3,190	27,851	61,497
1987	5,331	2,791	5,437	11,255	503	1,478	3,318	30,113	70,641
1988	5,552	3,013	5,716	12,415	654	1,592	4,027	32,969	76,169
1989	6,993	3,289	6,205	11,857	964	1,974	4,417	35,699	84,273
1990	7,603	3,510	6,949	13,148	1,100	2,125	5,014	39,449	91,462
1991	8,118	3,472	7,928	14,197	502	2,212	6,931	43,360	101,761
1992	8,390	3,576	7,522	15,570	593	2,563	8,498	46,712	107,451
1993	8,018	3,674	9,317	17,924	927	3,070	7,273	50,203	114,860
1994	9,233	4,344	11,376	20,512	1,038	3,710	7,487	57,700	131,394
1995	9,608	4,767	6,649	23,093	1,159	3,870	8,436	57,582	142,347
Direct Investments from Canada in the United States (millions of dollars)									
1983	2,455	1,361	3,363	3,730	52	107	1,387	12,455	28,587
1984	2,390	1,602	3,653	4,510	(12)	386	1,995	14,524	34,700
1985	3,272	1,307	4,072	5,750	2	207	2,393	17,003	39,586
1986	3,584	1,660	4,326	6,302	123	470	2,664	19,129	42,027
1987	3,125	1,827	4,805	6,609	226	773	2,472	19,837	46,091
1988	3,005	1,824	5,063	7,068	218	526	3,263	20,967	48,809
1989	4,019	2,113	5,503	6,411	467	615	3,541	22,669	52,615
1990	4,489	2,214	6,039	7,145	484	846	3,845	25,062	55,475
1991	4,262	1,962	6,507	7,710	239	975	4,334	25,989	58,398
1992	4,653	1,933	5,723	8,559	356	1,345	6,010	28,579	61,471
1993	3,822	2,090	6,535	9,287	383	1,651	4,600	28,368	61,828
1994	4,168	3,046	8,121	10,340	464	1,819	3,993	31,951	68,835
1995	4,403	3,382	2,937	11,661	489	1,671	4,027	28,570	76,505
Percentage of total direct investments abroad placed in the United States									
1983	64.4	87.2	89.8	46.5	28.1	16.9	92.0	64.0	67.6
1984	62.1	85.4	90.4	51.4	-7.0	40.2	88.0	66.2	69.3
1985	63.1	62.1	87.1	56.2	2.2	32.1	88.7	66.3	69.2
1986	66.7	71.0	86.9	58.5	57.5	48.2	83.5	68.7	68.3
1987	58.6	65.5	88.4	58.7	44.9	52.3	74.5	65.9	65.2
1988	54.1	60.5	88.6	56.9	33.3	33.0	81.0	63.6	64.1
1989	57.5	64.2	88.7	54.1	48.4	31.2	80.2	63.5	62.4
1990	59.0	63.1	86.9	54.3	44.0	39.8	76.7	63.5	60.7
1991	52.5	56.5	82.1	54.3	47.6	44.1	62.5	59.9	57.4
1992	55.5	54.1	76.1	55.0	60.0	52.5	70.7	61.2	57.2
1993	47.7	56.9	70.1	51.8	41.3	53.8	63.2	56.5	53.8
1994	45.1	70.1	71.4	50.4	44.7	49.0	53.3	55.4	52.4
1995	45.8	70.9	44.2	50.5	42.2	43.2	47.7	49.6	53.7

Source: Calculated from data compiled by Statistics Canada, Canada's International Investment Position, Catalogue No. 67-202, 1994, 1995, 1996

investments abroad placed in the U.S. fell. For example, whereas in 1983 the U.S. attracted 92 per cent of Canadian direct investments abroad in electrical and electronic products, by 1995 the proportion had fallen to 47.7 per cent. The proportion for the seven manufacturing industry groups examined faced similar trends. Meanwhile, little change occurred in the metallic minerals and metal products, much volatility in the machinery and equipment, and a sharp rise in transportation equipment industries. Thus as the overall amount of direct investments abroad has increased, so has the amount placed in the U.S.. But the proportion placed in the U.S. has dropped.

Further, as Figure 7.3 illustrates, the proportion of direct investments in Canada made up by selected manufacturing industries, has increased from under 44 per cent in 1983 to over 53 per cent in 1995. In contrast, the proportion of direct investments abroad made up by selected manufacturing industries fell from about 46 per cent to 40.5 per cent. Thus, the trends in direct investments in Canada and abroad put into question the claims of the de-industrialization thesis. However, missing from the analysis is money that has permanently left the country together with the investor who is no longer a Canadian resident.

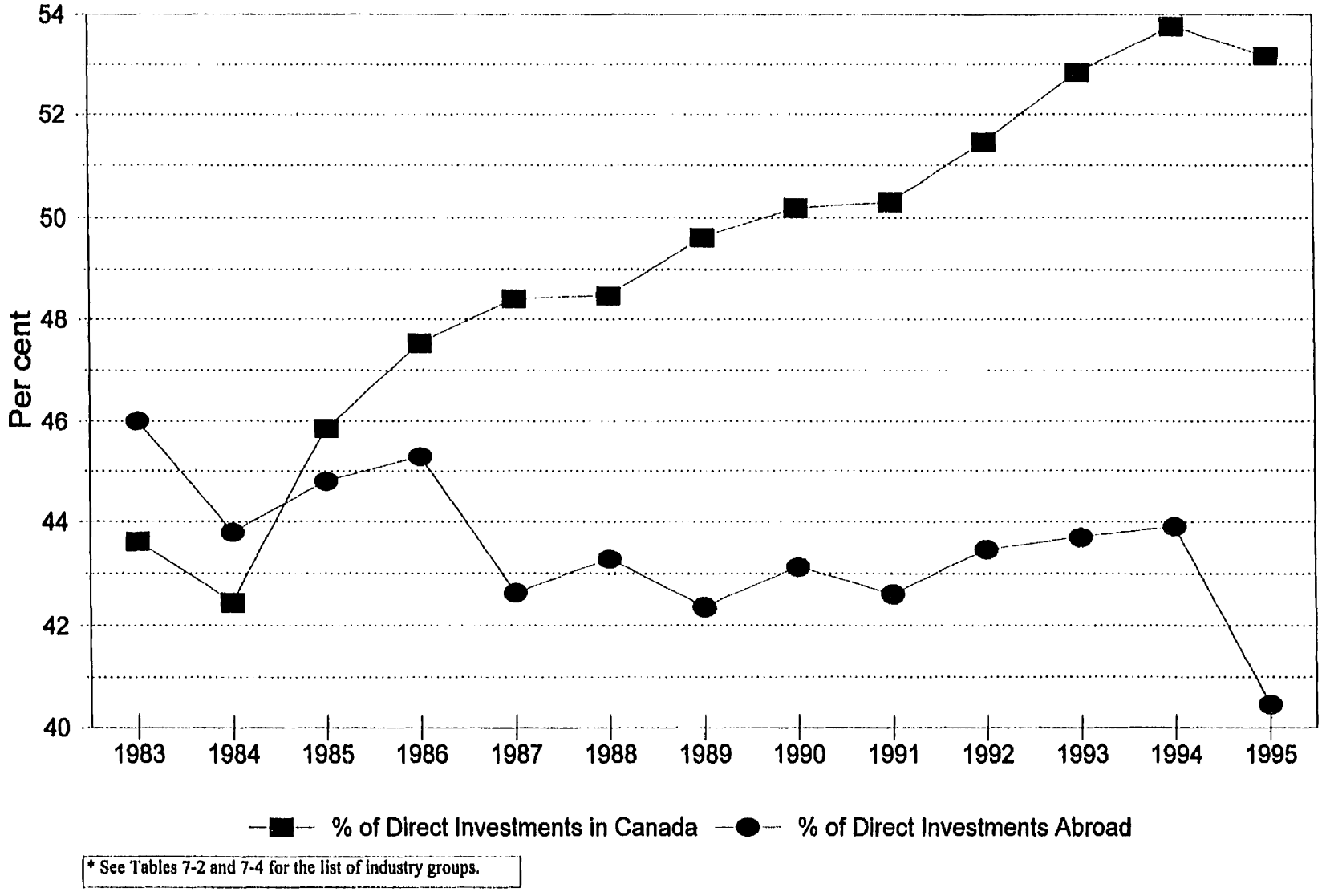
Trade

As was the case with investment data, trends in trade appear to be quite different from the expectations of the de-industrialization thesis. Merchandise and manufacturing imports have certainly increased over the last three decades, but so have merchandise

Figure 7-3

Direct Investments in Manufacturing*

Percentage of total direct investments



* See Tables 7-2 and 7-4 for the list of industry groups.

Source: Calulated from data compiled by Statistics Canada, Canada's International Investment Position, Catalogue No. 67-202, 1994, 1995, 1996

and manufacturing exports. And while manufacturing import penetration grew, so did manufacturing export orientation. As for trade with the U.S., in the 1981-91 period the value of U.S. manufacturing imports in the Canadian market grew, but the U.S. share of Canada's total imports fell. Meanwhile, the value of Canadian manufacturing exports to the U.S. also grew, with the result that Canada moved from having a deficit to a surplus situation in trade with the U.S..

Over the years merchandise imports and exports have both increased with Canada retaining a trade surplus. The rise in exports and imports grew quite sharply since the mid-1980s, with each achieving an average annual rise of 12 per cent. As shown in Table 7.5, in current dollars merchandise imports grew from more than 15.3 billion in 1971 to nearly 77.1 billion in 1981 to about 225.3 in 1995. In the same years, exports grew from about 17.8 billion dollars to 84.4 billion dollars to over 253.5 billion dollars. Thus, in 1995 Canada had a merchandise trade surplus of nearly 28.3 billion dollars, higher than in 1994 when it was about 15 billion dollars, and far higher than the earlier peak of 19.8 billion dollars achieved in 1984.

The picture changes somewhat when the merchandise trade figures are in constant 1986 dollars, as shown in Tables 7.6 and 7.7. Merchandise imports in constant 1986 dollars grew from more than 75.8 billion in 1980 to nearly 141.1 billion in 1989 to 217.2 billion in 1995. In the same years exports also grew, rising from about 81.4 billion constant 1986 dollars to nearly 137.8 billion to almost 202 billion dollars. Thus, the surplus in merchandise trade expressed in constant dollars was not as wide as in current dollars. For example, in 1984 the surplus was nearly 15.6 billion constant 1986

Table 7.5: Merchandise Trade and Manufacturing Trade, 1971-1995

(current dollars)

	Imports		*Exports*		*Balance*	
	Merchandise	Manufacturing	Merchandise	Manufacturing	Merchandise	Manufacturing
	'000,000	'000,000	'000,000	'000,000	'000,000	'000,000
1971	15,314	13,227	17,782	14,168	2,468	941
1972	18,272	15,819	20,222	15,805	1,950	(14)
1973	22,726	19,537	25,649	19,378	2,923	(159)
1974	30,903	25,193	32,738	23,052	1,835	(2,141)
1975	33,962	27,216	33,616	23,496	(346)	(3,720)
1976	36,608	29,658	38,166	28,359	1,558	(1,299)
1977	41,523	33,975	44,495	33,683	2,972	(292)
1978	49,048	41,015	53,361	40,926	4,313	(89)
1979	61,157	51,289	65,582	48,877	4,425	(2,412)
1980	67,903	54,644	76,681	55,781	8,778	1,137
1981	77,140	62,174	84,432	60,672	7,292	(1,502)
1982	66,739	54,948	84,393	59,820	17,654	4,872
1983	73,098	62,950	90,556	65,512	17,458	2,562
1984	91,493	79,904	111,330	82,661	19,837	2,757
1985	102,669	89,186	119,061	89,553	16,392	367
1986	110,374	97,077	120,318	96,176	9,944	(901)
1987	115,119	100,621	126,340	102,033	11,221	1,412
1988	128,862	113,900	137,779	112,749	8,917	(1,151)
1989	135,455	118,259	141,514	116,652	6,059	(1,607)
1990	136,859	116,533	145,555	115,318	8,696	(1,215)
1991	136,617	116,464	140,233	110,220	3,616	(6,244)
1992	149,201	127,160	155,402	121,773	6,201	(5,387)
1993	171,928	147,391	181,251	143,638	9,323	(3,753)
1994	202,807	177,670	217,854	175,418	15,047	(2,252)
1995	225,251	198,539	253,536	207,720	28,285	9,181

Sources: Compiled and calculated from,
Statistics Canada, Canadian Economic Observer, Historical Statistical Supplement, 1995/1996, Catalogue No. 11-201-XPB, Vol. 10, July 1996

Table 7.6: Imports, Manufacturing Trade and Merchandise Trade, 1980-1995

(constant 1986 dollars)

	Natural Resource Materials		*Motor Vehicle and Parts*		*Other Manufactured Goods*		**Total Manufacturing**	*Merchandise Trade*	
	Total	Share of total manu-facturing	Total	Share of total manu-facturing	Total	Share of total manu-facturing		Total	Share made up of manufacturing
	'000,000	%	'000,000	%	'000,000	%	'000,000	'000,000	%
1980	16,053	23.8	20,475	30.3	30,983	45.9	67,511	75,827	89.0
1981	16,798	24.3	20,042	28.9	32,398	46.8	69,238	83,386	83.0
1982	13,694	23.4	17,280	29.6	27,503	47.0	58,477	69,635	84.0
1983	15,631	23.0	21,713	31.9	30,756	45.2	68,100	77,318	88.1
1984	17,309	20.8	28,268	34.1	37,440	45.1	83,017	92,520	89.7
1985	19,687	21.7	32,425	35.7	38,790	42.7	90,902	102,103	89.0
1986	20,420	21.1	33,124	34.3	43,154	44.6	96,698	110,374	87.6
1987	21,627	21.1	33,111	32.3	47,630	46.5	102,368	117,229	87.3
1988	25,314	21.5	34,806	29.6	57,489	48.9	117,609	133,813	87.9
1989	26,575	21.6	33,125	27.0	63,109	51.4	122,809	141,099	87.0
1990	26,553	21.8	31,113	25.6	64,007	52.6	121,673	141,529	86.0
1991	25,582	20.5	31,777	25.5	67,426	54.0	124,785	146,115	85.4
1992	27,904	20.9	32,612	24.5	72,789	54.6	133,305	156,395	85.2
1993	30,292	20.4	36,788	24.8	81,482	54.8	148,562	173,665	85.5
1994	35,380	20.5	41,474	24.0	95,652	55.4	172,506	197,856	87.2
1995	39,001	20.2	42,620	22.1	111,359	57.7	192,980	217,178	88.9

Note: Natural resource materials include construction materials and industrial materials.

Other manufactured goods include aircraft & parts, other transportation equipment, agricultural machinery, communication & electronic equipment, industrial machinery, other equipment & tools, and other consumer goods.

Total manufacturing includes natural resource materials, motor vehicle and parts, and other manufactured goods.

Sources: Compiled and calculated from,

Bank of Canada, Bank of Canada Review, Winter 1996-1997 and July 1990

Statistics Canada, Catalogue No. 11-010-XPB, Canadian Economic Observer, Statistical Summary, March 1997

Table 7.7: Exports, Manufacturing Trade and Merchandise Trade, 1980-1995

(constant 1986 dollars)

	Natural Resource Materials		*Motor Vehicle and Parts*		*Other Manufactured Goods*		**Total Manufacturing**	*Merchandise Trade*	
	Total '000,000	Share of total manu-facturing %	Total '000,000	Share of total manu-facturing %	Total '000,000	Share of total manu-facturing %	'000,000	Total '000,000	Share made up of manufacturing %
1980	33,081	51.5	16,066	25.0	15,098	23.5	64,245	81,350	79.0
1981	32,378	49.0	18,026	27.3	15,719	23.8	66,123	85,363	77.5
1982	29,657	45.4	20,700	31.7	14,971	22.9	65,328	84,894	77.0
1983	31,411	44.1	25,204	35.4	14,643	20.5	71,258	91,187	78.1
1984	34,566	39.9	32,908	37.9	19,263	22.2	86,737	108,122	80.2
1985	35,811	39.0	34,435	37.5	21,670	23.6	91,916	115,078	79.9
1986	38,947	40.7	31,910	33.3	24,953	26.0	95,810	120,318	79.6
1987	41,858	42.3	32,017	32.3	25,160	25.4	99,035	124,719	79.4
1988	44,405	41.1	36,136	33.5	27,484	25.4	108,025	136,280	79.3
1989	44,551	40.0	36,886	33.1	29,995	26.9	111,432	137,794	80.9
1990	43,199	36.3	36,124	30.4	39,559	33.3	118,882	144,114	82.5
1991	43,517	38.8	33,364	29.8	35,251	31.4	112,132	146,534	76.5
1992	44,652	36.6	36,472	29.9	40,942	33.5	122,066	158,412	77.1
1993	46,939	34.0	43,079	31.2	48,097	34.8	138,115	175,972	78.5
1994	50,207	31.3	48,255	30.1	62,076	38.7	160,538	201,980	79.5
1995	61,858	33.7	50,933	27.8	70,544	38.5	183,335	227,031	80.8

Note: Natural resource materials include lumber and sawmill products, pulp and paper, metals and minerals, chemicals and fertilizers.
Other manufactured goods include aircraft & parts, other transportation equipment, agricultural machinery, communication & electronic equipment, industrial machinery, other equipment & tools, other consumer goods, and other industrial goods
Total manufacturing includes natural resource materials, motor vehicle and parts, and other manufactured goods.

Sources: Compiled and calculated from,
Bank of Canada, Bank of Canada Review, Winter 1996-1997 and July 1990
Statistics Canada, Catalogue No. 11-010-XPB, Canadian Economic Observer, Statistical Summary, March 1997

dollars and in 1995 the surplus was about 9.9 billion. Nevertheless, a surplus existed whether expressed in constant or current dollars, and the trends are contrary to what the de-industrialization thesis would lead us to expect.

However, merchandise trade comprises more than just manufacturing. And the concern is often expressed over the situation in manufacturing which in the 1980-95 period averaged more than 78 per cent of merchandise exports and about 87 per cent of merchandise imports expressed in constant 1986 dollars (see Tables 7.6 and 7.7).

Manufacturing trade data for the 1966-87 period compiled by the former Department of Regional Industrial Expansion (1984, 1988) show that the increase in manufacturing imports was accompanied by an even higher increase in manufacturing exports. In 1987 imports were nearly 12.6 times the amount of two decades earlier. And import penetration grew from 21 per cent in 1966 to 29.2 per cent in 1976 to 37 per cent in 1987. But by 1987 exports were actually 13.8 times more than in 1966. And export orientation rose from 18.8 per cent in 1966 to 26.2 per cent in 1976 to 35.9 per cent in 1987. Hence, whereas import penetration grew 16 percentage points, export orientation grew 17.1 percentage points in the 1966-1987 period.

In more recent years trade in manufacturing has also shown increases in imports and exports (see Tables 7.6 and 7.7). In current dollars imports grew from about 13.2 billion in 1971 to nearly 62.2 billion in 1981 to a peak level of over 198.5 billion in 1995. Such a trend is what the de-industrialization thesis would expect. But the trend in imports was accompanied by a similar one in exports. Manufacturing exports grew from nearly 14.2 billion in 1971 to about 60.7 billion in 1981 to almost 207.7 billion in 1995.

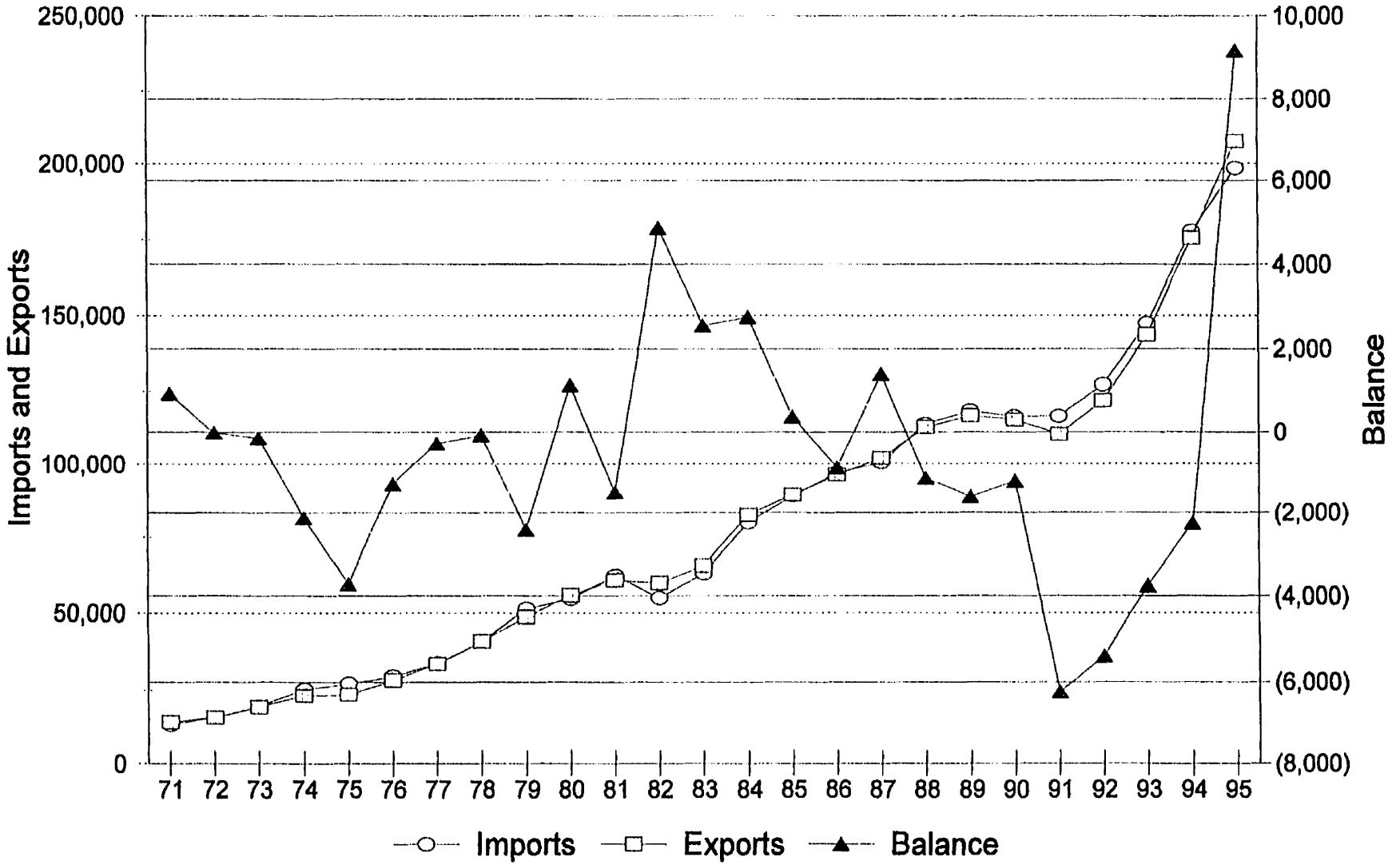
Thus, as Table 7.5 shows and Figure 7.4 illustrates, not only have both imports and exports continued to rise, but, for example, between 1987 and 1995 exports of manufactured goods more than doubled. Further, the strong performance in manufacturing exports resulted in a trade surplus in 1995 of nearly 9.2 billion dollars, the first since 1987. (It is worth noting that in the 1990s the Canadian dollar decreased in value relative to the U.S. dollar. See Bank of Canada, 1997.)

The trend in manufacturing trade is less spectacular when expressed in constant dollars (see Tables 7.6 and 7.7). Nevertheless, both imports and exports grew. In constant 1986 dollars manufacturing imports rose from about 67.5 billion in 1980 to nearly 193 billion in 1995. This was accompanied by an increase in manufacturing exports from about 64.2 billion in 1980 to nearly 183.3 billion in 1995. But as Figure 7.5 illustrates, in the 1980-95 period a manufacturing trade surplus in constant 1986 dollars only occurred from 1982 to 1985. And whereas in 1995 the manufacturing sector had a trade surplus in current dollars, it had a trade deficit in constant 1986 dollars. However, the recent strong performance in manufacturing exports has shrunk the size of the deficit from 12.7 billion constant dollars in 1991 to 9.6 billion constant dollars in 1995.

In addition, the value of imported motor vehicle and parts products rose from nearly 20.5 billion constant 1986 dollars in 1980 to about 42.6 billion in 1995, a rise of almost 22.1 billion dollars (see Table 7.6). But exports also grew from about 16 billion constant 1986 dollars in 1980 to nearly 54 billion in 1995, an increase of nearly 34.9 billion dollars (see Table 7.7). These changes raise doubts about claims that the

Figure 7.4

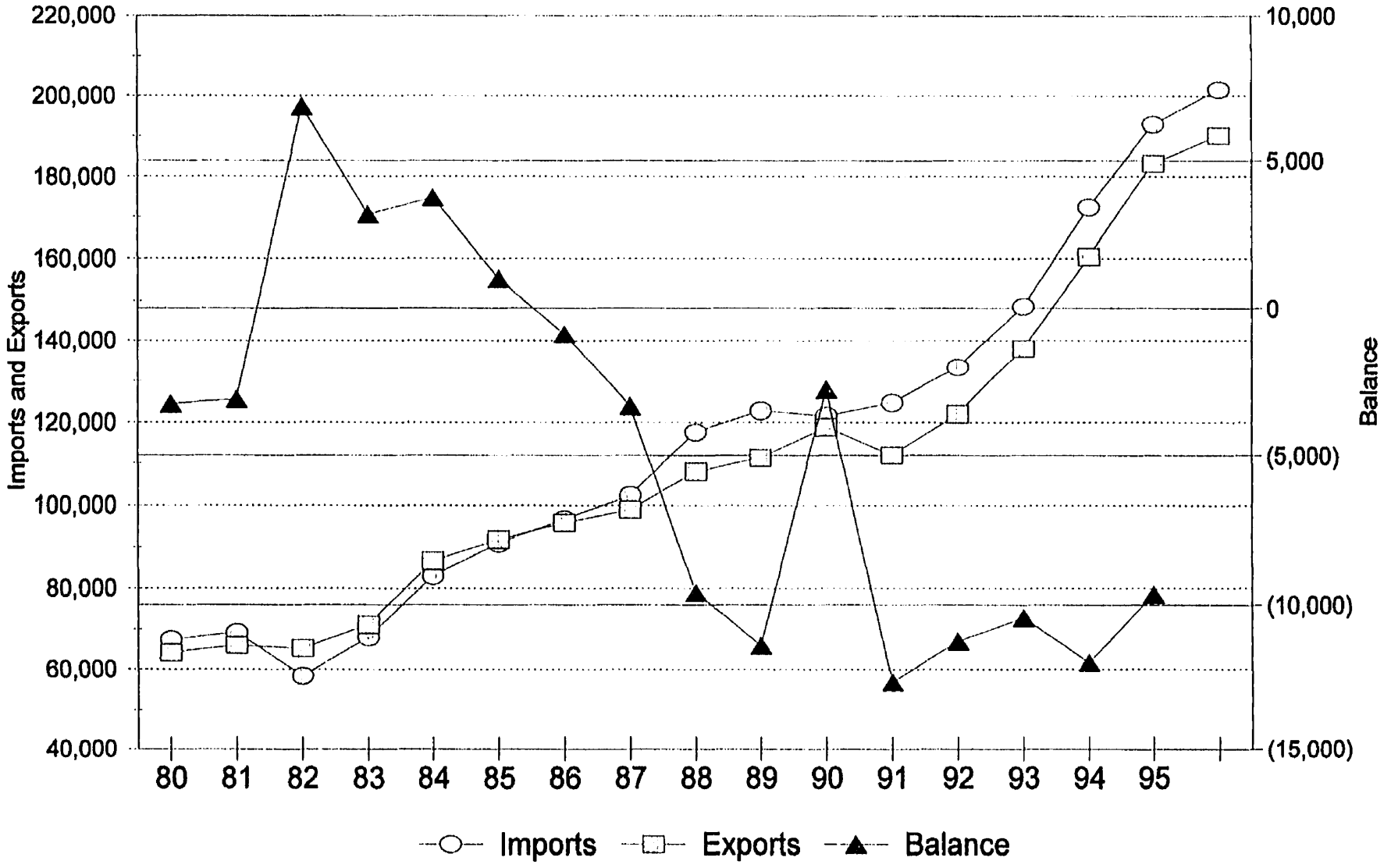
Manufacturing Trade, 1971-1995
(millions of dollars)



Sources: Compiled and calculated from,
Statistics Canada, Canadian Economic Observer, Historical Statistical Supplement, 1995/1996, Catalogue No. 11-201-XPB, Vol. 10, July 1996

Figure 7.5

Manufacturing Trade, 1980-95
(constant 1986 dollars)



Sources: Compiled and calculated from,
Bank of Canada, Bank of Canada Review, Winter 1996-1997 and July 1990
Statistics Canada, Catalogue No. 11-010-XPB, Canadian Economic Observer, Statistical Summary, March 1997

"automotive industry" is disappearing. Moreover, in constant dollars the share of motor vehicle and parts products in total manufacturing imports fell, but grew in total manufacturing exports. As for natural resource material products and other manufactured goods, their value of imports and exports in constant 1986 dollars both increased in the 1980-95 period. Further, while the share of natural resource products in manufacturing imports showed little change, their share in manufacturing exports was lower in the early 1990s than in the early 1980s.

Much of the merchandise and manufacturing trade continues to be with the U.S.. Since 1971 the values of U.S. merchandise imports in Canada and Canadian merchandise exports to the U.S. have grown, with Canada having a merchandise trade surplus (Statistics Canada, Catalogue No. 11-201-XPB, 1996). The U.S. share of the total value of merchandise imports in Canada grew from almost 68 per cent in 1971 to only about 69 per cent in 1991 to nearly 75 per cent in 1995. Meanwhile, the U.S. share of the total value of all Canadian merchandise exports grew from about 66 per cent in 1981 to around 75 per cent in 1991 to nearly 80 percent in 1995. In addition, the merchandise trade surplus with the U.S. grew from about 1.3 billion current dollars in 1971 to nearly 11.4 billion in 1991 to almost 33 billion in 1995. But one can rightly argue that the rise in merchandise exports and trade balance may not necessarily be due to increasing exports in manufacturing.

Manufacturing trade data for the 1981-1991 period show that at least over that period the value of Canadian manufacturing exports to the U.S. was growing, and so did the value of U.S. manufacturing imports in Canada. As Table 7.8 shows, the value of

Table 7.8: Trade Patterns: Canada - United States, Manufacturing Industries, 1981-1991

	Value of Supply	Total Market Share	Import Market Share
	million U.S.$	%	%
CANADIAN INDUSTRIES			
	in Canadian market		
1981-83	106,758	66.8	
1985-87	118,134	60.7	
1989-91	156,073	59.3	
	in United States market		
1981-83	37,502	1.9	19.9
1985-87	57,613	2.3	17.6
1989-91	76,282	2.6	18.0
UNITED STATES INDUSTRIES			
	in Canadian market		
1981-83	39,141	24.5	73.7
1985-87	53,191	27.4	69.7
1989-91	72,212	27.4	67.3

Source: Compiled from Statistics Canada, Trade Patterns: Canada - United States, The Manufacturing Industries, 1981-1991, Catalogue No. 65-504, 1993

supplies in the Canadian market in manufacturers rose from nearly 107 billion dollars in 1981-83 to more than 156 billion dollars in 1989-91 with the share of the total market accounted by Canadian industries dropping from 66.8 per cent to 59.3 per cent. The value of U.S. manufacturing imports in the Canadian market grew from more than 39.1 billion dollars in 1981-83 to about 72.2 billion dollars in 1989-91. But when considered in relative terms, a different picture emerges; the U.S. share in the Canadian import market dropped from 73.7 per cent to 67.3 per cent. The U.S. share of the total Canadian manufacturers grew from 24.5 per cent in 1981-83 to 27.4 in 1985-87, but it stayed at that level also for 1989-91.

More important, over the 1981-91 period, Canadian manufacturing exports to the U.S. more than doubled, rising from about 37.5 billion dollars to nearly 76.3 billion dollars. While in 1981-83 Canada had a deficit with the U.S. in manufacturing trade of about 1.6 billion dollars, Canada had a surplus of more than 4.4 billion dollars in 1985-87 and more than four billion dollars in 1989-91. In addition, Canada accounted for 19.9 per cent of the total U.S. import market in 1981-83, it fell to 17.6 per cent in 1985-87, but slightly rose in 1989-91 to 18 per cent. But the drop in the Canadian share of total U.S. imports was the result of an increasing level of imports in the U.S. market from also other countries. Interestingly, over the same years, the Canadian share of the U.S. market in manufacturers grew from 1.9 per cent in 1981-83 to 2.6 per cent in 1989-91. Thus, in the 1981-91 period the trade pattern between Canada and the U.S. was clearly not what the de-industrialization thesis predicted.

Concluding Remarks

In assessing the impact of the FTA and the NAFTA on investments and trade, it is worth recalling that the de-industrialization thesis was formulated long before these trade agreements came into force. From the de-industrialization perspective the FTA and the NAFTA accelerated, or assured that, de-industrialization would occur. A proper evaluation of the impacts of the agreements should examine developments over a longer period than from the time they were implemented and compare recent and past developments. Further, although one can dispute the cause, one cannot neglect the fact that Canada faced a recession in the early 1990s which affected developments in manufacturing.

Again, data looked at over a short period are likely to leave a distorted picture. Focusing on only 1989 to 1993, suggests an apocalyptic future for Canada's industrial base with sharp drops in investments and thereby support for the de-industrialization thesis. A more realistic picture is achieved from long term data; there has been an overall rise in investments with drops occurring during recessions. Likewise, those who in the mid-1980s concentrated on only drops in investments that occurred in the early 1980s would have arrived at the incorrect conclusion that Canada was on the verge of losing its manufacturing industries. Yet the reverse happened in the second half of the 1980s. Thus, while it is true that since the implementation of the FTA investments dropped, we cannot neglect that there was an economic downturn. Of course, one can argue that the FTA marks a new beginning whereby investments will continue to fall

despite the recession. But at the present time this would only be at best speculation and at worst alarming. One could then easily argue that if investments were to continue falling then they should have also fallen in 1994 and 1995 and continue to fall in 1996. But instead they grew and the intended capital expenditures for 1996 are expected to surpass the 1995 level.

The data on direct investments also show that over the long run foreign investors and especially U.S. investors have continued to have confidence in Canada's manufacturing sector. Although the share of direct investments in Canada made up by U.S. investors fell over the years, the relative drop occurred before the FTA, and since the FTA has actually shown a slight increase. More importantly the absolute level continued to rise, even after the FTA. In 1995 U.S. direct investments in manufacturing were nearly 20.2 billion dollars more than they were in 1990, hardly a finding consonant with de-industrialization.

There has long been a steady rise in the amount of Canadian direct investments abroad, with the U.S. as the favoured place to invest, even before the FTA. In addition, Canadian direct investments in U.S. manufacturing have risen from about 22.7 billion dollars in 1989 to about 28.6 billion dollars in 1995. However, as Canadian investments enter new areas, the U.S. accounts for an increasingly lower share of the total Canadian direct investments abroad in manufacturing, falling from 63.5 per cent in 1990 to 49.6 per cent in 1995.

Canadian direct investments in Mexico have especially grown during years the NAFTA agreement was being considered and since its implementation. Investments

grew from 201 million dollars in 1991 to 532 million in 1993 to more than double that in 1995 at over 1.1 billion dollars (Statistics Canada, Catalogue No. 67-202, 1992 to 1996). Thus, even before the NAFTA, and possibly in anticipation of its implementation, Canadian direct investments in Mexico grew. Unfortunately, the published data give neither information on the proportion placed in manufacturing nor the level of Mexican direct investments in Canada. It is also of interest to note that direct investments in Canada by Mexican investors have also grown, rising from 60 million dollars in 1992 to nearly two billion dollars in 1995. But, as these figures indicate, Canadian investments in Mexico and Mexican investments in Canada, represent small proportions of total direct investments abroad and in Canada, respectively.

Although a larger proportion of Canadian direct investments have been moving to low wage and less developed countries, the bulk is by far still mainly placed in industrialized countries. Over the past decade the U.S., U.K., other countries of the European Community (EC), and Japan and other OECD countries, attracted more than 80 percent of all the combined direct investments placed in various manufacturing industries (Statistics Canada, Catalogue No. 67-202, 1995 and 1996). Indeed, in the last decade the drop in the U.S. share has been more than made up by the rise in investments in EC countries other than the U.K..

It is also of interest to note that most of Canada's merchandise trade continues to be mainly with the major industrialized countries (i.e., the G-7) and there has been little change in the proportions of merchandise exports and imports accounted by these countries together. They make up nearly 83 per cent of the value of Canada's

merchandise imports and nearly 90 per cent of the value of its merchandise exports (United Nations 1995). This is not surprising when one considers the merchandise products that are traded. Certainly, there seem to be an increasing number of products imported from less developed countries. But the dollar values of these products is generally far less than the kind of products imported from industrialized countries, say a Boeing 747 from the U.S. or an Airbus from Europe compared to shoes from Thailand. Hence, despite the impression left by the de-industrialization literature, imports from less developed countries with their lower wages and inexpensive products, contribute a small proportion to the total value of total merchandise imports. For example, over the years the value of Mexican imports and Canadian exports to Mexico have increased, but they have represented a small proportion of total imports and exports (Statistics Canada, Catalogues No. 65-202 and 65-203, 1980 to 1994).

Advocates of the de-industrialization thesis can point to the increase in overall manufacturing imports in current and constant dollars to support their claims. But contrary to their expectations, manufacturing exports have over the years also continued to grow in current and constant dollars. Further, the manufacturing sector has shown a strong performance in recent years, and achieved a peak level in trade surplus in 1995 in current dollars, and a shrinking trade deficit in constant dollars in the early 1990s. In addition, in the 1966-87 period manufacturing export orientation showed a slightly higher increase than manufacturing import penetration. And in the 1981-91 period manufacturing exports to the U.S. continued to rise with Canada achieving a manufacturing trade surplus.

Thus, aggregate investment and trade data show Canada has a manufacturing base that has been expanding. However, proponents of the de-industrialization thesis ignore or give such data little importance. Many tend to stress the development at more disaggregate levels, such as changes in major manufacturing industries. The issue is explored in the next chapter.

Chapter Eight

Manufacturing Industries

The data in previous chapters have shown that over the long-run absolute changes in manufacturing employment, output, investments, and trade, raise doubts about the empirical validity of the de-industrialization thesis. But, some variations of the de-industrialization thesis focus exclusively on "basic" or "key" industries in the manufacturing sector. It is presumed that losses in these industries have a devastating impact on the health of not only the manufacturing sector, but the economy as a whole. However proponents of such an argument do not provide a clear rationale of why one industry or sector compared to another should be considered basic.

In this chapter I consider the issue of defining an industry as basic. This discussion is followed by an examination of changes in employment, output, investment, and trade in manufacturing industries at the two-digit SIC level. These can be identified as "major" manufacturing industries, the term used by Statistics Canada. The chapter

also contains illustrative material on employment, output and trade in the "automotive industry," "steel industry," and "paper industry."

The analysis stresses absolute declines in so far as they represent a more serious test of de-industrialization than do relative drops. In addition, output and investments are measured in real terms to avoid price effects. The trends examined mainly cover changes over a period of at least a decade.

Basic Industries

What defines an industry as "basic?" The discussion of basic industry is complex and often confusing. Some of the largest industries receive particular mention in the de-industrialization thesis, especially auto and steel. But these are also industries that in the 1970s and 1980s seemed to have the biggest problems and received much attention in the media. It is interesting to note that these industries and their problems are among the oldest in advanced industrial economies. The de-industrialization thesis (or at least certain proponents of it) leaves the impression that these industries have been heading down in a secular and not in a cyclical way, and that, aside from the jobs lost to them directly, the economy as a whole has much to lose. But the shutdown of certain plants and the restructuring of an industry, while painful and tragic for those who lose jobs is inevitable in any competitive economic system. Industries are in a constant state of restructuring, some die while others emerge. There is a general neglect in the

de-industrialization literature of industries that are on the rise. De-industrialization, therefore, seems to imply a basic industry may be old and big. Moreover, the industrial policy strategies put forth by proponents of the de-industrialization thesis seem to be based largely on what they perceive as happening to these basic industries (see, e.g., Bluestone and Harrison 1982). They give no clear definition of a "basic" industry.

However, think of this issue from the perspective of workers. For them a basic industry is one that provides jobs, and preferably at reasonable wages. Workers are not necessarily concerned with how old or big the industry is at the national level. Of paramount interest to them is whether or not it will survive in their local area. It matters little why some of them are concentrated in a given area in the first place. As Krugman (1991, p. 35) noted for the U.S., an industry may locate in a particular area because of a "trivial historical accident." Nonetheless, over time an industry can become "basic" for an area, while a minor contributor to the national economy. For example, whatever categorization one wants to make of the clothing industry, it remains that thousands of workers depend on it for their livelihood and is linked to other industries -- but not everywhere in Canada. It is largely located in Quebec and mainly in Montreal where in many respects it is "basic" to the local economy. Its loss would have a devastating impact on the local job market and economy.[1]

In attempting to define an industry as basic one must also consider its overall

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[1] Most clothing establishments in Canada are located in Quebec, primarily in an area of Montreal. A large proportion of clothing establishments are in a district of the city, which has been officially designated "la cité de la mode." Because of the importance the clothing industry represents for the Montreal job market and economy, municipal governments have over the years implemented strategies to maintain it and to promote its further growth.

contribution to the economy. Two obvious factors are its total output and its interdependency with other industries. For example, the textile industry is intertwined, indeed inextricably linked, to other manufacturing industries. In the late 1980s the textile industry supplied three downstream markets: 35 per cent of its production was used in apparel manufacturing; 45 per cent was used in household products, such as carpets; and 20 per cent was used in industrial applications, such as protective wear (Industry, Science and Technology 1991a). Hence, industries can be basic to each other, as in the case of the clothing and textile industries. Moreover, the link between them is part of a long chain with various links. Consider, for example, the contribution of the petrochemical industry to textiles in its provision of raw materials for synthetic fibers. Such links are also important for employment. Davidson (1995) estimates that each job in the textile and clothing industries supports 1.65 jobs in the rest of the economy.

But, interdependency among industries can be broken or weakened, and thereby industries may become less "basic" to each other. For example, if the clothing industry increasingly turns to imports for supplies, it will have less of a need for inputs from the domestic textile industry. This can result in a contraction of the textile industry. Does this then mean that the "textile" industry is no longer "basic" for the domestic clothing industry? But the clothing industry too can be affected by rising import penetration and face difficulties, which in turn will have an impact on the textile industry. However, this reasoning assumes that imports are in direct competition with domestically-made goods, and this may not necessarily be the case.

Rising import penetration does not in itself suggest an industry is contracting, is

not basic, or is no longer basic. An industry can at the same time face import penetration and have (or develop) an export orientation. The plastic products industry, for example, in the 1980s nearly doubled its employment levels, had an increase in real output, experienced rising investments and clearly assumed export orientation (see Industry, Science and Technology Canada 1991b). Yet, import penetration in the Canadian domestic market also increased.

Imports may supply some domestic needs while Canadian firms may specialize in products that respond to other domestic demand or be valued in the international market. Such changes may reflect a growing interdependency of international markets, that is, a growing reliance on exports and imports in the composition of GDP for most industrial economies. Thus, for example, an industry may become less basic for other domestic manufacturing industries, but it brings in needed export dollars by being tied into the international market.

A further complication in defining an industry as basic arises when its activities might be considered "high-tech" or "strategic." Certain industries are likely to grow and become the leaders of tomorrow. But the process involved is not always clear. For example, there exists no common agreement on what defines an industry as high-tech (see Wong 1990, Economic Council of Canada 1987). Is it the manufactured product, amounts spent on research and development, the skills of the workers, or the inputs used in the making of the product?[2]

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[2] There exist at least four definitions of identifying the level of technology of an industry: the ratio of total sales spent on research and development (R&D); the ratio of the workforce made up of scientists and engineers; designating the level of technology by the user of the final product; and, "high-tech" inputs to the

Another complexity concerns the economic factors that determine an industry's importance to the economy. In 1981 the workforce in the clothing industry totaled more than 113 thousand while there were about 90 thousand in the chemical industry. Even though the clothing industry provided more jobs, its total output was approximately 2.5 billion constant 1986 dollars compared to the chemical industry that had more than 5.4 billion constant dollars in output. Does this imply that one is more basic than the other in terms of employment, and the other more basic in terms of output? To add further confusion, in 1993 the clothing industry had nearly 31 thousand less workers than in 1981 while the chemical industry had about the same number of workers in 1993 as in 1981. Does this imply that in terms of employment the chemical industry was now more basic than the clothing industry? Meanwhile output in the clothing industry dropped by about 367 million constant dollars, but it increased by more than two billion constant dollars in the chemical industry. This evidence may suggest that the clothing industry is slowly fading away. But taking capital expenditures into account further complicates things. In 1981, the clothing industry had only 24.3 million constant dollars in capital expenditures, while the chemical industry had more than 1.4 billion constant dollars. But in 1993 capital expenditures in the clothing industry peaked to reach 69 million constant dollars, despite the loss in number of workers and drop in output. Thus, this evidence may be taken to suggest a continuing confidence in the clothing industry. There is, of course, much more to the issue than I have noted here. For example, the nature of the product produced is the major determinant of the level of investments. The

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production of goods and services (see Economic Council of Canada 1987 and Wong 1990).

point here is that various factors, such as employment, output, and capital expenditures, if fused independently of each other, can lead to different ways of classifying the importance of any given industry.

The time frame used to examine the performance of an industry can further add to the confusion. For example, is the plastic industry basic, or becoming basic, or becoming more basic, because its level of employment, real output, and exports have increased over the years? Moreover, assessments of the future prospects of an industrial sector are notoriously fickle. Some may be pessimistic about the future prospects of certain industries, especially those that produce products that are labour-intensive, because of the competition from low-wage countries. They may even advocate that such industries simply fade away and their capital and resources be redirected into other sectors. In contrast, others may feel that jobs need to be protected, and therefore call for trade restrictions on imports from low-wage countries. Despite differences in strategy, both views assume certain industries are doomed and unable to compete internationally. But how can we be sure that the death of an industry is inevitable? While historically some industries have fallen and others risen, we have no good theoretical basis for predicting the future of given sectors, nor are empirical generalizations of much use either.

A productive industry which seems assured of a healthy future may face declines and unforseen competition. Or an industry whose future seems bleak may turn around and even expand. Consider the following example. Until a few decades ago the American motor vehicle industry was the undisputed world leader in car production.

American firms were very self-assured in their leadership position. But, events in the world economy began to threaten U.S. domination in car production in the 1970s, including its ability to hold on to the domestic market share. It is doubtful that anyone could have foreseen such an evolution, especially the rise of automotive imports from Japan and Europe. The self-confidence of American executives was gradually replaced by reports making gloomy predictions about the American, and Canadian, auto industry. Indeed, by the end of the 1970s Chrysler was close to bankruptcy. Some concluded that the motor vehicle industry in the U.S., and in Canada, was sure to die. But that certainly did not happen. The motor vehicle industry has survived, as has Chrysler. The decline for the U.S. has been a relative one with more cars in the world assembled in other countries, while the number of cars assembled in the U.S. has slowly risen. Rather than collapsing, the motor vehicle industry has over the years faced significant restructuring, not a de-industrialization.

The restructuring of manufacturing industries appears to be a constant feature of competitive economies. Manufacturing industries have always faced challenges whether because of changes in the world economy, technological advancements, or other factors. Some industries have come and gone and other industries produce products that bear only a slight resemblance to those it produced in the past. An attentive reading of the history of manufacturing seems to indicate that one should avoid defining an industry as basic. Such a reading also raises other questions for those theorists and commentators that have defined some industrial sectors as basic. Is an industry permanently categorized as "basic?" When does such an industry lose its status of "basic" and what

should a country do about that industry? Stated differently, should a country promote certain industries, and if so, how? But what to do, assumes that we are able to explain why trends occur or why an industry fails or should not fail.

Consider the case of what to do about the textiles industry. In Canada the industry has generally been identified as a manufacturing sector that has accounted for a large number of relatively poorly paid workers. Historically the industry has benefitted from various stringent protective measures adopted by the Canadian state against imports from low-cost countries (see, e.g., Mahon 1984; Cohen 1987). Such logic assumes that if the protectionist measures are removed then the industry would face a difficult future, possibly becoming extinct. An alternative policy approach might welcome the removal of protective barriers insofar as they are keeping an industry alive that cannot survive in the face of import penetration. Further, its capital and resources could be put to better use. An underlying assumption of these arguments is that the textile industry can only survive through low wages combined with protectionism. But this is too simplistic, since many factors can account for an industry's success or failure. Industries restructure, they adopt new strategies and technology, and possibly capture a niche in the domestic or international market, or both. This may occur in ways that may not correspond to a naive conceptualization of the workings of the economic system. Take the example of the textile industry in the former West Germany, a country that was strongly opposed to protectionism. West Germany was the second largest importer of textiles and apparel, and its factories paid substantially high wages. Following the logic of "protectionism" it would seem that the textile industry in West Germany was doomed to failure. Yet, West

Germany became the third largest exporter in textiles and apparel. West German firms invested in new plant and equipment and in new technologies, including labour-saving machinery. Exports grew from 11 per cent of total output in 1960 to 48 per cent in 1984 (Dertouzos, Lester, and Solow 1989). Of course, the story is much more complex than this brief outline, but West Germany's textile industry survived and successfully captured a market niche in which there generally existed little competition from low-cost producers. But the moral of the story is that an industry is probably never inevitably doomed. Likewise an industry that has all the markings of one that should succeed can suddenly face unforseen challenges. The semiconductor industry, for example, was almost totally American in the early 1980s but rapidly faced a sharp challenge by the Japanese at the end of the 1980s (see Fallows 1995).

In categorizing an industry as basic, there is an added complication of providing an operational definition of an industry, separate from the issue of what is a manufacturing establishment. At what SIC level is an industry basic? Two, three, or four digits? Moreover, the concerns expressed over the failures of industries such as "steel" and "auto" suggest a group of industries can together be recognized as basic. For example, the "automobile industry" is in fact made up of a number of industries. This adds to the complexity of defining an industry as basic. Given the strong linkage between the automotive parts and accessories manufacturers and vehicle assemblers, which one is more important (or more basic) than the other? Further, given the size of the "Big Three" (General Motors, Ford, and Chrysler), are they more or equally important (or basic) than non-Big Three firms, including Japanese transplants? And if

so, is each of the Big Three of equal importance?

Hence, what is a "basic" industry will depend on numerous factors, not least on time and place, as well as on its economic and employment contributions. In many respects, all industries are basic, but of course this begs the question of degree. Nevertheless, it will be worthwhile to explore whether some major manufacturing industries (defined by Statistics Canada as being at the two-digit SIC level) show signs of de-industrializing. Further, since some commentators consider "basic" industries to be subsets of certain major manufacturing industries, I will also explore developments in the "automotive," "steel," and "paper" industries.

Major Manufacturing Industries

Employment and Output

Although at the aggregate level there is little evidence of de-industrialization in Canada, a closer examination of employment and real output changes in the major manufacturing industries, certainly shows that some are experiencing grave difficulties.

The employment data covers the period from 1981 until 1993, the years for which comparable published data were available for each of the manufacturing industries. The output data are instead available up to 1994. An advantage of this time frame is that there is a consistency in the classification of the major manufacturing industries

according to the 1980 SIC. The industries are categorized for the 1981-93 period into four groups on the basis of their performance in terms of average annual growth in employment and output: 1) output and employment gainers; 2) output gainers and employment losers; 3) output and employment losers; 4) and employment gainer and output loser.

Output and employment gainers

As shown in Table 8.1, there were only four major manufacturing industries with a positive average annual rate of growth in employment and output in the period under consideration: plastic, wood, transportation equipment, and chemical industries. The transportation equipment industry was the biggest gainer in output with an average annual rate of growth of nearly 5.3 per cent, and with respect to employment it grew on average about 1.1 per cent annually. Moreover, in contrast to 1981 when the transportation equipment ranked second in terms of employment and output, in 1993 it ranked first (see Tables 8.2 and 8.3).

Together employment in the four industries grew from 425,437 workers in 1981 to 512,648 in 1989, only to experience drops during the recession of the early 1990s and fall to 460,740 workers in 1993. However, for the same years, their share of total manufacturing workers grew from 23 per cent to 26 per cent to 28 per cent. Combined, their output totaled about 18.6 billion constant 1986 dollars in 1981 and 29.1 billion dollars in 1989, and following the recession it fell to 28.2 billion dollars in 1993. Meanwhile, their share of total manufacturing output grew from 24.1 per cent to 30.6 per

Table 8.1: Employment and Output, Manufacturing Industries: Average annual rate of growth, 1981-1993

	EMPLOYMENT	*OUTPUT*
Manufacturing	-0.9	1.7
Output and employment gainers		
Plastic	3.6	4.2
Wood	0.1	2.9
Transportation	1.1	5.3
Chemical	0.03	3.4
Output gainers and employment losers		
Food	-0.3	1.0
Rubber	-1.2	3.7
Textile	-2.7	0.1
Furniture	-0.4	0.1
Paper	-1.7	0.02
Primary Metal	-3.1	3.2
Electrical & Electronic	-1.6	5.3
Refined Petroleum	-3.8	1.8
Other	-0.7	2.2
Output and employment losers		
Beverage	-1.5	-0.4
Tobacco	-4.8	-3.9
Leather	-5.9	-3.7
Clothing	-2.5	-0.8
Fabricated Metal	-1.1	-0.8
Machinery	-1.5	-1.8
Non-metallic products	-2.0	-0.7
Employment gainer and output loser		
Printing	1.3	-0.3

Sources: Calculated from data compiled by Statistics Canada, CANSIM Matrix Numbers: 4670, 5378, 5379, 5401, 5406, 5409, 5413, 5419, 5424, 5429, 5439, 5458, 5473, 5482, 5496, 5504, 5514, 5540, 5548, 5567, 6848, 6865, 6869, 6883.

Table 8.2: Employment, Manufacturing Industries (1980 SIC), 1981-1993

	1981	1983	1985	1987	1989	1991	1993
Food	196,747	186,687	192,000	197,167	202,106	191,801	189,499
Beverage	32,751	31,327	31,903	31,361	27,728	23,128	26,602
Tobacco	8,744	8,110	7,097	5,984	5,153	4,810	4,778
Rubber	26,655	25,142	25,366	24,238	25,612	22,903	22,964
Plastic	33,786	31,648	38,182	44,650	52,798	50,758	50,410
Leather	27,290	23,674	23,129	21,782	18,607	13,948	12,818
Textile	64,928	60,790	57,868	60,704	59,588	52,927	46,022
Clothing	113,288	109,816	110,910	112,002	112,177	93,464	82,737
Wood	112,570	101,965	107,560	121,655	123,609	100,656	109,961
Furniture	49,060	43,694	49,868	61,584	63,379	50,686	44,654
Paper	126,206	114,308	114,187	119,346	120,106	110,086	101,926
Printing	107,474	110,159	117,062	127,543	140,698	133,532	124,867
Primary Metal	125,168	105,352	106,808	104,088	106,414	92,331	84,416
Fabricated Metal	156,951	129,393	139,698	157,478	180,228	153,370	132,606
Machinery	92,711	69,557	74,732	82,422	94,685	77,076	74,379
Transportation	188,681	173,360	210,984	218,368	240,838	208,145	209,879
Electrical	145,535	127,922	137,165	143,837	151,320	131,033	118,629
Non-metallic mineral	55,735	47,449	50,605	56,822	57,317	49,334	42,661
Refined Petroleum	22,638	18,917	16,739	15,148	16,045	14,643	14,084
Chemical	90,400	87,824	87,224	89,030	95,403	91,527	90,490
Other	69,327	64,046	67,676	69,372	76,448	71,448	63,050

Source: Compiled from data collected by Statistics Canada, CANSIM Matrix Numbers:
5378, 5379, 5401, 5406, 5409, 5413, 5419, 5424, 5459, 5439, 5458, 5473, 5482, 5496, 5504, 5514, 5540, 5548, 5567, 6848, 6865, 6869, 6883

Table 8.3: Real Gross Domestic Product, Manufacturing Industries (1980 SIC), 1981-1994
(millions of 1986 dollars)

	1981	1983	1985	1987	1989	1991	1993	1994
Food	8,767.1	8,603.8	9,588.2	9,600.6	9,250.9	9,643.3	9,829.5	10,082.1
Beverage	2,631.2	2,303.4	2,446.0	2,358.6	2,465.9	2,130.1	2,450.3	2,530.6
Tobacco	966.2	851.6	667.5	670.7	629.4	591.6	544.7	624.4
Rubber	896.3	912.9	1,166.9	1,067.4	1,084.5	950.9	1,372.5	1,542.1
Plastic	1,245.0	1,297.8	1,643.0	1,852.2	1,958.3	1,777.6	1,993.2	2,195.4
Leather	569.9	524.3	551.1	510.1	459.6	315.1	316.8	325.3
Textile	2,050.6	2,046.7	2,019.9	2,297.9	2,195.0	1,863.3	1,830.8	1,981.3
Clothing	2,519.8	2,239.9	2,489.8	2,694.2	2,604.4	2,244.7	2,152.8	2,184.7
Wood	3,620.6	3,620.1	4,611.9	5,338.9	5,337.2	4,384.1	5,022.5	5,187.8
Furniture	1,590.8	1,370.9	1,643.4	1,731.1	1,669.1	1,290.7	1,341.5	1,442.1
Paper	7,308.5	7,011.7	7,171.1	8,012.8	7,740.0	7,167.3	7,434.9	7,763.1
Printing	4,462.8	4,187.4	4,753.0	4,933.0	5,280.1	4,618.1	4,129.1	4,147.6
Primary Metal	5,790.4	4,909.9	6,351.7	6,773.2	6,922.1	6,459.2	7,394.9	7,554.9
Fabricated Metal	6,180.0	4,956.3	5,999.2	6,509.6	6,890.6	5,703.1	5,455.7	6,068.8
Machinery	4,199.9	2,767.5	3,422.5	3,476.8	3,919.1	2,920.4	3,081.1	3,402.3
Transportation	8,213.7	8,635.0	11,704.4	11,355.9	14,224.8	12,031.3	13,648.8	14,742.8
Electrical	4,665.2	4,323.0	6,183.3	7,147.9	8,179.7	8,003.5	8,788.4	11,000.6
Non-metallic mineral	2,808.2	2,382.3	2,845.2	3,256.9	3,230.5	2,411.7	2,461.8	2,598.5
Refined Petroleum	1,927.0	1,777.5	1,746.1	1,823.9	1,952.1	2,045.9	2,062.3	2,102.9
Chemical	5,479.1	5,731.0	6,345.0	6,825.2	7,568.8	6,901.7	7,523.5	7,679.5
Other	1,213.7	1,127.1	1,348.6	1,407.6	1,459.3	1,430.5	1,447.2	1,483.4

Source: Compiled from data collected by Statistics Canada,
CANSIM, GDP at Factor Cost - 1986 K$, Annual, Matrix: 4670

cent to 31.2 per cent. While the overall trends were positive for the period examined, as Tables 8.2 and 8.3 show, for a few years these industries faced declines, mainly following the 1981-82 recession and the last recession in the early 1990s. Nonetheless, in all four industries employment peaked in either 1989 or 1990. And output peaked in 1993 and again in 1994, except for the wood industry in which output peaked in 1988. The drop in that industry was particularly sharp in the early 1990s, but then began to recover and in 1994 reached approximately 5.2 billion constant 1986 dollars, nearly 804 million dollars more than in 1991, but still about 4.7 per cent less than the 5.4 billion dollars of 1988.

Output gainers and employment losers

While the loss of employment is especially painful for the displaced workers, as noted earlier in itself it does not imply a reduction in the manufacturing base nor should it be taken as evidence of de-industrialization. Gains in output are possible despite stable or declining employment. Improvement in output combined with losses in employment, could result from various factors. However, the purpose here is to examine the observed changes.

As Table 8.1 shows, there are nine industries which have faced real gains in output but declines in employment: food, rubber, textile, furniture, paper, primary metal, electrical, refined petroleum, and "other" industries. These data suggest that such industries are not in difficulty. Instead, they were able to produce more with fewer workers, i.e., they enhanced their productivity over time.

The biggest drop in the average annual rate of growth in employment occurred in the refined petroleum industry followed by the primary metal industry. The biggest gain in the average annual rate of growth in output was in the electrical and electronic industry followed by the primary metal industry.

But the average annual rates of growth are only part of the picture. Data examined on a year by year basis provide further insights into the changes. Employment actually peeked in 1989 in the food, furniture, electrical and electronic, and other industries. Instead, employment peaked in 1981 in the rubber, textile, paper, primary metal, and refined petroleum industries. However, as Table 8.2 shows, among these five industries, generally only the primary metal and refined petroleum industries faced continuous drops in employment. Between 1981 and 1993 the primary metal industry lost 40,752 workers, or about 33 per cent of its workforce, and the refined petroleum industry lost 9,223 workers, a drop of nearly 38 per cent.

Clearly, when the output data is juxtaposed with employment, the nine industries are producing more with less, especially the rubber, primary metal, and electrical and electronic industries. While employment in the primary metal industry dropped, real output grew by about 27.7 per cent, rising from about 5.8 billion constant 1986 dollars in 1981 to nearly 7.4 billion dollars in 1993. Another example is the electrical and electronic industry with an average annual loss in employment of nearly 1.6 per cent, but an average annual increase in real output of nearly 5.3 per cent. Thus while the industry had 26,906 less workers in 1993 than in 1981, real output grew by nearly 88.4 per cent, rising from about 4.7 billion constant 1986 dollars in 1981 to more than 8.8 billion

dollars in 1993. Output peaked in 1994 at more than 11 billion dollars.

The annual averages, however, can be affected by extreme scores. The year to year data show that not all of the various industries experienced a continuous rise in output. In 1993 output had peaked only in the rubber, primary metal, and electrical and electronic industries. In addition, although the textile and furniture industries had a positive average annual growth, the change was negligible. Indeed, both industries had in 1993 total output levels lower than in 1981.

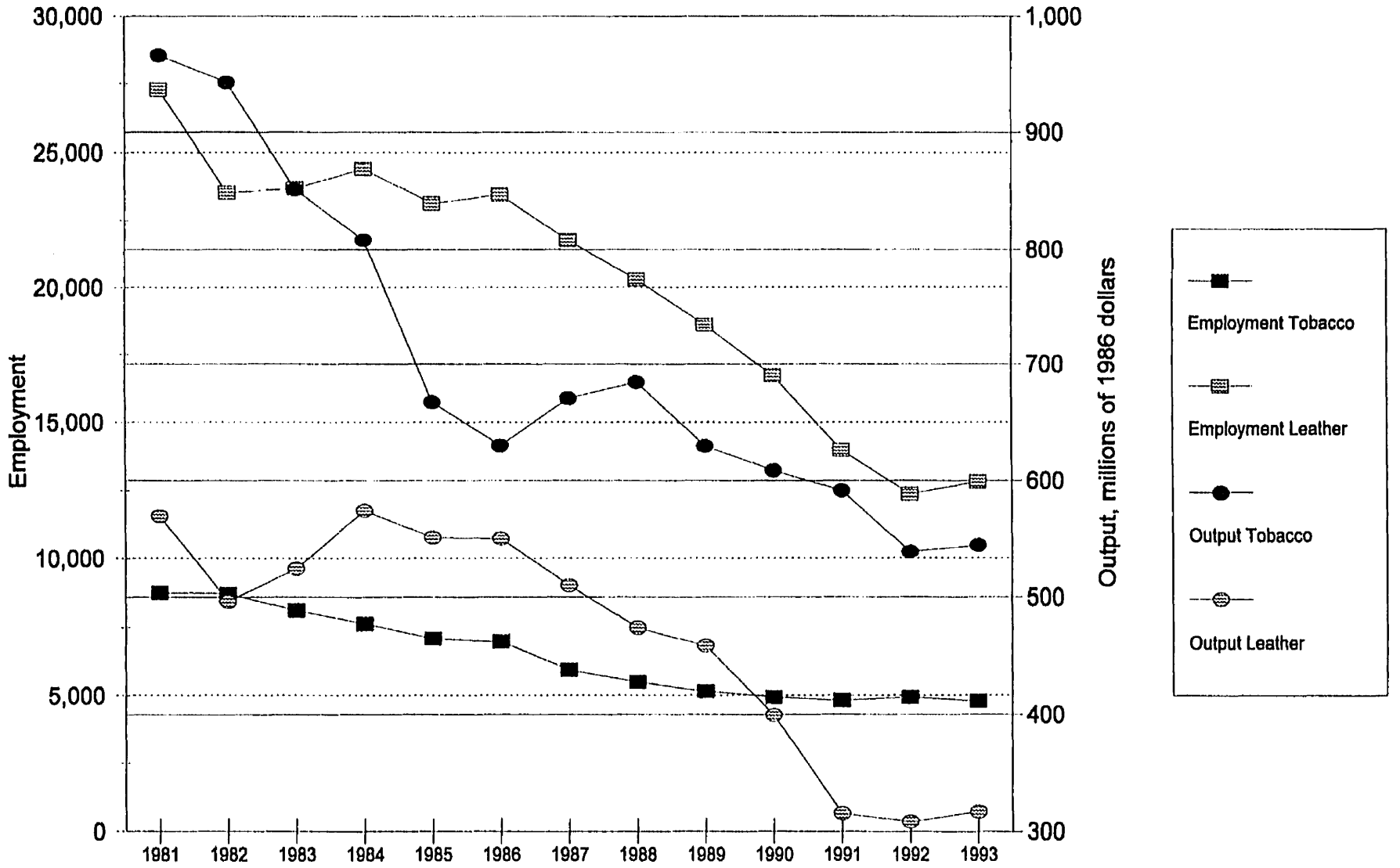
Output and employment losers

The most disturbing situation occurs for those industries registering losses both in employment and output. Nine industries faced such problems in the period 1981-1993: beverage, tobacco, leather, clothing, fabricated metal, machinery, and non-metallic industries.

The biggest employment loser was the leather industry with a drop in the average annual rate of growth of nearly 5.9 per cent followed by the tobacco industry with a loss of more than 4.8 per cent. Both industries were also the biggest losers in output, about 3.7 per cent on average annually in the leather industry and more than 3.9 per cent annually in the tobacco industry. As Figure 8.1 illustrates, generally these industries have faced continuous absolute drops in employment and output in the period examined. It is also worth noting that the tobacco industry was the smallest industry in terms of employment with 8,744 workers in 1981 and 4,778 in 1993. However, its existence supports the employment of thousands of seasonal workers, especially on tobacco farms

Figure 8.1

Tobacco and Leather Industries
Employment and Output (1986 $)



Sources: Compiled from CANSIM, Matrix Numbers: 4670, 5406, and 5419.

in Ontario (see Seymour 1995). Real output in the tobacco industry dropped nearly 41 per cent falling from 966 million dollars in 1981 to 545 million dollars in 1993. But it slightly grew in 1994. In 1981 the leather industry, with 27,290 workers, had more workers than in three other industries. But in 1993 it was the second smallest with 12,818. Throughout the years examined the leather industry had the smallest amount of real output among the manufacturing industries. In 1981 output totaled only 570 million dollars in 1981 and fell to only about 317 million dollars in 1993.

Six of the other industrial sectors did face similar declining trends in employment and output as in the tobacco and leather industries, while the beverage industry faced a continuous drop in employment, but its level of real output remained generally stable over most years. Employment in the clothing industry dropped on average 2.5 per cent annually, but year to year data show that employment peaked in 1988, and then sharply dropped. Similarly, real output peaked in 1987 at about 2.7 billion dollars and was only 1.8 billion dollars in 1993. Likewise, employment in the fabricated metal, machinery, and non-metallic industries peaked in 1989, before the start of the last recession. Real output peaked in 1986 in the furniture industry, 1989 in the fabricated metal industry, and 1988 in the non-metallic industry. However, real output in the machinery industry peaked in 1981 in the time frame examined. This industry has seen losses especially during the recessions. Output fell from nearly 4.2 billion dollars in 1981 to about 2.8 billion dollars in 1983, a drop of more than 34 per cent. After rising a few years, output again sharply fell by nearly one billion dollars from 1989 to 1991, or a drop of more than 25 per cent. Output has been recovering in more recent years and in 1994 was more than

3.4 billion dollars, still nearly 800 million dollars less than the 1981 level.

Employment gainer and output loser

The printing industry was the only one to have a positive average annual growth in employment accompanied by a negative average annual rate of growth in output. However, the year to year absolute data provide a different impression of what happened in this industry. Employment in the industry peaked in 1990 to reach nearly 142 thousand, an increase of nearly 31 per cent since 1981. But in the early 1990s employment fell nearly 12.7 per cent to reach 124,867 by 1993. Although the average annual rate of growth in output is negative, output grew for most of the 1980s. After falling nearly 8.7 per cent in 1982, output recovered in the next years and peaked in 1989 at nearly 5.3 billion dollars, an increase of about 29.7 per cent since 1982. But in the 1990s output fell and in 1992 was more than one billion dollars less than in 1989. It continued to fall slightly in 1993 and showed little improvement in 1994.

Investments

Data examined in the previous chapter showed that over the years investments in manufacturing, as a whole, have generally increased. The same has happened for most of the major manufacturing industries in current and constant dollars.

The data in Table 8.4 are based on results of an annual questionnaire survey on spending intentions and uses a consistent classification of major industries for the period

Table 8.4: Capital Expenditures in Manufacturing Industries, 1981 - 1993

	Expenditures on Construction and Machinery and Equipment (millions of 1986 dollars)						*Average annual rate of growth* (percentage)		
	1981		1987		1993		1981 - 1993		
	Construction	Machinery & Equipment	Construction	Machinery & Equipment	Construction	Machinery & Equipment	Capital	Construction	Machinery & Equipment
Food and Beverage	141.3	462.7	231.3	988.3	217.1	1,604.9	10.6	6.2	11.9
Tobacco	4.8	25.2	4.1	35.1	NA	NA	NA	NA	NA
Rubber	76.5	150.4	52.7	374.2	23.2	455.3	11.4	8.9	14.8
Leather	4.4	11.5	4.4	12.1	0.4	10.1	-1.5	8.7	1.0
Textiles & Knitting	17.9	131.1	27.4	264.1	34.9	455.3	11.9	9.7	12.5
Clothing	7.6	16.7	5.1	33.0	10.0	59.0	15.0	21.4	14.4
Wood	79.2	298.9	76.7	493.6	77.7	523.1	14.3	11.9	15.1
Furniture	14.3	19.7	19.9	55.2	3.1	58.4	7.5	9.1	11.2
Paper	243.1	1,273.6	326.1	2,194.1	613.3	2,448.7	12.5	16.4	12.4
Printing	25.3	113.1	32.7	346.9	43.5	722.1	17.8	17.5	19.3
Primary Metals	256.6	851.1	304.4	1,571.0	153.6	1,018.8	9.3	19.5	15.2
Metal Fabrication	61.1	204.6	132.7	387.8	33.8	386.1	7.5	7.1	8.7
Machinery	54.6	165.4	81.9	366.6	82.2	469.1	12.1	12.5	12.6
Transportation	214.1	970.9	306.9	2,305.8	149.1	3,042.3	16.1	24.6	16.4
Electrical	43.6	184.7	115.7	616.7	30.8	639.6	11.7	5.4	12.7
Non-metallic mineral	41.9	197.2	48.9	322.4	21.4	270.1	7.0	4.6	8.1
Petroleum	437.3	162.3	443.8	147.9	437.6	152.5	6.7	6.9	7.1
Chemical	296.6	1,145.2	254.9	838.9	459.8	1,675.3	7.3	9.9	6.8
Miscellaneous	20.7	52.5	55.1	226.2	NA	NA	NA	NA	NA

Note: The constant dollar figures were derived by dividing the current dollar figures by the 1986 implicit price index for the GDP.

Source: Calculated from data compiled by Statistics Canada, CANSIM, Matrix Numbers: 1274 and 6841.

1973-1993. The focus here is on the years between 1981 and 1993. For purposes of comparisons, the current dollar amounts have been changed into constant 1986 dollars. The data show that all major industries, except leather goods, had a positive average annual rate of growth in overall capital expenditures. And, all had a positive average annual rate of growth both in construction and in machinery and equipment expenditures.

However, average annual rates of growth are affected by extremes, and the amounts invested in the various industries are, of course, dramatically different. The year to year data for the period 1981 to 1993, of which only three of the years are noted in Table 8.4, more clearly demonstrates that the declines occurred during or immediately after a recession. Investment decisions are usually made long in advance and thus the impact of recessions on investments are usually felt after the economic downturn has started. Generally, capital expenditures in constant 1986 dollars fell in the early 1980s but then reached new highs in the late 1980s or early 1990s. Among the industries for which information is available for the entire period, once again the leather industry is the main exception. The leather industry makes up the smallest proportion of capital expenditures in manufacturing, and although the amount peaked in 1985, subsequently it declined. In addition, it was one of only two industries (petroleum being the other) that had capital expenditures in 1993 lower than in 1981. Capital expenditures peaked in the metal fabrication industry in 1987, in 1988 in the wood, furniture, and transportation industries, in 1989 in the textiles and paper industries, in 1990 in the food and beverage, rubber, primary metals, non-metallic, and petroleum industries, in 1991 in the machinery, electrical, and chemical industries, and in 1993 in the clothing and printing industries.

More recent investment data in current dollars, which cover the years 1991 to 1995, arranged according to the 1980 SIC, show that in most industries investments fell and then began to show signs of a slow recovery by 1995. In addition, as Figure 8.2 illustrates, in 1995 most industries had higher investments than they did in 1991. However, the increases were generally modest, except in wood, paper and allied, and transportation industries, the three of which had sharp increases in investments.

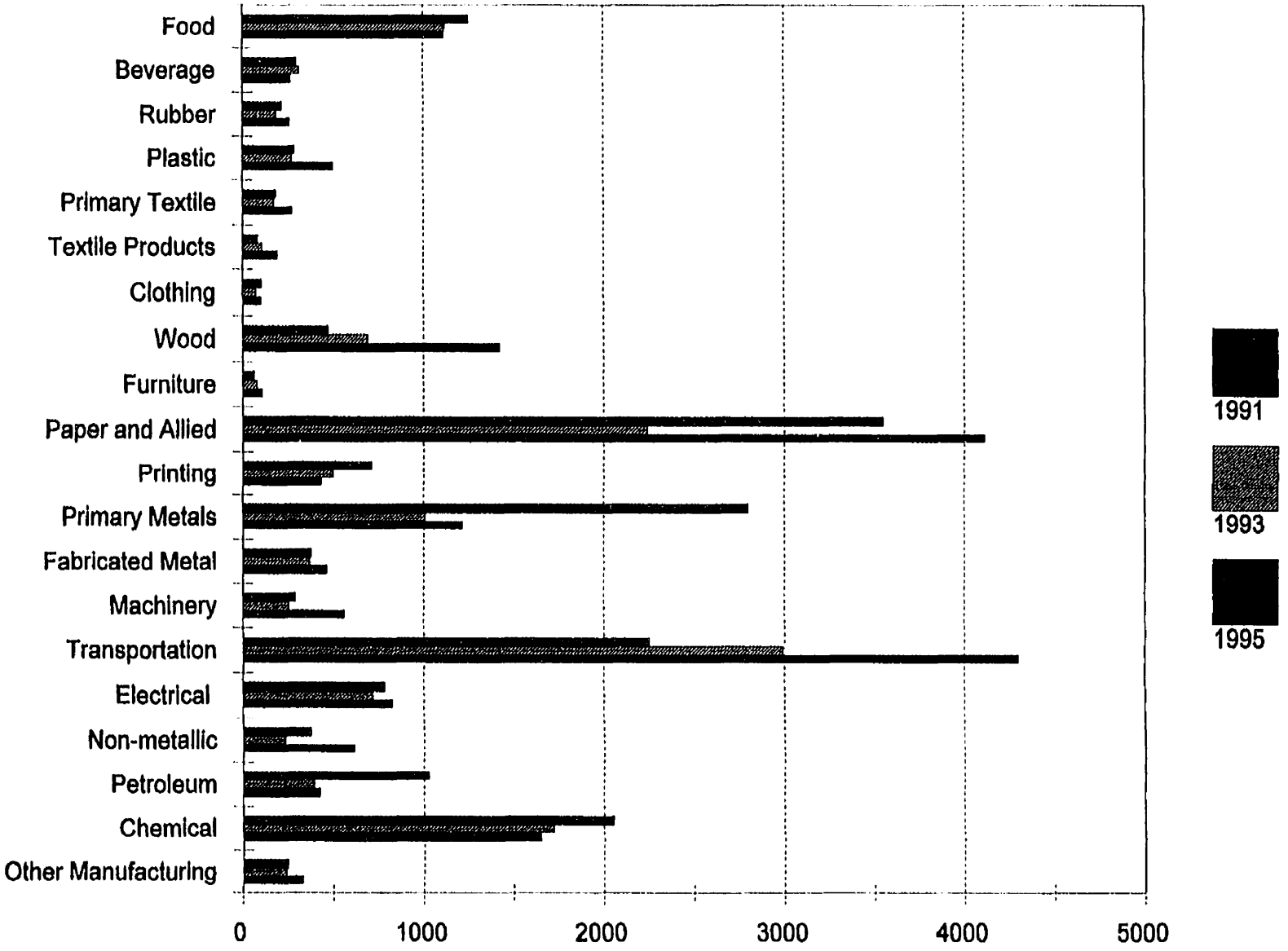
As with the manufacturing sector as a whole, the data from 1981 to 1995 show that investments in machinery and equipment were consistently much higher than in construction. The ratio of expenditures in construction to that in machinery and equipment increased over the years for most industries.

The investment data clearly indicate that to ignore the recession's effects could lead one to think that a cyclical decline was secular. Of course, investments in a particular industry may sharply rise one year and drop the next, or vice versa, and such patterns may not be solely due to a recession. For example, investments in machinery and equipment in the primary metals industry dropped from more than 2.3 billion 1986 constant dollars in 1991 to about 861 million dollars in 1993 (data not shown in Table 8.4). Developments specific to a given industry may point to additional explanations. Perhaps a few firms in an industry heavily invested in new machinery and equipment in certain years, and then did not need to do so again for another few years. For example, a firm may invest in a new plant one year, which would result in sharp increases in investments, but which, once completed, would require less investment, especially in construction. With overall investments increasing, in the long run the industry will continue to survive

Figure 8.2

Capital Expenditures, 1991 - 1995

(millions of dollars)



Note: The expenditures in the leather and tobacco industries were either too small to include here or were not available.

Source: Compiled from Cansim, Matrix 3103

and to grow.

There is, naturally, reason for concern when a major industry shows a consistent drop in investments over a period longer than a business cycle. But the 1981-1993 set of data and the more recent data show that in general none of the industries had such a consistent drop in capital expenditures. This does not necessarily imply that all is well in all major industries. Again, the leather industry stands out. Expressed in constant 1986 dollars the data in Table 8.4 show that whereas capital expenditures totaled 15.9 million in 1981 and slightly more in 1987, in 1993 the amount was 10.5 million, with most invested in machinery and equipment.

It is also worth noting that most of the manufacturing investments have been concentrated in a few industries, in particular the paper and allied, primary metals, transportation, and chemical industries. In 1991 these sectors made up nearly 61 per cent of investments. In addition, the transportation equipment industry, the largest in terms of employment and output, was also the largest with regard to investments. Investments in the transportation industry increased in current dollars throughout the 1990s. As a consequence, forecasts indicate that the industry is expected to attract more than 22 per cent of investments in manufacturing in 1995, compared to only 13 per cent in 1991. And, as shown in the previous section, the industry has had positive average annual rates in output and employment in 1981 to 1993 period.

Thus, there is no clear evidence of long term disinvestment in specific major industries, with the possible exceptions of the leather goods and tobacco industries. In other words, there is no support here for any variant of the de-industrialization thesis.

The data indicate that in most major industries investments fall during or immediately after recessions and then slowly recover. This is as economists emphasize a cyclical downturn. It is not the secular decline expected by proponents of the de-industrialization thesis. More disaggregate data for each major industry would help us determine whether a firm, or few firms, or an industry within the major sectoral group, may be responsible for most of the change in the investment trend. Nonetheless, the investment and output data suggest that while industries have faced difficulties, they are not collapsing. Rather, the evidence points in the direction of restructuring (sometimes radical) and even expansion. In most industries the rise in output has been accompanied by a rise in the proportion of investments that have gone into modernizing machinery and equipment which is almost universally followed by increases in output. It is true, however, that such restructuring might leave firms with relatively fewer workers.

Trade

All advanced industrial economies have seen sharp increases both in imports and exports. This has had some impact on most major manufacturing industries. Trade data available for the two digit SIC manufacturing industries end with 1987 since in 1988 Statistics Canada began to use a new classification procedure. The available data cover a long enough period to determine whether Canada was losing industries because of higher import penetration and declining export orientation, as expected by some

proponents of the de-industrialization thesis.

The trade data show, disregarding the SIC, that in 1987 compared to 1966 export orientation was higher in all of the major manufacturing industries for which the information is available (see Tables 8.5 and 8.6). For the same years import penetration was also higher, except in the refined petroleum and printing industries in which it was slightly lower. Generally, those industries with the largest increases in export orientation also faced the largest increases in import penetration.

Classified according to the 1970 SIC, all industries except one, showed higher import penetration and export orientation in 1984 than 1966. The exception was the refined petroleum industries with lower import penetration and higher export orientation. The most striking increases in import penetration were in the transportation equipment industry, from 39.1 per cent to 84.1 per cent, electrical and electronic industry from 21.9 per cent to 52.5 per cent, and in leather industry from 13.4 per cent to 36.3 per cent (see Table 8.5). But the transportation and electrical industries also faced sharp increases in export orientation, 31.2 per cent to 85.2 per cent for the former and 9.2 per cent to 36 per cent for the latter (see Table 8.6). Export orientation in the leather industry instead rose from only 4.3 per cent to 6.7 per cent. As for the textile industry, which received some attention in the de-industrialization literature (see Mahon 1984), it faced both an increase in import penetration and export orientation. Interestingly, in the 1966-84 period import penetration in the textile industry grew 1.8 percentage points, that is from 25.2 per cent to 27 per cent, while export orientation grew from 4.9 per cent to 7.7 per cent, a rise of 2.8 percentage points. However, the situation was quite different in the clothing

Table 8.5. Import Penetration (Imports/Canadian Market), Manufacturing Industries, 1966 - 1987 (per cent)

	SIC 1970		SIC 1980	
	1966	1984	1981	1987
Manufacturing	21.0	35.8	31.8	37.0
Food	NA	NA	12.4	12.3
Beverages	NA	NA	10.0	9.1
Tobacco	1.0	1.9	2.4	1.5
Rubber	13.4	36.3	27.4	36.2
Plastic	17.2	17.6	21.7	24.5
Leather	14.3	38.5	33.7	48.4
Textiles	25.2	27.0	32.1	40.5
Clothing	5.1	19.9	17.3	27.6
Wood	7.9	10.8	10.8	9.4
Furniture	5.1	13.9	12.5	15.8
Paper	5.5	12.2	11.7	13.1
Printing	12.3	15.2	14.0	12.0
Primary metal	23.5	33.0	38.2	30.7
Fabricated Metal	11.6	17.2	19.7	20.7
Machinery	64.2	79.7	69.4	68.1
Transportation	39.1	84.1	72.5	85.0
Electrical	21.9	52.5	49.7	56.5
Non-metallic mineral	15.3	19.4	19.0	18.5
Refined Petroleum	10.8	6.6	3.7	9.6
Chemical	23.0	33.2	28.8	29.5
Other	46.2	69.0	55.8	64.2

Sources: Compiled from data in Department of Industry Science and Technology,
Manufacturing: Trade and Measures, 1981-1987, Ottawa, 1988;
Manufacturing: Trade and Measures, 1966-1984, Ottawa, 1987

Table 8.6. Export Orientation (Exports/Shipments), Manufacturing Industries, 1966 - 1987 (per cent)

	SIC 1970		SIC 1980	
	1966	1984	1981	1987
Manufacturing	18.8	35.8	29.9	35.9
Food	NA	NA	12.9	14.5
Beverages	NA	NA	12.6	9.8
Tobacco	0.5	0.8	9.5	6.3
Rubber	3	31.7	22.9	35.2
Plastic	6.9	9.3	8.9	15.4
Leather	4.3	6.7	7.4	9.2
Textiles	4.9	7.7	10.8	12.7
Clothing	2.2	6.5	4.8	7.1
Wood	38.9	55.4	44.3	47.6
Furniture	2.2	18.4	10.7	21.7
Paper	49.9	55.8	59.6	58.5
Printing	1.3	4.9	3.2	5.3
Primary metal	42.2	51.7	52.2	46.8
Fabricated Metal	2.7	9	14.7	18.1
Machinery	33	60.4	45.9	41.6
Transportation	31.2	85.2	68.8	84.7
Electrical	9.2	36	28.2	35.7
Non-metallic mineral	5.8	13.8	10.4	11.3
Refined Petroleum	1	8.9	8.3	9.4
Chemical	14.4	27	27.3	24.6
Other	22.5	42	26.6	38.1

Sources: Compiled from data in Department of Industry Science and Technology,
Manufacturing: Trade and Measures, 1981-1987, Ottawa, 1988;
Manufacturing: Trade and Measures, 1966-1984, Ottawa, 1987

industry, with a rise in import penetration from 5.1 per cent in 1966 to 19.9 per cent in 1984 and an increase of only from 2.2 per cent to 6.5 per cent in the same years.

When classified according to the 1980 SIC, except for six major manufacturing industries, all had higher export orientation and import penetration in 1987 than in 1981. For example, import penetration in the textile industry rose from 32.1 per cent to 40.5 per cent, and export orientation grew from 10.8 per cent to 12.7 per cent. Thus, although export orientation in the textile industry did not show a gain as sharp as import penetration, it nevertheless increased. The exceptions were the chemical and paper industries with lower export orientation and higher import penetration (see Tables 8.5 and 8.6). Between 1981 and 1987, export orientation fell 1.1 percentage points in the paper industries and 2.7 percentage points in the chemical industries. Meanwhile import penetration grew 1.4 percentage points and only 0.7 per cent, respectively. The beverages, tobacco, primary metal, and machinery industries had both lower export orientation and lower import penetration. In addition, three of the industries had percentage point drops in export orientation that were higher than the drops in import penetration. Instead, the primary metal industry had a 5.4 percentage drop in export orientation accompanied by a 7.5 percentage drop in import penetration. It is also of interest to note that the food and wood industries faced a drop in import penetration but a rise in export orientation.

Thus while none of the industries show signs of de-industrializing, some are facing challenges from rising imports. The latter are leather, textile and clothing industries, all of which have long been identified as in difficulty. But about a decade ago

Mahon (1984) claimed the textile industry was not de-industrializing. And the leather industry is generally ignored in the de-industrialization literature. Once again, when the theory of de-industrialization is placed directly in front of the appropriate empirical evidence, that line of argument comes up very short indeed.

Three "Basic" Industries

Above I have discussed changes in the so-called major manufacturing industries. However, the term "basic industry" might be taken to refer to only a subset of certain major sectors. The automotive industry and steel industry are often mentioned in the de-industrialization literature. The former is a part of the transportation equipment industry, that has been subject to the terms and conditions of a bilateral trade agreement with the U.S. since 1965. It is dominated by the Big Three U.S. auto assemblers, and therefore is heavily under foreign control and influence. Steel is part of the primary metal industry and it too has its (Canadian) Big Three, and it is predominately Canadian controlled. Steel and the automotive sectors are heavily concentrated in Ontario, and are closely linked.

But while the automobile and steel industries have captured much attention in the general de-industrialization literature, in the case of Canada resource based manufacturing industries also deserve special attention. Canada's economic development has relied heavily on "staples" and thus manufacturing industries involved in processing

staples are of particular importance. This is all the more true if that industry is mainly in the hands of Canadian investors. Presumably, because of the available staple they would want to keep profits in Canada and continue producing the goods in Canada. Instead, among other reasons, foreign investors might prefer taking profits out of Canada. Hence, in Canada resource based manufacturing industries that are heavily into exports would be considered by most commentators to be "basic." One such industry is the "pulp and paper industry," which is not only resource based, but is also mainly under Canadian control, and is a leading world producer and exporter of pulp and newsprint. The industry is part of the paper and allied products industry which together with the wood industry comprise the "forest products" industry. The success of the Canadian pulp and paper industry in the world market depends in no small measure on lumber, which is in abundant supply in Canada. It is also of interest to note that unlike the automotive and steel industries whose largest share of total production is in Ontario, the largest share of total production of the pulp and paper industry is in Quebec, followed by Ontario and British Columbia (Minnes 1995).

Further, while the automobile, steel, and pulp and paper industries may be called "basic," they probably differ with regard to their level of "high-tech." Assume that they hold the same rank as the major manufacturing industries of which they are a part. In the mid-1980s the now defunct Economic Council of Canada (1987) developed a complicated procedure for identifying "high-tech" inputs. It used data in Canadian input/output tables and a series of judgments, to determine the level of technology that a commodity embodies. The industries examined were separated into three equal-sized

groups categorized as high-tech, mid-tech, and low-tech (see Wong 1990). The transportation equipment industry was identified as "high-tech," the paper and allied products industry as "mid-tech" and the primary metal industry as "low-tech."

Thus this section considers changes in the automobile, steel, and pulp and paper industries, since they play a significant role in Canada's economic development. Each of the industries is defined and their employment, shipments, and exports and imports trends are examined from 1986 until 1993, the last year for which published data are available.

Automotive Industry

Media reports on "troubles" at the U.S.-owned Big Three automotive manufacturers, combined with an increasing penetration of Japanese and European cars into the North American market, tend to give an overall impression that the "automotive industry" is in serious difficulty. Some commentators have even come to the conclusion that in Canada the "automobile industry" is de-industrializing (see Van Ameringen 1985). A closer examination of the available data suggests otherwise.

There is no doubt that the Big Three have faced serious competitive pressures. They were unable to meet the rising demand for compact and subcompact cars after the oil crisis in the early 1970s. As a result overseas competitors, mainly Japanese automobile firms, were able to capture that segment of the market (see Womack, Jones, and Roos 1990; Dertouzos, Lester, and Solow 1989.) Further, as world vehicle

production grew, it was met largely by Japanese manufacturers. The Japanese went from producing only 32 thousand vehicles in 1950 to nearly 5.3 million two decades later to nearly 12.5 million in 1992 (World Almanac 1994).

The Big Three were facing relative drops in their share of the world market as well as in the Canadian market because of imports (see Adams 1993). In addition, the lean production techniques used by Japanese vehicle manufacturers were considered to be more productive and cost-efficient, and better at assuring high quality. These developments forced the Big Three to reconsider their mass production techniques for assembling vehicles. That which had served them so well for so many years was apparently not up to the challenge. These changes added to the rationalization and restructuring that had started with the Canada-U.S. Auto Pact in 1965.

The Auto Pact basically integrated the U.S. and Canadian automotive industries, making Canada's automotive production in that sector almost totally dependent on the U.S. market. The result has been a higher rate of expansion in vehicle production in Canada than the U.S.. In 1950 the U.S. produced about eight million motor vehicles, or nearly 76 per cent of world production, but by 1970 that country was producing only 8.3 million vehicles (World Almanac 1994). In 1950 Canada produced 388 thousand vehicles, or about 3.7 per cent of total world production. But by 1970, mainly because of the Auto Pact, production reached about 1.2 million vehicles, despite a population of only one tenth that of the U.S.. The number of vehicles produced in Canada and the U. S. has continued to grow over the years. In 1992 Canada produced about two million vehicles compared to about 9.7 million in the U.S. -- about twice as many per capita.

However, while Canada's share of vehicles produced in the two countries and in the world has increased, the share for the U.S. has dropped. In 1970 Canada accounted for 12 per cent of vehicles produced in the two countries, but for about 17 per cent in 1992. Canada's share of total world vehicle production rose from about 3.9 per cent to 4.1 per cent. Instead the U.S. share of total world vehicle production dropped from 28.2 per cent in 1970 to 20.5 per cent in 1992. The percentage drops contrast sharply with Japan's shares which went from about 18 per cent in 1970 to 26 per cent in 1992. Thus, because of the Auto Pact, among other developments, the Big Three in Canada have over the years undertaken restructuring efforts, whereby they renovated plants and embraced new production techniques (see Holmes 1991a and 1991b). They are still the biggest vehicle producers in Canada and the U.S.. In Canada they account for nearly 85 per cent of assembly capacity and purchase more than 90 per cent of the sales by parts manufacturers (Industry Canada 1995). But much of the challenge to the Big Three in Canada has come from "transplants" which have contributed to the expansion of this country's vehicle production (see Morris 1991; Industry, Science and Technology 1988).

In 1992 there were five transplants in Canada which together accounted for 16.2 per cent of total Canadian automobile production (Adams 1993). Vehicle production in the transplants grew from 10,800 in 1986 to 314,000 in 1992. Since 1986 about 75 per cent of their production has been exported to the U.S.. In 1991 they represented about 17 per cent of Canadian automobile exports to the U.S. compared to less than 3 per cent in 1988. Clearly transplants have expanded vehicle production in Canada and helped Canada maintain a surplus in automobile trade with the U.S..

However, the "automotive industry" includes other activities than vehicle production. But despite popular discussions, an operational definition is not always specified. It has been identified as made up of the Big Three or motor vehicle production or parts and accessories industries. Even in government publications there is no consistency in the use of the term. For example, Côté (1989) of Statistics Canada refers to thirteen industries that make up the automotive industry as the "motor vehicle industry." But the motor vehicle industry is a sub-group of industries that make up the automotive industry.

The operational definition used here is the official one by Statistics Canada which consists of thirteen of eighteen separate industries at the four digit SIC that comprise the transportation equipment sector (see Statistics Canada, Catalogue No. 42-251). As indicated in Table 8.7, at the three digit SIC they are the motor vehicle industry (SIC 323), truck, body and trailers manufacturers industry (SIC 324) and the motor vehicle parts and accessories industries (SIC 325). In 1993 they accounted for about 87 per cent of value of shipments and 73 per cent of employment in the transportation equipment industries (Statistics Canada, Catalogue 42-251, 1995). Although much importance is given to vehicle production, most workers are employed in the parts and accessories industries. The motor vehicle industry is the largest in terms of value of shipments of goods of own manufacture.

A typical vehicle includes about 15,000 parts therefore making the automotive industry a major consumer for many other industries (see Womack, Jones, and Roos 1990; Dertouzos, Lester, and Solow 1989.) In consequence, a downturn in the

Table 8.7 : Automotive Industry at the Three Digit and Four Digit SIC

Motor Vehicle SIC 323	
3231	Motor vehicle industry

Truck & Bus Body & Trailer SIC 324	
3241	Truck and bus body
3242	Commercial trailers
3243	Non-commercial trailers
3244	Mobile homes

Parts & Accessories SIC 325	
3251	Motor vehicle engines and engine parts
3252	Motor vehicle wiring assemblies
3253	Motor vehicle stampings
3254	Motor vehicle steering and suspension parts
3255	Motor vehicle wheel and brake
3256	Plastic parts and accessories
3257	Motor vehicle fabric accessories
3259	Other motor vehicle accessories, parts and assemblies

automotive industry inevitably affects numerous industries, both in manufacturing and in non-manufacturing. For example, in the mid-1980s the automotive sector consumed 14 per cent of iron foundry production, 11 per cent of rubber products, 7 per cent of machine-shop products, 9 per cent of wire goods, 14 per cent of processed aluminum, 6 per cent of carpeting and fabrics, 9 per cent of glass products, and 20 per cent of domestic steel shipments (Dykes 1995).

Total employment in the automotive industry increased until 1989, fell for two years and began to recover by 1991. In 1993 employment stood at 153,022 compared to 151,755 in 1986. The employment trends in each of the three digit SIC industries did not follow the same directions (see Table 8.8). Employment grew from 1986 to 1989 in the parts and accessories industries and the truck, body and trailer industries and after falling for two years began to recover. Instead employment in the motor vehicle industry vacillated from 52 to 56 thousand workers. From 1986 to 1993 employment grew from 85,241 to 87,974 in the parts and accessories industries and fell from 12,979 to 10,856 in the truck, body and trailer industries. But employment in the motor vehicle industry remained about the same with 53,544 in 1986 and 54,192 in 1993.

As seen in the bottom panel of Table 8.8, the value of shipments of goods of own manufacturer in constant 1986 dollars grew from about 38.5 billion in 1986 to about 46.8 billion in 1989. Shipments fell during the recession of the early 1990s dropping to about 40.8 billion dollars in 1991. But it began to recover the next year and by 1993 shipments had grown to more than 51 billion dollars.

Of the three groups of industries that make up the automotive industry, only the

Table 8.8: Automotive Industry, Employment and Shipment

EMPLOYMENT

	Motor vehicle SIC 323	*Truck & bus body & trailer* SIC 324	*Parts and accessories* SIC 325	Total
1986	53,544	12,979	85,241	151,764
1987	52,034	13,419	88,550	154,003
1988	52,681	15,256	94,335	162,272
1989	55,392	16,188	96,254	167,834
1990	56,089	12,293	86,396	154,778
1991	55,678	9,195	80,264	145,137
1992	54,738	10,199	83,376	148,313
1993	54,192	10,856	87,974	153,022

SHIPMENT VALUES
(millions of 1986 $)*

1986	24,286.6	1,301.9	12,921.7	38,510.2
1987	22,443.2	1,486.4	13,017.1	36,946.7
1988	29,531.3	1,658.0	14,790.7	45,980.0
1989	29,244.6	1,683.5	15,827.3	46,755.4
1990	28,793.7	1,271.5	14,332.0	44,397.2
1991	26,793.8	979.2	13,005.6	40,778.6
1992	28,318.1	982.1	14,098.9	43,399.1
1993	33,483.2	1,087.3	16,470.7	51,041.2

*The 1986 dollar values were calculated using the industrial product price indexes for each group of industries.

Sources: Calculated from data compiled by Statistics Canada,
Transportation Equipment Industries, Catalogue No. 42-251, various years
Industry Price Indexes, Catalogue No. 62-001, various years

truck and bus body and trailer industry had in 1993 employment and shipment levels lower than in 1986. But the other two groups of industries still had in 1993 employment levels below the peak years -- 1990 in motor vehicle and 1989 in parts and accessories. In contrast, the level of shipments peaked in both industries in 1993.

With regard to trade, exports and imports grew in dollar terms, with Canada maintaining a surplus (see Table 8.9). However the breakdown according to commodities shows that its surplus was mainly due to dollars from exports of passenger automobiles and chassis, and trucks, truck tractor and chassis. Instead Canada faced a deficit in the other three groups of commodities. Measured in terms of current dollars, Canada bought more of motor vehicle engines, engine parts, and motor vehicle parts than it exported. Nonetheless, the value of exports showed more spectacular gains than that of imports. Exports went from about 34.2 billion dollars in 1986 to about 47.5 billion dollars in 1993, a rise of nearly 39 per cent. In contrast, imports rose from about 33.6 billion dollars in 1986 to about 40 billion dollars in 1993, a gain of more than 19 per cent. (Part of the growth, however, may be explained by exchange rate fluctuations. See Bank of Canada 1997).

Thus, the restructuring faced by the Canadian automotive industry, which was especially vigorous over several years, has been accompanied by a rising number of vehicles produced, an absolute rise in employment until it began feeling the effect of the last recession in the early 1990s, and higher increases in export dollars than in import dollars. While such data are open to a variety of interpretation, they most certainly do not indicate that the Canadian automobile industry has been de-industrializing (see also

Table 8.9: Automotive Industry, Exports and Imports

Exports

(thousands of dollars)

	Passenger automobiles & chassis	*Trucks, truck tractor & chassis*	*Other motor vehicle*	*Motor vehicle engines & engine parts*	*Motor vehicle parts, except engines*	*Total*
1986	17,614,472	5,084,615	426,239	1,795,431	9,291,107	34,211,864
1987	14,092,243	6,009,716	437,028	1,923,477	9,611,746	32,074,210
1988	16,973,163	7,206,154	682,782	2,324,567	7,996,649	35,183,315
1989	15,883,382	7,281,911	679,797	2,261,717	7,949,906	34,056,713
1990	16,226,514	7,560,771	693,112	2,009,014	7,835,480	34,324,891
1991	16,430,746	7,173,491	685,393	1,443,689	6,795,835	32,529,154
1992	17,834,052	9,422,296	785,358	1,665,259	8,136,556	37,843,521
1993	24,137,966	10,479,677	1,008,147	2,192,540	9,644,003	47,462,333

Imports

(thousands of dollars)

1986	12,061,734	2,947,238	599,770	3,298,059	14,652,240	33,559,041
1987	12,346,158	3,292,859	618,582	3,004,229	13,951,954	33,213,782
1988	12,215,378	3,030,683	671,274	3,766,545	14,344,105	34,027,985
1989	11,833,889	2,607,711	850,366	3,529,349	13,305,543	32,126,858
1990	10,717,834	2,535,082	913,675	3,691,047	12,766,765	30,624,403
1991	11,665,535	2,759,162	929,500	3,512,211	12,270,187	31,136,595
1992	11,680,495	2,566,396	1,131,211	4,070,298	14,418,301	33,866,701
1993	11,856,161	3,333,296	1,294,210	5,289,640	18,278,303	40,051,610

Note: These specific categories were selected on the basis of information on total imports and exports included in Statistics Canada, Transportation Equipment Industries, Catalogue No. 42-251, 1995.

Source: Compiled from, Statistics Canada,
Exports, Merchandise Trade, Catalogue No. 65-202, various years
Imports, Merchandise Trade, Catalogue No. 65-203, various years

Côté 1989; Holmes 1991a, 1991b, 1993, 1996; Morris 1991).

Steel Industry

The changes faced by the steel industry in the last two decades have also aroused much concern over the future of the manufacturing sector. But while employment in the steel industry has been falling, output has been rising and the industry has been facing a trade surplus. Masi (1991, p. 181) concluded for the 1970 to 1986 period that, "The classic characteristics of de-industrialization were never manifest in Canada's steel industry. Rather, it seems to be an example of successful industrial restructuring in a basic industry." The data suggest the same can be said for later years.

Attempts at setting up iron work projects in Canada go as far back as the eighteenth century when it faced little success (Heron 1988). The manufacture of steel products mainly started in the second half of the nineteenth century, and by the early twentieth century had concentrated in Ontario (Hamilton and Sault Ste Marie) and in Sydney, Nova Scotia (Ross and Peacey 1995). After facing generally slow growth, the industry experienced rising demand with the outbreak of World War II. Canada's primary steel industry became mainly centered in Ontario where the integrated producers, Algoma, Dofasco, and Stelco, also known as the "Big Three," are located.

As with the automotive industry, developments at the Big Three steel firms have received much attention. In the past years they have laid off thousands of workers and Algoma came close to bankruptcy, thereby contributing to the pessimistic impression of

the future of the steel industry. But the steel industry is more than the Big Three and, as I have argued in previous chapters, employment is only one indicator of what has been happening to an industry. For example, the steel sector also consists of "mini-mills" which often have the ability to quickly adapt new technology and meet the changing demands of the market. Further, unlike the motor vehicle industry, the primary steel industry is mainly Canadian owned and about 70 per cent of shipments are destined for the Canadian market.

The steel industry is here defined for Canada as the primary steel industries (SIC 2910), the steel pipe and tube industry (SIC 2921), and iron foundries (SIC 2941). In 1993 they accounted for about 55 per cent of workers and about 55 per cent of the total value of shipments of goods of own manufacture in the primary metal industries. Of the three, the primary steel industries make up the largest proportion of employment and value of shipments in the primary metal industries accounting for about 40 per cent of total employment and 42 per cent of the total value of shipments.

As Table 8.10 shows, although the various steel industries faced employment drops, it was especially marked in primary steel plants where the drop was from 46,461 in 1986 to 33,257 in 1993. However, shipments grew until 1989 when they peaked at 8.8 billion dollars in constant 1986 dollars, then fell for two years before they showed signs of recovering. In 1993 the value of shipments was 8.2 billion constant 1986 dollars, about 600 million dollars less than in 1989 a peak year, but about 446 million dollars more than in 1986.

Steel industry performance was also quite successful with regard to trade. Masi

Table 8.10: Steel Industry, Employment and Shipment

	Primary steel SIC 291	*Steel pipe and tube* SIC 292	*Iron foundries* SIC 294	Total
		EMPLOYMENT		
1986	46,461	4,829	7,547	58,837
1987	46,493	4,964	7,860	59,317
1988	48,259	6,008	8,095	62,362
1989	46,738	5,438	7,538	59,714
1990	39,120	5,319	8,397	52,836
1991	38,126	5,618	7,680	51,424
1992	35,268	4,808	7,394	47,470
1993	33,257	5,555	7,174	45,986
		SHIPMENT VALUES (millions of 1986 $)*		
1986	7,753.9	985.5	812.8	9,552.2
1987	8,126.5	1,189.4	822.7	10,138.6
1988	8,590.1	1,487.6	850.1	10,927.8
1989	8,800.1	1,433.2	799.8	11,033.1
1990	7,067.6	1,415.2	923.1	9,405.9
1991	6,501.4	1,571.5	809.2	8,882.1
1992	7,389.1	1,290.1	836.5	9,515.7
1993	8,199.4	1,613.1	884.5	10,697.0

* The 1986 dollar values were calculated using the industrial product price indexes for each group of industries.

Sources: Calculated from data compiled by Statistics Canada,
Primary Metal Industries, Catalogue No. 41-250, various years
Industry Price Indexes, Catalogue No. 62-001, various years

(1991) notes that Canada became a net exporter in 1976, as measured by steel products in tonnage terms. The trade data here measured in dollar terms show that Canada continues to be a net exporter. As Table 8.11 shows, using certain commodity export groups of the steel industry, there has been an overall rise in exports in the 1986-93 period. Likewise, there has been an overall rise in imports, but they remained below the level of exports. The data suggest that producers may have been specializing in certain products. For example, from 1986 to 1993 import dollars in bars and rods steel have grown from about 228 million dollars to about 377 million dollars, a 65 per cent gain. In the meantime, export dollars in the same commodities grew from about 424 million dollars to about 654 million dollars, a 54 per cent rise. Again, when imports are taken into account together with exports the changes are quite unlike what are assumed or expected by proponents of the de-industrialization thesis.

The steel industry has been shedding labour while increasing output and maintaining a trade surplus. Thus, in the 1986-93 period the steel industry continued in many respects the changes started in the 1970-86 period noted by Masi (1991). The industry continued to restructure rather than de-industrialize.

Pulp and paper industry

The paper and allied products industry is composed of two major segments, one which produces pulp and paper (e.g., pulp, newsprint and paperboard) and the other produces valued-added paper (e.g., packaging, stationery, and business forms). The

Table 8.11: Steel Industry, Exports and Imports

Exports (thousands of dollars)

	Ferro- alloys	Primary iron & steel	Castings & forgings, steel	Railway track material				Bars & rods, steel	Plate sheet &strip steel	Other iron & steel & alloys	*Total Exports*
1986	55,084	219,914	188,397	41,901				423,673	801,480	685,001	2,415,450
1987	34,550	181,614	196,564	90,599				446,711	987,667	730,319	2,668,024
1988	46,783	198,486	35,285	60,385				431,875	870,358	785,633	2,428,805
1989	55,341	267,121	29,263	53,112				464,242	1,120,211	752,633	2,741,923
1990	51,190	317,701	28,063	75,715				376,583	975,657	674,386	2,499,295
1991	44,188	226,925	30,866	58,838				365,635	1,217,023	763,052	2,706,527
1992	26,395	254,549	31,427	63,242				517,475	1,354,244	705,245	2,952,577
1993	27,834	282,955	28,728	102,965				654,243	1,429,797	903,179	3,429,701

Imports (thousands of dollars)

					Pipes & tubes, iron & steel	Wire & wire rope, iron & steel	Structure, shapes, steel & sheet piling	Bars & rods, steel	Plate, sheet & strip, steel	Other iron, steel & alloys	*Total Imports*
1986					288,471	108,391	99,835	227,984	721,543	393,746	1,839,970
1987					311,095	109,737	119,795	226,314	774,097	535,059	2,076,097
1988					574,890	203,451	180,135	303,388	1,035,309	733,925	3,031,098
1989					429,528	220,576	144,284	311,559	944,776	533,241	2,583,964
1990					463,367	170,639	138,405	326,994	1,110,355	368,144	2,577,904
1991					492,061	142,140	116,763	285,416	1,020,360	307,222	2,363,962
1992					403,822	155,673	85,197	282,218	997,108	342,024	2,266,042
1993					472,430	184,978	112,858	376,624	1,174,787	562,864	2,884,541

Note: These specific categories were selected on the basis of information on total imports and exports included in Statistics Canada, Primary Metal Industries, Catalogue No. 41-250, 1995

Source: Compiled from data in Statistics Canada,
Exports, Merchandise Trade, Catalogue No. 65-202, various years
Imports, Merchandise Trade, Catalogue No. 65-203, various years

focus here is on the former (SIC 271) which in 1993 accounted for nearly 67 per cent of the workers and about 74 per cent of the total value of shipments of the paper and allied products industries. In turn much of the pulp and paper industry consists of five sub-industries at the four digits SIC, as listed in Table 8.12.

A main component of the pulp and paper industry is the newsprint industry. Canada has long been a leading world producer and exporter of newsprint. In 1992, this country accounted for 56.3 per cent of the newsprint traded internationally and 27.9 per cent of total world newsprint production. Most exports are to the U.S. market. In addition, Canada is a leading pulp producer, ranking second in the share of world production, behind the U.S. which ranks first. And it relies heavily on the export of pulp, with the U.S. as its main customer.

Paper mills have existed in Canada since the early nineteenth century, but as with steel and autos, the industry largely developed at the turn of the twentieth century. By the end of World War I Canada had already become a leading exporter of pulp and paper (Minnes 1995). In the 1960s the industry faced a surge of expansion -- sixteen new mills opened in the latter half of the decade. The 1970s were instead turbulent because of, among other factors, intense competition in world markets. But by the end of the decade the industry began to restore its competitive ability and mills were being modernized. Not long after came the recession of the early 1980s which led to cutbacks and a few years would pass before the industry began to recover. However, one report on the state of the industry in the 1980s in Ontario pointed out that many firms were using outdated machinery, were slow to respond to the changing demands of pulp and paper products,

Table 8.12: Pulp & Paper Industry: Employment and Shipments

	Pulp	*Newsprint*	*Paperboard*	*Building Board*	*Other Paper*	**Total**
	SIC 2711	SIC 2712	SIC 2713	SIC 2714	SIC 2719	
EMPLOYMENT						
1986	18,506	38,892	7,998	932	13,242	79,570
1987	18,202	40,169	7,742	993	13,228	80,334
1988	19,314	39,428	7,236	1,021	14,059	81,058
1989	19,548	39,492	7,161	989	13,405	80,595
1990	19,505	36,985	6,894	1,012	13,372	77,768
1991	19,704	35,734	6,737	1,006	12,104	75,285
1992	17,956	31,921	6,213	938	12,661	69,689
1993	17,599	30,264	6,681	948	12,561	68,053
SHIPMENT VALUES (millions of 1986$)*						
1986	4,267.4	7,183.3	1,470.0	100.8	2,050.9	15,072.4
1987	4,723.9	7,535.0	1,569.0	98.0	2,038.8	15,964.7
1988	4,680.8	7,663.1	1,467.6	98.4	2,269.1	16,179.0
1989	4,569.9	7,249.7	1,391.1	97.0	2,299.0	15,606.7
1990	4,223.5	6,714.2	1,315.9	100.1	2,345.4	14,699.1
1991	4,507.3	6,262.3	1,251.7	114.0	2,088.0	14,223.3
1992	4,389.0	6,345.2	1,319.0	139.7	2,598.3	14,791.2
1993	4,565.7	6,429.6	1,441.8	150.1	2,736.8	15,324.0

* The 1986 dollar values were calculated using the industrial product price indexes for each group of industries.

Sources: Calculated from data compiled by Statistics Canada,
Paper and Allied Products Industries, Catalogue No. 36-250, various years
Industry Price Indexes, Catalogue No. 62-001, various years

and were slow to take advantage of new technologies (Report of the Premier's Council, nd). More recently, the industry was hurt badly by the recession of the early 1990s. Media reports often highlighted the closure of paper mills and lay offs of thousands of workers.

Employment in the pulp and paper industry peaked in 1988 at 81,058 workers (see Table 8.12). But in the next years the industry faced a loss of more than 13,000 workers and by 1993 employed 68,053 workers. However, shipments did not face a similarly sharp drop. After falling in constant dollars from 16.2 billion dollars in 1988 to 15.7 billion dollars in 1989, shipments began to recover in 1992 and by 1993 reached 15.3 billion dollars.

The employment drop was particularly evident in the newsprint industry which from 1987 to 1993 faced a loss of nearly 10,000 workers. Shipments began to decline in 1988, but by 1992 showed signs of recovering. Instead in the pulp industry employment reached a high of 19,704 workers in 1991 and then faced a sharp drop losing 2,105 workers by 1993. The picture was different for shipments which remained generally steady throughout the period, but were highest in 1987.

The pulp and paper industry is closely tied to the export market as Table 8.13 indicates. Exports in 1993 totaled more than 14 billion dollars compared to imports that only totaled about 1.7 billion dollars. Given that other industrialized countries, including the U.S. faced a recession in the early 1990s, exports fell. After peaking in 1988 at about 15.8 billion dollars, exports dropped and by 1991 were about 13.6 billion dollars. Export dollars began to recover in the next years and by 1993 again exceeded 14 billion dollars,

Table 8.13: Paper Industry, Exports and Imports

Exports
(thousands of dollars)

	Wood pulp and similar pulp	Newsprint	Other paper for printing	Paperboard	Other paper		*Total Exports*
1986	4,072,078	5,660,891	620,647	279,603	652,031		11,285,250
1987	5,473,035	6,028,589	868,864	302,418	763,215		13,436,121
1988	6,495,790	7,299,211	885,518	323,243	780,912		15,784,674
1989	6,940,337	6,507,031	635,569	300,587	805,809		15,189,333
1990	6,121,025	6,461,554	812,137	419,296	967,773		14,781,785
1991	4,937,256	6,498,556	790,370	501,741	905,012		13,632,935
1992	5,067,602	6,316,771	824,688	588,117	1,090,587		13,887,765
1993	4,640,781	6,655,546	947,606	597,987	1,240,939		14,082,859

Imports
(thousands of dollars)

	Wood pulp and similar pulp					Paper and Paperboard	*Total Imports*
1986	138,343					924,586	1,062,929
1987	142,687					1,015,097	1,157,784
1988	183,652					1,199,044	1,382,696
1989	202,249					1,262,124	1,464,373
1990	220,884					1,281,172	1,502,056
1991	165,160					1,339,388	1,504,548
1992	204,324					1,400,740	1,605,064
1993	182,136					1,553,246	1,735,382

Note: These specific categories were selected on the basis of information on total imports and exports included in Statistics Canada, Paper and Allied Products Industries, Catalogue No. 36-250, 1995.

Source: Compiled from data in Statistics Canada,
Exports, Merchandise Trade, Catalogue No. 65-202, various years
Imports, Merchandise Trade, Catalogue No. 65-203, various years

still about 1.7 billion dollars less than the 1988 peak. Meanwhile, imports kept rising, from more than one billion dollars in 1986 to more than 1.7 billion dollars in 1993.

The downturn in the late 1980s and early 1990s is not necessarily a harbinger of what is in store for the industry. The recession in Canada and elsewhere, especially the U.S., contributed to the slump. The industry has in 1993 shown signs of recovering with shipments and exports surpassing the 1992 figures. A dark spot is employment, and perhaps the losses are permanent with the industry shedding labour, especially in its pulp and newsprint operations. As for imports, while they are increasing, they still are far less than exports. Imports in wood pulp and similar pulp, totaled more than 182 million dollars in 1993 compared to exports which totaled more than 4.6 billion dollars. Further, the largest share of exports is in newsprint, nearly 6.7 billion dollars in 1993, but Canada has virtually no imports in newsprint. In addition, while the amount of imports in paper and paperboard has increased, the amounts in exports in paperboard and other paper have also increased.

Concluding Remarks

If the yardstick of de-industrialization is a long term absolute loss in both employment and output, then the data presented in this chapter indicate that only the tobacco and leather industries qualify. Longer term data show that in the tobacco product industries employment peaked in 1962 and real output in 1977. Employment in

the leather and allied products industries also peaked in the early 1960s and then steadily dropped. However, output was cyclical, rising and falling until the 1980s when they began to fall steadily.

Investment data generally show increases for most years examined, but they were affected by economic downturns. Investments dropped in the last recession in most industries. But the drop was especially marked in the leather industry, which had a level in 1991 that was below the level of 1981 in constant 1986 dollars. The employment and output data together with the investment data show that the leather industry has over the years been contributing less to employment and to the economy.

Trade data show that most of Canada's major manufacturing industries are dependent on exports. And imports are increasingly essential in answering the demands of the ever diversifying Canadian economy. Most major industries with rises in import penetration also had increases in export orientation. Canadian manufacturing has become more dependent on international trade and shows signs that suggest it is increasingly specializing in certain products. Moreover, the trade data juxtaposed with the employment and output data suggest that industries with a declining importance in international trade, measured by falling import penetration and export orientation, are likely to face drops in employment or output, or both, as in the case of the beverages and tobacco industries.

Together the data on employment, output, trade and investments indicate that the leather industry has been in serious difficulty. Although other industries have shown certain weaknesses, among industries for which data are complete, the leather industry

alone has faced absolute declines in employment, real output and investments, and rising import penetration but has experienced only modest increases in its export orientation. It is the one industry with clear signs that if the trends continue its future is bleak, and possibly the tobacco industry being another. But, again, it is worth noting that they have been relatively small manufacturing industries (see Seymour 1995, Kelley 1995). Of course, the leather and tobacco industries have been virtually ignored in discussions on de-industrialization. Perhaps it is because they are not perceived as "basic" industries. The losses have nevertheless been tragic for the displaced workers and undermined the local economies. But the overall situation in the major manufacturing industries is not what the proponents of the de-industrialization thesis expected.

Notwithstanding the confusion over what defines an industry as basic, employment, output, and trade data show that Canada has not been losing its automotive, steel, or paper industries. There are serious concerns about the employment levels in the pulp and paper industry and the steel industry. However, while they have been shedding labour, they have increased their output and have become net exporters. The automotive industry instead has experienced gains in employment, output and exports. Thus, the data examined in this chapter indicate that rather than de-industrializing the three groups of industries have shown signs of restructuring.

Chapter Nine

Has Canada de-industrialized?

Canadian manufacturing along with other economic sectors has been in a state of constant change, and in the long run the economy has grown and society has benefitted. But such changes are rarely smooth and their impact on society is often profound. The changes can result in irreversible shifts as for example the agricultural shift that occurred decades ago. The agricultural sector did not fade away; "de-agriculturalization" did not happen. Instead, as the agricultural sector became more productive fewer people lived on farms, and the sector continued to make a marked contribution to the economy. While much concern was expressed about the impact of such developments on the future of farms and agricultural workers, there was no widespread concern that Canada was losing its agricultural base. Indeed, agriculture was and continues to be one of this country's most productive sector and is highly export oriented. The same cannot be said about the concerns expressed over what is happening, or has already happened, to Canada's

manufacturing industries. According to proponents of the de-industrialization thesis, Canada is losing, or has lost, its manufacturing base. The view that Canada has been de-industrializing has gained so much currency that some accept it as a matter of fact. There is no doubt that the manufacturing sector has been, both directly and indirectly, a major contributor to the growth of the Canadian economy and its labour market. But its history has been characterized by considerable flux. Canadian society and economy would be dramatically different if manufacturing was to disappear. But the evidence presented in this dissertation indicates that these industries, while changing, often dramatically, are not in a process of extinction.

At first my interest was sparked by wanting to know more about the de-industrialization of Canada and the consequences it would have on our society. I had the impression that in Canada the de-industrialization thesis had been simply adapted from the work of Bluestone and Harrison (1982) in the U.S.. Indeed, their work was the main one, and often the only one, cited in recent works in Canada in which mention was made of de-industrialization. Few considered the de-industrialization debate in the U.K., which actually preceded the one in the U.S.. Further research led me to an earlier indigenous de-industrialization thesis in Canada which had been formulated in the context of the dependency theory. Therefore, I posed two types of questions. First, I decided to concentrate my efforts on an examination of the concept and operational definition of de-industrialization that had been advanced in the three countries. To my amazement and consternation, I found that there was no common agreement on the definition of de-industrialization or its measurements. However, the principal implication of these

various de-industrialization theses was the same for all three countries -- the loss of their respective manufacturing sectors.

In the process of examining the conceptualization and operationalization of de-industrialization, it became evident that the propositions on which the thesis rested were not clearly spelled out by its proponents in Canada. They did not question the thesis. They simply pointed to illustrative, often haphazard, data which in their view fitted the requirements of the thesis. Thus, a second task of the study was that of determining the key propositions advanced, or implied, by supporters of the de-industrialization thesis and to consider critically whether a particular proposition alone should be taken to indicate that Canada was de-industrializing.

It became increasingly apparent that there were serious conceptual problems with the de-industrialization thesis in Canada. I began to question whether the central propositions on which the thesis in Canada rested were at all grounded in empirical information. It became obvious that its proponents had given scant attention to the available data and tended instead to stress the potentially harmful impact that de-industrialization would bring. Some researchers argued that de-industrialization had occurred because a single plant had closed!

Before trying to understand the impact of a phenomenon, it is essential to establish whether it exists or how much of it exists. One of the many aims of this dissertation became that of determining whether Canada was losing its manufacturing sector. The data analyses presented in the previous chapters were mainly descriptive in large part because such treatment of the statistical information was sufficient to determine if the

claims that Canada was de-industrializing were well founded. Further, proponents of the de-industrialization thesis in Canada, as well as to a large extent those in the U.S. and U.K., had mainly concentrated on descriptive data to back their claims.

The rest of the chapter will:

1) summarize the evolution of the de-industrialization thesis;

2) note the major changes in the manufacturing sector;

3) state the main conclusion of this study; and

4) suggest directions for future research.

The de-industrialization thesis in Canada

The term de-industrialization has become part of economic parlance. Indeed, I think it has become conventional wisdom. While credit for the de-industrialization thesis is usually given to American academics who proposed it in the early 1980s, or at times to British academics who considered a similar thesis a few years earlier (at least with regard to changes in a developed society) "de-industrialization" was actually first proposed in Canada.

The indigenous Canadian de-industrialization thesis of the early 1970s was fashioned from assumptions held about Canada's path to industrialization and its development of a weak industrial base. Proponents of the thesis were alarmed at the high

level of foreign ownership that characterized Canadian manufacturing. They argued that Canada was in the process of losing its already truncated manufacturing sector. However, their arguments relied mainly on limited evidence and their thesis was marred with conceptual problems. They did not have a clear definition of the concept nor did they state appropriate measurements to test it. Further, the empirical generalizations on which the thesis was based were inconsistent and questionable. Their own data showed a rise in U.S. investments in manufacturing and increases in manufacturing employment, at least in Ontario in that early period. Critics relied on aggregate data, including absolute manufacturing employment and output, to argue that de-industrialization was merely myth.

While ignoring the earlier de-industrialization thesis in Canada, over the years many other commentators have expressed pessimism about the future of the manufacturing sector. One could conclude that the thesis had been useful in a debate undertaken in a specific time and place. But in the 1980s talk of de-industrialization again became widespread, this time, however, based on a model developed for the U.S. by Bluestone and Harrison (1982). The implication of the Bluestone and Harrison model was similar to that of the one proposed earlier in Canada (and somewhat to that in the U.K.) -- the loss of the manufacturing sector as a result of disinvestments. But there was at least one major difference between the arguments in the U.S. and in Canada. The earlier thesis proposed in Canada claimed U.S. firms were closing down branch plants and shifting part of their capital back into the U.S.. In contrast, the thesis advanced in the U.S. expected investments to move across regions and abroad, presumably also to

American owned branch plants in Canada. Obviously, both could not be correct. Indeed, the evidence seems to show that both were wrong.

It is unclear why the de-industrialization thesis put forth in the U.S. gained more attention in Canada than the indigenous one. Perhaps it was because the thesis in the U.S. was popularized during the most severe recession since the Great Depression and served as an explanation for what was happening. Ironically, the proponents of the de-industrialization thesis largely ignored or played down the impact of the recession. As with the earlier thesis in Canada, the U.S. variant had conceptual problems, interpreted scattered evidence as symptomatic of a manufacturing sector in serious difficulty, and was pessimistic about its future. Moreover, as had occurred earlier in the de-industrialization debate in Canada, its main critique concluded from aggregate data that American de-industrialization was nothing more than a "myth." Further, other severe criticisms have come from those who believe that manufacturing has a central role to play in the prosperity of the U.S. economy.

The manufacturing sector in Canada recovered from the recession of the early 1980s and by the end of the decade had achieved new highs in employment and output. In the face of such evidence one might expect more restraint in claiming that Canada has de-industrialized or is in the process of de-industrializing. Instead, the de-industrialization thesis seems to have gained more credence with the implementation of the FTA and the NAFTA. However, once again the proponents ignore the fact that their data are short-term and recession biased. Notwithstanding data to the contrary, the

work by Bluestone and Harrison (1982) continues to attract attention by discussants of changes in the Canadian economy. The work of some authors leaves the impression that there is a body of definite evidence in support of the concept of de-industrialization. A recent example is the work by Merrett (1996, p. 86) who writes: "It has been widely noted that net job creation in the manufacturing sector has been a losing proposition over the past several decades." To add credibility to his statement he footnotes the study by Bluestone and Harrison (1982). However, aside from other weaknesses with his study, not only is Merrett's statement about job creation "over the past several decades" questionable, but Bluestone and Harrison (1982) emphasized gross loss of jobs and not net loss of jobs in their work. Indeed, the appendix to the book showed that over the decade of the 1970s there was a net gain in U.S. manufacturing jobs!

Remember that the implementation of the FTA coincided with a recession. Given what happened to manufacturing after the recession of the early 1980s, one would rightly expect this factor to be taken into account in making statements about what was happening to manufacturing in the early 1990s. But, according to the de-industrialization thesis the change is secular, not cyclical. In fact, proponents of the thesis who examined data covering the early 1980s ignored the recession (e.g., Drache 1989a). And those examining data during the recent recession, blame the FTA and the NAFTA for accelerating de-industrialization (e.g., Hurtig 1991; Merrett 1996). Short term data can be used to justify almost any kind of argument. But here the logic is circular and pernicious.

While the earlier de-industrialization thesis proposed in Canada was virtually ignored, judging from lack of references, its general expectations have remained part of the commentaries that have informed many public policy debates in this country. U.S. firms in Canada are still seen as key culprits. They are accused of withdrawing investments. However, now Canadian firms are also perceived as shifting investments out of manufacturing or placing new investments abroad. But, new investments by U.S. firms and Canadian manufacturers have been on the rise in this country!

The de-industrialization thesis is likely to have a long life, for even when the evidence raise doubts about its validity, proponents have a fall back position. They have the luxury of arguing that the impacts of recent changes such as the free trade agreements are indeed de-industrializing Canada, and they point to bits of information to "prove" their claims. To put it another way, if Canada has not de-industrialized, it eventually will, as the closure of manufacturing plants and resulting job losses demonstrate. The patient may be healthy, but just you wait! Once again, this argument is far from flawless.

The de-industrialization thesis has for some become an end in itself. Supporters of the thesis, except those that have been purely speculative, tend to stress bits of data that fit the requirements of the thesis. They rely often on familiar limited facts, mainly plant closures and gross loss of jobs, covering a short term which usually includes recessionary years, and they ignore the impact of the recessions and the business cycle. But plant closures and gross job losses are constants in the process of economic development and are more evident during economic downturns. Further, such bits of data are not sufficient

to allow generalizations about what has happened to a sector. It would be like interpreting the closure of a few retail stores and the gross loss of service jobs as the end of the service sector.

Nevertheless, some leave the impression they have assembled an abundant amount of reliable evidence (e.g., Laxer and Jantzi 1973; Drache 1989a; Hurtig 1991). A recent example is Merrett (1996) whose work on the surface would suggest there is definitive empirical evidence that Canada is de-industrializing. But closer examination of data he cites show otherwise. He restricts the data primarily to the 1984-1994 period and gives particular importance to the loss of manufacturing jobs. Further, the problem is that he tends to contrast the recovery years 1984-89, that followed the 1981-82 recession, with the 1990-94 period, which was influenced by a recession, as well as the FTA and other factors. As he correctly notes, manufacturing employment grew from 1984 to 1989 and then dropped sharply in 1990 and 1991. The data are of course open to interpretations. The one provided by Merrett (1996) is that the FTA, and not the recession, accelerated the de-industrialization of Canada. However, he mainly concentrates on the drop in employment in certain years and gives little importance to the slow recovery that started in 1992. He notes there were 200 thousand fewer manufacturing jobs in 1994 than in 1989. True, but it is essential to recall that 1989 was a peak year in manufacturing employment. Moreover, if the drop in employment between 1989 and 1994 is seen as a sign of de-industrialization, then Merrett has to also explain why there were 84 thousand more jobs in 1994 than in 1992. It is also worth noting that there occurred a rise of 156 thousand manufacturing jobs from 1984 to 1989.

Long term changes have more to say about what is happening to a sector then developments over a few years. To complicate matters, proponents of de-industrialization arguments have not clearly specified the basic propositions and indicators of their thesis. A major claim is that de-industrialization is the loss of the primacy of manufacturing. But, whether in employment or output, manufacturing has never been the leading sector in Canada. Further, many have long argued that the Canadian manufacturing sector is truncated and weak. But according to the de-industrialization thesis Canada is losing, or has lost, its manufacturing base. How then has Canada become so wealthy and remained so for such a long time? The critical assessment of claims put forth by proponents of the de-industrialization that I have presented in this dissertation indicate that what has happened to the manufacturing sector is probably restructuring, but definitely not de-industrialization!

Changes in the manufacturing sector

The study relied almost exclusively on official statistics from Statistics Canada, Bank of Canada, and the U.S. Bureau of Labor Statistics. The reason for using such sources is that they are the only ones that provide empirically credible aggregate data to examine the principal claims put forth by proponents of the various de-industrialization theses. There exist weaknesses with the Canadian indicators and the available data, but

no alternative or better data exist at the aggregate level.

Based on claims advanced by various supporters of the de-industrialization thesis in Canada, the focus of my research was on trends in employment, output, investments, and trade in the last three decades. Below are some key results.

Employment

The de-industrialization literature in Canada expects the following to have happened to manufacturing employment:

1) a relative drop of manufacturing employment in the labour force
2) an absolute drop in manufacturing employment
3) rising "gross" loss of jobs in manufacturing
4) rising manufacturing unemployment rate

The relative drop in manufacturing employment has occurred for many years. Census data show that the proportion of workers in manufacturing dropped from 24.5 per cent in 1951 to 16.8 per cent in 1986 on the basis of the 1970 SIC. According to the LFS the proportion dropped from 19.7 per cent in 1977 to 15.2 per cent in 1995. In itself the drop does not mean that Canada de-industrialized. Instead the manufacturing sector grew at a slower rate than the labour force as a whole. Further, international data show that Canada is not alone in facing a relative drop in manufacturing employment among the major industrialized countries.

An absolute fall in the number of workers in manufacturing would be more serious. Although there have been ups and downs with the number of manufacturing

workers, particularly in the last decade, over the long run the number of manufacturing workers has actually grown slowly. In the 1977-1995 period the number of manufacturing workers ranged from about 2.1 million to 2.4 million and peaked in 1989. In 1995 there were 2.2 million workers compared to 2.1 million in 1977. Although there has been little expansion in terms of workforce, the employment data show that the manufacturing sector has not de-industrialized -- it has increased slightly in absolute numbers. Further, in the past two decades Canada has had a higher growth rate in absolute manufacturing employment than the other major industrialized countries.

Gross loss of jobs in manufacturing as an indicator of de-industrialization is somewhat awkward. The number tells us how many are affected by lay offs and plant closure, but not whether there has been a net gain or loss. The increase in gross loss of jobs is also influenced by the rise in the number of workers in the manufacturing sector in the past years. Further, since the gross loss of jobs has always existed, then an absurd conclusion would have to be that Canada has always de-industrialized, even while it was industrializing!

The focus on gross job loss as an indicator of de-industrialization is also put into doubt on the basis of unemployment figures. A comparison of the unemployment rate in manufacturing with that of the non-manufacturing labour force, shows that in Canada manufacturing has generally had a lower rate except during the recessionary years of 1981 and 1982, and 1990 and 1991.

Manufacturing employment data indicate that over the years jobs have been eliminated and new ones created, with a net gain in the absolute number over the long

run. But the official data also show that the manufacturing sector has become less important as a net job creator. Nonetheless, employment data alone are insufficient indicators of whether a sector is fading away. Again, as in the case of agriculture, the output of a sector can rise while employment falls.

Output and Productivity

Surprisingly, the changes in output and productivity have not received much attention by supporters of the de-industrialization thesis in Canada. Those who have taken them into account expect the following to have happened:

1) a relative drop of manufacturing output in total output
2) a fall in manufacturing labour productivity

The relative drop in manufacturing output has fallen in the last three decades from an annual average of more than 21 per cent in the 1960s and 1970s to 19 per cent in the 1980s to 18 per cent in the early 1990s. The relative drop is due to manufacturing output rising at a slightly lower rate than total output. Indeed, the size of manufacturing output and total output have more than tripled in the 1961-94 period. Manufacturing output in constant 1986 dollars grew from 31.1 billion in 1961 to 97.5 billion in 1994. Thus there has been a relative drop in the contribution of manufacturing to total output which has been accompanied by an absolute rise in manufacturing output. Such data are serious challenges to claims that Canada has been losing its manufacturing base.

The slower rates of growth in manufacturing output and employment have been accompanied by weaker productivity growth. But while over the years the rate of

productivity growth has slowed down, the productivity index with 1986 as a base steadily increased and peaked in 1994. Of course, a rise in labour productivity is not necessarily a sign of improvement for the workers in a sector, since it could be achieved by eliminating jobs and introducing more labour saving technology and organizational structures. However, the data show that the rise in the level of the productivity index in the last two decades has mainly occurred from a combination of rising output accompanied with slight changes in labour input.

Investment

If there exists one key measure of de-industrialization, it has to be the decline in investments. If supporters do not specifically point to investments, they nevertheless stress plant closures. A fall in investments implies a loss of confidence in the sector, resulting in plant closures and job losses, and of course a fall in output, declining exports and rising imports. Thus, the proponents of the Canadian de-industrialization thesis expect the following to have happened:

1) declines in capital expenditures in manufacturing
2) declines in foreign direct investments in manufacturing
3) increases in Canadian foreign direct investments in manufacturing

The investment data raise doubts about the view that investors have lost interest in this country's manufacturing sector. Investment declines occurred mainly in times of recessions. Total capital expenditures in constant 1986 dollars grew from about 8.6 billion dollars in 1970 to a peak level of nearly 20.6 billion dollars in 1989. Investments

declined in the last recession, but remained above the level of the 1970s. In 1994 investments began to recover and preliminary actual expenditures in constant 1986 dollars were about 14.8 billion dollars. Preliminary actual expenditures for 1995 total more than 16.6 billion current dollars and for 1996 expenditures are expected to rise to above 19.1 billion current dollars. In addition, over the years an increasing proportion of the investments have been on new machinery and equipment. This suggests that manufacturing firms have concentrated mainly on modernizing their machinery and equipment to increase output while not necessarily adding workers.

Direct investments in manufacturing have steadily grown and the bulk continues to be by U.S. investors. Although the share of total direct investments by U.S. investors has generally fallen, the level of investments has grown. Further, the proportion of U.S. direct investments in Canada placed in manufacturing has increased. The rise in foreign direct investments in Canada has been accompanied by a rise in the amount of Canadian direct investments abroad, including in manufacturing. However, the proportion placed in manufacturing has dropped over the years.

Trade

According to the de-industrialization thesis, the fall in investments should result in a rise in import penetration and drop in export orientation. Because of disinvesments in manufacturing, Canada should be exporting in fewer goods and importing more. Thus, the de-industrialization literature in Canada indicates the following should have happened:

1) rising import penetration in manufacturing
2) falling export orientation in manufacturing

Although in the long run investments in manufacturing did not fall, import penetration did rise. Between 1980 and 1995 merchandise imports grew in current dollars from about 68 billion to more than 225 billion, and in constant 1986 dollars rose from nearly 76 billion to over 217 billion. In the same period manufacturing imports in current dollars rose from about 55 billion to almost 199 billion, and in constant dollars increased from approximately 68 billion to nearly 193 billion. Data for the 1966 to 1987 period also showed a sharp rise in import penetration. Alone the data would seem to lend support to the de-industrialization thesis, but the import data make up only half the picture.

Exports did not fall. Between 1980 and 1995, merchandise exports in current dollars rose from about 77 billion to nearly 254 billion, and in constant dollars increased from more than 81 billion to 227 billion. In the same period manufacturing exports in constant 1986 dollars grew from about 64 billion to over 183 billion. Consequently, in 1995 the manufacturing sector had a trade surplus of over nine billion current dollars. And, while the sector had a trade deficit in constant dollars, the size of the deficit has in recent years declined. Further, data for the 1966 to 1987 period show that export orientation sharply increased and matched the rise in imports.

The trade data do not indicate that Canada is losing its manufacturing base. They seem to suggest instead that the manufacturing industries have been specializing as "globalization" expands.

Basic Manufacturing Industries

Some proponents of the de-industrialization thesis may object to a focus on aggregate national data. They would argue that the core of their thesis is the fate of basic industries in manufacturing. However, there is no clear meaning of the notion of a "basic industry." Nonetheless, changes in employment, output, investment, and trade at the level of the major manufacturing industries show no clear support for the de-industrialization line of argument. While some industries have faced difficulties, only two industries showed signs that their future was bleak (leather and tobacco). However, it is worth noting that these two sectors have been relatively small among the major manufacturing industries, and there is no particular mention about them in the de-industrialization literature.

Generally, supporters of the de-industrialization thesis have preferred to either focus or comment on changes in groups of industries. Therefore, the study briefly considered changes in the automotive, steel, and pulp and papers industries. For different reasons, each one is significant to the manufacturing sector and to the overall economy. The automotive sector, which is heavily U.S. owned, has been part of a sectoral free trade agreement with the U.S. for more than three decades and thereby involved in a "continental" market. In contrast, the steel industry is predominately Canadian owned and most of its shipments are destined for the Canadian market. The pulp and paper industry is a resource base manufacturing industry that is mainly Canadian owned and heavily

reliant on exports. The employment, output and trade data show that while the three groups of industries have different characteristics, none can be considered as in a process of de-industrialization. The steel and pulp and paper industries have been shedding labour, but like the automotive industry, their output has been rising and all three are net exporters.

Canada is not de-industrializing

The central conclusion of this study is that Canada has not been losing its manufacturing base. In the long run the manufacturing sector has actually expanded with absolute rises in employment, output, investments, and exports. There is a mismatch between the expectations of the de-industrialization thesis and what has happened to manufacturing as a whole, the major manufacturing industries, and three main groups of manufacturing industries.

One might object and argue that the conclusion is premature, especially insofar as the situation has changed with the implementations of first the FTA and then the NAFTA. The agreements have been accused of accelerating or causing de-industrialization. But the thesis has existed for more than two decades and was not formulated on the basis that there would be the two trade agreements. Whether someone favours or opposes the agreements, the arguments for de-industrialization have remained virtually the same.

Two decades ago some feared manufacturing plants, mainly U.S. branch plants, were being relocated to the U.S.. The same fear exists today, with the addition of Mexico as a possible location, and that Canadian manufacturers have now joined the exodus.

Although Canada has long ranked among the most industrialized countries in the world, some have seen its development as rather distorted. More than two decades ago Canada was described as "the world's richest underdeveloped country" with a small manufacturing base that was truncated because of the high level of U.S. ownership. For some Canada had all the makings of a country that was losing its manufacturing base. But the manufacturing sector did not erode. Nonetheless, two decades later some Canadian commentators continue to see this country as de-industrializing and thereby "disappearing" and "disintegrating" or in the process of becoming "underdeveloped" (Hurtig 1991; Merrett 1996). The circumstances and explanations are somewhat different, but the general pessimistic outlook about the manufacturing sector and about Canada's prospects have remained the same. Consider Merrett's (1996, p. 85) explanation of recent developments and their consequences:

> Starting with free trade negotiations and accelerating after the implementation of the FTA, the Canadian industrial base has been eroded. . . . The immediate effect of the FTA has been the accelerated deindustrialization of Canada. . . . As the pressures of free trade dismantle Canada's engine of economic growth, Canada is being transformed from a developed to an underdeveloped nation.

It is worth remembering that by some estimates Canada has long ranked among the major industrialized countries in the world. Nevertheless, not only has Canada

retained its manufacturing base, but international comparisons on employment and output raise serious questions about Canada slipping relative to the other G-7, let alone becoming underdeveloped.

The relative drop in manufacturing employment has also occurred in other major industrialized democracies over several years with some countries facing steeper drops than those experienced by Canada. More importantly, Canada has had a higher growth rate in absolute manufacturing employment than the other major industrialized countries. In the 1970-89 period, manufacturing employment grew in Canada, while it declined in the U.S. and Italy since about 1980 and even earlier in France and Germany. In addition, in the 1979-93 period, the major industrialized countries saw increases in manufacturing output. However, the increase in the rate was sharper for Canada than for France, the U.K., and Germany. Therefore, if one believes that Canada is de-industrializing and becoming underdeveloped, the employment and output data begs the question whether other industrialized countries such as France are facing the same fate.

Putting aside the debates over whether Canadian economic development was caught in a "staples trap" or dominated by "commercial capitalists," Canada it would seem should have been more vulnerable to de-industrialization than other industrialized countries. Its manufacturing sector has long been relatively smaller and has had a strong presence of foreign owned branch plants. Whether the cause is believed to be the "Nixon agenda" noted by J. Laxer (1973) or the recent FTA and the NAFTA noted by more recent supporters of the thesis, events have been interpreted as not favourable to Canada and

resulting in its de-industrialization. But this has not happened. Loyal adherents to the de-industrialization thesis continue to find ad hoc causes and selectively point to limited data to support their perspective. The more balanced empirical evidence presented in this dissertation make the claims unsustainable.

Future Research

In the last two decades manufacturing employment in absolute terms slowly increased to peak in 1989, but has fallen sharply during the last recession and has yet to fully recover. In 1995 manufacturing still had 185 thousand workers less than 1989. In relative terms manufacturing employment has been gradually declining. In 1995 manufacturing made up about 15 per cent of the labour force, compared to about 20 per cent in 1980. Meanwhile, manufacturing output has grown in absolute terms and fallen in relative terms. The share of manufacturing in the total economy dropped from about 22 per cent in the second half of the 1960s to about 18 per cent or less in the early nineties. But while a drop of even four percentage points may seem steep, it is essential to recall that the total economy has grown sharply. The total economy in constant 1986 dollars grew from about 203 billion in 1965 to a peak level of nearly 543 billion in 1995. Likewise with manufacturing output. The country that some see as de-industrializing achieved in 1995 a peak level of manufacturing output of more than 102 billion constant

1986 dollars, compared to about 45 billion constant dollars three decades earlier. The demand for manufactured goods is being satisfied by a static and possibly falling number of manufacturing workers. Further, manufacturing investments and exports have been growing. Thus instead of asking whether Canada is de-industrializing, the data raise a series of questions about what kind of restructuring manufacturing is experiencing.

Is manufacturing experiencing the same fate as agriculture?

The data examined in this study suggest that the manufacturing sector as a whole is facing a similar fate as that of the agricultural sector. There is an important difference between the manufacturing sector and the agricultural sector, which raises the question of whether the comparison is appropriate. The agricultural sector needs land. While investments can be withdrawn from the sector, the land which makes the sector productive cannot be. Not so for manufacturing. Investments can be withdrawn and reinvested elsewhere, and manufacturing plants can be moved. Manufacturing workers are mobile, but probably less so than the plants in which they work. Nonetheless, investments in manufacturing were particularly high in recent years with the bulk used to purchase new machinery and equipment which in turn have an impact on employment and output.

Where are new investments being placed?

The trend in capital expenditures shows that most new investments have been in

machinery and equipment while the amount in new construction has shown little change. This suggests that few new plants are opening up in manufacturing, but research will have to test this out. And research would also have to explore what kind of new machinery and equipment are being purchased. The increase in output with a modest change in employment may have been achieved by investing in new labour-saving technology. Further, the investments in new technology may be part of a firm's strategy to restructure production to become more competitive in the domestic and world market.

The data show that direct investments in Canada have continued to rise and Canadian direct investments abroad have been by far largely placed in the U. S.. It is possible that the popularity of the U.S. may be for specific regions with lower labour costs. But further research is needed on this issue, as well as on claims that Canada is losing manufacturing jobs to these regions. Indeed, the data raise questions about how much of this is actually happening, since U.S. investors and other foreign investors, have been increasing their level of investments in Canada.

It is true that Canadian investments abroad have been rising. And there is no denying that plants have been relocated to the U.S., and possibly since the NAFTA more have moved to Mexico. But it needs to be shown just how many are in manufacturing and what factors led them to relocate to a certain region. Further, the relocation of certain plants is only a partial picture of what is happening. The increase in Canadian direct investments may result from Canadian firms expanding their line of business and opening up new markets. In turn the Canadian firms may have created more demand of specific

goods for their Canadian-based plants. And as capital can easily move across borders of certain regional economies, this flow may be also dictated by the demand of consumers and the skills of workers, among other factors.

What are the implications of "globalization" on manufacturing?

Canada has faced increases in both the value of manufacturing imports and manufacturing exports. This suggests that there is a growing specialization in manufactured goods. In other words, are manufacturers increasingly producing specialized goods for export? A related question is whether many of the imported goods were previously produced in Canada and if so did domestic production stop because of imports. Or stated differently, are Canadian manufacturing industries specializing because of foreign competition?

In addition, if there is increasing specialization, as the trade data suggest, then possibly investments are aimed at contributing to that specialization. The same investors are likely to expand their presence in Canada as well as elsewhere, but the investments may be in different types of industries. Research on investments needs to take into account whether the rise in direct Canadian investments abroad is at the expense of domestic investments. Likewise, whether rises in foreign direct investments in Canada are displacing or adding to the Canadian domestic investments within an individual industry. Large companies may be becoming increasingly more global, as well as more flexible, and this is bound to have an impact on their corporate decisions of where to

invest. A related issue worthy of much attention is the kind of restructuring manufacturing industries have undergone because of internationalization of production, or globalization of the market for certain goods, or both, especially in light of the NAFTA and other trade agreements

Why is manufacturing employment showing little growth?

To say that Canada has not de-industrialized does not imply that the manufacturing base has faced no difficulties or negative changes. As the study showed thousands of workers have lost their jobs during the last two recessions and certain industries had only modest growth. An economic recovery does not imply that the laid off workers are all rehired in manufacturing. It is possible that the recovery encourages specific industries to grow while others show little growth. Research at the individual industry level can shed more light on this issue. Furthermore, workers are not laid off solely during recessions, since contractions and plant closures are always present. The manufacturing data show a large gross number of unemployed workers, even during an economic recovery. These developments beg the following empirical questions: In which individual industries are manufacturing workers displaced? What are the causes of the job loss? Also important is whether the workers' skill and experience are transferable. For many workers, it may have no significance as to whether they are employed in one sector or another. The wage and the quality of the jobs may be far more important, and if that job is in another sector, fine.

Which firms are job creators?

Anecdotal evidence cited by proponents of the de-industrialization thesis, leaves the impression that manufacturing job losses are mainly in large establishments. More effort is needed to assess the extent of the deaths of manufacturing establishments in Canada, as well as the size and industry of the establishment, among other factors. This raises the question of whether small firms are replacing large firms as creators of new manufacturing jobs? The employment data provide reasons to doubt this. Among major manufacturing industries, the clothing industry which is widely recognized as having small firms faced job losses, while the transportation equipment industries generally identified as having large firms faced employment gains. Further research in this area would also have to take into account births of plants and the expansions and contractions of existing plants. Our understanding of the changes in manufacturing employment would benefit greatly from a closer focus on the size of establishments and the type of jobs and quality of jobs created and eliminated.

What is happening to manufacturing wages?

A widespread assumption, and one advocated by supporters of the de-industrialization literature, is that the loss of manufacturing jobs results in the loss of high paying jobs, at least relative to the service sector. This view leaves the impression that manufacturing jobs are basically high paying jobs. Such a perspective is probably based on the "average" wage in manufacturing or at least in certain manufacturing

industries, compared to wages in the service sector. High wages in manufacturing may be concentrated in specific industries and among workers with higher job security. For example, the average wage in the transportation equipment industry is higher than in the clothing industry. Yet the latter has in recent years lost workers while the former has gained workers. In addition, research has shown that layoffs are carried out on the basis of job security - last hired first fired. And the last hired is likely to be young and earn a lower wage. All of this would suggest that within manufacturing it may be the industries that pay relatively lower wages that are displacing workers or that as a whole it is the lower paid workers in manufacturing that are displaced. And their "average" wage may be "relatively" equal to, or less than, the "average" wage in the service sector. More attention should be given to the variation of wages in manufacturing industries and the characteristics of displaced workers, with regard to such factors as age and work experience. In addition, the various changes in manufacturing, may have diminished the level of the wage workers expect from being employed in certain manufacturing industries, especially those at one time identified as paying high wages.

Are manufacturing firms increasingly contracting out?

Data cited in an earlier chapter suggest that manufacturing firms may be relying on purchasing services which were formerly in-house, such as maintenance work. And they may also prefer purchasing new types of services, rather than set them up in-house, such as the running of their computer data networks. It is also important to consider whether in

the process of contracting out certain production activities, large manufacturing firms are contributing to the rise of small manufacturing firms.

The employment data showed that part-time employment in manufacturing is relatively lower than in the labour force as a whole. However, research should explore whether there is a rise in the number of "temporary," "casual," or "contract" employees. In many respects temporary work is a form of contracting out work. The worker has limited employment security and may not have the same wage and benefits available to "regular" workers. In the last two decades there has also occurred a sharp rise in the number of self-employed in the labour force. Possibly, restructuring (or downsizing) in manufacturing is resulting in the use of more self-employed consultants -- perhaps professionals who at one time worked in manufacturing, faced layoffs, and may even prefer a regular job.

What are the implications for unionization and industrial relations?

The developments in the manufacturing sector have implications for unionization and industrial relations. Unionized jobs have been generally perceived as providing relatively higher wages and job security than non-unionized jobs. However this may be changing because of the restructuring of manufacturing industries. The data show that there are numerous layoffs in manufacturing, including during periods of increasing employment. Conceivably, the new jobs in manufacturing are being created in non-unionized workplaces. An example would be the possible loss of unionized jobs at the

Big Three auto-assemblers and the rise in non-unionized jobs at the auto transplants.

Moreover, data examined earlier show rising manufacturing output is being achieved with fewer workers. And imports have been rising. Such developments may have weakened the power of unions in the collective bargaining process. A manufacturing plant may be able to shed workers and still achieve higher output. And it can claim that imports (or "globalization") require the plant to be more "competitive." In consequence, the firm can argue that unless workers make concessions it will have to rely on contracting out some work, or close down the plant and reinvest elsewhere. Thus, labour's response to restructuring deserves attention, particularly the impact of restructuring on the willingness or opposition of workers to accept concessions, such as wage cuts and new work structures. Research should also take into account the response of organized labour, as well as the impact restructuring is having on unionization and possibly the emergence of new and diverse forms of industrial relations.

What has been the impact of government policies on restructuring manufacturing industries?

Advocates of the de-industrialization thesis imply that governments either have advanced policies that are leading to the disappearance of manufacturing industries or have failed to pass necessary policies to halt the process of de-industrialization. Notwithstanding their general belief in government intervention to protect manufacturing industries, it would seem that whatever governments do or not do, proponents of the de-

industrialization thesis believe governments either fail to advance industrial policies or pass the wrong policies. Our understanding of the restructuring of manufacturing industries, however, is better served through analyses of government strategies that have contributed to the development, expansion, transformation, or protection of manufacturing industries, and the participation of the industries in formulating these strategies. Further, it is necessary to examine, as much as possible, the impact of these strategies on the manufacturing industries.

Are the changes in manufacturing a statistical illusion?

Among various weaknesses noted in this study about the official data the more complicated one is the industrial classification of establishments. Again, the classification is based on the principal activity of the establishment. This poses certain impediments in understanding changes in manufacturing. The establishment is key to determining the number of workers, the amount of output, the level of productivity, and investments. But the distinction between manufacturing and service activities may have become increasingly blurred because of how work is done and production is organized.

In the process of restructuring, manufacturing firms may have reorganized their activities in such a way that, for example, many service activities are now carried out in a separate establishment. The newly created establishment would be categorized in the service sector because of the main activity. In addition, manufacturing plants may be increasingly contracting out work that was previously carried out in-house. Some, if not

most, of the work contracted out may originate from establishments categorized in the service sector. But if the work was still carried out by workers in-house, then those workers would be counted as in manufacturing rather than in services. In addition, by contracting out work, the manufacturing plant not only registers fewer workers, but may be able to increase output because of the work contracted out. And labour productivity also rises since it is the ratio of output and the number of hours worked by persons in the establishment. Thus, the kinds of organizational restructuring manufacturing firms have undertaken, and whether the restructuring in manufacturing and other sectors is creating a statistical aberration about certain changes, including employment trends, are worthy of additional research.

Concluding Remarks

Contrary to the de-industrialization thesis, the data presented here indicate that manufacturing is not on the way out. Advocates of the de-industrialization thesis have not subjected their ideas to a systematic data-based assessment. This dissertation has filled that gap, but as inevitably happens more questions have arisen. A theory should help guide the research and the research refines the theory. But the adherents of the de-industrialization thesis have often advanced its worthiness on the basis of speculative statements and limited data, and shown a general lack of interest in considering the

relevant empirical information. This study failed to find support in aggregate data for the de-industrialization claims. The data on manufacturing employment, output, investments, and trade examined found that in general de-industrialization is not, and has not been, happening. The manufacturing sector is not only alive, but it is as a whole well and growing. There are of course many other avenues of research to explore in the study on changes in the manufacturing sector, and as always the data will be open to interpretation. But in the face of evidence examined in this study, the de-industrialization thesis does not offer a useful guide to future research. However, several questions have arisen from this critique of the thesis and they deserve more careful examination.

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