Ministry of State
Science and Technology Canada

Ministère d'État
Sciences et Technologie Canada

Ottawa, Canada
K1A 1A1

THE GROWTH OF THE SERVICE SECTOR IN THE CANADIAN ECONOMY

April 1982

Canada

THE GROWTH OF THE SERVICE SECTOR

IN THE CANADIAN ECONOMY

U.K. Ranga Chand

Policy Research Group
Industry Branch
Ministry of State for Science & Technology

April 1982

PREAMBLE

As with other industrial economies, the Canadian economy has undergone profound changes in terms of its broad structure since the end of the second world war. This is particularly evident in the changing composition and distribution of employment that has occurred among the major sectors of the economy. In the three decades since 1950, the focus of economic activity has shifted significantly from the goods-producing to the service-producing sector of the economy. Thus, for example, although employment in the non-agricultural sector of the economy increased by about six million jobs between 1950 and 1979, approximately eighty percent of this increase occurred in the service industries.

As a result of this increase, employment in the service sector now accounts for about two-thirds of total employment. Although the rapid growth of employment in service industries has been widely noted, there is, however, no consensus regarding the implications of a predominantly service-based economy on future economic prospects and performance.

Partly, this is a reflection of the different perceptions people have regarding the composition of the service sector or a service economy. To many, the service sector is associated with the traditional low-paying service

occupations of barbers, waiters, laundry cleaners, etc. Hence, a rapid increase in these types of activities is, for obvious reasons, viewed with considerable trepidation and alarm. Others see the growth in the service sector as being synonomous with growth in the government sector which is also viewed with reservation.

In reality, the service sector is a conglomeration of many diverse activities ranging from the traditional service industries mentioned above to the more specialized and knowledge-intensive industries providing, for example, banking and computer services. In addition, the service sector also encompasses the non-commercial service industries such as government, hospitals, schools and universities. Inevitably, with such a disparate array of service industries, the relative importance of individual industries will differ markedly thereby affecting not only the growth and performance of the service sector itself, but also of the whole economy.

At a more substantive level, there is growing concern that the introduction of new technologies, particularly in the field of information technologies, will sharply curtail the growth of employment. Indeed, there are fears that the diffusion of micro-electronics and other information

technologies will generate an unprecedented wave of unemployment.

Although the introduction of these technologies will affect production techniques and methods in virtually every industry and sector of the economy, it is generally felt that the greatest impact will be on employment, particularly in the service sector. As a result there are doubts that the service sector will continue to be in a position to absorb the large number of workers that were displaced from other sectors as it had in the past.

Clearly, the impact of these technologies on employment will, to a significant extent, depend on the underlying rate of growth of the economy. In this regard, the outlook is rather pessimistic in that the overall rate of growth of productivity has slowed appreciably in the Canadian economy in recent years.

It is now generally accepted that a large part of the slowdown in productivity is related to a number of structural factors including relatively steep increases in energy prices and higher inflation rates. A decrease in the rate of growth of productivity will obviously be a major impediment to achieving high rates of economic growth in the

future. Moreover, this may lead to intensified adjustment problems resulting from the introduction and diffusion of new technologies.

Paradoxically, the solution to problems of low growth and inflation lies in the achievement of increases in productivity. This in turn depends critically on the introduction and absorption of new technologies in the economy. However, as indicated earlier, technological change can also exacerbate problems of unemployment. The situation is obviously a complicated one and, as yet, no clear-cut consensus has emerged on the impact on employment of these technologies.

To a large extent this reflects the lack of a coherent body of knowledge of the characteristics and economics of the service sector and of the service economy in general. This state of affairs is not new. For example, the Economic Council of Canada noted in its fifth annual review that, up until the late 1960s, economic analysis and policies were largely centred on the performance of goods-producing industries even though the service-producing industries had expanded to a point where they employed well over half of the labour force. Unfortunately, the situation has changed little since then despite the fact that service industries

now account for over two-thirds of total employment.

In the absence of an analytical framework, it is difficult to assess the implications and interactions of technological change and progress with, for example, trends in the levels of output and employment in a predominantly service-based economy. The ensuing paper examines the changes that have taken place in the broad structure of the Canadian economy over the 1950-79 period. As such, it is intended to serve as a starting point in the analysis of the characteristics of technological change in a service-based economy.

CONTENTS

LIST OF TABLES AND CHARTS

THE GROWTH OF THE SERVICE SECTOR IN THE CANADIAN ECONOMY

Summary

The purpose of this paper is to examine some of the important long-term changes that have occurred in the structure of the Canadian economy over the 1950-79 period. In particular, the paper focusses on the growth of service industries relative to goods-producing industries during this period.

In the present study, the goods-producing sector is defined as consisting of both agriculture and non-agricultural goods-producing industries. The latter group, referred to here as the "Industry" sector as a matter of convenience, includes non-agricultural primary industries, manufacturing and construction activities. The service sector consists of the following industries: transportation, communication and other utilities; trade; finance, insurance and real estate; community, business and personal services; and public administration.

Total employment in the Canadian economy more than doubled over the last thirty years, increasing from about 5 million employed persons in 1950 to about 10.4 million by 1979. During this period, employment in the service sector

more than tripled, rising from about 2.2 million in 1950 to nearly 7 million by 1979. Within the goods-producing sector, there were two opposing trends. Employment in agriculture decreased from over 1 million in 1950 to less than 0.5 million by 1979, whereas employment in the "Industry" sector increased by over 1.2 million jobs to about 3 million by 1979.

In comparison to employment trends in the goods-producing sector, the share of employment in the service sector has increased substantially, rising by over twenty percentage points during this same time period. By the end of the 1970s, service industries accounted for two out of every three persons employed in the economy. Moreover, it is the only sector of the economy to have registered substantial increases in both the level and share of employment over the last thirty years.

The two leading industries in terms of employment creation have been community, business and personal services and wholesale and retail trade. During the 1970s, for example, employment in these two service industries was expanding by over 100 thousand jobs annually in the former group and by about 56 thousand annually in the latter group. The next leading industry in employment creation was

manufacturing. In this sector, employment increased on average by about 35 thousand annually during the 1970s. However, although employment has increased in the goods sector, four out of every five jobs created in the economy in each of the preceding three decades have come from the service sector.

An examination of the changes in the distribution of the output of the economy between goods and services indicates that the growth of output in current dollars between these two sectors parallels similar trends in the distribution of employment. Thus, for example, the service sector's share of total output has increased from 48.3 percent in 1950 to 62.5 percent in 1979. Within the goods sector, both agriculture and "Industry" experienced declining shares in total output.

A different picture emerges when we examine shifts in the distribution of output when the effects of price changes are excluded. The distribution of output in real terms between goods and services has remained remarkably stable, particularly during the 1950s and 1960s. During these two decades, the service sector accounted for about 62 percent of real output and the goods sector for about 38 percent. However, during the 1970s, the service sector's share of

real output increased somewhat to 65 percent, with goods decreasing to 35 percent.

Compared to the 1950s and 1960s, the growth in real output in both the goods and service sectors of the economy has slowed during the last decade. The slowdown is particularly noticeable in the goods sector where real output growth averaged only 3.1 percent during the 1970s compared to a growth of 5.7 percent in the 1960s. Although real output growth in the service sector also decreased from an annual growth of 5.6 percent in the 1960s to 4.9 percent in the 1970s the slowdown was not as marked as in the goods sector.

The major reason for the dramatic increase in employment that has taken place in the service sector is that the rate of growth of productivity expressed in terms of either output per person or output per manhour has increased at a slower rate in the service sector compared to other sectors. Thus, for any given increase in output, the employment requirements of the service sector has been substantially greater than that of the goods sector.

One implication of a slower rate of growth of productivity in service industries relative to

goods-producing industries is that the overall rate of productivity growth for the economy will be curtailed as the focus of economic activity continues to shift toward the service sector. An examination of this issue indicates, however, that the impact of the shift of employment to the service sector on overall productivity growth has in fact been negligible. For example, the reduction in the growth rate of aggregate productivity, because of the shift in employment from goods to services over the 1950-79 period, amounts to only one-tenth of one percent.

Although the shift of employment to the service sector of the economy has had a negligible impact on overall productivity, an examination of the levels of productivity between goods and services over the 1950-79 period yields some interesting results. Thus, for example, although the level of productivity has increased in both sectors, the level was actually higher in the commercial service sector relative to that in the goods sector during this period. However, because of the differences in the rates of growth in productivity, the gap in the productivity levels between these two sectors was eliminated by the end of the 1970s. This is contrary to the widely held view that the level of productivity is much lower in the service sector relative to

goods.

The findings that emerge from an examination of trends in the levels and the rates of growth of productivity in the goods and service sectors of the commercial economy over the 1950-79 period are surprising. The substantial increase in employment that took place in the service sector relative to goods actually enhanced the average level of productivity in the economy. This is in sharp contrast to the popular view that the growth of the service sector in fact reduces the overall level of productivity.

Interestingly, if productivity in the goods sector continues to grow at a higher rate relative to the service sector in the future, any shifts in employment towards the service sector will reduce the overall level of productivity in the economy. This would occur simply because the level of productivity between these two sectors is currently the same.

THE GROWTH OF THE SERVICE SECTOR IN THE CANADIAN ECONOMY

1. INTRODUCTION

The purpose of this paper is to examine some of the important long-term changes that have occurred in the structure of the Canadian economy over the 1950-79 period. In particular, the paper focusses on the growth of service industries relative to goods-producing industries during this period.

The paper begins by presenting a brief discussion, contained in Section 2, concerning the problems encountered in defining and classifying service industries or the "service" sector of an economy. Section 3 examines post-war employment trends in the goods and service sectors including the allocation of increases in total employment to these groups over the last three decades. Section 4 of the paper provides a measure of the relative "gain" or "loss" in employment for goods and service industries relative to the average for the total economy.

Post-war changes in the growth and distribution of output between goods and services are discussed in Section 5. These changes in output are examined in both current and constant dollar terms. This section also briefly reviews the problems associated with measuring the level of output

in the different sectors of the economy, particularly in the service sector.

Section 6 examines some of the main reasons for the rapid growth of employment that has taken place in the service sector. The discussion focusses on the demand for services, both final and intermediate, and also on the productivity differentials between goods and services and assesses the importance of these factors in explaining the growth of the service sector.

Section 7 examines the interrelationships between output, productivity and employment. This relationship is used to delineate those sectors of the economy which are expanding in terms of employment and those which are either declining or stagnant.

Section 8 presents an overview of productivity trends for the commercial economy. Levels of productivity and the rate of growth of productivity in goods and service industries are examined. The section also includes a discussion concerning the impact on the overall level of productivity in an economy as a result of changes in the distribution of employment. Concluding comments are presented in section 9.

2. THE DEFINITION AND CLASSIFICATION OF THE SERVICE SECTOR

The distinction between goods and services seems relatively straightforward. Goods are visible and tangible objects whereas services are invisible and hence, by definition, intangible. Thus, for example, a car which is the product or output of the automobile industry is a tangible object and is therefore classified as a "good". On the other hand, the output of a lawyer, i.e., the provision of legal advice and counsel, being intangible, is classified as a "service".

However, the classification of the numerous economic activities of a nation into either goods-producing industries or service-producing industries presents a number of conceptual problems and is an area in which there is no unanimity. Conventionally, an industry is usually defined as a group of firms or companies that are engaged in either the same or similar types of economic activity.[1] The term "Industry" is a comprehensive one in that it encompasses all types of economic activities including primary industries such as agriculture and forestry, secondary industries such as manufacturing and construction, and those that provide

[1] Statistics Canada, Standard Industrial Classification Manual, Catalogue No. 12-501 Occasional, Revised 1970.

services such as banks, barber and beauty shops.

The definition of industries on the basis of their principal economic activity, be it either in products or services, lacks precision for, in reality, virtually all industries are engaged in more that one activity. Thus, for example, although the primary activity of the automobile industry is the manufacture of cars, the industry is also engaged in a variety of service activities such as advertising, sales, finance, etc.

This lack of precision, which is essentially unavoidable, is reflected in the fact that different authors have used different industry groupings in allocating industries to either the goods-producing sector or the service-producing sector.

For example, Victor Fuchs, in analyzing the growth of the service economy in the United States, includes transportation, communications and public utilities in the goods sector "because of their dependence upon heavy capital equipment and complex technology".[2] On the other hand, Eli

[2] Victor R. Fuchs, assisted by Irving F. Leveson, The Service Economy, National Bureau of Economic Research, No. 87, General Series, distributed by Columbia University Press, 1968.

Ginzberg and George J. Vojta, in a recent article on the service sector in the United States, follow the convention of national accounting and include transportation, communications and public utilities in their definition of the service sector.[3] David Worton, in his study examining the service industries in Canada, includes public utilities in the goods sector but allocates transportation and communications to the service sector.[4]

Despite these differences in sector definitions, there is a broad measure of agreement that emerges from these and other similar studies examining the changing structure of different economies as a result of the continuing process of economic growth that there has been a distinctive and continuing movement in economic activity from the goods-producing to the service-producing sector. In the present study the goods-producing sector consists of both

[3] Eli Ginzberg and George J. Vojta, "The Service Sector of the U.S. Economy", Scientific American, Volume 244, Number 3, March 1981, pages 48-55.

[4] David A. Worton, "The Service Industries in Canada, 1946-66", Production and Productivity in the Service Industries, Victor R. Fuchs, ed., Studies in Income and Wealth, No. 34, National Bureau of Economic Research, Inc., distributed by Columbia University Press, 1969.

agricultural and non-agricultural goods-producing industries. The latter group, hereinafter referred to as the "Industry" sector as a matter of convenience, includes non-agricultural primary industries, manufacturing and construction activities. The service sector consists of the following industries: transportation, communication and other utilities; trade; finance, insurance and real estate; community, business and personal services; and public administration. These definitions, while in line with the sector definitions used in the studies indicated above, coincide with the designations of Statistics Canada.

3. EMPLOYMENT TRENDS IN THE CANADIAN ECONOMY, 1950-79

3.1 Overall Trends

Total employment in the Canadian economy more than doubled over the last thirty years increasing from about 5 million employed persons in 1950 to about 10.4 million by 1979. Nearly 90 percent of this increase in employment took place in the service sector with the goods-producing sector absorbing the remaining 10 percent. Table 1 shows the level of employment for the goods-producing and service sectors of the economy during the period 1950 to 1979.

Employment in the service sector more than tripled, rising from about 2.2 million employed persons in 1950 to

TABLE 1

LEVELS OF EMPLOYMENT BY SECTOR
SELECTED YEARS 1950-79

(THOUSANDS)

	1950	1960	1970	1979
GOODS	2,771	2,696	2,942	3,466
AGRICULTURE	1,018	682	491	483
"INDUSTRY"	1,753	2,014	2,451	2,983
SERVICES	2,205	3,269	4,836	6,904
TOTAL ECONOMY	4,976	5,965	7,778	10,370

SOURCE: BASED ON DATA FROM STATISTICS CANADA, HISTORICAL LABOUR FORCE STATISTICS, ANNUAL, CAT. NO. 71-201.

nearly 7 million by 1979. Within the goods-producing sector, there were two opposing trends. Employment in agriculture decreased from over 1 million employed persons in 1950 to less than 0.5 million in 1979, whereas employment in the "Industry" sector increased by over 1.2 million jobs to about 3 million by 1979.

Employment in the service sector increased by one million jobs during the 1950s; by one and one-half million during the 1960s; and by two million during the 1970s. In the goods-producing sector, employment in the "Industry" sector increased by a quarter million during the 1950s and by about half a million in the 1960s and 1970s. On the other hand, in agriculture, employment decreased by over 300 thousand during the 1950s, by about 200 thousand in the

1960s, and by less than 10 thousand during the 1970s, indicating that the movement of labour from agriculture to other activities is now essentially over.

Table 2 shows the average annual rates of growth in employment for goods and services for each of the last three decades. There was no growth in employment in the goods

TABLE 2

AVERAGE ANNUAL RATES OF GROWTH IN EMPLOYMENT BY SECTOR
SELECTED PERIODS 1950-79

(PERCENT)

	AGRICULTURE (A)	INDUSTRY (I)	GOODS (G)	SERVICES (S)	DIFFERENTIALS* (S-G)	(S-I)
1950-60	-3.8	1.7	0.0	3.8	3.8	2.1
1960-70	-3.5	2.4	1.2	4.2	3.0	1.8
1970-79	-0.1	2.0	1.7	4.2	2.5	2.2

SOURCE: BASED ON DATA FROM STATISTICS CANADA, HISTORICAL LABOUR FORCE STATISTICS, ANNUAL, CAT. NO. 71-201.

* DIFFERENCE BETWEEN THE RATES OF GROWTH OF EMPLOYMENT IN: (a) GOODS AND SERVICES; AND (b) "INDUSTRY" AND SERVICES.

sector during the 1950s; however, in the 1960s, employment increased on average by 1.2 percent annually and, in the 1970s, by 1.7 percent. The annual rate of growth of employment in the "Industry" sector has fluctuated between 1.5 and 2.5 percent with employment expanding by at least 2 percent annually during the 1960s and 1970s. In contrast, employment in the service sector has continued to grow by

about 4 percent annually since 1950.

The last two columns of Table 2 show the differentials between the rates of growth of employment in goods and services and between services and the "Industry" component of the goods sector. An examination of the differential between goods and services would suggest that the spread in the rates of employment growth between these two sectors has been narrowing in each of the last three decades. This, however, reflects the inclusion of agriculture in the goods sector. When agriculture is removed and the comparison is made between "Industry" and services, it is apparent that the differential in the rates of employment has not narrowed but has remained at about 2 percent per annum.

As a result of these divergent trends, the share of employment between the goods-producing and services sector has changed substantially. Table 3 shows these changes in the distribution of employment among the sectors of the economy that have taken place since 1950. In both the agriculture and "Industry" sectors of the goods-producing sector, the share of employment has consistently declined over the last three decades with agriculture experiencing the sharpest decline. For example, in 1950 approximately one out of five persons was engaged in agricultural activities. However, by the end of the 1970s, only about

TABLE 3

DISTRIBUTION OF EMPLOYMENT BY SECTOR
SELECTED YEARS 1950-79

(PERCENTAGES)

	1950	1960	1970	1979
GOODS	55.7	45.2	37.8	33.4
AGRICULTURE	20.5	11.4	6.3	4.7
"INDUSTRY"	35.2	33.8	31.5	28.7
SERVICES	44.3	54.8	62.2	66.6
TOTAL ECONOMY	100.0	100.0	100.0	100.0

SOURCE: BASED ON DATA FROM STATISTICS CANADA, HISTORICAL LABOUR FORCE STATISTICS, ANNUAL, CAT. NO. 71-201.

one in twenty persons employed in the economy was engaged in the activities of this sector. In "Industry", on the other hand, the decline in the employment ratio was less pronounced, going from about 35 percent in 1950 to about 29 percent in 1979.

In comparison to employment trends in the goods-producing sector, the share of employment in the service sector has increased substantially, rising by over twenty percentage points during this same time period. In 1950, less than one out of every two persons employed was engaged in this sector but, by the end of the 1970s, service industries accounted for two out of every three persons employed in the economy. Thus, it is apparent that the service sector is the only sector of the economy, in terms

of employment, to have registered substantial increases in both the level and share of employment over the last thirty years.

3.2 Employment Trends in the "Industry" Sector

As indicated earlier, the "Industry" sector is defined in this paper as consisting of the following industries: manufacturing, construction and primary industries other than agriculture. Manufacturing is the dominant industry within the "Industry" sector and accounts for approximately 70 percent of the total employment in this sector. Construction activities account for about 20 percent with non-agricultural primary industries accounting for the remaining 10 percent of "Industry" employment. These employment shares have remained quite stable during the last 30 years.

Table 4 shows the levels of employment in the industry sector for selected years for the 1950-79 period. Over the last three decades, employment in this sector has increased by about 1.25 million. The distribution of these employment gains among the different groups of this sector are as follows: manufacturing, 822 thousand; construction, 332 thousand; and non-agricultural primary industries, 76 thousand. As a result of these increases, there were over

TABLE 4

LEVELS OF EMPLOYMENT IN THE "INDUSTRY" SECTOR
SELECTED YEARS 1950-79

(THOUSANDS)

	1950	1960	1970	1979
MANUFACTURING	1,248	1,419	1,768	2,070
CONSTRUCTION	308	387	467	640
PRIMARY INDUSTRIES(a)	197	208	216	273
TOTAL "INDUSTRY" SECTOR	1,753	2,014	2,451	2,983

SOURCE: BASED ON DATA FROM STATISTICS CANADA, HISTORICAL LABOUR FORCE STATISTICS, ANNUAL, CAT. NO. 71-201.

(a) LESS AGRICULTURE.

two million people employed in manufacturing industries at the end of the 1970s with construction and non-agricultural primary industries providing somewhat less than another million jobs.

Although the levels of employment have increased in each of the "Industry" sector groups over the last thirty years, the rate of job creation has differed appreciably during each of the last three decades. Strictly speaking, one should adjust for movements in the business cycle as the demand for labour, particularly in the "Industry" sector, is sensitive to changes in the overall economy. Nevertheless, an examination of the average annual increases in employment yields useful insights into the changing patterns of employment in the economy.

Table 5 shows the employment performance of the "Industry" sector and its components for each of the three preceding decades. The average number of persons employed each year in the sector has increased in every decade with an average of 26 thousand jobs being added annually during the 1950s, about 44 thousand in the 1960s and 59 thousand during the 1970s.

TABLE 5

AVERAGE ANNUAL CHANGES IN EMPLOYMENT IN THE "INDUSTRY" SECTOR
SELECTED PERIODS 1950-79

(THOUSANDS)

	MANUFACTURING	CONSTRUCTION	PRIMARY INDUSTRIES(a)	"INDUSTRY"
1950-60	17.1	7.9	1.1	26.1
1960-70	34.9	8.0	0.8	43.7
1970-79	33.5	19.2	6.3	59.0

SOURCE: BASED ON DATA FROM STATISTICS CANADA, HISTORICAL LABOUR FORCE STATISTICS, ANNUAL, CAT. NO. 71-201.

(a) LESS AGRICULTURE.

Employment in manufacturing industries, after increasing annually by about 17 thousand during the 1950s, added between 34 and 35 thousand jobs annually in the 1960s and 1970s. In the construction industry, employment increased by about 8 thousand jobs annually during the 1950s and 1960s but by over 19 thousand during the 1970s. Employment increases in non-agricultural primary industries were virtually non-existant during the 1950s and 1960s.

However, the situation improved during the 1970s with an average of over 6 thousand jobs being added annually by this industry group.

Despite increases in employment in the "Industry" sector and in each of its component groups, "Industry's" share of employment relative to the total economy has been steadily declining since the 1950s (Table 6). In 1950, one

TABLE 6

"INDUSTRY'S" SHARE OF TOTAL EMPLOYMENT
SELECTED YEARS 1950-79

(PERCENT)

	1950	1960	1970	1979
MANUFACTURING	25.0	23.8	22.7	19.9
CONSTRUCTION	6.2	6.5	6.0	6.2
PRIMARY INDUSTRIES(a)	4.0	3.5	2.8	2.6
TOTAL "INDUSTRY" SECTOR	35.2	33.8	31.5	28.7

SOURCE: BASED ON DATA FROM STATISTICS CANADA, HISTORICAL LABOUR FORCE STATISTICS, ANNUAL, CAT. NO. 71-201.

(a) LESS AGRICULTURE.

out of every four employed persons was engaged in manufacturing activities. However, by 1979 this ratio had declined to only one out of five persons. The share of the construction industry has stayed around the 6 percent mark with the share of employment in non-agricultural primary industries declining from 4 percent in 1950 to 2.6 percent at the end of the 1970s.

3.3 Employment Trends in the Service Sector

The service sector, as defined here, consists of the following industries: transportation, communication and other utilities; wholesale and retail trade; finance, insurance and real estate; community, business and personal service industries; and public administration, i.e. the activities of federal, provincial and local goverments.

The distribution of employment between these service industries has changed over the last thirty years. Two industries increased their share of employment within the service sector (community, business and personal services; finance, insurance and real estate), and two experienced declining shares (transportation, communication and other utilities; wholesale and retail trade), and in one, public administration, the share of employment has remained stable. Currently, about 43 percent of the employment in the service sector is accounted for by the community, business and personal services industry, 26 percent by wholesale and retail trade, 13 percent by transportation, communication and other utilities, 10 percent by public administration and about 8 percent by finance, insurance and real estate.

Table 7 shows the levels of employment in the service sector for selected years for the 1950-79 period. During

TABLE 7

LEVELS OF EMPLOYMENT IN THE SERVICE SECTOR
SELECTED YEARS 1950-79

(THOUSANDS)

	1950	1960	1970	1979
TRSCU	469	573	676	900
TRADE	690	1,018	1,303	1,806
FIRE	142	226	364	553
CBPS	670	1,107	2,025	2,946
PADM	234	345	486	699
TOTAL SERVICES	2,205	3,269	4,836	6,904

SOURCE: BASED ON DATA FROM STATISTICS CANADA, HISTORICAL LABOUR FORCE STATISTICS, ANNUAL, CAT. NO. 71-201.

TRSCU : TRANSPORTATION, STORAGE, COMMUNICATIONS & UTILITIES.
TRADE : WHOLESALE & RETAIL TRADE.
FIRE : FINANCE, INSURANCE, REAL ESTATE.
CBPS : COMMUNITY, BUSINESS & PERSONAL SERVICES.
PADM : PUBLIC ADMINISTRATION.

this period, total employment in this sector increased by about 4.7 million with two industries, community, business and personal services and wholesale and retail trade, accounting for about 75 percent of this increase. Employment in the community, business and personal services industries increased by approximately 2.3 million to about 3 million by 1979 with employment in wholesale and retail trade increasing by over 1.1 million to 1.8 million during the same period. Each of the other three service industries, i.e. transportation, communication and other utilities; finance, insurance and real estate and public

administration, accounted for between 9 and 10 percent of this increase. By the end of the 1970s, approximately 900 thousand people were employed in transportation, communication and other utilities, about 700 thousand in public administration and over 550 thousand in finance, insurance and real estate.

As in the "Industry" sector, the rate of job creation for each of the industries in the service sector has differed significantly during each of the preceding three decades. Table 8 shows the average annual changes in employment for the service sector and its components for the period 1950-79. During the 1950s, employment in the service sector expanded at the rate of over 100 thousand jobs a

TABLE 8

AVERAGE ANNUAL CHANGES IN EMPLOYMENT IN THE SERVICE SECTOR
SELECTED PERIODS 1950-79

(THOUSANDS)

	TRSCU	TRADE	FIRE	CBPS	PADM	TOTAL SERVICES
1950-60	10.4	32.8	8.4	43.7	11.1	106.4
1960-70	11.4	28.5	13.8	91.8	14.1	159.6
1970-79	23.7	55.9	21.0	102.3	23.7	226.6

SOURCE: BASED ON DATA FROM STATISTICS CANADA, HISTORICAL LABOUR FORCE STATISTICS, ANNUAL, CAT. NO. 71-201.

TRSCU : TRANSPORTATION, STORAGE, COMMUNICATIONS & UTILITIES.
TRADE : WHOLESALE & RETAIL TRADE.
FIRE : FINANCE, INSURANCE, REAL ESTATE.
CBPS : COMMUNITY, BUSINESS & PERSONAL SERVICES.
PADM : PUBLIC ADMINISTRATION.

year. In the 1960s, this figure had increased to about 160 thousand and, in the 1970s, there were over 225 thousand jobs being added to this sector each year. Similarly, the average annual increases in employment in each of the component industries of the service sector expanded at a higher rate during the 1970s than during either the 1950s or 1960s.

The two leading industries in employment creation have been community, business and personal services and wholesale and retail trade. During the 1970s, employment in the former industry was expanding at over 100 thousand jobs annually and by about 56 thousand annually in the latter industry. Employment in the three other service industries, i.e. transportation, communication and other utilities, finance, insurance and real estate and public administration, increased by between 21 and 24 thousand annually.

As indicated earlier, the share of employment in the service sector relative to the total economy has increased substantially, rising from about 44 percent in 1950 to over 66 percent in 1979. Table 9 shows trends in the share of total employment for the different industries of the service sector. As can be seen from the table, employment shares

TABLE 9

SERVICE SECTOR'S SHARE OF TOTAL EMPLOYMENT
SELECTED YEARS 1950-79

(PERCENT)

	1950	1960	1970	1979
TRSCU	9.4	9.6	8.7	8.7
TRADE	13.9	17.0	16.6	17.4
FIRE	2.8	3.8	4.7	5.3
CBPS	13.5	18.6	26.0	28.4
PADM	4.7	5.8	6.2	6.8
TOTAL SERVICES	44.3	54.8	62.2	66.6

SOURCE: BASED ON DATA FROM STATISTICS CANADA, HISTORICAL LABOUR FORCE STATISTICS, ANNUAL, CAT. NO. 71-201.

TRSCU : TRANSPORTATION, STORAGE, COMMUNICATIONS & UTILITIES.
TRADE : WHOLESALE & RETAIL TRADE.
FIRE : FINANCE, INSURANCE, REAL ESTATE.
CBPS : COMMUNITY, BUSINESS & PERSONAL SERVICES.
PADM : PUBLIC ADMINISTRATION.

increased in three industries -- finance, insurance and real estate, community, business and personal services and public administration; remained reasonably stable in wholesale and retail trade, at least during the 1960s and 1970s, and declined somewhat in transportation, communication and other utilities.

4. ACTUAL VERSUS "EXPECTED" EMPLOYMENT CHANGES

Table 10 shows the actual versus the "expected" change in employment between 1950 and 1979 in the goods and service sectors of the Canadian economy. Column 1 of the table is

derived from Tables 1, 4 and 7 and is simply the difference in employment between the years 1950 and 1979.

TABLE 10

ACTUAL VERSUS "EXPECTED" EMPLOYMENT CHANGES BY INDUSTRY AND SECTOR, 1950-79

	ACTUAL EMPLOYMENT CHANGE BETWEEN 1950-79 (1)	"EXPECTED" EMPLOYMENT CHANGE BETWEEN 1950-79 (2)	DIFFERENCE COLUMN (1) MINUS COLUMN (2) (3)	RATIO OF ACTUAL TO "EXPECTED" (4)
	(THOUSANDS OF PERSONS)			
GOODS SECTOR	695	3,003	-2,308	0.23
AGRICULTURE	-535	1,103	-1,638	
PRIMARY INDUSTRIES(a)	76	213	-137	0.36
MANUFACTURING	822	1,353	-531	0.61
CONSTRUCTION	332	334	-2	0.99
SERVICE SECTOR	4,699	2,391	+2,308	1.97
TRSCU	431	508	-77	0.85
TRADE	1,116	748	+368	1.49
FIRE	411	155	+256	2.65
CBPS	2,276	720	+1,556	3.16
PADM	465	260	+205	1.79
TOTAL ECONOMY	5,394	5,394		1.00

SOURCE: DERIVED FROM DATA CONTAINED IN TABLES 1, 4 AND 7.

(a) LESS AGRICULTURE.

TRSCU : TRANSPORTATION, STORAGE, COMMUNICATIONS & UTILITIES.
TRADE : WHOLESALE & RETAIL TRADE.
FIRE : FINANCE, INSURANCE, REAL ESTATE.
CBPS : COMMUNITY, BUSINESS & PERSONAL SERVICES.
PADM : PUBLIC ADMINISTRATION.

Column 2 shows the "expected" changes in employment that would have occurred between 1950 and 1979 if all industries in both the goods-producing and service-producing sectors increased their levels of employment at the same

rate as that for the overall economy.* The difference between the actual and "expected" change in employment essentially provides a measure or an indication of the relative "gain" or "loss" in employment for an industry relative to the average for the total economy.

Employing the above technique, employment in the goods-producing sector would have increased by over 3 million jobs instead of the 0.7 million increase that actually occurred, i.e., a more than four-fold increase. In contrast, the "expected" increase in employment in the service sector of about 2.4 million was virtually half of the increase that actually took place.

In addition, the rankings of the industries in terms of job creation between the actual and "expected" changes in employment is also altered. For example, if the employment in each industry increased at the national rate, the leading industry in terms of job creation would have been manufacturing and not the community, business and personal

*Between 1950 and 1979, the overall level of employment in Canada increased by about 5.4 million jobs, representing a 108.4 percent increase. Hence, the "expected" change in employment for each industry is calculated by multiplying the industry's level of employment in the base year, i.e. 1950, by the percentage change in the overall level of employment from 1950 to 1979, i.e. 108.4 percent.

services industry. "Expected" employment in manufacturing would have increased by over 1.3 million jobs and would have accounted for about 25 percent of the total increase. In the second leading industry, agriculture, the "expected" employment increase of approximately 1.1 million would have accounted for another 20 percent of the total increase. Thus, over 45 percent of the "expected" increase in total employment would have come from these two goods-producing industries.

Column 3 of Table 10 shows the difference between actual and "expected" employment changes. The goods sector experienced a "shortfall" of more than 2.3 million jobs between 1950 and 1979 whereas the service sector had a "surplus" of over 2.3 million jobs. All industries in the goods-producing sector experienced "shortfalls" whereas only one industry, transportation, communications and utilities, in the service sector had a "shortfall".

Column 4 shows the ratio of actual to "expected" employment changes. For industries in which the rate of increase in employment was higher than the national average, the ratio of actual to "expected" employment change is greater than one. Similarly, for industries which experienced lower rates of increase in employment than the national average the ratio is less than one.

On the basis of this indicator, employment in the service sector increased at virtually twice the national average. Within this sector, the community, business and personal services industry had the highest ratio of actual to "expected" employment change with employment in this industry increasing by over three times the national average. Furthermore, employment in all the other service sector industries with the exception of transportation, communication and utilities, also increased at rates higher than the national average.

In contrast to the service sector, the ratio of actual to "expected" employment in the goods-producing sector was only 0.23 of the national average. Moreover, for all industries in this sector, the ratio of actual to "expected" employment was less than one, ranging from a low of 0.36 for non-agricultural primary industries to 0.99 for construction activities.

5. OUTPUT TRENDS IN THE CANADIAN ECONOMY, 1950-79

The output of the domestic economy, measured in terms of Gross Domestic Product (GDP) at factor cost in current dollars, increased from about $16.8 billion in 1950 to $239.6 billion in 1979 for a more than fourteen-fold increase. However, after adjusting for price increases, the

output of the economy measured in terms of the Real Domestic Product (RDP) and expressed in constant 1971 dollars increased from $29.7 billion in 1950 to $115.1 billion in 1979, representing a less than four-fold increase.

5.1 Aggregate Trends in GDP

Table 11 shows the distribution of Gross Domestic Product in current dollars between goods and services for the 1950-79 period. The continuing relative shift in the economy toward the service sector is reflected in this sector's increasing share of total output. GDP increased on

TABLE 11

DISTRIBUTION OF GROSS DOMESTIC PRODUCT(a) BY SECTOR
SELECTED YEARS 1950-79

(PERCENT)

	1950	1960	1970	1979
GOODS SECTOR	51.7	42.8	37.9	37.5
AGRICULTURE	10.1	4.9	3.3	3.5
"INDUSTRY"	41.6	37.9	34.6	34.0
SERVICE SECTOR	48.3	57.2	62.1	62.5
TOTAL ECONOMY	100.0	100.0	100.0	100.0

SOURCE: BASED ON DATA FROM STATISTICS CANADA, NATIONAL INCOME AND EXPENDITURE ACCOUNTS, ANNUAL, CAT. NO. 13-201.

(a) CURRENT DOLLARS.

average by 10 percent in the service sector. The corresponding figures for "Industry" and agriculture are about 8 and 5 percent. As a result of the higher growth in the output of the service sector compared to the growth of output in the goods sector, the service sector's share of total output has increased from 48.3 percent in 1950 to 62.5 percent in 1979. Within the goods sector, both agriculture and "Industry" experienced declining shares in total output.

Thus, a cursory examination of the changes in the distribution of output between goods and services indicates that the growth of output, in current dollars, between these two sectors parallels similar trends in the distribution of employment between goods and services.

5.2 Aggregate Trends in RDP

A different picture emerges when we examine shifts in the distribution of output when the effects of price changes are excluded. Table 12 shows the changing composition of output, measured in terms of the real domestic product in 1971 dollars, between goods and services.

In contrast to the service sector's increasing share of total output in current dollars, it is evident that the distribution of constant dollar output, i.e. real output,

TABLE 12

DISTRIBUTION OF REAL DOMESTIC PRODUCT(a) BY SECTOR
SELECTED YEARS 1950-79

(PERCENT)

	1950	1960	1970	1979
GOODS SECTOR	38.4	37.8	37.3	35.0
AGRICULTURE	5.9	4.6	3.2	2.6
"INDUSTRY"	32.5	33.2	34.1	32.4
SERVICE SECTOR	61.6	62.2	62.7	65.0
TOTAL ECONOMY	100.0	100.0	100.0	100.0

SOURCE: BASED ON DATA FROM STATISTICS CANADA, REAL DOMESTIC PRODUCT BY INDUSTRY, ANNUAL, CAT. NO. 61-213.

(a) IN 1971 DOLLARS.

between goods and services has remained to all intents and purposes remarkably stable, particularly during the 1950s and 1960s. During these two decades, the service sector accounted for about 62 percent of real output and the goods sector about 38 percent. However, during the 1970s, the service sector's share of real output increased to 65 percent, with goods decreasing to 35 percent.

Within the goods sector, agriculture's share of total output has declined in each of the last three decades, going from about 6 percent in 1950 to 2.6 percent by the end of the 1970s. In contrast, the "Industry" sector actually increased its share of real output from 32.5 to over 34 percent during the 1950s and 1960s. However, by 1979,

"Industry's" share of total output had dropped back to the level prevailing in 1950.

5.3 RDP Trends in the "Industry" and Service Sectors

Within the "Industry" sector, manufacturing industries, which accounts for about 22 percent of the total real output, continues to be the dominant sector of the Canadian economy at least in terms of output. Construction activities account for between 6 and 7 percent of total output with non-agricultural primary industries accounting for about 4 percent. As can be seen from Table 13, these output shares have remained more or less the same over the last thirty years.

TABLE 13

"INDUSTRY" SECTOR'S SHARE OF REAL DOMESTIC PRODUCT(a)
SELECTED YEARS 1950-79

(PERCENT)

	1950	1960	1970	1979
MANUFACTURING	22.0	21.3	23.0	22.0
CONSTRUCTION	6.8	7.5	6.6	6.2
PRIMARY INDUSTRIES(b)	3.7	4.4	4.5	4.2
TOTAL "INDUSTRY" SECTOR	32.5	33.2	34.1	32.4

SOURCE: BASED ON DATA FROM STATISTICS CANADA, REAL DOMESTIC PRODUCT BY INDUSTRY, ANNUAL, CAT. NO. 61-213.

(a) IN 1971 DOLLARS.

(b) LESS AGRICULTURE.

The dominant industry within the service sector is the community, business and personal services group. This group accounts for about one-third of the service sector's output and about one-fifth of the total output of the economy. Three industries -- finance, insurance and real estate; wholesale and retail trade; and transportation, communication and other utilities -- each currently account for between 12 and 13 percent of total output with the remaining service industry, public administration, accounting for about 7 percent.

Over the 1950-79 period, as shown in Table 14, the main movements have been between the transportation and

TABLE 14

SERVICE SECTOR'S SHARE OF REAL DOMESTIC PRODUCT(a)
SELECTED YEARS 1950-79

(PERCENT)

	1950	1960	1970	1979
TRSCU	9.4	10.2	11.8	13.5
TRADE	12.1	12.0	11.8	12.1
FIRE	12.4	12.4	11.7	13.1
CBPS	19.2	18.1	19.9	19.4
PADM	8.5	9.5	7.5	6.9
TOTAL SERVICES	61.6	62.2	62.7	65.0

SOURCE: BASED ON DATA FROM STATISTICS CANADA, REAL DOMESTIC PRODUCT BY INDUSTRY, ANNUAL, CAT. NO. 61-213.

(a) IN 1971 DOLLARS.

TRSCU : TRANSPORTATION, STORAGE, COMMUNICATIONS & UTILITIES.
TRADE : WHOLESALE & RETAIL TRADE.
FIRE : FINANCE, INSURANCE, REAL ESTATE.
CBPS : COMMUNITY, BUSINESS & PERSONAL SERVICES.
PADM : PUBLIC ADMINISTRATION.

communication group and public administration. In the former group, the share of total output has steadily increased from less than 10 percent in 1950 to over 13 percent by the end of the 1970s. On the other hand, public administration's share of total output has declined from about 10 percent in the 1960s to less than 7 percent today. The sector shares of the other three industry groupings in the service sector have remained virtually the same over this time period.

5.4 Rates of Growth in Real Output

Table 15 shows the average annual rates of growth in real output for goods and services for each of the last

TABLE 15

AVERAGE ANNUAL RATES OF GROWTH IN REAL OUTPUT BY SECTOR
SELECTED PERIODS 1950-79

(PERCENT)

	AGRICULTURE (A)	"INDUSTRY" (I)	GOODS (G)	SERVICES (S)	DIFFERENTIALS* (S-G)	DIFFERENTIALS* (S-I)
1950-60	0.5	5.1	4.4	4.6	0.2	-0.5
1960-70	1.8	6.2	5.7	5.6	-0.1	-0.6
1970-79	2.3	3.2	3.1	4.9	1.8	1.7
1950-79	1.5	4.9	4.4	5.0	0.6	-0.1

SOURCE: BASED ON DATA FROM STATISTICS CANADA, REAL DOMESTIC PRODUCT BY INDUSTRY, ANNUAL, CAT. NO. 61-213.

* DIFFERENCE BETWEEN THE RATES OF GROWTH OF REAL OUTPUT IN: (a) GOODS AND SERVICES; AND (b) "INDUSTRY" AND SERVICES.

three decades.* The trend rate of growth from 1950 to 1979 averaged 4.4 percent in the goods sector with agricultural output growing at 1.5 percent and "Industry" output at 4.9 percent. During this same period, the trend rate of growth in real output averaged 5 percent in the service sector.

Compared to the 1950s and 1960s, the growth in real output in both the goods and service sectors of the economy has slowed during the last decade. The slowdown is particularly noticeable in the goods sector where real output growth averaged only 3.1 percent during the 1970s. This in turn reflects trends in the "Industry" sector as the growth rate in real output in agriculture was actually higher during the 1970s compared to the 1950s and 1960s. In the "Industry" sector, real output growth averaged over 6 percent during the 1960s but only 3.1 percent during the 1970s. Although real output growth in the service sector also decreased in the 1970s, the slowdown was not as marked as in the goods sector. In fact, output in services during the 1970s increased at virtually the same rate as the long-term trend rate of 5.0 percent.

* Although an examination of output trends conceals the year-to-year fluctuations in the growth of output due to the vagaries of the business cycle, these trends nevertheless give an overall indication of the changing composition of output among the different sectors of the economy.

The last two columns of Table 15 show the differentials in the rates of growth in real output between all goods and services and between the "Industry" component of the goods sector and services. There was little difference in the growth of real output between goods and services during the 1950s and 1960s. However, in the 1970s the rate of growth of real output in the service sector was about 1.8 percentage points higher than in the goods sector.

Similarly, an examination of the differential in the growth rates of real output between services and the "Industry" sector also reveals a higher growth rate in services during the 1970s. This is in contrast to the situation prevailing during the 1950s and 1960s, when the "Industry" sector had an annual growth rate of about half a percentage point higher than the service sector.

What emerges from an examination of these trends is that, during the 1950s and 1960s, as a result of the virtually identical rates of growth of real output between goods and services, the service sector's share of total output remained more or less constant. However, since the onset of the 1970s, there has been a noticeable shift in output from the goods sector and, in particular, from the "Industry" sector towards services. Whether this represents a structural shift in the economy or reflects the perverse

conditions present in the economy during the 1970s remains to be seen.

These trends in the distribution of real output between the goods and service sectors have also been noted in other studies. For example, Fuchs in examining the changing structure of the U.S. economy has observed that apart from the decline of agriculture there has been very little shift in output from "Industry" to services during the last 50 years when output is measured in constant dollars.[5] Similarly, the Economic Council also observed in its Fifth Annual Review and more recently in its Fifteenth Annual Review that the distribution of real output between the goods and service sectors has remained almost the same over the post-war period.[6]

Nevertheless, these findings, at least in the North American context, are not universally accepted and remain as the source of confusion. For example, in their article on

[5] Victor R. Fuchs, "The Service Industries and U.S. Economic Growth Since World War II", Economic Growth or Stagnation: The Future of the U.S. Economy, edited by Jules Backman, 1978, page 140.

[6] Economic Council of Canada, "The Challenge of Growth and Change", Fifth Annual Review, September 1968. Also: "A Time for Reason", Fifteenth Annual Review, 1978.

the service sector, Ginzberg and Vojta state that "the gross national product figures in both current and constant dollars exhibit the same massive shift from goods to services".[7]

5.5 The Measurement of Real Output

Although the distribution of real output between goods and services has remained more or less the same since 1950, in part this reflects the conceptual and statistical problems involved in measuring the output of the different sectors of the economy. As an economy produces literally thousands of different commodities both "tangible", i.e. goods, and "intangible", i.e. services, it is clearly impossible to measure the output of the whole economy in "quantity" terms by summing up these different commodities for obvious reasons.

However, by using prevailing market prices as the common denominator which links together the different goods and services produced, it is possible to measure the total "value" of these diverse commodities. Thus, for example,

[7] Eli Ginzberg and George J. Vojta, "The Service Sector of the U.S. Economy", Scientific American, March 1981, Volume 244, Number 3.

the gross domestic product (GDP) measures the total "value" of goods and services produced by the different industries in an economy during any given year.

In order to separate out changes in the "volume" of production and changes in prices, it is necessary to decompose the "value" of the output produced into its price and quantity components. In principle the real domestic product (RDP), which is a measure of the real output of the domestic economy adjusted for price changes, is derived by employing the so-called "double deflation" method.[8] Essentially, this procedure involves deflating the value of each industry's gross output and subtracting from it the deflated value of each industry's intermediate inputs. This results in constant dollar net output or value added measures for the industry. A summation of the net outputs of the various industries yields the real output, i.e. RDP, for the whole economy.

Unfortunately, because of data limitations, there are only a few sectors of the economy in which it is possible to derive net output measures based on the "double deflation"

[8] Statistics Canada, National Income and Expenditure Accounts, Volume 3, Catalogue No. 13-549E Occasional, page 266.

method. In most cases, gross output measures are used as proxies for net output. However, the quality of these measures is often judged to be quite high and, as such, accurately reflect trends in net output.

In a recent study on productivity growth in Canada, Sims and Stanton provide a qualitative assessment of the output measures for both the goods and service sectors of the economy.[9] The authors estimate that, for about 80 percent of the goods sector, the constant dollar output measures are of good quality although within this sector only the output of agriculture and manufacturing industries are based on "net output" or "value added" measures.

In the service sector, on the other hand, the measures of real output are considered to be of good quality for only about 25 percent of the output of this sector. In addition, "value added" measures of output are available for only a portion of one service industry, i.e. transportation and communications. However, if public administration, education and other such non-commercial services are

[9] Harvey Sims and Jim Stanton, Recent Changes in Patterns of Productivity Growth in Canada, (Long Range and Structural Analysis Division, Department of Finance) April 1980, pages 15-19.

excluded, then about 50 percent of the constant dollar output measures are judged to be of good quality.

Thus, it is apparent that the measurement of real output in the service sector presents a greater degree of challenge than is the case in the goods sector. An important reason for this situation is the fact that the output measures of the non-commercial service sector and parts of the commercial service sector are based largely on "input" measures.

As the services of governments and other non-commercial institutions are provided without charge, the "value" of the output of such services cannot be measured directly. The conventional way of getting around this problem is to define the output of non-commercial institutions as consisting of the services rendered by the employees of the organization. In this way, the value of the output of these institutions is measured "at cost" through the direct payments made to employees in the form of wages, salaries, allowances, etc.

Similarly, the wage and salary bill, when expressed in constant dollar terms is used to denote the real output of non-commercial institutions. The implication of this procedure is that changes in the real output of these institutions simply reflects changes in the total number of

employees.[10] Clearly, the use of "input" measures as a proxy for the output of an industry is not a satisfactory state of affairs. If proper output measures were available, the service sector's share of the total output of the economy would undoubtedly increase. However, even with better real output measures, it is quite possible that the relative distribution of the output between the goods and service sectors would remain more or less the same. This would, of course, be the case if the real output of both the sectors increased at about the same rate of growth.

6. REASONS FOR THE GROWTH OF THE SERVICE SECTOR

Economists have focussed their attention basically on an examination of the demand for services relative to goods and also on the productivity performance of the service sector as possible explanations for the faster growth of employment that has taken place in the service sector relative to the goods sector.[11] The following are the main

[10] Statistics Canada, National Income and Expenditure Accounts, Volume 3, Catalogue No. 13-549E Occasional, page 274.

[11] See for example: Victor R. Fuchs, The Service Economy, NBER, New York, 1968; David A. Worton, "The Service Industries in Canada, 1946-66" in Production and Productivity in the Service Industries, Victor R. Fuchs, ed., NBER, New York, 1969; and, Economic Council of Canada, A Time for Reason, Fifteenth Annual Review, 1978, Chapter 5.

hypotheses that have generally been explored and tested as possible explanations for the dramatic shift in employment to the service sector:

1) a more rapid growth of final demand for services;
2) a relative increase in intermediate demand for services; and,
3) a relatively slow increase in output per man in services.

6.1 Final Demand for Services

The first hypothesis seeks to explain the increase in the service sector's share of employment in terms of the differentials in income elasticities between goods and services. The basic proposition here is that, as real incomes increase, particularly in the case of the advanced industrial nations, the demand for services increases at a faster rate than the demand for goods. Thus, a higher income elasticity of demand for services relative to goods will lead to an increase in the service sector's share of total output.

Although it is recognized that there are difficulties in measuring the income elasticity of demand for service

output relative to goods output,* nevertheless, the attempts that have been made at quantifying such measures generally indicate that the income elasticity hypothesis accounts for only a small part of the growth in service sector employment.

For the U.S. economy during the period 1929 to 1965, Fuchs observed that there was very little change in the service sector's share of output, measured either in current or constant dollars. The share in constant dollars was almost exactly the same in 1965 (48.3 percent) as in 1929 (48.4 percent) while the share in current dollars increased somewhat from 46.9 percent to 50.5 percent.

In addition, an examination of the distribution of final demand expenditures between goods and services during the same period revealed that the share of services increased slightly from 33.2 to 35.3 percent in constant

* The demand for a commodity is not only a function of income but is also affected by numerous factors including changes in the prices of other commodities, in tastes, in technology, in population, in income distribution, etc. Thus, attempts at isolating the response of a commodity to a change in income clearly presents difficulties. Moreover, as indicated earlier, the measurement of real output, particularly of the service sector, is subject to varying degrees of error.

dollars and from 35.4 to 38.5 percent in current dollars.* These trends in the service sector's share of output were in sharp contrast to the share of employment which increased from 40 percent in 1929 to 55 percent in 1965.[12]

In explaining the relative stability of the service sector's share of output in both current and constant dollar terms, Fuchs argued that this, in effect, implied that the income elasticity of demand for services was marginally above that for the rest of the economy.** This was contrary to the usual proposition that the income elasticity of

* The "output" of the service sector based on the industrial classification is different both in concept and in definition from the "service expenditure" category in the final demand classification.

[12] Victor R. Fuchs, The Service Economy, NBER, New York, 1968, pages 37-39.

** Fuchs corroborated his arguments by estimating income elasticities for total retail sales of goods to be 0.97, for sales of personal services 1.12 and for selected expenditures of state and local governments 1.07. These results indicate that the income elasticity of demand for services is only marginally higher than that for goods. In addition, using consumer expenditure data for 1960-61, Fuchs estimated that the expenditure elasticity of services was 1.12 compared to 1.05 for goods excluding food and tobacco. [See Fuchs, op. cit., pages 41 to 44 for the methodology and related discussions concerning time periods, data limitations and problems, etc.]

demand for services has generally been considered to be much higher than that for goods.

Worton, in his study of the growth of the service industries in Canada during the period 1946-66, observed that the output of the service sector when measured in current dollars increased at a faster rate than the output of the goods sector thereby leading to an increase in the service sector's share of output from about 49 percent in 1946 to about 54 percent in 1966. However, when output was expressed in constant dollar terms, the situation was reversed with goods output increasing faster than service output. As a result, the service sector's share of real output declined from about 48 percent in 1946 to less than 44 percent in 1966.[13]

If the demand for services was more elastic than that for goods, real output in the service sector would have increased at a faster rate relative to the goods sector in response to increases in real income. As this had not happened, Worton rejected the elasticity hypothesis and also concluded that the "sharply differing rates of employment

[13] David A. Worton, "The Service Industries in Canada, 1946-66" in Production and Productivity in the Service Industries, Victor R. Fuchs, ed., NBER, New York, 1969, table 6, page 361.

growth between the goods and service sectors in Canada during the postwar years cannot be explained by differences in the rates of growth of sector outputs or final demand for their products".[14]

In its fifteenth annual review, the Economic Council of Canada estimated both income and price elasticities for the period 1947 to 1976 for various categories of goods and services. Although at the aggregate level the service sector's share of real output and also of final demand expenditures have remained more or less the same during this period, the results nevertheless clearly indicate that the income elasticity for most services is substantially greater than that for goods. The response of the quantity demanded of goods and services to changes in prices, on the other hand, varies both within and between the two categories. Table 16 shows the income and price elasticity estimates for selected personal expenditure catagories on consumer goods and services.

With the exception of laundry and dry-cleaning

[14] David A. Worton, "The Service Industries in Canada, 1946-66" in Production and Productivity in the Service Industries, Victor R. Fuchs, ed., NBER, New York, 1969, page 366.

services,* it is evident that the income elasticities of services are well in excess of one indicating that as the level of income rises there is a more than proportionate increase in the demand for these services. In contrast, the

TABLE 16

INCOME AND PRICE ELASTICITIES
FOR SELECTED GOODS AND SERVICES, 1947-76

		INCOME ELASTICITY	PRICE ELASTICITY
SERVICES:	RECREATIONAL SERVICES	2.1	0.9
	RESTAURANT & HOTEL SERVICES	1.5	1.5
	COMMUNICATIONS	1.5	1.5
	LAUNDRY & DRY CLEANING	-0.1	0.1
	PURCHASED TRANSPORTATION SERVICES	3.0	0.4
GOODS:	DURABLE GOODS	1.1	1.9
	SEMI-DURABLE GOODS	0.6	1.2
	NON-DURABLE GOODS	0.6	0.9

SOURCE: ECONOMIC COUNCIL OF CANADA, "A TIME FOR REASON", FIFTEENTH ANNUAL REVIEW, TABLE 5-2, PAGE 75.

the demand for goods in response to increases in income is income elastic only for durable goods. In the case of semi-durable and non-durable goods, on the other hand, as the level of real income rises there is a less than proportionate increase in the demand for these goods.

* "The demand for dry-cleaning and laundry services has declined for reasons that appear to be associated with income but in fact reflect changes in life styles and the introduction of easy care fabrics and automatic washers and dryers". Economic Council, Fifteenth Annual Review, page 74.

An examination of the price elasticities of demand for services shows that the demand for restaurant and hotel services and for communication services are much more responsive to price changes than is the case for the other services. This implies that as prices change for these two service categories the quantity demanded changes by a larger percentage. Similarly, the demand for durable and non-durable goods is also price elastic whereas the demand for non-durable goods is price inelastic, implying that there is a less than proportionate change in quantity demanded to a change in prices.

Although the evidence indicates that the income elasticity for most services is substantially greater than that for goods, estimates by the Economic Council show that, when account is taken of changes in relative prices, a 10 percent increase in real income leads to an increase in the demand for services by about 10.2 percent and for goods by 9.7 percent.[15] This implies an overall expenditure elasticity of demand for services of 1.02 and for goods of 0.97. With the expenditure elasticity for services being marginally above that for goods as the level of income

[15] Economic Council of Canada, Fifteenth Annual Review, page 74.

increases, the demand for services increases at about the same rate as that for goods. This factor would account for the relative stability in the distribution of real output and of final demand expenditures between goods and services.

One cannot really compare these admittedly tentative findings in income elasticities between Canada and the U.S., both because of the different time periods considered and also because of the different estimation techniques. Nevertheless, it is interesting to note that in the case of Canada the income elasticity of demand for services is in general quite high. Moreover, the differential in income elasticities between goods and services is also substantial.

Clearly, a higher income elasticity of demand for services relative to goods should result in an increase in the service sector's share of real output as the economy expands. That this has not happened in Canada is not a refutation of the income elasticity hypothesis per se but, rather, reflects the substantial price increases that have occurred in this sector relative to the goods sector. In contrast, it would appear that in the U.S., at least for the period 1929 to 1965, the increases in prices in the service sector were more or less in line with those of the goods sector.

6.2 Intermediate Demand for Services

The second possible explanation for the rapid growth of employment that has taken place in the service sector centres around the proposition concerning increases in specialization and in the division of labour among the major sectors of the economy as a result of the process of economic growth and development. The argument here is that, as manufacturing and other goods producing industries become more and more specialized in their respective functions, this process inevitably leads to an increase in the demand for such services as legal, financial, advertising, etc., and hence for a concomitant increase in the growth of employment in the service sector.

Fuchs, in comparing the input-output tables for the U.S. economy for 1947 and 1958 estimated that only about 10 percent of the service sector's growth in employment is accounted for by this hypothesis.[16] Similarly, the Economic Council, although it does not provide the necessary quantitative evidence, also arrives at the same conclusion for the Canadian economy.[17] Thus, it would appear that,

[16] Victor R. Fuchs, The Service Economy, NBER, New York, 1968, pages 39-41.

[17] Economic Council of Canada, Fifteenth Annual Review, page 74.

although there has been some increase in the demand for intermediate services, this factor by itself, however, only explains a small proportion of the phenomenal growth in employment in the service sector.

6.3 Productivity Differentials Between Goods and Services

The third explanation for the growth of employment in the service sector has to do with the hypothesis concerning the relative productivity performances between the goods and services sectors. The basic argument here is that, if productivity expressed in terms of either output per person or output per man-hour increased at a slower rate in the service sector compared to other sectors, this would imply that, for any given increase in output, the service sector would require a larger amount of labour relative to, say, the manufacturing sector.

An examination of the long-term trends in labour productivity between goods and services clearly indicates that the rate of growth of productivity is indeed much higher in the goods sector than is the case in the service sector. For example, output per person in Canada has increased by about 2.2 percent annually during the 1950-79 period. However, the annual growth in output per person was approximately 4.3 percent in agriculture, 3.1 percent in the

"Industry" sector and only about 1.0 percent in the service sector during this period. Similarly, for the U.S. economy, output per person has increased much more slowly in the service sector than in other sectors.*

These differences in productivity trends between goods and services are the major reason for the substantial growth in employment that has taken place in the service sector. Employment trends are obviously affected by trends in output and productivity. Moreover, it is possible to assess the implication on the level of employment by examining the interrelationships between these variables.

7. THE RELATIONSHIP BETWEEN OUTPUT, PRODUCTIVITY AND EMPLOYMENT

The rate of growth of real output for an economy or a sector within an economy is equal to the sum of the rate of growth of productivity and the rate of growth of employment.

* For example, the annual growth in output per person in the United States during 1961-76 was about 2.4 percent for the non-agricultural goods sector and about 1.2 percent for the service sector. [See Victor R. Fuchs, "The Service Industries and U.S. Economic Growth Since World War II" in Economic Growth or Stagnation: The Future of the U.S. Economy, Jules Backman, ed., Bobbs-Merrill Company, Inc., 1978. Table 6.4, page 143.]

As output is by definition the product of employment and productivity, the above relationship can readily be seen by considering the following identity:

$$(1)\quad Y \equiv LP$$

where Y = real output; L = number of persons employed; and $P = \frac{Y}{L}$ = productivity, i.e. output per employed person.

The total differential of equation (1) is given by:

$$(2)\quad dY = PdL + LdP$$

Dividing equation (2) by equation (1), i.e. Y = LP yields:

$$(3)\quad \frac{dY}{Y} = \frac{dL}{L} + \frac{dP}{P}$$

where $\frac{dY}{Y}$, $\frac{dL}{L}$ and $\frac{dP}{P}$ represent the rates of growth of output, employment and productivity, respectively.

Using the above relationship it is possible, by examining the trends in output and productivity, to delineate those sectors of an economy which are expanding in terms of employment and those which are either declining or are stagnant. Basically, if the growth in output increases at a faster rate than the growth in productivity, i.e. if $\frac{dY}{Y} > \frac{dP}{P}$, employment will increase in the sector. On the

other hand, if the growth in output increases at a slower rate than the growth in productivity, i.e. if $\frac{dY}{Y} < \frac{dP}{P}$, employment will decline in the sector. Finally, if the growth in output matches the growth in productivity, employment in the sector will remain unchanged.

Although employment trends are affected by trends in output and productivity, the growth in output of an industry, on the other hand, is determined by both supply and demand conditions. On the supply side, some of the factors which influence the rate of growth in output include, for example, the rate of capital investment, the relative prices of the different factors of production, innovation and technological change, etc. On the demand side, the growth of output is influenced by, among other things, the growth in population, the growth in incomes, the distribution of incomes, etc.

The income elasticity of demand plays an important role in determining the relative rates of growth in output of the different sectors of the economy. As indicated earlier, for those industries in which the income elasticity of demand is large and above one, the demand for their products will increase as incomes rise at a faster rate than the average rate of growth for the total economy. Similarly, for those industries which face income elasticities of demand that are

less than one, demand will increase as income rises but at a slower rate than the average rate for the economy.

Thus, over time, the changes that take place in the demand and, hence, the output of an industry is governed to a large extent by the income elasticity of demand. Provided the income elasticity is positive, the output of an industry will increase in absolute terms in response to increases in income. However, as indicated earlier, increases in output do not necessarily imply increases in employment as the latter depends on the interaction between output and productivity growth.

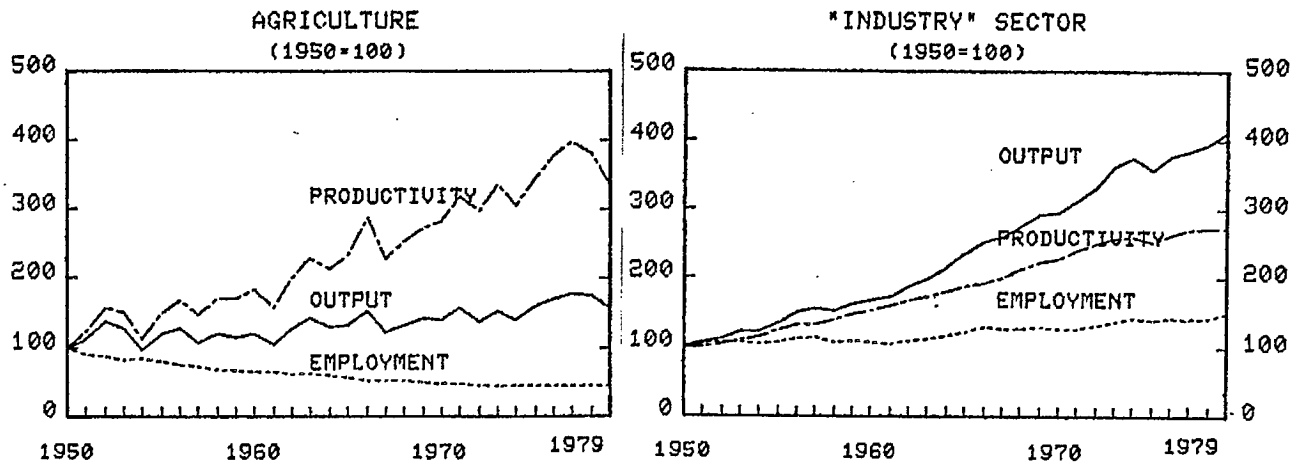
Chart 1 shows the growth in output, employment and productivity that has taken place over the last thirty years for the following three sectors of the economy: agriculture, "Industry" and the commercial services sector.

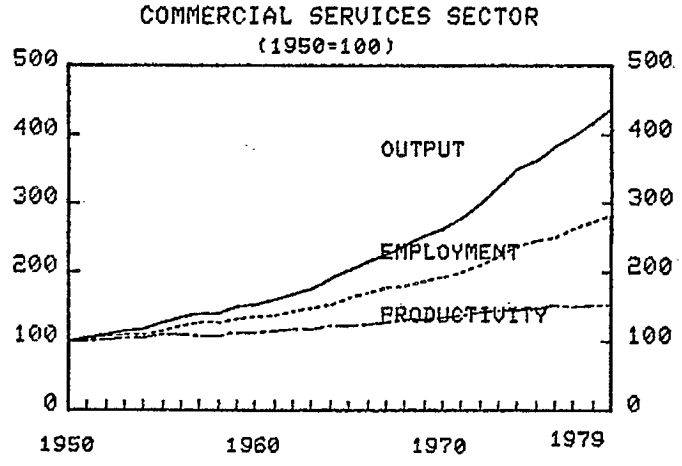
As is readily apparent in the case of agriculture, the sharp increases achieved in productivity were not matched by similar increases in output because of the low income elasticity of demand for agricultural products. As a result, despite increases in the level of output, employment has declined substantially in this sector.

In the "Industry" sector, on the other hand, the demand for the output of the sector expanded at a somewhat faster

CHART 1

OUTPUT, PRODUCTIVITY AND EMPLOYMENT* TRENDS BY SECTOR, 1950-79





* Output: Real Domestic Product; Productivity: Output Per Person Employed; Employment: Persons Employed.

rate than the growth in productivity. Hence, although employment in the "Industry" sector increased, the increases were very moderate. In contrast, the growth of output in the service sector has expanded at an appreciably faster rate than the growth in productivity thereby leading to substantial increases in employment.

8. PRODUCTIVITY TRENDS IN GOODS AND SERVICES*

8.1 Overall Trends

As indicated earlier the rate of growth of labour productivity in the service sector has been much slower than the corresponding rate of growth in the goods sector. Part of this differential in productivity growth can be attributed to the conceptual and statistical problems discussed in section 5.5 regarding the measurement of the output of the different sectors of the economy. Moreover, because labour input measures are used as proxies for the output of non-commercial industries, productivity growth in these industries is in effect assumed to be zero.

* The discussion on productivity trends in this section are confined only to the commercial industries of the economy. These industries account for approximately four-fifths of total output. Note that the sector definitions, particularly of services, used here are not comparable to earlier designations.

Obviously, the inclusion of non-commercial industries, which are part of the service sector, will distort the productivity comparisons between goods and services in favour of the goods sector. In addition, because a larger proportion of the people who work in the service sector relative to the goods sector are employed on a part-time basis, productivity measures expressed in terms of output per person also bias the comparisons between goods and services.

When account is taken of some of these factors, the differential in the rates of growth of productivity between goods and services is reduced. Thus, for example, for the 1950-79 period, the long-term average annual increase in output per man-hour in the commercial service sector was about 2.3 percent. This corresponds with a 4.2 percent annual increase in output per man-hour in the "Industry" sector and a 4.7 percent annual increase in the agricultural sector. Nevertheless, despite these adjustments, it is apparent that the rate of increase in productivity has been higher in the goods sector compared to that of the service sector.

Aside from measurement problems, several reasons have been advanced as possible explanations for the slower growth in productivity in the service sector. Some of these

include a slower increase in the amount of capital employed per person, a slower increase in the quality of the labour employed in the sector, a slower rate of technological change and innovation, and the general inability to capture economies of scale as a result of the preponderance of small-sized enterprises.

8.2 Aggregate Productivity and the Shift to Services

One implication of a slower rate of growth of productivity in service industries relative to goods producing industries that has received a fair amount of attention recently is that the overall rate of productivity growth for the economy will be curtailed as the focus of economic activity continues to shift towards the service sector. In essence, the contention here is that, as workers move from a high productivity growth sector such as goods to a low productivity growth sector such as services, the overall rate of productivity growth will inevitably be reduced.

Recent studies examining this issue, however, indicate that the impact of the shift of employment to the service sector on overall productivity growth has in fact been negligible. Fuchs, for example, has estimated that the growth in aggregate productivity was reduced by

approximately one-tenth of one percent as a result of the shift of employment to the service sector that took place in the U.S. economy between 1948 and 1978.[18] Similarly, Sims and Stanton, in examining the recent changes in the patterns of productivity growth in Canada also conclude that "Canada's experience between the mid-1950s and the early 1970s indicates that the growth of the share of employment accounted for by the service sector does not automatically mean that aggregate productivity growth will decline".[19]

Although the authors of the above study did not calculate the impact on overall productivity growth of employment shifts from goods to services, estimates of such movements support their basic conclusions that the impact was negligible. For example, the average annual rate of growth in output per man-hour in the commercial economy was 3.8 percent over the 1950-79 period. When the shift effect of employment from goods to services is eliminated, the average annual growth in productivity increases to 3.9

[18] Victor R. Fuchs, "Economic Growth and the Rise of Service Employment", National Bureau of Economic Research, Working Paper No. 486, page 27.

[19] Harvey Sims and Jim Stanton, "Recent Changes in Patterns of Productivity Growth in Canada", Department of Finance, April 1980, page 44.

percent. Thus, the reduction in the growth rate of aggregate productivity, because of the shift in employment, is only one-tenth of one percent.*

If the comparison is made only between the "Industry" sector and the commercial services sector, the employment shifts from the former to the latter sector also reduces the growth in aggregate productivity by one-tenth of one percent. For example, the observed average annual increase in the aggregate productivity index of these two sectors of the economy was 3.2 percent over the 1950-79 period. Without changes in the distribution of employment between these sectors, the average annual increase in productivity would have been about 3.3 percent.

8.3 Productivity Levels in Commercial Goods and Service Producing Industries

Aside from examining the different rates of productivity growth in the goods and services sectors of the economy, it is interesting to compare the levels of productivity in these sectors. Table 17 shows the level of output per man-hour in constant 1971 dollars for the goods

* The methodology used to calculate the aggregate level of productivity, assuming no changes in the distribution of employment, is contained in the Appendix.

and services sectors of the commercial economy.

TABLE 17

PRODUCTIVITY LEVELS(a) IN THE COMMERCIAL ECONOMY BY SECTOR
SELECTED YEARS 1950-79

(CONSTANT 1971 DOLLARS)

	1950	1960	1970	1979
GOODS	1.79	3.17	5.33	6.85
AGRICULTURE	0.64	1.14	1.91	2.51
"INDUSTRY"	2.55	4.10	6.28	7.86
COMMERCIAL SERVICES	3.56	4.32	5.60	6.85
COMMERCIAL ECONOMY	2.38	3.64	5.42	6.85

SOURCE: BASED ON DATA FROM STATISTICS CANADA, AGGREGATE PRODUCTIVITY MEASURES, ANNUAL, CAT. NO. 14-201.

(a) OUTPUT PER MAN-HOUR.

As is readily apparent, the level of productivity has increased in both sectors over the 1950-79 period. However, what is striking about Table 17 is that the level of productivity was actually higher in the commercial service sector relative to that in the goods sector during this period although the gap was eliminated by the end of the 1970s. This is contrary to the widely held view that productivity is much lower in the service sector relative to goods.

Within the goods producing sector, the level of productivity increased in both the agricultural and the "Industry" sectors. Output per man-hour almost quadrupled

in agriculture and virtually tripled in the "Industry" sector. On the other hand, the level of productivity in the service sector, whilst increasing, only doubled during this period.

Table 18 shows the ratio of the sector productivity levels relative to the level of total productivity for selected years for the 1950-79 period. This ratio takes into account both the growth and level effects of the productivity performance of the different sectors.

TABLE 18

PRODUCTIVITY RELATIVES(a) BY SECTOR
SELECTED YEARS 1950-79

	1950	1960	1970	1979
GOODS	0.75	0.87	0.98	1.00
AGRICULTURE	0.27	0.31	0.35	0.37
"INDUSTRY"	1.07	1.13	1.16	1.15
COMMERCIAL SERVICES	1.50	1.19	1.03	1.00

SOURCE: BASED ON DATA FROM STATISTICS CANADA, AGGREGATE PRODUCTIVITY MEASURES, ANNUAL, CAT. NO. 14-201.

(a) RATIO OF SECTOR PRODUCTIVITY TO TOTAL PRODUCTIVITY.

An examination of these productivity relatives reveals that the ratio of the productivity in the service sector relative to the national average for the commercial economy has been declining over the last three decades. For

example, in 1950 the level of productivity in the service sector was 50 percent higher than the national average. However, by the end of the 1970s, the productivity level of this sector was the same as that of the overall economy. On the other hand, output per man-hour in the goods sector was 25 percent less than the national average in 1950. By 1979, however, this gap had been closed and the level of productivity in the goods sector was also, coincidentally, the same as that of the service sector.

The productivity relatives of both agriculture and "Industry" within the goods-producing sector have increased over the 1950-79 period. In 1950, the level of productivity in agriculture was about a quarter of the national average. Although by the end of the 1970s this ratio had increased to about a third of the average level of productivity in the economy, it was still substantially below the national average. On the other hand, the level of productivity in the "Industry" sector has consistently been higher than the national average. This ratio, which increased in the 1950s and 1960s, has remained virtually constant during the 1970s. Currently, the level of productivity in "Industry" is about 15 percent higher than the national average.

The findings that emerge from the above examination of trends in the levels and the rates of growth of productivity

in the goods and service sectors of the commercial economy over the 1950-79 period are surprising. The substantial increase in employment that took place in the service sector relative to goods actually enhanced the average level of productivity in the economy. This is in sharp contrast to the popular view that the growth of the service sector in fact reduces the overall level of productivity. The reason that this has not happened is straightforward.

Although the rate of growth of productivity in the goods sector is appreciably higher than the corresponding rate for the service sector, the level of productivity has nevertheless been higher in the service sector. Thus, at least in an arithmatical sense, when account is taken of both the level and growth of productivity in goods and services, the impact on overall productivity of employment shifts from goods to services turns out to be negligible.

Interestingly, if productivity in the goods sector continues to grow at a higher rate relative to the service sector in the future, any shifts in employment towards the service sector will reduce the overall level of productivity in the economy. This would occur simply because the level of productivity between these two sectors is currently the same.

The level of productivity, of course, varies substantially among the different industries and sectors of an economy. Consequently, one has to be circumspect in any discussion concerning the impact on the overall level of productivity in an economy emanating from changes in the distribution of employment.

Table 19 shows the level of productivity for the different industries which make up the "Industry" sector and

TABLE 19

PRODUCTIVITY(a) LEVELS IN THE COMMERCIAL ECONOMY
BY INDUSTRY AND SECTOR
SELECTED YEARS 1950-79

(CONSTANT 1971 DOLLARS)

	1950	1960	1970	1979
MANUFACTURING	2.50	3.64	5.57	7.46
OTHER(b)	2.71	5.07	7.90	8.63
"INDUSTRY" SECTOR	2.55	4.10	6.28	7.86
TRCU	2.29	3.38	6.17	8.77
TRADE	2.40	2.80	3.68	4.62
FIRE	13.85	14.91	15.28	16.22
CBPS	3.94	4.14	4.45	5.01
COMMERCIAL SERVICES	3.56	4.32	5.60	6.85
COMMERCIAL ECONOMY	2.38	3.64	5.42	6.85

SOURCE: BASED ON UNPUBLISHED DATA FROM STATISTICS CANADA.

(a) OUTPUT PER MAN-HOUR.

(b) INCLUDES FORESTRY, FISHING & TRAPPING, MINING, CONSTRUCTION, ELECTRIC POWER & GAS DISTRIBUTION.

TRCU : TRANSPORTATION, COMMUNICATION AND OTHER UTILITIES.
TRADE : WHOLESALE & RETAIL TRADE.
FIRE : FINANCE, INSURANCE, REAL ESTATE.
CBPS : COMMERCIAL, BUSINESS AND PERSONAL SERVICES.

the commercial services sector of the Canadian economy. Within the "Industry" sector, the average level of output per man-hour in manufacturing industries increased from $2.50 in 1950 to about $7.50 in 1979 for an overall increase of about 200 percent. Similarly, the level of productivity in the other goods-producing industries excluding agriculture and manufacturing also increased by about 200 percent during this period.

The percentage change in the levels of productivity in commercial service industries, in contrast to the "Industry" sector have varied considerably. For example, output per man-hour in the transportation, communication and other utilities sector increased from about $2.30 in 1950 to over $8.75 in 1979 for an overall increase of about 280 percent. On the other hand, although the level productivity in the finance, insurance and real estate sector was the highest in the economy, the percentage increase in output per man-hour over the 1950-79 period amounted to a paltry 17 percent. In the remaining commercial service industries, productivity increased by about 90 percent in the trade sector and by about 27 percent in the commercial, business and personal services sector over the 1950-79 period.

The ratio of productivity levels in the "Industry" and commercial service sectors relative to the level of total

productivity in the commercial economy are presented in Table 20 for selected years for the 1950-79 period. In the "Industry" sector, the productivity levels of both manufacturing and other goods-producing industries excluding agriculture have been consistently higher than the national average. Moreover, the productivity relatives of these industries have also been increasing over time although there was a decline in this ratio for the other goods-producing industry group during the 1970s.

TABLE 20

PRODUCTIVITY RELATIVES(a) FOR THE "INDUSTRY" AND SERVICE SECTORS
SELECTED YEARS 1950-79

	1950	1960	1970	1979
MANUFACTURING	1.05	1.00	1.03	1.09
OTHER(b)	1.14	1.39	1.46	1.26
"INDUSTRY" SECTOR	1.07	1.13	1.16	1.15
TRCU	0.96	0.93	1.14	1.28
TRADE	1.01	0.77	0.68	0.67
FIRE	5.82	4.10	2.82	2.37
CBPS	1.66	1.14	0.82	0.73
COMMERCIAL SERVICES	1.50	1.19	1.03	1.00

SOURCE: BASED ON UNPUBLISHED DATA FROM STATISTICS CANADA.

(a) RATIO OF LEVEL OF PRODUCTIVITY BY SECTOR AND INDUSTRY TO THE LEVEL OF TOTAL PRODUCTIVITY IN THE COMMERCIAL ECONOMY.

(b) INCLUDES FORESTRY, FISHING & TRAPPING, MINING, CONSTRUCTION, ELECTRIC POWER & GAS DISTRIBUTION.

TRCU : TRANSPORTATION, COMMUNICATION AND OTHER UTILITIES.
TRADE : WHOLESALE & RETAIL TRADE.
FIRE : FINANCE, INSURANCE, REAL ESTATE.
CBPS : COMMERCIAL, BUSINESS AND PERSONAL SERVICES.

In the commercial service sector, on the other hand, transportation communication and other utilities was the only group in which the average level of productivity relative to the total for the commercial economy increased over the 1959-79 period. The productivity relatives for trade and the commercial, business and personal services group have been steadily declining since 1950 and, currently, the productivity levels of both groups are substantially below the national average. Consequently, employment increases in these two areas of the service sector will in future constrain the overall average level of productivity in the economy.

9. CONCLUSIONS

Total employment in the Canadian economy more than doubled over the last thirty years, increasing from about 5 million employed persons in 1950 to about 10.4 million by 1979. During this period, employment in the service sector more than tripled, rising from about 2.2 million in 1950 to nearly 7 million by 1979. Within the goods-producing sector, there were two opposing trends. Employment in agriculture decreased from over 1 million in 1950 to less than 0.5 million by 1979, whereas employment in the "Industry" sector increased by over 1.2 million jobs to

about 3 million by 1979.

As a result of these trends, the share of employment between the goods-producing and services sector has changed substantially. In both the agriculture and "Industry" sectors of the goods-producing sector, the share of employment has consistently declined over the last three decades with agriculture experiencing the sharpest decline. Currently, less than 5 percent of total employment is in agriculture compared to over 20 percent in 1950. In "Industry", on the other hand, the decline in the employment ratio was less pronounced, going from about 35 percent in 1950 to about 29 percent in 1979.

In comparison to employment trends in the goods-producing sector, the share of employment in the service sector has increased substantially, rising by over twenty percentage points during this same time period. By the end of the 1970s, service industries accounted for two out of every three persons employed in the economy. Moreover, it is the only sector of the economy to have registered substantial increases in both the level and share of employment over the last thirty years.

The two leading industries in terms of employment creation have been community, business and personal services

and wholesale and retail trade. During the 1970s, for example, employment in these two service industries was expanding by over 100 thousand jobs annually in the former group and by about 56 thousand annually in the latter group. The next leading industry in employment creation was manufacturing. In this sector, employment increased on average by about 35 thousand annually during the 1970s. However, although employment has increased in the goods sector, four out of every five jobs created in the economy in each of the preceding three decades have come from the service sector.

An examination of the changes in the distribution of the output of the economy between goods and services indicates that the growth of output in current dollars between these two sectors parallels similar trends in the distribution of employment. Thus, for example, the service sector's share of total output has increased from 48.3 percent in 1950 to 62.5 percent in 1979. Within the goods sector, both agriculture and "Industry" experienced declining shares in total output.

A different picture emerges when we examine shifts in the distribution of output when the effects of price changes are excluded. The distribution of output in real terms between goods and services has remained remarkably stable,

particularly during the 1950s and 1960s. During these two decades, the service sector accounted for about 62 percent of real output and the goods sector for about 38 percent. However, during the 1970s, the service sector's share of real output increased somewhat to 65 percent, with goods decreasing to 35 percent.

Compared to the 1950s and 1960s, the growth in real output in both the goods and service sectors of the economy has slowed during the last decade. The slowdown is particularly noticeable in the goods sector where real output growth averaged only 3.1 percent during the 1970s compared to a growth of 5.7 percent in the 1960s. Although real output growth in the service sector also decreased from an annual growth of 5.6 percent in the 1960s to 4.9 percent in the 1970s the slowdown was not as marked as in the goods sector.

The major reason for the dramatic increase in employment that has taken place in the service sector is that the rate of growth of productivity expressed in terms of either output per person or output per man-hour has increased at a slower rate in the service sector compared to other sectors. Thus, for any given increase in output, the employment requirements of the service sector has been substantially greater than that of the goods sector.

One implication of a slower rate of growth of productivity in service industries relative to goods-producing industries is that the overall rate of productivity growth for the economy will be curtailed as the focus of economic activity continues to shift toward the service sector. An examination of this issue indicates, however, that the impact of the shift of employment to the service sector on overall productivity growth has in fact been negligible. For example, the reduction in the growth rate of aggregate productivity, because of the shift in employment from goods to services over the 1950-79 period, amounts to only one-tenth of one percent.

Although the shift of employment to the service sector of the economy has had a negligible impact on overall productivity, an examination of the levels of productivity between goods and services over the 1950-79 period yields some interesting results. Thus, for example, although the level of productivity has increased in both sectors, the level was actually higher in the commercial service sector relative to that in the goods sector during this period. However, because of the differences in the rates of growth in productivity, the gap in the productivity levels between these two sectors was eliminated by the end of the 1970s. This is contrary to the widely held view that the level of

productivity is much lower in the service sector relative to goods.

The findings that emerge from an examination of trends in the levels and the rates of growth of productivity in the goods and service sectors of the commercial economy over the 1950-79 period are surprising. The substantial increase in employment that took place in the service sector relative to goods actually enhanced the average level of productivity in the economy. This is in sharp contrast to the popular view that the growth of the service sector in fact reduces the overall level of productivity.

Interestingly, if productivity in the goods sector continues to grow at a higher rate relative to the service sector in the future, any shifts in employment towards the service sector will reduce the overall level of productivity in the economy. This would occur simply because the level of productivity between these two sectors is currently the same.

APPENDIX

The Calculation of Labour Productivity With Constant Sectoral Shares of Employment

A productivity index which eliminates the effects of changes in the distribution of employment can be calculated by the following method:

$$\frac{[K(Q/L)_g + (1 - K)(Q/L)_s]i}{(Q/L)_T, \quad i = 1950}$$

where : g = goods sector
s = service sector
T = g + s, i.e. sum of the goods and service sectors
Q = real output (constant 1971 dollars)
L = employment expressed in man-hours
K = share of total employment in the goods sector in the base period, i.e. 1950
1 - K = service sectors share of total employment in 1950
i = time period where i = 1950 to 1979

The numerator of the above expression is the aggregate level of productivity in the economy. It is the sum of the productivities of goods and services weighted by their respective employment shares in the base period. This procedure eliminates any changes in the distribution of employment that has taken place between the sectors over the time period under consideration. Dividing the numerator by

the denominator, which is the aggregate level of productivity in the base period, yields a productivity index which only measures changes in productivity in the different sectors of the economy and does not include changes in the relative importance of these sectors.

REFERENCES

1. Economic Council of Canada, "The Challenge of Growth and Change", Fifth Annual Review, September 1968.

2. Economic Council of Canada, "A Time for Reason", Fifteenth Annual Review, 1978.

3. Victor R. Fuchs, "Economic Growth and the Rise of Service Employment", National Bureau of Economic Research, Working Paper No. 486.

4. Victor R. Fuchs, assisted by Irving F. Leveson, The Service Economy, National Bureau of Economic Research, No. 87, General Series, distributed by Columbia University Press, 1968.

5. Victor R. Fuchs, "The Service Industries and U.S. Economic Growth Since World War II", Economic Growth or Stagnation: The Future of the U.S. Economy, edited by Jules Backman, 1978.

6. Eli Ginzberg and George J. Vojta, "The Service Sector of the U.S. Economy", Scientific American, Volume 244, Number 3, March 1981.

7. Harvey Sims and Jim Stanton, Recent Changes in Patterns of Productivity Growth in Canada, (Long Range and Structural Analysis Division, Department of Finance) April 1980.

8. Statistics Canada, Aggregate Productivity Measures, Annual, Catalogue No. 14-201.

9. Statistics Canada, National Income and Expenditure Accounts, Volume 3, Catalogue No. 13-549E Occasional.

10. Statistics Canada, Standard Industrial Classification Manual, Catalogue No. 12-501 Occasional.

11. David A. Worton, "The Service Industries in Canada, 1946-66", Production and Productivity in the Service Industries, Victor R. Fuchs, ed., Studies in Income and Wealth, No. 34, National Bureau of Economic Research, distributed by Columbia University Press, 1969.