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# The Rise of Service Employment in the Canadian Economy

**Sunder Magun**

*This paper analyzes the trends in employment shares by industry and presents an employment profile of the service-producing and goods-producing sectors and examines some of the reasons for the shift to service jobs.*

Employment in the Canadian Service Industries has been increasing rapidly during the post-war period. In 1977 Canadian employment in all industries was 9.8 million, compared to 4.7 million in 1946. Of the 5 million increase in the employed work force over the past three decades, some 90 per cent occurred in the service industries. An analysis of the shift of employment to services in the post-war period is a subject matter of this paper.

The paper analyzes the trends in employment shares by industry and presents an employment profile of the service-producing and goods-producing sectors. We shall examine some of the *reasons* for the shift to service jobs. Since the distribution of employment among the goods and service sectors is closely related to labour productivity, sectoral productivity measures are constructed and reasons for sectoral differences in productivity are explained. The productivity measures include real output per man and real output per man-hour. We shall conclude by drawing policy implications from standpoint of the structural change in terms of the growing importance of service employment.

## **SECTOR DEFINITIONS**

At present, there exists no clear theoretical basis for classifying industries into goods and services, and, therefore, no consensus among econo-

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mists on definitions of services and goods. Some economists include transportation, communications and public utilities in the service sector, whereas others include them in the goods sector<sup>1</sup>.

The differences in the definitions of service show the difficulties of first identifying and then quantifying a unit of service output. The two identification criteria often used are: (1) a service activity is performed close to the consumer; and (2) a service is an intangible product. It is difficult to apply the foregoing criteria. As regards the first criterion, there are several industrial activities which are *not* close to the consumer but are commonly considered as services, for example wholesale trade, advertising and consulting services. The criterion of intangibility as an identification of service output is also difficult to apply. For example, the medical services do produce a healthy body that could be considered as a tangible output.

Any criteria used to classify industrial activities into goods and service are somewhat arbitrary. We have, therefore, followed the conventional classification and defined industrial sectors as follows:

#### Goods Sector

- a) *Primary Goods Sector*: agriculture; fishery and trapping; forestry.
- b) *Secondary Goods Sector*: mining, quarrying and oil wells; manufacturing; construction; electric gas and water utilities.

#### Service Sector

Trade — wholesale and retail; transportation, storage, and communication; finance, insurance and real estate; community, recreation, business and personal services; public administration and defence.

In recognizing the difficulties or *precisely* drawing boundary lines of industrial activities and the great diversity in the character of industrial sectors, the paper will also present detailed industry analyses wherever possible.

### EMPLOYMENT TRENDS BY SECTOR AND INDUSTRY, 1946-77

There is a common theory among economic historians and others that most nations evolve from largely agricultural or rural-based activities,

<sup>1</sup> Victor R. FUCHS, *The Service Economy*, New York, Columbia University Press, for National Bureau of Economic Research, New York, 1968, pp. 14-17.

through a progressively industrial and urbanized manufacturing phase, to a metropolitan service-oriented stage. To a degree Canada has followed this course, although the early stages were marked by the export of a variety of staples and the later industrializing process was accompanied by redeployment of men and women into manufacturing and then into service jobs.

In its transition from a goods to a service economy Canada has followed four distinct stages. First, along with the development of industry there was an expansion of transportation and communication services required in the movement of goods. The development of railway and telegraph services played an important part in this stage. Second, with the growth of population and urban industrial centers, there was an increase in distribution trade services — wholesale and retail; and finance and insurance. Third, as per capita income grew, the production of income devoted to nondurable goods (e.g., food and beverages at home) dropped and the proportion devoted to durable goods (housing and automobiles) and to recreation and personal services increased. Fourth, there was an increase in the pressure for more public services, such as education, health, and a decent environment, resulting in the expansion of government services. In this stage, community services and public administration grew rapidly. Today, Canada appears to be in the midst of stage three and four. This economic transformation can be seen by analyzing the trends in the industrial distribution of employment in Canada.

In 1946 the service sector's share of total employment was around 41 per cent; by 1977 this had increased to over 65 per cent (Table 1). In contrast, the employment share of the goods sector has been declining steadily, from about 60 per cent of total employment in 1946 to 35 per cent in 1977. This shift from goods production arose mainly from a decline in employment in the primary industries, especially in agriculture. The non-agricultural goods sector, including mining, manufacturing, etc., experienced relative stability of employment, although more recently its share has started to decline (see Chart 1).

In recent years the employment shift towards services has been starting. By the late 1960s eight out of every ten new jobs were in the service industries (see Table 2). In contrast, the labour absorptive capacity of the secondary goods sector has been steadily declining. Net increases in secondary employment are now relatively small. During the period from 1946 to 1955, the secondary sector accounted for 35 per cent share of the increase in non-primary employment, whereas the comparable ratio was 19 per cent during the period from 1965 to 1976.

**TABLE 1**  
**Share of Total Persons Employed, by Sector,**  
**Canada, Selected Years, 1946-77**

	1946	1955	1967	1977
Goods sector	59.2	51.9	41.8	34.6
Primary sector	27.8	17.8	8.8	5.7
Secondary sector	31.4	34.0	33.0	28.9
Service sector	40.8	48.1	58.2	65.4
Total*	100.0	100.0	100.0	100.0

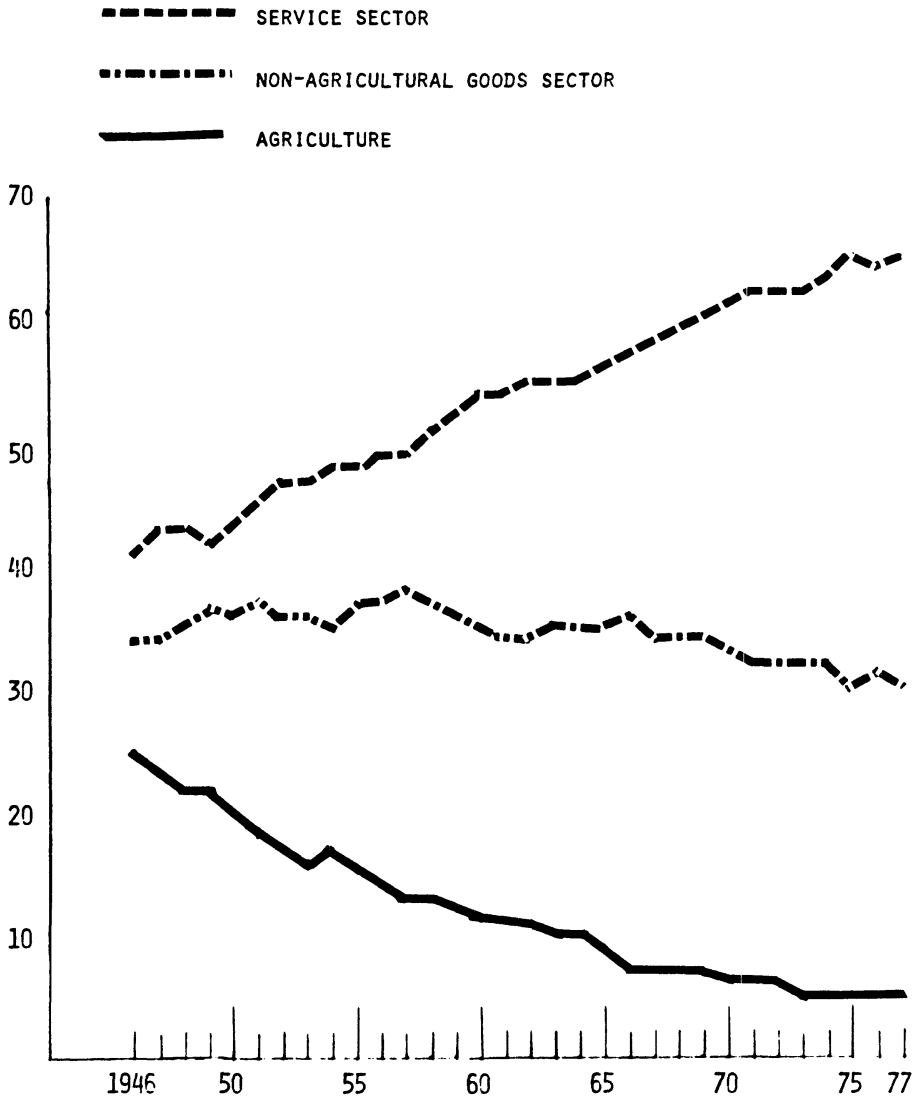
\* Sectoral figures may not add to 100 due to rounding.

Source: Statistics Canada, *Labour Force Survey*.

Within the service sector, the key industries contributing to the transition from goods to service employment are: community, business and personal services; and public administration. Over 30 years from 1946 to 1976, these industries together expanded by 2.6 million workers, a rate of growth of employment of 5.2% per annum, more than twice the national average of 2.4% (see Table 3). Now one out of three Canadian workers are employed in these two industries.

Of particular interest is the rapid growth of employment in the *non-commercial* service components of the Canadian economy such as public administration, education and hospital care. The latter two are the major components of the community, business and personal service industry, whose share in national employment has grown substantially. The noncommercial industries experienced higher rates of growth of employment than the national rate or the rate of growth of service employment in the last decade (Table 4). As a result, the relative weight occupied by the noncommercial service component in employment in the Canadian economy is expanding. The share of public administration in total employment in 1955 was 4.9 per cent; by 1976 its share had moved up to 7.2 per cent. 424 thousand more workers were employed in public administration in 1976 than in 1955. And the employment shares of education and hospital had also been growing. The education share in national employment increased from 5.6 per cent to 7.0 per cent in the last decade and the hospital employment share went up from 5.4 per cent to 6.2 per cent. About half a million more workers were employed in education and hospital care in 1976 than in 1966. Taken together, public administration, hospital and education provide jobs for one out of every five Canadians.

**CHART 1**  
**Sector Employment as a Percentage of Total Employment,**  
**Canada, 1946-1977**  
 (per cent)



Source: Statistics Canada, *Labour Force Survey*.

**TABLE 2**  
**Change in Employment and Its Disposition Between Sectors,**  
**Canada, 1946-76**  
**(Thousands of persons)**

<i>Source and disposition of Change</i>	<i>1946-76</i>		<i>1946-55</i>		<i>1955-65</i>		<i>1965-76</i>	
	<i>Number</i>	<i>Percentage of total</i>	<i>Number</i>	<i>Percentage of total</i>	<i>Number</i>	<i>Percentage of total</i>	<i>Number</i>	<i>Percentage of total</i>
Increase in total employment	4,905	87	698	67	1,497	85	2,710	95
Decrease in primary sector	731	13	343	33	260	15	128	5
Total — increase in non- primary employment	5,636	100	1,041	100	1,757	100	2,838	100
Net increase in service sector	4,254	75	676	65	1,275	73	2,303	81
Net increase in secondary goods sector	1,382	25	365	35	482	27	535	19

Source: Statistics Canada, *Labour Force Survey*.

**TABLE 3**  
**Distribution of the Employed Labour Force,**  
**by Industry, Canada, 1946-77**

<i>Industry</i>	<i>1946</i>		<i>1977</i>		<i>Average annual percentage of growth of employment</i>
	<i>Number</i> (Thousands of persons)	<i>Percentage of all industries</i>	<i>Number</i> (Thousands of persons)	<i>Percentage of all industries</i>	
Service sector	1,906	41	6,379	65	4.0
Trade — wholesale and retail	619	13	1,695	17	3.0
Transportation, storage and communications	382	8	720	7	1.8
Finance, insurance and real estate	124	3	537	6	4.6
Community, recreation, business and personal services, and public administration	781	17	3,427	35	5.2
Goods sector	2,760	59	3,376	35	0.6
Primary	1,297	28	559	6	-2.9
Secondary	1,463	31	2,817	29	2.1
All industries	4,666	100	9,754	100	2.4

Source: Statistics Canada, *Labour Force Survey*.



**TABLE 4**  
**Average Annual Percentage Rate of Growth of Employment**  
**Noncommercial Services and Hotels, Restaurants and Taverns,**  
**1966-76**

<i>Industry/Sector</i>	<i>1966-76</i> (Per cent)
Public administration and defence	5.1
Education	5.3
Hospitals	4.5
Hotels, restaurants and taverns	6.4
Service sector	4.3
All industries	3.0

Source: Statistics Canada, *Labour Force Survey*. Employment in hotels, restaurants and taverns relates to those firms with 20 or more employees. Statistics Canada, *Travel, Tourism and Outdoor Recreation, A Statistical Digest*, Cat. No. 66-202 (annual), 1975-76, p. 143; 1974-75, p. 171; 1973-74, p. 113.

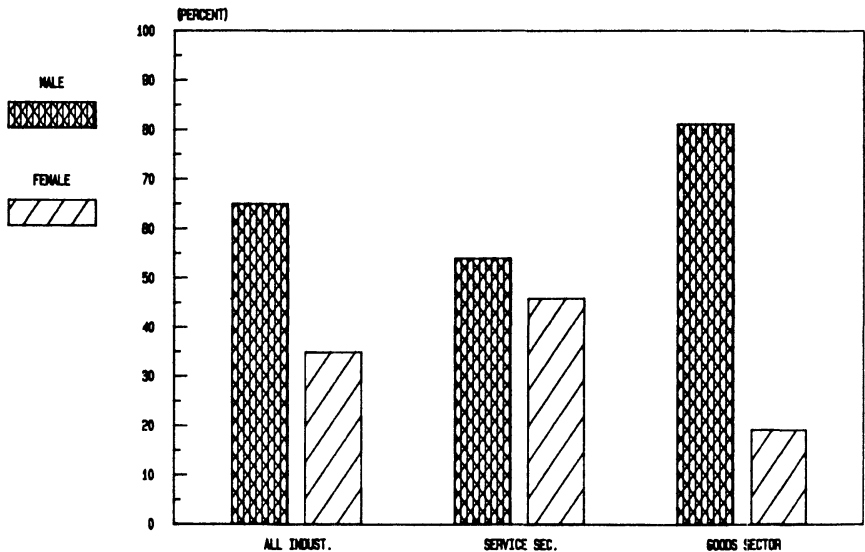
### **AN EMPLOYMENT PROFILE OF THE SERVICE AND GOODS SECTORS**

We have already established that two out of three Canadian workers are now employed in service-producing activities, and the long-term trend seems to be the growing importance of service employment in the labour market. The typical Canadian worker is not the farm or factory worker but the service person. Let us look at the employment structure in the service industries by briefly drawing an employment profile of the service sector according to sex, full-time versus part-time status, occupation, and job tenure.

#### **Female Employment in the Service Sector**

The growth of service activities has been particularly conducive of female employment: the service sector employs relatively more female workers than the goods sector. The proportion of women employed in the service industries was 46 per cent in 1976, as opposed to 19 per cent in the goods-producing industries (see Chart 2). In absolute terms, there are four times more female workers in the service sector than in the goods sector. It may be noted that almost all increases in female employment are occurring in the service industries. In particular, female employment is concentrated in community and personal services, finance and banking and insurance. The percentage employment for women in these two industries is highest: around 60 per cent. This is due to the fact that these industries contain a preponderance of occupations traditionally open to females, such as nursing and teaching, etc.

**CHART 2**  
**Percentage Distribution of Employment,**  
**by Sex and Industrial Sector, Canada, 1976**



Source: Statistics Canada, *Labour Force Survey*.

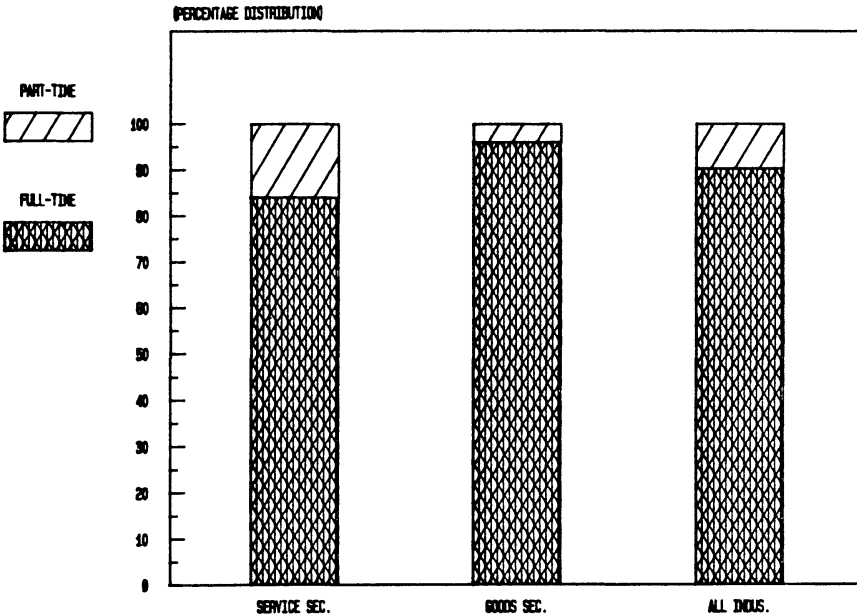
### Full-time Versus Part-time Employment

Service activities lend themselves to part-time and part-year employment. One out of ten employed Canadians are part-time workers, who usually work less than 30 hours per week, and they are largely employed in the service industries: about 86 per cent are engaged in service employment as compared to 14 per cent in the goods sector. Looked at another way, the ratio of part-time workers to full-time workers is one to six in the service industries compared with only one to twenty four in the goods industries (Chart 3).

The majority of part-timers are female workers and they are mostly engaged in service employment. In fact, six out of ten part-timers are women employed in the service industries.

Within the service sector, part-timers are concentrated in the two service industries: community, business and personal services and trade, which together account for three quarters of the total part-time workers.

**CHART 3**  
**Full-time and Part-time Employment Shares,**  
**by Sector, Canada, 1975-76**



Source: Statistics Canada, *Labour Force Survey*.

**Forms of Occupation in the Service Sector**

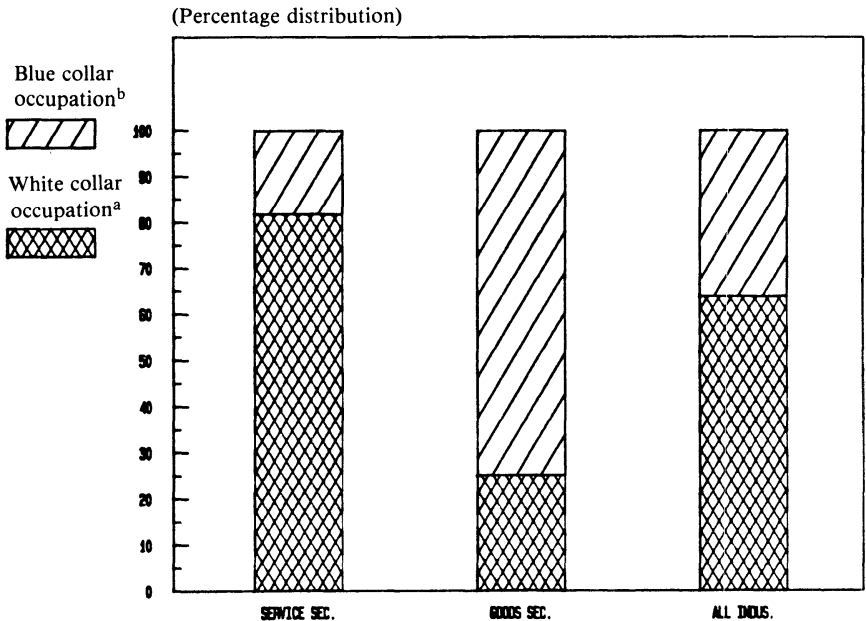
Forms of occupation and industry are closely related. “White collar” occupations, such as managerial, professional, clerical, sales and personal services<sup>2</sup>, predominate in the service industries, employing four out of five workers. By contrast, in the goods sector three out of four jobs are “blue collar” types — such as primary, processing, construction trades, material handling, and transportation equipment operating — and only a quarter white collar types.

Within the service sector, the occupational mix differs among the service industries. In trade, one out of two workers are employed in the sales occupations. The highest proportion of employment in managerial and pro-

<sup>2</sup> Personal services include protective services, food and beverage preparation, lodging and other accommodation, apparel and furnishing services and other personal services.

fessional occupations is observed in community and personal service industry and public administration. The clerical occupation predominates in finance, insurance and public administration.

**CHART 4**  
Occupational Composition of Employment,  
by Industrial Sector, Canada, 1976



- a. White collar occupations include managerial and administrative, natural sciences, social sciences, religion, teaching, medicine and health, artistic and recreational, protective service, food and beverage preparation and related service, lodgings and other accommodation, personal service, apparel and furnishing service, clerical and sales.
- b. Blue collar occupations include farmers, farm workers, fishermen, trappers and hunters, loggers and related workers, miners, quarrymen and related workers, processing, machinery, and product fabricating, assembling and repairing, construction trades, transport equipment operating, material handling and other crafts and equipments.

Source: Statistics Canada, *Labour Force Survey*.

### Job Tenure in the Service Sector

Many service sector jobs offer low wages, and this along with the fact that they attract second or third members of multiple-earner households results in substantially higher job turnover than in most goods producing

enterprises. In *People and Jobs*, for instance, The Economic Council reported a particularly high incidence in small shops, banks and industries that rely heavily on women and part-time young workers. In 1976, according to Statistics Canada *Labour Force Survey*, two-thirds of the employed workers in the service industries had job tenure less than five years as compared with half in the goods sector. On the contrary, 21 per cent of the employed workers in the service sector had job tenure more than ten years, while the comparable percentage for the goods sector was higher, around 30 per cent. When we exclude public administration and transportation from the service sector, the sector difference in the average length of employment becomes greater. This arises from the fact that workers in public administration and transportation have, on average, longer job tenure.

Looking at the question of labour turnover another way, a large majority of job leavers who enter into unemployment comes from the service sector. Of the total job leavers in 1976, about two-thirds had jobs in the service-producing industries<sup>3</sup>. Almost half of the job leavers originated from the two service industries: community business and personal services; and trade.

Three out of ten employed workers in trade; in finance, insurance and real estate; and in community, business and personal service industries have *less* than one year of job tenure. This ratio compares with one out of four workers for all industries. The shorter job tenure in the service industries is attributable to the preponderance of occupations — such as clerical, sales, and personal services — in which the labour turnover is usually higher. As described above, most of the female employment is in the service industries, and this also contributes to higher turnover and, consequently, shorter job tenure.

## REASONS FOR GROWTH OF EMPLOYMENT IN THE SERVICE SECTOR

### Trends in Real Output by Sector

One possible reason for the remarkable growth of employment in the service industries could be relatively stronger growth of demand for service output. Since the demand for labour originates from the demand for output, services jobs would continue to grow if the “final” or/and “intermediate” demands for services were expanding.

<sup>3</sup> Statistics Canada, *Flows into Unemployment*, by Bruce MACDONALD, Labour Force Survey Division, Research Paper No. 17, May 1978, p. 51. Public utilities are included in transportation and communications and classified in the service sector, but their relative weight is small.

The increases in the final demand for services could result from a decline in the relative prices of services, a high income elasticity of demand for services, or a change of taste in favour of service consumption. Intermediate demand for service output grows either from a change in production processes requiring more services as inputs, a shift of intermediate services from in-house production within the goods industries to purchasing externally from the service industries, or a fall in the relative prices of services used as inputs.

If final demand factors were contributing to the rapid growth of service employment, we would expect a significant shift in the *composition* of real output in favour of service industries. Table 5 presents sector distributions of gross domestic product in constant dollars for selected years during the 1951-76 period.

**TABLE 5**  
**Sector Shares of Gross Domestic Product in Constant (1971) Dollars,**  
**Canada, Selected Years, 1951-76**  
**(Per cent)**

<i>Sector</i>	<i>1951</i>	<i>1955</i>	<i>1962</i>	<i>1969</i>	<i>1973</i>	<i>1976</i>	<i>Annual rate of growth of real output, 1950-74</i>
Goods sector	39.9	41.3	41.2	41.3	40.7	38.8	4.6
Primary goods sector	7.9	6.7	5.5	4.3	3.6	3.5	1.4
Secondary goods sector	32.0	34.6	35.7	37.0	37.1	35.3	5.2
Service sector	60.1	58.7	58.8	58.7	59.3	61.2	4.7

Source: Based on data from Statistics Canada.

It is evident from the table that the service sector's share of real output has remained almost stable for a quarter century, whereas its share of total employment increased substantially from 45 to 64 per cent over the same period. The stable trend in output shares indicates that the growth of service employment is *not attributable* to changes in output composition in favour of service industries. The annual rates of growth of real output for the goods and service sectors have been similar. There seems to be some other explanation for the rapid growth of service employment.

It is, however, appropriate to qualify this conclusion since the statistics on real output for some of the service industries, in particular for the rapidly growing noncommercial industries such as public administration, education, hospitals, etc., are questionable. There are difficulties in identifying

the output produced, and for a number of noncommercial services, employment is used as an indicator of real output. Since this method assumes zero productivity growth, the resulting output measures tend to be *underestimated*. This downward bias, therefore, could have contributed to the stability of service output shares.

Coming at the question another way, at the final demand level it is possible to calculate from the input-output tables the trend in the proportion of service expenditures to total expenditures on consumer goods and services for selected years from 1961 to 1971. These percentages are presented in Table 6.

**TABLE 6**  
**Consumer and Government Expenditures on Services**  
**as a Percentage of Their Total Expenditures**  
**on Goods and Services, Canada,**  
**Selected Years, 1961-71**  
**(Constant 1961 dollars)**

<i>Year</i>	<i>Per cent</i>
1961	31.0
1965	30.8
1969	30.5
1971	31.5

Source: Statistics Canada, *The Input-Output Structure of the Canadian Economy in Constant 1961 Prices 1961-71*, catalogue 15-507E, Occasional. Final Demand Matrix (Aggregation-S), December 1977. Service expenditures include expenditures on transportation and storage; communication services; wholesale margins; retail margins; imputed rent owner-occupied dwellings; other finance; insurance, real estate; business services; personal and other miscellaneous services; and travel, advertising, promotion. These expenditures are reported under the columns "Cons. Exp. Services" and "Gov't Gross Current Expenditures" in the input-output tables, 1961-71.

Total expenditures on goods and services by consumer and government include personal expenditures on durable, semi-durable, non-durable, services, and government gross current expenditures, *minus* net indirect taxes and other operating surplus.

The shares of service expenditures by consumer and government in their total expenditures remained almost stable over 1961-71 period. This supports our earlier conclusion that the service sector's shares in real output have been stable and the relative demands for services have changed relatively little. When we separate government's share, we find that its share has increased, but this increase has been offset by a slight decline in relative consumer expenditures on services. Thus, there appears to be some other explanation for the rapid growth of service jobs.

It is often believed that the goods industries are now more specialized and, therefore, purchase service inputs from the service industries rather than produce in-house. A part of the growth of services in Canada might be attributed to this shift. The validity of this view can be verified by analyzing the input structure of the goods industries. If these industries were using relatively more service inputs in their production processes, the relative intermediate demand for service output in the goods sector would grow.

Table 7 shows the trend in service inputs in the goods industries during the period from 1961 to 1971. It is obvious from the table that the shares of service inputs have *not* increased significantly. Although the shares increased slightly after 1965, this would *hardly* explain the rapid growth of service employment in the country. Thus, there is also no evidence that the relative intermediate demand for service output has grown substantially.

**TABLE 7**  
**Share of Services Used as Intermediate Inputs**  
**by the Goods Sector, Canada,**  
**Selected Years, 1961-71**  
**(Constant 1961 dollars)**

<i>Year</i>	<i>Service inputs as a percentage of total inputs of goods and services, Goods Sector</i>
1961	20.9
1965	20.8
1969	21.5
1971	21.9

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Source: Statistics Canada, *The Input-Output Structure of the Canadian Economy in 1961 Prices 1961-71*, Catalogue No. 15-507E occasional, Use (Input) Matrix (Aggregation-S), December 1977. Service inputs include services incidental to mining; transportation and storage; communication services; wholesale margins; retail margins, imputed rent owner-occupied dwellings; other finance, insurance, real estate; business services; personal and other miscellaneous services; transportation margins; travel, advertising and promotion. Total inputs of goods and services exclude GDP at factor cost, indirect taxes, unallocated imports and exports and non-competing imports.

Another explanation for the rapid growth of service employment is based upon the relation between consumption of services and the levels of income. As per capita real income rises, the demand for services tends to rise more rapidly than the demand for goods. This means that there is a higher income elasticity of demand for services than for goods. This rela-



tionship between income and demand for services and goods is statistically difficult to measure. Demand is determined by many factors such as rising per capita income, relative prices, urbanization, tastes, family composition and changes in the distribution of income. Since these determining factors work simultaneously with different intensities and time lags, it is not easy to measure precisely the influence of income on demand for services or goods. Moreover, the consumer sometimes jointly consumes services and goods: recreational services are jointly consumed with recreation, sport and camp equipment goods. In this case, the separate influence of income on recreational services is difficult to isolate from that on recreational equipment. The demand for rapidly growing public services, such as health and education, is not directly determined by changes in income, although, as we shall show below, it is certainly affected by them.

Within the service sector, the demands for household and laundry and cleaning services have been declining whereas the demands for certain services such as health, educational, cultural and communications, have been increasing. At the same time, in the goods sector, the consumption of durable goods has been increasing rapidly while that of semi-durable and non-durable goods has been growing slowly. The result of all these structural changes in the patterns of personal expenditures is that the proportions of real disposable income spent by the average Canadian on services and goods have very slightly changed in favour of services over the past twenty-five years from 1951 to 1976. At the sectoral level, the estimated income elasticity of demand for services is almost similar to that for goods for the period from 1954 to 1975. For example, a 10 per cent increase in per capita real disposable income would increase per capita real consumption of services by about 10.2 per cent and of goods by 9.7 per cent.

However, the effect of income change on consumption of services takes on a somewhat different picture at a disaggregated level. Per capita real consumption of services and goods is related with per capita real disposable income, taking into account separately the substitution effects attributable to changes in relative prices. The estimated income and price elasticities, indicating the influences of changes in incomes and relative prices on demand for services and goods, are set out in Table 8.

The income elasticities for certain services, such as medical and hospital care, recreation, hotel, restaurant, communication and transportation, are greater than unity. This implies that as per capita income increases by one percentage point the consumption of these services tends to rise by a proportionately greater amount. The rapid increase in the demand for health services arises from their higher income elasticities. Although the income effects on the demand for recreation, restaurant and hotel services are

TABLE 8

**Income and Price Elasticities, by Selected Personal  
Expenditure Category, Services and Goods, Canada**

<i>Expenditure Category</i>	<i>Income Elasticity</i>	<i>Price Elasticity</i>	<i>Observed annual rate of change in expenditure</i>  (Per cent)	<i>Time period</i>
1. Medical care — public and private	1.3	*	4.3	1947-76
2. Hospital care — public and private	1.6	*	6.8	1947-76
3. Recreational services	2.1	-0.9	3.2	1954-75
4. Restaurant and hotel services	1.5	-1.5	2.1	1954-75
5. Communications	1.5	-1.5	5.7	1954-75
6. Domestic services	-0.5	*	-1.8	1958-75
7. Laundry and dry cleaning services	-0.05	-0.1	-0.1	1947-76
8. Personal care	0.8	*	0.7	1954-75
9. Financial, legal and other services	1.0	*	2.0	1954-75
10. Purchased transportation services	3.0	-0.4	1.6	1954-75
11. Durable goods <sup>a</sup>	1.1	-1.9	5.4	1947-76
12. Semi-durable goods <sup>b</sup>	0.6	-1.2	1.7	1947-76
13. Nondurable goods <sup>c</sup>	0.6	-0.9	2.1	1947-76

a. Includes recreation, sport and camp equipment; furniture and carpets; household appliances; automobiles; and repair and parts.

b. Includes clothing; footwear; books, newspapers and magazines; semi-durable household furnishing; and jewellery, watches and repairs.

c. Includes food; beverages; tobacco; drugs and sundries, toilet articles and cosmetics; and electricity, gas, fuels and gasolines.

\* Relative price variable is not significant or its sign is positive.

Source: Economic Council of Canada, *CANDIDE 2.0 National Accounts Personal Expenditure Data*. The income and price elasticities for expenditure categories 3, 4, 5, 5, 8, 9 and 10 are derived from the consumption block of CANDIDE 2.0. CANDIDE uses the Houthakker and Taylor approach. For details, see Thomas T. SCHWEITZER, *Personal Consumer Expenditures in Canada, 1926-75*, Part I, Economic Council of Canada, Staff Study No. 26. The elasticities for the remaining expenditure categories are derived by fitting the double log functions. All expenditures are in per capita constant 1971 dollars except category 6 which is in per household constant dollars.

positive and strong, they have been offset to some extent by the negative price substitution effects, resulting from rapid increases in their relative prices. The demands for domestic, laundry and dry cleaning services are declining for reasons that appear to be associated with income, but in fact reflect changing lifestyles, polyester fibres and automatic washers/dryers and a reduced supply side of household services resulting from better alternative opportunities.

The influence of rising per capita income on the demands for goods is positive too, although not so strong as for some services. In particular, the demand for durable goods is more income elastic, resulting in the greater demand with rising per capita income. Like the income effect, the price substitution effect has also increased the demand for goods: the relative prices of goods have been declining over time, increasing the demand for goods as well, particularly for durable goods.

In sum, at the sectoral level, the income and price effects are offsetting on the consumption of services. As per capita income rises, the demand for services tends to rise. However, because the cost of services has increased more than that of goods, there is an offsetting price effect discouraging the purchase of services in favour of goods. Moreover, both income and price effects have increased the demand for goods. The balancing of income and price influences, which are in fact operating simultaneously, have sustained the growth of demand for both services and goods. Therefore, there is no evidence that the Canadian economy has experienced *stronger* demand for services than for goods. Since the income elasticity of demand for services is similar to that for goods, the shift of employment to services cannot be attributable primarily to the sectoral difference in income elasticity of demand.

Another explanation for the growing importance of employment in the service industries lies in the supply factor, i.e., in the sectoral differential rate of growth of labour productivity (output per person employed). We now turn our attention to an analysis of labour productivity trends in the service and goods sectors.

### **Productivity Trends in the Service Sector**

It is difficult to measure productivity trends in the service sector precisely because its real output measure is not satisfactory. Ideally, real output should be measured by real value added — by deducting the quantity of intermediate inputs used from the quantity of output produced. In practice this is not generally possible. For many service activities, however, even the unit of output is difficult to identify or quantify. This problem is especially

serious for the rapidly growing noncommercial service industries. In the case of a number of service industries, change in real output is measured by applying either the indicator of deflated gross output or that of labour input, to the net output (value added) "benchmark weights".

For most noncommercial service industries, the labour input indicator is employed for measuring output change. This is done either by using wages and salaries deflated by average earnings per worker or by using numbers of workers employed multiplied by base-year average earnings, and with addition in most cases for capital consumption in constant dollars. This approach virtually rules out any productivity growth in the noncommercial service sector. In the case of commercial service industries, transportation<sup>4</sup> trade, and finance and insurance, change in real output is measured by deflated gross output<sup>5</sup>.

Despite these measurement difficulties, it is possible to form some judgment, at least in relative terms, of the differences in productivity growth among the different sectors. Table 9 presents productivity growth rates for the service and goods sectors. We have constructed another sub-sector, called the "modified service" sector, which excludes those service industries whose real output measures are based upon labour input series. This modification excludes the rapidly growing services such as health, education and public administration.

Clearly, output per employed worker has grown much more rapidly in the goods sector than in the service sector. The productivity growth of the service sector as a whole is only 30 per cent of that of goods. The differential is, however, smaller when we exclude the services, mostly noncommercial, whose output is estimated from labour input data, carrying the implication of zero productivity growth. The productivity growth of the modified services appears as 62 per cent of that of goods. While there are difficulties in establishing the "true" size of the sectoral productivity rate differential, it is clear that the differential is closer to 1.4 percentage points than to 2.8 percentage points. Even so, this result is consistent with the general consensus among economists that the service industries have experienced relatively slow growth of output per worker. The lagging growth of labour productivity is the *principal* explanation for the growing importance of service employment in the Canadian economy.

Why does output per worker in the service sector grow more slowly than in the goods sector? There are three major factors: (1) a slower rate of

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<sup>4</sup> Net output indicator is used for air transport and urban transit.

<sup>5</sup> Gross output is, in general, equal to total value of production or total sales of an establishment.

**TABLE 9**  
**Rates of change of Real Output, Employment, Man-hours,**  
**Output Per Man and Per Man-hour, and Capital-labour Ratio,**  
**Canada, 1950-1977**  
**(Per cent per annum)**

	<i>Real Output</i>	<i>Employment</i>	<i>Output per man</i>	<i>Man-hours</i>	<i>Output per man-hour</i>	<i>Net capital per employed worker, 1950-74</i>
All industries <sup>a</sup>	4.7	2.5	2.2	1.8	2.9	3.1
Service sector	4.9	4.0	0.9	3.1	1.8	2.0
Goods sector	4.5	0.8	3.7	0.2	4.3	4.6
Sectoral productivity, rate differential, goods minus services	—	—	2.8	—	2.5	—
Modified service sector <sup>b</sup>	5.1	2.8	2.3	2.2	2.9	2.3
Goods sector	4.5	0.8	3.7	0.2	4.3	4.6
Sectoral productivity, rate differential, goods minus modified services	—	—	1.4	—	1.4	—

a. Total output for all industries excludes owner-occupied dwelling rents.

b. Modified service sector includes trade, wholesale and retail; finance insurance and real estate; and transportation and communication.

Source: Economic Council of Canada, *CANDIDE 2.0, Data Bank*.

increase in capital employed per worker; (2) a slower rate of increase in the quality of labour employed; and (3) a faster rate of decline in hours of work per worker<sup>6</sup>.

The average annual rate of increase in capital per worker has been roughly half that of the goods-producing sectors. In both the service and goods-producing industries there has been steady growth in the amount of plant and equipment. But, because employment in the service sector has grown relatively faster, the annual rate of increase of capital per worker has been less than half that in the goods-producing sector. In 1977, the service sector had about 37 per cent less capital in plant, machinery and equipment per worker than the goods sector<sup>7</sup>.

There is also a qualitative factor contributing to the productivity differential. While the public sector activities — particularly health, education, welfare and the legal services — employ many professionals and other highly trained people, they also have a large number of clerical and secretarial staff. A large segment of service manpower is still only modestly skilled, whereas the proportion of unskilled workers in the goods sector has been shrinking rapidly. In commercial services such as wholesale and retail trade, and banking, there are secondary family workers who receive lower pay and have less permanent tenure than the average work in the goods-producing industries. In addition, service workers have higher rates of unemployment, and their average work experience is, consequently, shorter.

Within the modified service sector, there are wide variations in productivity growth. Between 1950 and 1974, output per worker in transportation and communication grew very fast. The industry was a heavy beneficiary of advanced technology. Indeed, in the same period, the productivity growth rate in this industry actually exceeded the average of manufacturing industries by 0.8 percentage points per year. Trade followed, with the increase in output per worker averaging 2.1 per cent per annum — a rate only slightly lower than the national average during the same period. The finance, insurance and real estate sector also experienced some improvement in pro-

6 A. BOWER, C. WEST, R. CROZIER, "Change in Industrial Structure — A Long-Term View", Economic Council of Canada, Staff Paper (unpublished), January 1967; David A. WORTON, "The Service Industries in Canada, 1941-1966", *Production and Productivity in the Service Industries*, edit., Victor R. FUCHS, NBER Studies on Income and Wealth, Vol. 32, New York, 1966, pp. 260-79. The Canadian studies have followed the methodology developed by FUCHS in his two basis papers: *Productivity Trends in the Goods and Service Sector, 1929-1961: A Preliminary Survey*, Occasional Paper 89, New York, NBER, 1964; and *The Growing Importance of the Service Industries*, Occasional Paper 96, New York, NBER, 1965. See also FUCHS' later work, *The Service Economy*, New York, NBER, 1968.

7 Economic Council of Canada, *A Time for Reason*, Fifteen Annual Review, 1978, p. 78.

ductivity. Recent studies using revised output measures for finance and insurance industries indicate that output per worker grew at an average annual rate of 2.3 per cent in savings and credit institutions and 2.8 per cent in life insurance business<sup>8</sup>.

There are strong indications that the service industries are catching up, and the sectoral productivity rate differential is narrowing owing to more rapid increases in productivity in services than in goods and to sharper declines, especially during the last decade, in productivity growth in the goods sector (Table 10). Although the industrialization of service is still in its adolescence, a number of productivity — enhancing technological developments have already taken place in the service industries. For example, the use of computers has displaced thousands of low-productivity office workers employed in preparing office payrolls, billings and related chores. Other examples of technology replacing workers include the introduction of automatic cheque-cash systems, coffee vending machines, and self-operated travel-insurance machines. In many other cases, technological developments have enhanced the productivity of the service worker rather than completely displacing him or her. For example, the introduction of electric-hand tools and electronic diagnostic care equipment has considerably improved the productivity of auto repairmen. Similarly, the credit card system has substituted a single credit transaction for the numerous repetitive and labour-using credit transactions. In Health services, the use of brain scanners has improved and lessened the work of neurosurgeons. Indeed, a number of similar technical developments hold the promise of significant improvements in productivity for the service sector.

The industrialization of services on a greater scale is in progress. Pre-planned industrial systems are being organized for individual service establishments. Often the systems involve custom-made equipment, division of labour and specialization. They are basically similar to the industrializing modes of manufacturing industries. The planned systems bring efficiency, speed, order and higher productivity to the service production process. Consider fast-food franchizing, or chains of restaurants; these service establishments are carefully designed to produce and deliver prepared foods with speed and cleanliness, and at low cost. They specialize in selected food items with large volume, and this makes it possible to benefit from economies of large-scale production. Other examples of preplanned service sys-

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<sup>8</sup> See R. HIRSHHORN and R. GEEHAN, "Measuring the Real Output of the Life Insurance Industry", *Review of Economics and Statistics*, Vol. LIV, No. 2, May 1977, pp. 211-219; and R. GEEHAN and L. ALLEN, "Measuring the Real Output and Productivity of Savings and Credit Institutions", *Canadian Journal of Economics*, Vol. XI, no. 4, November 1978, pp. 677-679.

**TABLE 10**  
**Rates of Change of Real Output Per Man and Per Man-hour,**  
**Canada, Selected Subperiods, 1950 to 1977**  
**(Per cent per annum)**

	1950-1958		1958-1966		1966-1977	
	<i>Output per man</i>	<i>Output per man-hour</i>	<i>Output per man</i>	<i>Output per man-hour</i>	<i>Output per man</i>	<i>Output per man-hour</i>
All industries <sup>a</sup>	3.1	3.6	2.4	3.2	1.6	2.3
Service sector	0.9	1.5	0.9	1.8	1.0	1.8
Goods sector	4.4	4.7	4.3	4.8	2.5	3.0
Sectoral productivity rate differential, goods minus services	3.5	3.2	3.4	3.0	1.5	1.2
Modified service sector <sup>b</sup>	1.2	2.0	2.8	3.4	2.0	2.7
Goods sector	4.4	4.7	4.3	4.8	2.5	3.0
Sectoral productivity rate differential, goods minus modified services	3.1	2.7	1.5	1.4	0.5	0.3

a. Total output for all industries excludes owner-occupied dwelling rents.

b. Modified service sector includes trade, wholesale and retail; finance, insurance and real estate; and transportation and communication.

Source: Economic Council of Canada, *CANDIDE 2.0, Data Bank*.



tems include prepackaged vacation tours, self-service hypermarché, cafeterias, mutual fund investments, and the like.

With the growing relative importance of services industries, the prices of services have been increasing rapidly. A major factor behind the current inflation, it might be argued, lies in services (see Chart 5). Although productivity growth has been lower in services, through the combination of heightened demand and collective bargaining, wage gains in the service sector have almost kept pace with those of the most productive goods sector. The consequence of these trends has been marked increases in service prices. The rate of growth of implicit prices for services has been twice that of goods. In particular, there has been a very rapid growth of prices (i.e. costs) of noncommercial services, especially education and hospitals. It may be expected, therefore, that public economic policy, with the objective of decelerating inflation, would *focus* on services, especially on the noncommercial services.

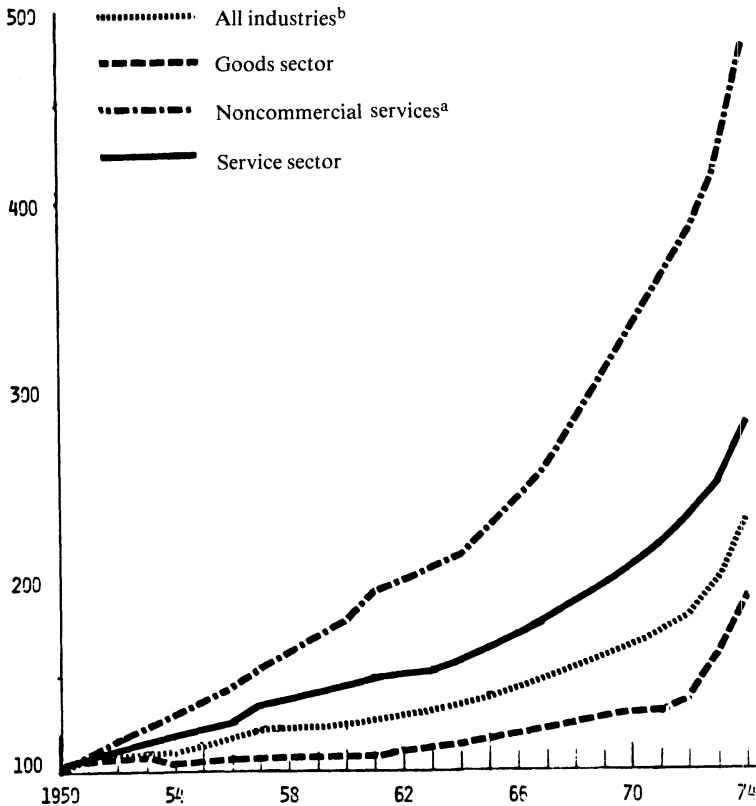
One important consequence of the rise in service price is the substitution of self-service activities for marketed services. Self-service activities encompass such things as self-serve salad bars in restaurants, pump-your-own gasoline stations, flourishing do-it-yourself methods in household repairs, etc. With increasing service costs, personal services are vanishing, partly or fully, from the market. The service itself does not normally disappear, however. The consumer meets his demand through his own efforts, and a whole industry has developed to provide him with the tools and materials to do the job.

## CONCLUSIONS

Employment in the service sector has been expanding rapidly during the last three decades. Now two out of three Canadian workers are employed in the service-producing industries. The average Canadian worker is not the farm or factory worker but the service person. Within the service sector, higher growth in employment took place in the noncommercial service components of the Canadian economy, such as public administration, education and hospital care.

The paper examines reasons for growth of employment in the service industries. Two explanatory hypotheses are explored: whether rapid growth in service employment is attributable to a stronger demand for service than for goods, or to a supply consideration — to a slower increase in output for worker in services. By analyzing the trend in the service sector's share of

**CHART 5**  
**Index of Implicit Price Deflators, by Sector, 1950-74**  
 (Base: 1950 = 100)



a. Includes education, hospital care, public administration and other noncommercial services.

b. Excludes owner occupied dwelling rents.

Source: Economic Council of Canada, *CANDIDE 2.0, Data Bank*. The implicit price deflators for the noncommercial services have been derived by dividing gross domestic product (GDP) in current dollars by gross domestic product in constant dollars. Dr. B.K. Lodh of the Economic Council of Canada developed estimates on GDP in current dollars, by using mostly expenditure data, in collaboration with the Industry Product Division of Statistics Canada. Estimates on GDP in constant dollars are produced by using employment data with adjustments for labour productivity growth. See, Statistics Canada, *Real Domestic Product By Industry, 1971-76*, Catalogue No. 61-213, Annual; Dominion Bureau of Statistics, *Indexes of Real Domestic Product By Industry of Origin, 1935-36*, Catalogue No. 61-505 occasional.

real national output, the trend in the proportion of service expenditures to total expenditures on goods and services, and in the share of services used as intermediate inputs by the goods sector, it is found that the Canadian economy has not experienced stronger demands for services than for goods. Since the income elasticity of demand for services is similar to that for goods, the shift of employment to service industries cannot be attributed to the sectoral differences in income elasticity of demand. Thus, a shift in demand to services has not been a main source of the relative growth of service jobs.

The principal explanation for the growing importance of employment in the service industries lies in the supply factor — in the sectoral differential rate of growth of labour productivity. Output per employed worker (or output per man-hour) has been growing much more slowly in the service sector than in the goods sector. Thus, the lagging growth of labour productivity in the service industries, arising mainly from a slower rate of increase in capital per employed worker and in the quality of labour, and a faster rate of decline in hours of work per employee, has contributed to the rise of service employment in the Canadian economy.

Although productivity growth has been lower in services, wage gains in the service sector have almost kept pace with those of the most productive goods sector. The result of these trends has been higher increases in service prices. The rate of growth of implicit prices for services has been twice that of goods. Thus, public economic policy, with the objective of reducing inflation, should focus on services.

It is expected that future technological developments in the service-producing industries, involving innovations, capital accumulation and economies of large scale, will make for a cumulative rise in output per man or man-hour. The prospects vary immensely, however, depending on the type of service activity. The sectoral productivity rate differential will considerably narrow. The influence of slower growth in labour productivity on the growth of service employment would diminish. In future, the growth of employment in the service industries will be more determined by demand factors such as changes in income, tastes and leisure time. As taxpayers, Canadians are re-examining the growth requirements of the public services, such as education, health care, and public administration. The big push in these services, arising in part from the effects of the postwar baby boom, is about to end. We now expect a proportionate decline in some public services, especially in education.

The service sector employs relatively more female workers and part-timers. The average tenure in services is lower, and a large majority of job

leavers who enter into unemployment comes from the service industries. With the growing importance of services, labour turnover and, consequently, the frictional unemployment in the economy has increased. This development has an important implication for macroeconomic policies, directed to stabilize the economy at its potential. Now the potential level is obtained at a higher level of unemployment rate. In addition, some modifications to the present manpower policies may be required to improve information in labour markets and, thereby, the job search process.

While frictional unemployment has become more serious, cyclical unemployment has declined with the rapid growth of service industries. The service industries are relatively *less* sensitive to cyclical fluctuations in output and employment. Since service output cannot be stored in inventory, the service sector does not experience the cyclical fluctuations arising from inventory changes. The goods sector, on the other hand, is prone to more cyclical fluctuations attributable to large swings in inventory investment.

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## L'augmentation de l'emploi dans les services au Canada

L'emploi dans le secteur des services au Canada a augmenté rapidement au cours des trois dernières décennies. À l'heure actuelle, deux travailleurs canadiens sur trois sont employés dans des entreprises de service. Le travailleur canadien ne se trouve plus sur la ferme ou dans l'industrie, mais dans les services. À l'intérieur de ce secteur d'activité, la plus forte hausse de l'embauchage s'est produite dans des entreprises qui ne relèvent pas du commerce proprement dit, mais principalement de l'administration publique, de l'enseignement et des soins hospitaliers. Ces trois dernières branches de l'activité fournissent de l'emploi à un travailleur sur cinq.

Le profit de la main-d'oeuvre dans les entreprises de service diffère de celui de l'industrie en ce que les premières recourent davantage aux femmes et aux employés à temps partiel ou saisonniers. Plusieurs de ces entreprises paient de bas salaires et font appel aux travailleurs secondaires de la famille, d'où un roulement de la main-d'oeuvre plus élevé.

L'étude expose ensuite les raisons de l'augmentation de l'emploi dans les entreprises de service et tente de l'expliquer par une hypothèse qu'on peut exprimer ainsi: ou il faut attribuer la croissance rapide de l'embauchage dans les services à une demande plus forte de services que de produits manufacturés ou, considération complémentaire, à un accroissement plus lent de la productivité par employé dans les services. L'analyse de la tendance du produit national réel dans le secteur des services, de la tendance de la proportion des dépenses en services par rapport aux dépenses totales en biens et services ainsi que la part des services utilisés comme intrants secondaires par le secteur des produits manufacturés révèle que l'économie canadienne n'a pas connu une plus forte demande de services que de biens manufacturés. Puisque maintenant l'élasticité de la demande de revenus est semblable à celle des biens, le déplacement de l'embauchage vers les services ne peut être attribué à des différences sectorielles dans l'élasticité. En conséquence, le déplacement de la demande n'a pas été la cause de la croissance de l'emploi dans les services.

L'explication première de l'importance croissante de l'embauche dans les entreprises de service réside dans le facteur complémentaire, c'est-à-dire l'écart dans le taux d'augmentation de la productivité du travail. Le rendement par employé (ou par heure-personne) a crû beaucoup plus lentement dans le secteur des services que dans celui des produits manufacturés. En conséquence, la croissance moindre de la

productivité du travail dans les entreprises de service, qui est surtout attribuable à un accroissement plus lent du capital investi par travailleur, de la qualité du travail elle-même auquel s'ajoute un taux plus rapide de diminution des heures de travail, a contribué à la majoration de l'embauche dans ce secteur de l'économie canadienne.

Bien que l'accroissement de la productivité ait été plus faible dans les services, les salaires y ont suivi de près ceux du secteur de biens manufacturés qui est plus productif. Cette tendance a entraîné de plus fortes majorations dans les prix des services, soit approximativement le double des prix des biens. Par conséquent, la politique économique des gouvernements, dont l'objectif est de réduire l'inflation, doit se concentrer sur les services.

On espère que les développements technologiques futurs dans les entreprises de service, innovations, accumulation de capitaux, économie d'échelle, favoriseront l'élévation de la productivité par employé ou heure-personne. Les perspectives varient beaucoup cependant selon les types d'activité. L'écart du taux de productivité entre les deux secteurs se rétrécira considérablement. L'influence d'une augmentation plus lente de la productivité sur l'accroissement de l'embauche diminuera dans les entreprises de service. À l'avenir, la croissance de l'emploi dans ce secteur dépendra davantage des facteurs ayant trait à la demande comme les changements dans les revenus, dans les goûts et dans la durée des loisirs. En tant que contribuables, les canadiens sont à réexaminer les exigences croissantes des services publics en matière d'éducation, de soins médicaux et de fonctionnarisme. La forte poussée de ces services, qui résulte partiellement de l'afflux des naissances, est sur le point de prendre fin. Nous pouvons donc nous attendre à un déclin proportionnel dans certains services publics, notamment dans le domaine de l'éducation.

Le secteur des services compte plus de femmes et de travailleurs à temps partiel comparé au secteur industriel. La durée de l'emploi y est plus courte et une grande majorité des personnes qui quittent le travail pour s'inscrire à l'assurance-chômage proviennent des entreprises de service. À cause de l'importance croissante des services, le roulement de la main-d'oeuvre et, par conséquent, le chômage frictionnel augmentent dans l'économie. Ceci revêt une grande importance en ce qui concerne les politiques macroéconomiques qui ont pour but de stabiliser l'économie de façon qu'elle puisse donner tout son potentiel, ce qui s'obtient présentement par un taux de chômage élevé. De plus, il faudrait apporter certaines modifications aux politiques de main-d'oeuvre de façon à améliorer la diffusion de l'information sur les marchés du travail et, par ce moyen, le processus de la recherche de travail.

Le chômage frictionnel est devenu plus grave, mais le chômage cyclique a diminué grâce à la croissance rapide des entreprises de service. Celles-ci sont beaucoup moins sensibles aux fluctuations cycliques dans la production et dans l'emploi. Étant donné que la production des services ne peut être emmagasinée sous forme d'inventaires, ce secteur ne se ressent pas de ces fluctuations qui sont attribuables aux changements dans le volume des inventaires. Le secteur industriel, d'autre part, est sensible à ces fluctuations cycliques causées par les grandes variations dans les inventaires.