

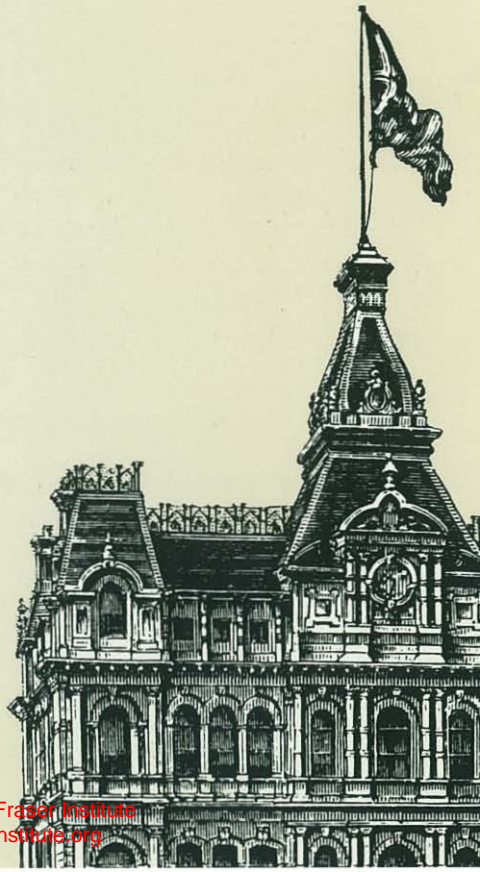
THE ECONOMICS
OF THE SERVICE SECTOR
IN CANADA

The Supply of Government Services

*Douglas Auld and
Harry Kitchen*

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PREFACE

The public sector is the largest component of the service sector in Canada. In this study, an overview and insight into the structure, growth and characteristics of the public sector is provided. Certain major components of the public sector, such as health and education, are addressed by other authors in different volumes of this series. In a study of this length, justice cannot be done to all topics related to the public sector.

During the 25 years prior to 1986, the public sector (measured by total expenditure by all levels of government) grew from just under 24 percent of gross national expenditure (GNE) to 46 percent of GNE in 1986. Transfer payments accounted for only 8 percent of GNE in 1951 but grew to 23.5 percent in 1986. Expenditure on actual services grew from 16 percent of GNE in 1951 to just under 24 percent in 1982 and then declined to just over 22 percent in 1986. The bulk of the growth in total expenditures has occurred at the provincial level. Nevertheless, there has been a downward trend from 1982 to 1986 in the ratio of public service expenditures to GNE.

The public sector employs approximately one-fifth of the work-force in Canada. What is surprising is that this figure has not changed appreciably since 1961. Increases in health and provincial employment have been offset by declines in the federal and education sector. The pattern of compensation in the public sector compared to the private sector reveals major swings in relative salaries in some areas, but there is no evidence to suggest that the public sector is responsible for the periods of generalized wage inflation during the past 20 years. More data on public and private sector compensation is necessary before in-depth and reliable comparisons of the two sectors can be made.

The actual delivery of public services is also going through a transition with more and more public sector managers willing to contract out public services. Contracting out has been encouraged because the public sector is believed to be inefficient, but this belief may be unwarranted. Further research is necessary.

In the conclusion to the study, we reflect on the make-up of the public sector and question whether or not all public services can be justified in terms of the theory of public goods. Canadians should ask whether it would be wiser for the government to facilitate the private production of certain public goods rather than insisting that the government provide these services directly.

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Professor Kitchen's area of research is government expenditure and tax analysis. In particular, he has written a number of articles, monographs and books with the majority of these concentrating on local government finance and expenditure issues.

Chapter 1

INTRODUCTION

Any discussion of the service sector in Canada would not be complete without reference to the public sector. No other portion of the service sector is larger and more pervasive than the diverse services paid for by one level of government or another. Although the characteristics of public services are not exactly the same as those of private services, most non-transfer expenditures by governments can be classified as services.

When researchers describe and analyse any component of the service sector, they usually raise the following questions.

1. How much and what kind of employment does the service industry provide?
2. What is the export potential of different services?
3. What is the pattern of employee compensation in the service industry?
4. Are there unique conditions in the service industry which influence productivity?
5. To what extent are new service industries merely the result of vertical disintegration of a previous goods industry?
6. What theories of the firm offer guidance in explaining the growth of the service industry?
7. For a given service industry, what are the effects of compensation and employment patterns in that industry on personal and regional income distribution?
8. Is the service industry primarily comprised of small or large firms? What is the capital intensity of these firms?

Some of these questions are relevant to a study of the public sector; others are not. But the study of public services requires that additional questions be asked, thereby making an exhaustive study nearly impossible.

2 Introduction

If, in limiting the scope of our research, we have omitted or given insufficient attention to certain subjects, we hope future researchers will investigate them.

Traditional analysis of the public sector has concentrated on expenditures by level of government, by functional area or by the division between exhaustive and non-exhaustive expenditures. But the public sector is much more complex than this. It employs one-fifth of all Canadians, and its compensation policies are interwoven with those in the private sector. Governments provide various jobs which require an enormously broad range of educational backgrounds and skills.

Another traditional view is that the bulk of government services is supplied through ministries, departments and branches which are staffed by civil servants. But recently, contracting out has become a viable alternative to "in house" provision of services. Franchises, crown corporations, commissions, agencies and special purpose bodies all provide public services.

Also, it has been and continues to be argued that public services are unproductive; they do not contribute to economic growth, and they require increasing levels of taxes to sustain a given level of service. These generalizations overlook the critical role of public services as an initiator of production in the private sector. The claim of government inefficiency arises as a residual when it becomes difficult, if not impossible, to measure public service output.

While this study contains elements of what might be termed traditional public finance analysis, there are significant points of departure. In chapter 2, we explore the definition of a service expenditure by how it relates to private services and by what it is that distinguishes a good from a service. A variety of public expenditures are then examined in light of the definition of a service to determine if these should be assigned to the goods or services categories.

Chapter 3 is a brief overview of public expenditures between 1951 and 1986 period. These are reported in a number of ways, including the aggregate, the level of government and its proportion of Gross National Expenditure (GNE). We also separate transfers from exhaustive expenditures, expenditures by function are presented, and a distinction is made between real and nominal expenditures. Next, we review the traditional or established theories that have been used to explain public expenditure growth and compare these to recent theories to explain private sector service growth.

In the various approaches to private service sector analysis, researchers usually examine compensation to service sector employees, particularly compared to other sectors, including government employees. In addition, emphasis has been placed on the characteristics of those employed in the

service sector. The public sector is the largest component of the total service sector, so the issues of compensation and employment in the public sector deserve detailed examination.

In chapter 5, we compare private and public sector compensation by using wage and salary data from several sources. Again, much of this material is an update of statistical evidence presented in earlier studies. Gaps and inconsistencies in the data are noted. Given the concern over the past decade that public sector wages and salaries are insensitive to the usual market forces and are therefore “out-of-line” with private sector compensation, we also review the theory and evidence on public sector wage determination.

The issue of public sector employment is examined in chapter 6. The major contribution of this chapter is to update earlier work on the size of public sector employment and its regional as well as functional distribution. Employment by occupational status and growth rates are also considered.

Another important aspect of the service sector growth debate has been the question of productivity. Is the public service sector a low productivity sector? How is productivity to be measured? These questions are not new to debates over the growth of the public sector. In fact, the public sector has frequently been accused of being a “zero-productivity” sector and a contributing factor to the alleged decline in overall productivity. In chapter 7, we attempt to answer two critical questions. First, what is the public sector’s contribution to the economy’s productivity overall? Second, can there be productivity gains in the delivery of public services?

While it is generally recognized that a private service can be delivered to a client or customer in several ways, it is not always appreciated that a variety of delivery modes are also available for delivering public sector services. In chapter 8, we review the empirical evidence on the cost differential of providing many services in the public rather than the private sector. The two main theories explaining cost differences are given next. Chapter 9 is an outline of various systems that government could use to deliver public services.

Chapter 2

THE GOODS AND SERVICES CHARACTERISTICS OF PUBLIC SECTOR OUTPUT

In his excellent review paper "On Goods and Services," Peter Hill distinguishes goods from services. First he defined the term *good*;

A good may be defined as a physical object which is appropriable and therefore transferable between economic units. (Hill, 1977, p. 317)

Next, he showed that all services share the following characteristic:

In every case, some change is brought about in the condition of some person or good...the change is the result of the activity of some other economic unit. (Hill, 1977, p. 318)

Thus, he defined a service in the following manner:

...a change in the condition of a person or of a good belonging to some economic unit, which is brought about as a result of the activity of some other economic unit, with the prior agreement of the former person or economic unit. (Hill, 1977, p. 318)

Hill notes that in the process of providing a service, nothing is actually exchanged between agents in the same way that goods are transferred. A service cannot be transferred to one person to be used by that person at a later date. For example, an appendectomy cannot be transferred: once the patient's condition is altered (loss of the appendix), the service is complete. Services are not storable. When a commodity is moved from A to B, a service has occurred; that service cannot be held at A and B simultaneously. In Hill's view, it is important to distinguish between services affecting goods and those having their impact on consumers. The transportation of parcels, repair work and household or commercial cleaning are in the former

6 Goods and Services Characteristics

category. But the distinction between what is a good and service is not always clear. If a car is painted after it is assembled, the act of painting will be recorded as a service unless the painting is done by the firm which made the car in the first place.

To be classified as a service to consumers, Hill argues that the production and consumption of the service must occur simultaneously; as a barber cuts hair, hair is removed. An underlying feature here is the notion that the good cannot be stored for future consumption to maximize utility in characteristic and time space.

Based on the difference between what is labelled a good and what is a service, the label *public goods* (used to describe public sector output) is somewhat misleading.¹ Governments spend money to provide services or transfer payments. In fact, Hill found it necessary to modify his definition of a private service so that public services would not be excluded: for public services, there is not always a mutual agreement between the government and taxpayer as to the provision of a service. No visible transaction between buyer and seller exists; the payment of sales tax does not involve receipt of an explicit public service, nor does it necessarily cause measurable change in the state of the economic unit.

To gain a better perspective on public services and how they fit into the definition of services in general, a number of specific public expenditure categories at the provincial/local and the federal government level are considered.

Provincial/Local Government

Protection of People and Property

This is a major responsibility at the local level and to some extent at the provincial and federal level, too. No transaction nor agreement between the government and individuals exists by which the effect of protection on households could be measured.

It is possible, however, to perceive the effect as a reduction in the probability of being robbed, having a car accident or having a home totally destroyed by fire.

The complex relationship between crime prevention and expenditures on police is summarized by Shoup (1969, pp. 115-118). The decline in crime for a given expenditure may be small, so, at the margin, the public is not prepared to devote additional tax dollars to police work. Since the change in the probability of suffering personal or property damage is extremely difficult to measure, changes in the level of service are measured by changes in the value of the inputs.

Protection could be provided privately. Instead, it is provided through the non-marketable mode, as Carl Shoup (1969) phrased it, either because it is cheaper to do so or because the externalities of public provision make it desirable. This subject will be discussed again later.

Waste Collection

This is one service where there is a measurable change in the state of the household as a result of the service. At one moment, a household possesses waste; at the next it does not. In fact, household waste collection could be viewed as a good, not a service, if it were done by the private sector. Contracting to have it removed involves an exchange of ownership and a transaction involving payment. The waste collector purchases the “product” from the household. It is traditionally done through the non-marketing mode because of the externalities associated with congestion of collection vehicles and potential non-compliance on the part of households to dispose of their waste. This latter problem could be dealt with through legislation forcing households to dispose of waste.

Education

At the primary and secondary level, education is a joint local/provincial activity. Like police protection, there is no transaction between the government and individual. There is technically nothing to prevent purely privately produced education, either. It is unclear, however, in what ways a change occurs in the person being educated. New skills are learned and problem solving abilities improved and developed—these changes are measurable through exams, tests and assignments. The amount of change will depend not only on who is teaching, but on who is learning as well.

Hill (1977) emphasized that a service cannot be stored. While that is true in terms of the direct act of servicing, it should be noted that the ability to exercise a service can be developed, strengthened and stored for future use. Formal instruction is usually thought to be the essence of education, but recent advances in information technology have placed education in the hands of many more people. Is the audio or video tape different from a live lecture? In some respects, no, but both represent a “stored” service. When the tape was made, no one consumed education; no one’s state was altered, and the act of service production and consumption was not done at the same time, unless the playing of the tape is defined as the service. It could be argued that the service was stored and the inventory used when the consumer played the tape.

8 Goods and Services Characteristics

Health Service.

The most rapid growth in expenditure at the provincial/local level has been in the area of health care. In some ways, these services are similar to education: although the condition of the patient is changed, there is no guaranteed correspondence between service and measurable change in the patient. An operation to have one's infected tonsils removed results in an immediate measurable change in the physical state of the patient, but general advice about good nutrition or smoking does not produce an immediate, measurable effect.

When it comes to medicine, the relationship between service and consumer is more complex. A physical examination, diagnosis and prescription of specialized medicine is a service performed by the physician and consumed (in the form of information received) by the patient. Nothing happens to the patient until he or she obtains the drug and takes it. The act of taking the drug is not classified as a service but as a good: the consumption of a drug is transactable and storable involving the exchange of a physical object.

Finally, with the exception of compulsory vaccination, quarantine and related activities, most health-related services are private goods in terms of their attributes. Many health services are run by and controlled by government because of public policy objectives and goals to redistribute wealth and ensure certain standards. One could easily envisage a government requiring minimum hospital/medical insurance, subsidizing premiums for those on low incomes, setting basic hospital standards and allowing the private sector to do the rest. Where there are externalities—both positive and negative—associated with health care, there is a case for government intervention, provided the costs of intervention do not outweigh the welfare gains achieved in reducing third party effects.

Federal Government

The largest single non-transfer expenditure on what is called goods and services is national defence. The government purchases labour, trains the labourer and, in combination with material objects (ships, guns, aircraft, trucks, etc.), provides a service with the following characteristics:

1. It does not require an act of consumption on the part of any economic unit.
2. It requires no exchange of money for a service.
3. It is available to all members of society, notwithstanding any one single person's preference.

The distinguishing feature in this case is the passive act of consumption of the service taking place regardless of the value anyone places on the service. The public finance literature refers to such goods as pure public goods. Examples include public administration, lighthouses and certain forms of communications as well as defence.

In general, externalities have some of the characteristics of pure public goods, but, due to the emphasis on negative externalities from private goods' production, they are usually considered separately. In essence, any externality, positive or negative, is an unsolicited service. Hill (1977, p. 332) argued that externalities are similar to other ordinary services and "...while there may be severe practical difficulties ... the case for including them alongside other goods and services seems very strong."

It would appear more appropriate to include all externalities in the public goods category. While many externalities are produced by the private sector and do not reflect a direct public expenditure, a good deal of public policy is concerned with responding to externalities as a form of market failure. The cost of dealing with such third party effects is often buried in total expenditure on public administration. Future research on this subject should to attempt to identify such expenditures.

Public services themselves also produce unsolicited services that are immeasurable and non-transactable. Education is a primary example of a service which is consumed by an individual with a direct benefit to the recipient of the service. But the benefits can be generalized in terms of a more educated population which is socially tolerant, more flexible in finding employment and able to sustain a broad range of social policies. Thus, education warrants public support.

SUMMARY AND CONCLUSIONS

Public expenditures, excluding transfer payments, exhibit a wide range of characteristics which do not always fit neatly into the definition of a service. The lack of a clearly defined transaction and the difficulty in measuring a public service's effect on an individual are two examples of the problem. A careful examination of these characteristics, however, suggests that for several public services there is no *a priori* reason to supply the service exclusively through the public sector.

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NOTE

1. Peter Hill, in a recent paper, (1987) raises questions about specific public expenditures and how they fit into a definition of the service sector.

THE GROWTH OF GOVERNMENT EXPENDITURES, 1951-1986

INTRODUCTION

Recently, interest in privatization and alternative ways of delivering government services has increased mostly because of the rapid growth (or at least the perceived rapid growth) in government expenditures. It is important, therefore, to determine the size and growth of the public sector.

There are many ways in which statistical data on the growth of government expenditures can be presented,¹ but we will concentrate primarily on one way: the change in government expenditures and their various components, (vis-a-vis commonly accepted indices) over time. By concentrating on relative measures, one avoids making meaningless statements comparing absolute levels over time (from 1951 to 1986)² or using these levels as a basis for making unsupportable, yet seemingly definitive, statements on the excessive and indefensible growth in the size of government. Table 1 does provide, nevertheless, current and constant per capita government expenditures (total, federal, provincial, local, hospital and QPP/CPP) for selected years. Column 2, for example, shows that current dollar per capita expenditures by all governments combined increased by a factor of 24.5 between 1951 and 1986, while column 3 shows that expenditures in constant dollars increased by a factor of 2.9. Of this total, the largest percentage increase (in both current and constant dollars) was exhibited by the provinces (columns 6 and 7), followed by the local governments (columns 8 and 9) and then by the federal government (columns 4 and 5). The corresponding trends in employment are found in chapter 6.

Given this information on the size of real and nominal per capita expenditures, the remainder of the chapter will be devoted to the growth in the relative size of the government according to various traditional measures.

Table 1
Current and Constant* Per Capita Government Expenditures in Canada,
(for selected years), 1951 to 1986
(for constant dollars, 1981 = 100.0)

Year	Total		Federal		Provincial		Local		Hospital		QPP/CPP	
	Cur. \$	Con. \$	Cur. \$	Con. \$	Cur. \$	Con. \$	Cur. \$	Con. \$	Cur. \$	Con. \$	Cur. \$	Con. \$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1951	373	2,360	210	1,385	86	527	77	448	—	—	—	—
1956	511	2,609	287	1,532	109	524	115	553	—	—	—	—
1961	669	2,939	333	1,494	133	572	160	687	43	186	—	—
1966	953	3,416	406	1,491	225	793	251	880	69	249	1	3
1971	1,632	4,684	607	1,751	487	1,394	405	1,155	124	356	9	27
1976	3,348	5,305	1,318	2,095	1,006	1,592	731	1,152	246	390	48	76
1981	6,033	6,033	2,392	2,392	1,935	1,935	1,158	1,158	414	414	135	135
1986	9,138	6,840	3,710	2,765	2,979	2,231	1,541	1,166	611	457	298	221

* Deflated by applying the gross domestic implicit price index for i) current government expenditures to current expenditures and ii) capital formation to gross capital formation expenditures.

Source: Calculated from data in reference tables 1, 40, 46, 48, 52, 54 and 55 in *Quarterly Economic Review*, (Ottawa, Department of Finance, June 1987). Government transfers are recorded as expenditures of the donee government.

EXHAUSTIVE EXPENDITURES VERSUS TRANSFERS

First, government expenditures are separated into those that are exhaustive and those that are transfers. This provides a measure of the amount of goods and services, including labour services that the government has used that would otherwise be available to the private sector (exhaustive expenditures). Transfers entail only a transfer of income from one individual in the private sector to another individual and do not represent a use of society's resources.³

Figure 1 measures total government expenditures, exhaustive expenditures and transfers as a percent of gross national expenditure (GNE) for selected years from 1951 to 1986. A quick glance at this figure indicates that the percentage of GNE absorbed by government expenditures almost doubled over the 36 years, rising from slightly less than 24 percent to almost 46 percent. Of this increase, almost seventy percent of it can be attributed to increases in transfer payments (8.1 to 23.5 percent of GNE from 1951 to 1986), while slightly more than 30 percent can be attributed to increases in exhaustive government expenditures (from 15.6 percent of GNE in 1951 to 22.3 percent in 1986).

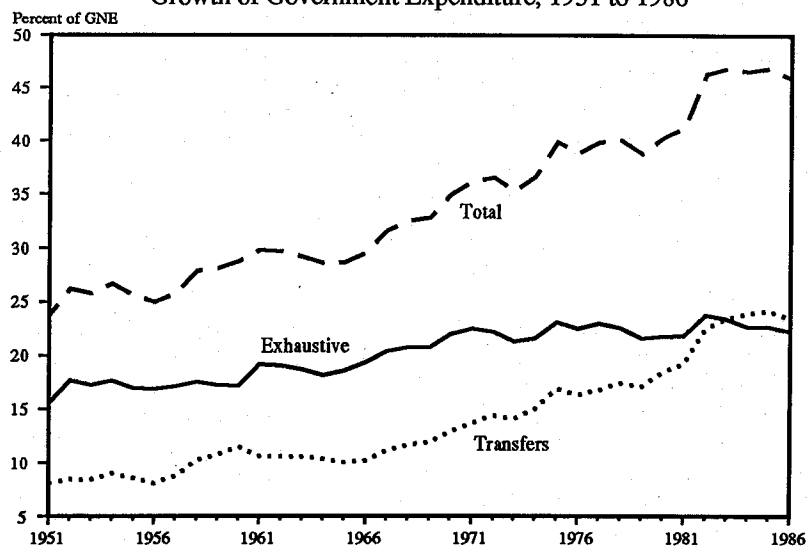
Furthermore, the growth in the ratio of exhaustive expenditures to GNE has been close to zero since the early 1970s (accounting for approximately 22 percent of GNE in each year), whereas the growth in transfer payments as a percent of GNE has exceeded seventy percent over the same period.

EXPENDITURES BY ECONOMIC CATEGORY

Further information can be obtained by comparing the change in the relative importance of government expenditures by economic category. Figure 2 disaggregates total transfers into transfers to persons, interest on the public debt and all others combined (subsidies, capital assistance and transfers to non-residents). The major increase has been in the interest paid on the public debt since the mid-1970s (10.7 percent of government expenditures in 1977 and 18.1 percent by 1986).

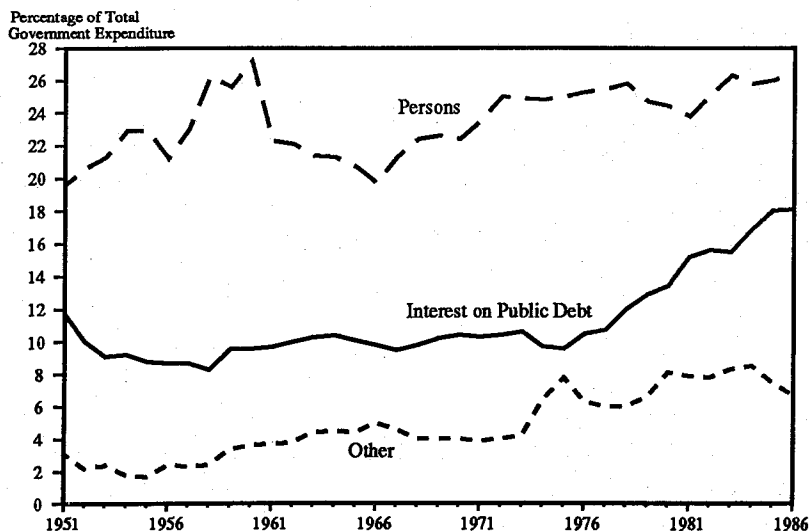
Figure 3 records the change in the relative importance of expenditures by economic category. The categories include total transfers, defence, capital formation, civilian wages and other civilian goods and services. From 1951 to 1986, the most notable change was the decline in defence expenditures (from 22.1 percent of all government expenditures in 1951 to 4.0 percent in 1986). Gross capital formation was the only other expenditure category displaying a relative decline, falling from 11.9 to 5.4 percent of all government expenditures. Offsetting these decreases were large increases in the relative importance of total transfers (from 34.4 in 1951 to

Figure 1
Growth of Government Expenditure, 1951 to 1986



Source: Appendix table 1A.

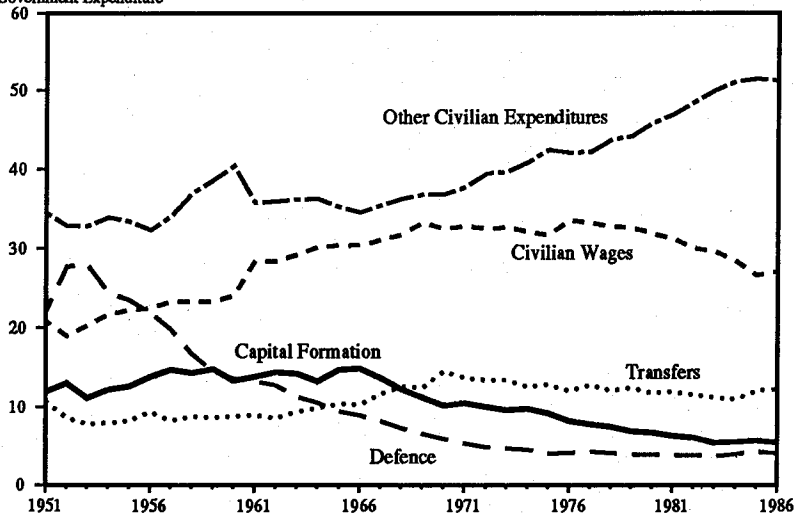
Figure 2
Transfers by Economic Category, 1951 to 1986



Source: Columns 2, 3 and 4 of Appendix table 2A.

Figure 3
Expenditure by Economic Category, 1951 to 1986

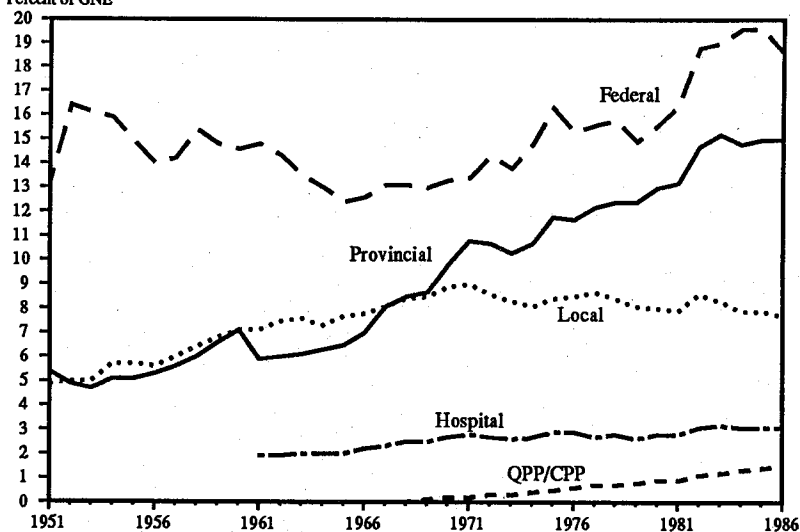
Percentage of Total
Government Expenditure



Source: Appendix table 2A.

Figure 4
Expenditure by Level of Government, 1951 to 1986

Percent of GNE



Source: Appendix table 3A.

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51.3 percent of total government expenditures in 1986); the greatest proportionate increase occurred from the early 1970s to 1986. Civilian wages have also increased since 1951 rising from 20.9 to 27.1 percent of all government expenditures. After the mid-1970s, however, this category has exhibited a proportionate decline (33.5 percent of all government expenditures in 1976 to 27.1 percent in 1986), reversing the trend of the 1950s and 1960s.⁴ Smaller increases occurred in expenditures on other civilian goods and services (from 10.7 to 12.2 percent).

EXPENDITURES BY LEVEL OF GOVERNMENT

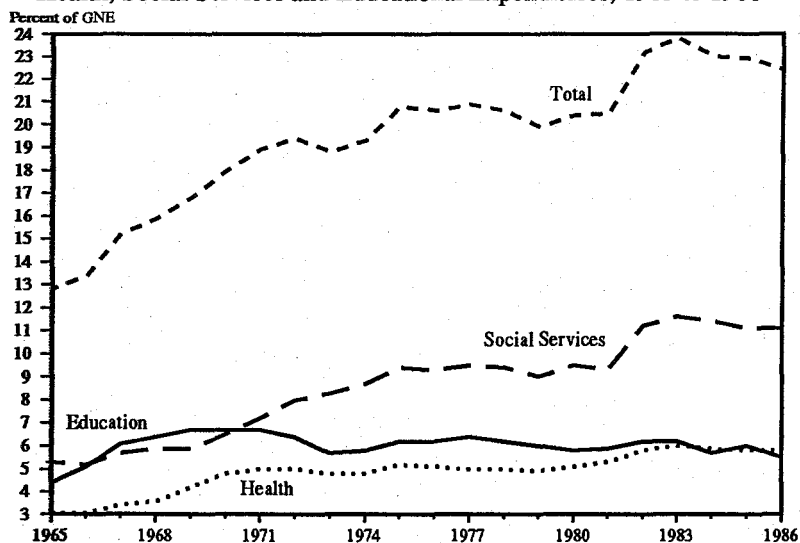
Government expenditures can also be evaluated by decomposing them into expenditures by level of government (figure 4). While many have criticized increases in federal expenditures (as a percent of GNE, these expenditures have produced a u-shaped pattern from the early 1950s to the mid-1980s), the provincial governments, not the federal government have accounted for the largest percentage increase over the past 36 years. A portion of this increase has been funded by federal transfers (federal transfers to the provinces are not reported as federal expenditures but as expenditures of the provincial or local governments) with the remaining funds coming from own source revenues.

Of the total increase in all government expenditures, provincial governments accounted for 43 percent (appendix table 3A); the federal government, for 24 percent; and local governments, 13 percent. Expenditures on hospitals (14 percent) and the Canada and Quebec pension plans (7 percent) made up the remainder.

EXPENDITURES BY FUNCTION

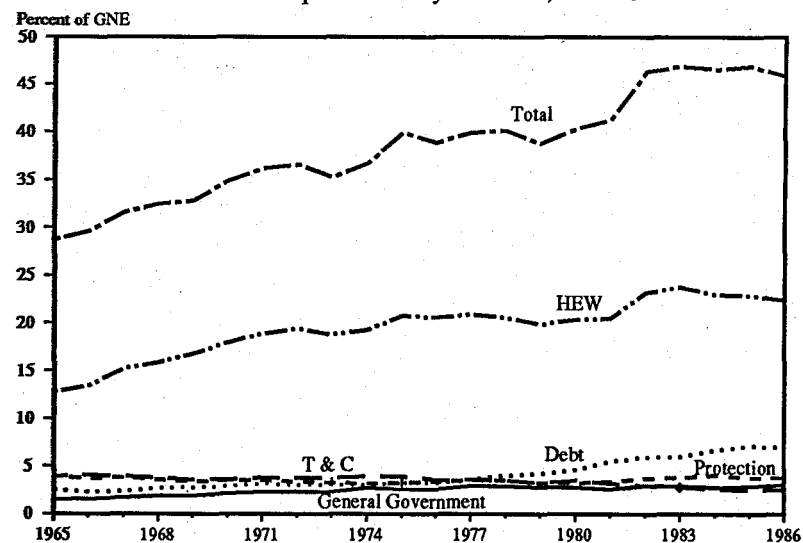
For those who are interested in the services that are provided by government revenues, Figures 5 and 6 record the relative importance of the major expenditure functions from 1965 to 1986 (data prior to 1965 are not available in a form that is consistent with the period from 1965 to the present). Figure 5 illustrates the increase in the relative importance of social expenditures—health, education and social services (unemployment insurance, family allowances, and old age security payments, etc.). In total, these grew at an increasing rate from 1965 to the mid-1970s, remained relatively constant for a couple of years and then declined until 1982 (when there was a significant increase in the percentage of GNE that they absorbed). After reaching a peak in 1983, this total has declined in relative importance. To a large extent, the growth and pattern of variation in this total has been dictated by the growth and variability in the social service component.

Figure 5
Health, Social Services and Educational Expenditures, 1965 to 1986



Source: Columns 5, 6 and 7 of Appendix table 4A.

Figure 6
Government Expenditures by Function, 1965 to 1986



Source: Appendix table 4A.

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In fact, social services accounted for more than 60 percent of the total increase in these three social expenditures. Education (12 percent) and health (28 percent) accounted for the remainder. Education expenditures have slowly declined or remained constant since the late 1960s and early 1970s but health expenditures increased slowly and continuously until the early 1980s when it appeared to stabilize at almost six percent of GNE.

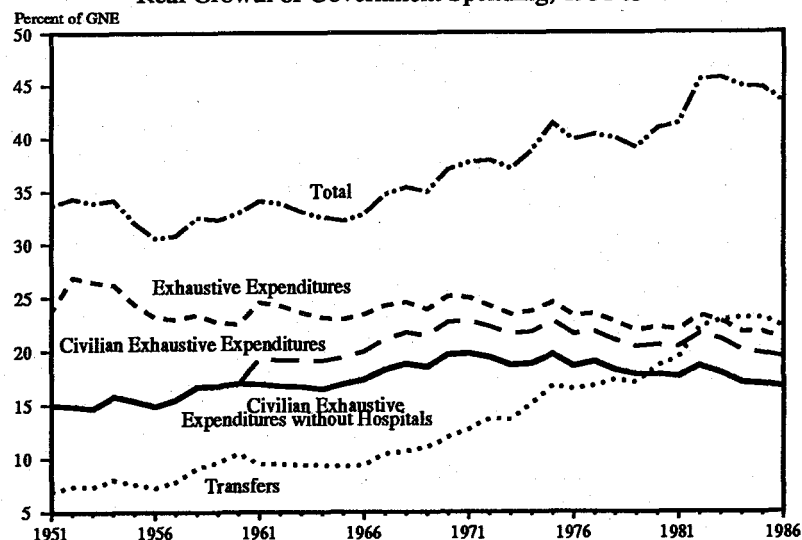
Figure 6 illustrates the comparative growth in the various functions. Health, education and welfare (HEW) accounted for almost 56 percent (calculated from data in appendix table 4A) of the increase in expenditures from 1965 to 1986. Debt charges caused the total to rise by a further 26 percent. Smaller increases were observed for the remaining functions, except for transportation and communications and for protection which decreased.

GROWTH IN REAL GOVERNMENT EXPENDITURES

Figure 7 illustrates the growth of government expenditures in real terms (that is, increases attributed to prices alone have been removed from the data). Although government expenditures increased in real terms by 38 percent from 1951 to 1986 (calculated from appendix table 5A), in nominal terms, the increase was 94 percent for the same period (from appendix table 1A). Furthermore, in constant dollars, exhaustive expenditures actually declined by 11 percent in relative terms (from 23.8 percent of GNE in 1951 to 21.1 percent in 1986), mostly because of a decrease in the relative importance of defence spending. Meanwhile transfers increased by 222 percent (from 6.9 percent of GNE to 22.2 percent).

Civilian exhaustive expenditures (excludes defence expenditures) increased by 23 percent (from 15.0 percent in 1951 to 19.4 percent of GNE in 1986) over the same period. The exclusion of hospital expenditures from the civilian exhaustive total indicates that the government's role increased from 15.0 percent of GNE in 1951 to 16.6 percent in 1986, although it reached a high of 19.8 percent in 1971. Hospital expenditures were excluded because they were not included in the national accounts measure of government expenditures prior to 1961. They were included in GNE as private expenditures. Over the late 1950s and the 1960s public expenditures were substituted for private expenditures due to the introduction of a national hospital insurance scheme in 1958 and a national medical insurance system in 1968. Hence, once hospital and defence expenditures are excluded, the real growth of government expenditures on the remaining services displays a relatively small increase (as measured by their share of real GNE).

Figure 7
Real Growth of Government Spending, 1951 to 1986



Source: Appendix table 5A.

SUMMARY

The measures of size and relative importance of the growth of government expenditures employed in this chapter indicates a number of interesting patterns from 1951 to 1986. First, as a percent of GNE, government expenditures have almost doubled over this period, with the growth in government transfers accounting for approximately 70 percent of the increase. The remaining 30 percent was attributed to exhaustive expenditures.

Second, when government expenditures are disaggregated into specific categories, transfers as a percent of total government expenditures exhibited the largest proportionate increase (largely driven by the growth in interest payments on the public debt). At the same time, both civilian wages and expenditures on other civilian goods and services accounted for an increasing proportion of government expenditures. By contrast, defence spending and expenditures on capital formation declined proportionately; in fact, defence expenditures declined dramatically.

Third, a comparison of the relative growth in expenditures by level of government indicated that expenditures by provincial governments outpaced those of the federal and local governments.

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Fourth, social expenditures (health, education and welfare) displayed the fastest growth rate (primarily due to the social services component) over the 36 years. Over the past decade, however, interest payments on the public debt increased at a faster rate than any other category.

Fifth, the decline in the relative importance of defence spending contributed considerably to a decline in constant dollar expenditures on exhaustive services. At the same time, civilian government expenditures excluding hospitals increased rather modestly.

Government spending patterns from 1982 to 1986 are notably different than those from 1951 to 1981. Total government expenditures in current dollars have not increased in relative importance. Transfers in total have risen slightly, but these increases are caused by the continuing growth in interest payments on the public debt. Exhaustive expenditures have declined. In constant dollars, all government expenditures (with the exception of transfers and they have remained constant) declined from 1982 to 1986.

NOTES

1. For a thorough presentation of statistical evidence on the growth of government expenditures up to the mid 1970s, see Bird, (1970) and (1979).
2. 1951 was chosen as the beginning year on the assumption that most of the expenditure consequences of World War II had disappeared by this time; 1986 was the latest year for which data were available.
3. It is recognized, however, that real resources (labour, manpower, etc.) are used up to ensure that transfers are paid to those who qualify, be they persons, corporations or other governments.
4. The extent to which this represents an increase in the labour intensity of the public sector is examined in chapter 6.
5. Bird, (1970, chapter 6) suggests that the substitution of public for private health expenditures in the late 1950s and 1960s did not lead to an increase in resources devoted to health, rather it merely switched the expenditures from the private to the public sector.

EXPLAINING PUBLIC SECTOR GROWTH: TRADITIONAL AND NEW APPROACHES

In chapter 2, it was argued that the bulk of non-transfer government expenditures at all levels could be considered services. Most traditional explanations for the growth in the public sector do not distinguish between goods and services. Many reasons have been offered as possible explanations for the growth in government spending in the post-war period:¹ rising income levels, increasing urbanization, the substitution of public for private goods, technological and innovative changes (increasing use of the automobile, for example), national crises (for example, the Korean war and inflation), changes in the political and bureaucratic structures, fiscal centralization, productivity changes and ideological changes.² According to recent theories of service (private) sector growth, relative prices, income elasticity of demand, productivity growth and technology have contributed to growth in government spending.

This chapter contains a review of the traditional analysis of government expenditure growth under two main headings: growth caused by demand and growth caused by supply factors.³ Demand driven changes may arise from demographic shifts, rising incomes and changes in political institutions. Supply driven changes can be caused by the higher costs associated with the provision of goods in the public sector compared to the private sector and by the impact of the public sector bureaucracy on government spending.

Demand

Demographic Changes

Changes in the demographic composition of the population may lead to changes in the government's expenditure patterns. For example, in Canada an ageing population has probably contributed to the decrease in the proportion of government expenditures devoted to education and the in-

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crease in the proportion assigned to health and social welfare (see figure 5 in chapter 3 and appendix table 4A for an illustration of the expenditure trends). But the extent to which demographic changes have caused government expenditures to increase is unknown. No analytically solid way to sort out the increase attributed to population change versus quality changes (or some other variable) has yet been developed. Nevertheless, two researchers in the mid-1970s who measured the extent to which population changes accounted for the government's growth concluded that demographics alone explained a relatively small fraction of total public sector growth.⁴

Income-Elasticity of Demand

If there is high income elasticity of demand, then, as real per capita income increases, the demand for government expenditures (to provide government services) rises more quickly. Looking at the data, government expenditures have absorbed an increasing proportion of GNE from 1951 to 1986, but exhaustive expenditures have maintained an almost constant proportion of GNE since 1970 (figure 1 in chapter 3 and appendix table 1A). Thus, income elasticity has exceeded unity for total expenditures and remained at or near unity for exhaustive expenditures.

The calculation of income elasticity coefficients does not, in itself, tell us what causes people to demand government services. The coefficients do not explain the rationale for the growth in government expenditures.⁵ For example, why must changes in demographic patterns or rising levels of income necessarily lead to rising government expenditures? To answer this question, the role of political institutions must be examined.

Political Factors

Year-to-year growth in government expenditures is determined in the political arena and is thus subject to political pressures. Despite suggestions that the size of government must be reduced (particularly, the federal government) in order to reduce the public debt and lower total interest payments, little has been done. A significant percentage of Canadians are still employed by the government or quasi-government sector and these employees are almost certain to be in favour of maintaining their jobs and the status-quo, in spite of their comments publicly to the contrary.

Also, a number of Canadians benefit in one way or another from a large government through contracts, purchases, and so forth. Many Canadians would choose a large government providing direct and indirect employment over a smaller government providing fewer government jobs, contracts, purchases and so forth. These Canadians are unlikely to vote in

favour of reductions in government spending if the reductions lower their benefits more than they would reduce their personal taxes.

Supply

Relative Price Effect

The relatively high rate of growth in government spending in the 1950s and 1960s can be attributed to the even greater increase in the price of goods and services purchased by governments.⁶ To buy the same level of goods and services over time would require an increase in the proportion of national income devoted to the government. Public officials have argued that this is one of the main reasons behind the growth in government spending in the post-war period.⁷

Although the price differential has been partially responsible for the growth in government spending, the government still must bear some of the responsibility for creating this differential. There is no fundamental law requiring government to continue purchasing the same mix of inputs (labour is the major item purchased by governments) in the 1980s as it purchased in the 1950s or 1960s. Throughout the post-war period, they have been hiring greater numbers of expensive employees, such as professionals (see chapter 5). When the new pay equity legislation is implemented, labour costs will be even higher.

Decisions on the type, numbers, characteristics and wages of employees—and hence on the level of government expenditures—are, in part, political decisions. Governments are not blameless in creating some, if not all, of the existing relative price differential.

Substitution of Public for Private Provision

If services previously provided in the private sector are absorbed into the public sector, then public sector expenditures will increase. Indeed, this happened when the government became actively involved in the provision of health care in the early 1960s (see figure 5 in chapter 3 and appendix table 4A). Whether or not government provision leads to higher costs (per unit or total) is a matter for empirical investigation. As we report in chapter 8, there are a number of studies suggesting that government provision is more costly than private provision of the same service.

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Role of the Bureaucracy

One of the more recent explanations for the growth in government spending concerns the roles of the bureaucracy, the bureaucrats and the elected politicians. Bureaucrats, like private sector managers, are interested in maximizing their utility but the major difference between the bureaucrats and private sector managers is the less stringent constraints faced by the former

Whether the manager works in the public or private sector, he will attempt to maximize his utility by gaining higher pay, more power, more prestige and more security. These benefits can be obtained more easily in an organization in which the manager or official has a large staff and organization working for him. The constraints, on the other hand, are not the same. Private sector managers and officials face greater pressure to satisfy consumers and to ensure profitability. Competitive market forces provide checks and balances that foster greater efficiency. Public sector officials, by comparison, are not subjected to competitive market forces; hence, there are fewer incentives to be as efficient in the production and provision of services.⁸ Furthermore, public sector officials face internal constraints—they must prepare through reports and be audited—that limit their efficiency.

SERVICE SECTOR GROWTH IN PRIVATE SECTOR

Recent growth in the service sector has generated considerable discussion about why this growth has occurred. In the case of private service sector growth, the following arguments have been offered as explanations:

1. The relative decline in the price of service outputs compared to prices of manufactured goods.
2. A high income elasticity for services.
3. The slower rate of productivity growth in the service sector.¹⁰
4. The nature of economic growth has been such that goods production over the past 25 years has used more and more service sector inputs.

An important question is whether these explanations are also applicable to public service spending. Another question is whether these explanations adhere to traditional public finance theories about growth.

If relative price and income elasticity effects are examined first, these theories are rejected as adequate explanations for the growth of the service sector (see McRae et al., 1984). But, these studies ignore the public sector. Relative income elasticity of demand has long been advanced as an ex-

planation for government expenditure growth. It is not difficult to construct an indifference map to demonstrate that once certain tastes for private goods have been satisfied, a willingness to “share the wealth” is reflected in a demand for such government activities as income redistribution.

Leaving aside transfer payments, government services such as health, post-secondary education, and housing embody distributional effects. If the desire to redistribute wealth is income elastic, so the willingness to supply such service increases with the rise in real income per capita. Statistical studies usually show a high degree of correlation between the dependent variable and per capita real income. This correlations means only that the two time series have grown at roughly the same speed over time. Median voter models and other models to determine public expenditure have not rejected income as an influence on public expenditure growth.

Many areas of government expenditure are not directed toward redistribution. Is rising income an important determinant of expansion in these services? Rising per capita spending on primary and secondary education, police and fire protection, recreation, transportation and the post office are all associated with rising income. But, these increases in expenditure do not necessarily reflect an increase in real services. What we may well be observing is a rising per capita expenditure to sustain a constant (or even declining) real level of service. The overwhelming difficulty stems from the problems of measuring output and productivity. More will be said about this when productivity in the public sector is examined in chapter 7.

The slow rate of productivity growth has been identified as a reason for the growth of employment and expenditure. For the public sector, this is usually referred to as the “Baumol hypothesis.”¹¹ Wages in the private sector rise by the rate of private sector productivity growth, and public sector wages parallel those wage increases. More and more resources must then be channelled into the public sector when its productivity is lower than the private sector’s. Although some evidence supports this hypothesis, empirical studies testing the hypothesis are constrained by the problem of finding a satisfactory measurement of public service output in the absence of market transactions.

The intermediate demand for services may also explain the service sector’s growth whereby the goods sector uses more service sector inputs per unit of output. It could indicate illusory growth; what used to be done in-house (and measured as goods production) could now be done outside the firm.

Governments have become increasingly inclined to “contract-out” for certain services in order to fulfill their ultimate service to the consumer. Governments are also providing services which do not exhibit the characteristics of pure or quasi-public goods to firms. Why, how many and what kind of services are being provided—all these questions must be answered.

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A government bureau's decision to contract out is not that different from a private sector firm's decision. For infrequent specialized services, it may cost less to contract out than to maintain a permanent in-house staff. The more complex the government activity, the more likely contracting out will occur. Also, contracting out may make sense when a new service is added to a bureau's mission. This is similar to Coase's (1973) argument regarding the expanding firm.

Contracting out allows governments to claim they are reducing the size of the public sector. In terms of public sector employment, this claim may be true. But government expenditures may rise due to the loss of scale economies and fiscal control over the project. Contracting out also provides a greater degree of fiscal flexibility since projects can be slowed down by changing the rate at which contracts are let to private firms. The issue of contracting out is considered in detail in chapter 9.

SUMMARY

Arguments used to explain private service sector growth help to understand public service growth—at least conceptually. In some instances, the reasons for public service growth do not apply to the private sector. Our review suggests that trying to explain public sector growth from a “macro” viewpoint is not productive. Each component of the public sector must be viewed separately since the forces leading to increases or decreases in growth are likely to differ from one category to the next.

NOTES

1. See Auld, Douglas, (1976) and Bird, Richard M., (1970 and 1979).
2. This list follows Auld, (1976), although other authors have constructed similar lists.
3. This approach follows Bird, (1979, ch. 7).
4. See Denton and Spencer, (1977) and Perry, (1977).
5. Bird, (1970, p. 96).
6. For a recent discussion of this and a 13 country comparison of public sector expenditure trends, see Beck, 1982.
7. See Ontario Ministry of Treasury, Economics and Intergovernmental Affairs, (1976).
8. For a more detailed discussion of the underlying theories of predicting why government production and provision will be more expensive and why government services are more likely to be over-supplied when compared with private production and provision, see the discussion on the "public choice" and "property rights" theories in chapter 8.
9. See McRae, Dobell and Desbois, (1984).
10. This has lead to an expansion of employment in the sector because of the higher labour content per unit of output. This may be measuring only sector specific employment and expenditure, not real output.
11. See Baumol (1967). This is discussed in more detail in chapter 7.

COMPENSATION IN THE PUBLIC SECTOR

One reason for the Federal government's Anti-Inflation Board in 1975 was the perception that wages and salaries in the public sector were "out of control."¹ It was argued that the usual labour market models employed to explain wage behaviour in the private sector were not applicable to the public sector (Fogel and Lewin, 1974). In 1980 and 1981 similar arguments were advanced to support the special compensation controls imposed by governments across Canada for public sector employees only.

Is there something intrinsically different about the public sector that enables public service employees to escape the normal controls imposed by the markets? Are salary and wage levels out of line with the non-service sector? Compared to the private sector, what are the significant features of public sector service compensation over the past 20 to 25 years? Is our information on public sector compensation reliable, consistent and useful? These and related questions are the focus of this chapter. Over the past ten years, the amount of research dealing with the public sector has increased significantly. Space limitations, however, permit us to highlight only the major features of the recent work.

PRIVATE AND PUBLIC SECTOR COMPENSATION COMPARISONS

Private and Public Sector Employment Income: Data from Taxation Statistics

The annual report of the Minister of Revenue (*Taxation Statistics*) provides data on the reported income of several professional occupations including public employees. Furthermore, the data isolate income from employment or direct compensation for professional activity for these groups. The public sector groups chosen are federal, provincial, local employees and teachers/professors. These are compared to annual incomes earned by doc-

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Table 2

Ratio of Average Federal Government Employee Income to Selected Professional Private Sector Incomes, Canada 1960 to 1985

Year	Doctor/ Surgeon	Engineer/ Architect	Lawyer	Dentist	Accountant	Insurance Agent	All Employees
1960	.25	.26	.28	.34	.36	.54	1.03
1965	.22	.27	.27	.33	.38	.55	1.08
1970	.21	.30	.30	.32	.45	.72	1.21
1975	.28	.30	.30	.32	.37	.63	1.11
1980	.31	.53	.42	.35	.49	.87	1.24
1982	.33	.62	.43	.38	.58	.98	1.29
1985	.28	.67	.42	.33	.48	1.08	1.30

Source: *Taxation Statistics*, Revenue Canada, Ottawa (annual).

tors, dentists, engineers/architects, lawyers, accountants and insurance agents. The results are shown in tables 2 to 3.²

Federal Government Employees

The average federal government employee's salary has done better between the period 1960 and 1985 than all six but one of the private sector groups' salaries (table 2). The most dramatic change has been the decline in the relative earnings of engineers/architects. A federal employee was earning approximately one-quarter of a doctor's salary in 1960. By 1970 he was earning one-fifth of a doctor's salary; but, by 1982, he was earning approximately one-third of a doctor's salary. This slipped back to 28 percent of a doctor's income by 1985.

Provincial Government Employees

Provincial employees have not done quite as well. Their position relative to doctors did not really change over the 25 year period (table 3). In 1960, the average provincial employee was better off than his federal counterpart, but that situation did not remain for long. In all other comparisons, the provincial employee's position showed improvement over time.

Local Government Employees

In 1960 the average income of local government employees was similar to that of the federal government employees (table 4). By 1985, however,

Table 3
Ratio of Average Provincial Government Employee Income to Selected Private Professional Incomes, Canada, 1960 to 1985

Year	Doctor/ Surgeon	Lawyer	Dentist	Architect/ Engineer	Accountant	Insurance Agent	All Employees
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1960	.30	.27	.32	.25	.34	.51	.98
1965	.21	.26	.31	.26	.37	.53	1.05
1970	.20	.28	.30	.36	.41	.67	1.10
1975	.27	.30	.31	.29	.36	.62	1.08
1980	.30	.41	.34	.52	.48	.85	1.22
1982	.31	.41	.36	.59	.54	.93	1.22
1985	.24	.37	.29	.58	.42	.94	1.14

Source: Same as table 2.

Table 4
Ratio of Average Local Government Employee Income to Selected Private Professional Incomes, Canada, 1960 to 1985

Year	Doctor/ Surgeon	Architect/ Engineer	Lawyer	Dentist	Accountant	Insurance Agent	All Employees
1960	.26	.27	.29	.34	.37	.54	1.04
1965	.21	.26	.26	.31	.37	.53	1.04
1970	.19	.35	.27	.29	.40	.65	1.08
1975	.26	.28	.29	.30	.36	.60	1.06
1980	.26	.45	.35	.29	.41	.73	1.07
1982	.28	.53	.37	.32	.49	.84	1.10
1985	.24	.57	.36	.28	.41	.92	1.12

Source: Same as table 2.

local government employees had fallen behind the federal government employees income. The local government groups actually lost ground to dentists and doctors over the period.

Professors/Teachers

This group has done relatively better than the other professionals reviewed. In 1960, the average teacher/professor's salary was one-third of the average lawyer's salary (table 5). By 1985, the average salary had risen to more than one-half. The issue of teachers' salaries is dealt with in much more detail in another volume in this series. (Easton, 1988)

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Table 5

Ratio of Teachers/Professors Average Income to Selected Private Professional Average Incomes, Canada, 1960 to 1985

Year	Doctor/ Surgeon	Architect/ Engineer	Lawyer	Dentist	Accountant	Insurance Agent	All Employees
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1960	.27	.28	.30	.36	.39	.58	1.11
1965	.23	.28	.28	.34	.40	.58	1.14
1970	.23	.42	.32	.35	.49	.78	1.28
1975	.31	.33	.33	.35	.41	.70	1.22
1980	.40	.68	.54	.45	.63	1.11	1.58
1982	.41	.78	.54	.47	.72	1.22	1.61
1985	.34	.82	.52	.41	.59	1.32	1.60

Source: Same as table 2.

Next, we compared public sector salaries to all employees' salaries. In 1960, public sector salaries ranged from 98 to 111 percent of the all employees' salaries. By 1985, this figure ranged from 112 to 160 percent. The most dramatic increase occurred between 1975 and 1985 when the average teacher/professor's salary rose from 122 to 160 percent of the average employee's salary. The source of this sudden and widening gap is not known. Perhaps the Anti-Inflation Board was much more effective in controlling wage inflation in the private than the public sector. Perhaps the rapid growth in post-secondary education contributed to higher salaries.

The Longer Term Relative Position of Public Sector Salaries

If more aggregated private sector incomes are considered as a basis for comparison, it is possible to examine relative incomes over 40 years. These data are shown in table 6. The average earnings of federal government employees in the post-war period are roughly equal to the earnings of private sector employees until the early 1960s. From then until the early 1970s federal earnings grew rapidly, declined for the next five years and recovered by the mid-1980s (when the average federal salary exceeded the average business salary by 30 percent). Though not as dramatic, a similar pattern emerges for provincial and local government employees. The largest relative increase, according to the data, is in the teacher/professor category.

Table 6
Ratio of Public Employee to Business Employee Earnings, Canada, 1946 to 1985

Year	Institutions ^a	Teachers and Professors	Federal	Provincial	Local	All Govern- ment ^b	All Public ^c
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1946	.78	.96	.97	.98	1.01	.98	.95
1950	.75	.97	.96	.96	1.00	.99	.95
1955	.69	1.01	.99	.97	1.01	.99	.94
1960	.70	1.09	1.02	.97	1.04	1.01	.96
1965	.74	1.13	1.08	1.04	1.04	1.05	.98
1970	.84	1.33	1.25	1.15	1.12	1.17	1.10
1975	.89	1.30	1.16	1.14	1.11	1.14	1.09
1978	.91	1.42	1.19	1.17	1.09	1.14	1.10
1985	.94	1.61	1.30	1.14	1.11	1.22	1.10

Source: Computed from *Taxation Statistics* (Ottawa: Revenue Canada Taxation). Annual earnings were first computed for each category, excluding the business sector, by dividing total wage and salary income for all taxable returns by the total number of taxable returns. The ratio of public to business earnings was then computed by dividing the earnings in each sector by the earnings in the business sector.

Notes: (a) Institutions are mainly hospitals and non-profit organizations.

(b) All Government is a weighted average (by number of employees) of federal, provincial and local.

(c) All Public is a weighted average (by number of employees) of federal, provincial, local, teachers and professors, and employees in institutions.

Specific Occupations

The data above incorporate many individual occupations under the classification of the public service. Table 7 provides a more detailed comparison of private and public wages for more specific occupations. The earlier comparison of public sector salaries and private professional salaries suggested that the public sector had made significant gains relative to the private sector. The picture is not quite so clear when wage rates for specific occupations are compared. Gunderson examined the ratio of municipal to private average wages of labourers in 37 major municipalities across Canada between 1952 and 1973:

Since the 1950's there has been a steady increase in the (unweighted) average wages of municipal labourers relative to their private sector counterparts....There appears to have been pressure for average public sector wages to catch up to average wages in the private sector.... (1978, pp. 135-7)

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Gunderson also examined the ratio of federal to private sector wages for specific occupations between 1967 and 1975:

The ratios have generally fallen over time, indicating that federal (maximum) earnings have not risen in the public sector....Certainly if the occupations...are representative of the federal civil service, then this sector has not contributed to the rise of earnings of public sector employees relative to their private sector counterparts. (1977, p. 141)

Table 7 provides more recent data, but it is not directly comparable to the earlier data employed by Gunderson. For 1975 and 1977 they are disaggregated by sex, but not in 1979 and later. Consider, for example, a senior computer operator. In 1975, a female employed in the public sector, as a computer operator, was earning roughly 16 percent more than her counterpart in the private sector. For males, the earnings differential was negligible. Although they have not been subjected to the scrutiny of statistical testing, the following generalizations are valuable. First, in most occupational groups, the public sector salary exceeds the private sector. This is especially true for office occupations. Second, with the exception of manager and senior secretary, females are paid more for a given occupation in the public sector than in the private sector. Third, the difference between the two sectors in wages has narrowed slightly over time. It must be emphasized that these are comparisons of wage rates, not total compensation.

In a detailed statistical analysis of private and public sector earnings differentials (using census data for 1971), Gunderson (1979) concluded that (1) average earnings for males in the public sector were 9.3 percent above those in the private sector; and (2) average earnings for females in the public sector were 22.3 percent above those in the private sector. He argued that about one-third of the difference for males is due to the "superior wage-determining characteristics" of public sector male employees; the rest is economic rent. For females, slightly less than two-thirds of the difference can be attributed to superior characteristics; the rest is economic rent. These data are out of date, but they have been included to underscore our plea for available, consistent, comprehensive data related to wage and salary comparisons in the public and private sector.

Wage Data from Collective Agreements

From the mid-1960s onwards—when the public sector was rapidly unionizing—data have been available to compare trends in public and private sector wage increases for employees in collective bargaining units. The most readily available data relates to base wage rates. While this allows the occupational distribution to be held constant, it has the disadvantage that a

Table 7
Ratio of Public Administration Wage to Wage Rates of Given Occupations in Other
Sectors, Canada, 1975 to 1983

		1975	1977	1979	1981	1983
Junior Accounting Clerk:						
Public Administration	-F					
	-M					
All Industry	-F	1.123	1.136	1.222	1.195	1.123
	-M	1.063	1.061	N.A.	N.A.	N.A.
Manufacturing	-F	1.115	1.142	1.234	1.200	1.123
	-M	1.043	1.030	N.A.	N.A.	N.A.
Non-Manufacturing	-F	1.123	1.129	1.216	1.195	1.127
	-M	1.076	1.078	N.A.	N.A.	N.A.
Service	-F	1.061	1.109	1.264	1.204	1.145
	-M	1.158	1.150	N.A.	N.A.	N.A.
Senior Accounting Clerk:						
Public Administration	-F					
	-M					
All Industry	-F	1.107	1.079	1.124	1.081	1.071
	-M	1.019	0.968	N.A.	N.A.	N.A.
Manufacturing	-F	1.101	1.074	1.098	1.055	1.052
	-M	0.981	0.956	N.A.	N.A.	N.A.
Non-Manufacturing	-F	1.114	1.079	1.128	1.092	1.080
	-M	1.038	0.976	N.A.	N.A.	N.A.
Service	-F	1.088	1.058	1.150	1.116	1.110
	-M	1.091	1.004	N.A.	N.A.	N.A.
Senior Office Clerk:						
Public Administration	-F					
	-M					
All Industry	-F	1.044	1.058	1.003	1.009	1.000
	-M	0.919	0.965	N.A.	N.A.	N.A.
Manufacturing	-F	1.061	1.063	0.953	0.954	0.956
	-M	0.859	0.916	N.A.	N.A.	N.A.
Non-Manufacturing	-F	1.038	1.058	1.011	1.015	1.002
	-M	5.270	6.783	N.A.	N.A.	N.A.
Service	-F	1.086	1.119	1.022	1.046	1.078
	-M	0.882	0.950	N.A.	N.A.	N.A.

Table 7 continued

Senior Computer Operator:						
Public Administration	-F					
	-M					
All Industry	-F	1.107	1.286	1.083	1.076	1.095
	-M	1.022	1.045	N.A.	N.A.	N.A.
Manufacturing	-F	1.163	1.241	1.110	1.085	1.131
	-M	1.004	1.045	N.A.	N.A.	N.A.
Non-Manufacturing	-F	1.084	1.302	1.075	1.070	1.082
	-M	1.027	1.045	N.A.	N.A.	N.A.
Service	-F	1.125	1.278	1.130	1.107	1.154
	-M	1.087	1.117	N.A.	N.A.	N.A.
Manager, Administration:						
Public Administration	-F					
	-M					
All Industry	-F	1.085	1.117	0.978	0.933	0.962
	-M	1.040	0.962	N.A.	N.A.	N.A.
Manufacturing	-F	1.066	1.141	0.926	0.874	0.904
	-M	0.996	0.926	N.A.	N.A.	N.A.
Non-Manufacturing	-F	1.089	1.113	0.989	0.945	0.971
	-M	1.057	0.973	N.A.	N.A.	N.A.
Service	-F	1.007	1.101	0.991	0.943	0.982
	-M	1.022	0.906	N.A.	N.A.	N.A.
Senior Secretary:						
Public Administration	-F					
	-M					
All Industry	-F	1.044	1.013	1.015	1.021	1.013
	-M	1.042	1.043	N.A.	N.A.	N.A.
Manufacturing	-F	1.027	1.018	1.011	1.024	1.015
	-M	1.064	1.000	N.A.	N.A.	N.A.
Non-Manufacturing	-F	1.050	0.957	1.015	1.018	1.013
	-M	1.031	1.053	N.A.	N.A.	N.A.
Service	-F	1.067	1.022	1.035	1.040	1.037
	-M	1.100	1.117	N.A.	N.A.	N.A.
Maintenance Carpenter:						
Public Administration	-M					
All Industry	-M	1.073	1.035	0.992	1.003	1.009
Manufacturing	-M	1.071	1.010	0.959	0.982	0.961
Non-Manufacturing	-M	1.073	1.046	1.013	1.015	1.034
Service	-M	1.138	1.126	1.077	1.069	1.096

Table 7 continued

Electrical Repairman:

Public Administration	-M					
All Industry	-M	1.030	1.013	0.989	0.962	0.977
Manufacturing	-M	1.022	0.993	0.966	0.934	0.953
Non-Manufacturing	-M	1.037	1.038	1.014	0.996	1.004
Service	-M	1.092	1.062	1.077	1.055	1.070

Maintenance Plumber:

Public Administration	-M					
All Industry	-M	1.066	1.028	1.000	1.010	0.988
Manufacturing	-M	1.099	1.029	0.979	0.998	0.982
Non-Manufacturing	-M	1.056	1.026	1.006	1.013	0.989
Service	-M	1.108	1.047	1.027	1.033	1.011

Elevator Operator:

Public Administration	-F					
	-M					
All Industry	-F	0	0	0.934	0.736	1.040
	-M	0.938	0.915	N.A.	N.A.	N.A.
Manufacturing	-F	0	0	0.762	0.658	0.951
	-M	0.800	0.798	N.A.	N.A.	N.A.
Non-Manufacturing	-F	0	0	1.000	0.770	1.086
	-M	1.031	0.980	N.A.	N.A.	N.A.
Service	-F	0	0	1.042	0.767	1.097
	-M	1.064	0.995	N.A.	N.A.	N.A.

Janitor:

Public Administration	-M					
All Industry	-M	1.130	1.052	1.045	1.020	1.089
Manufacturing	-M	1.026	0.932	0.934	0.907	0.944
Non-Manufacturing	-M	1.149	1.078	1.068	1.066	1.130
Service	-M	1.264	1.152	1.170	1.180	1.226

Security Guard:

Public Administration	-M					
All Industry	-M	1.185	1.312	1.127	1.187	1.325
Manufacturing	-M	0.905	1.063	0.771	0.796	0.824
Non-Manufacturing	-M	1.256	1.333	1.225	1.291	1.451

Source: *Wage Rates, Salaries and Hours of Work*, Labour Canada, various years.

Note: F = Female
M = Male

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base wage rate may not represent changes in the wage rates that accompany specific skills. Furthermore, the data available since 1966 for Canada are based on collective agreements of 500 employees or more. An Ontario data base incorporating agreements with 200 or more employees is also available.

Table 8 provides information on the annualized percentage increase in base wage rates for the private sector and several components of the public sector. The percentage increase for each sector is derived from collective bargaining data; the aggregate results are weighted by the number of employees covered in the contract. While these data, as noted above, are not without fault, they do provide evidence of general trends in private and public wage increases. For the period up to and including the first year of the Anti-Inflation Board, there is little more than a one percentage point premium, on average, in public compared to private sector wage increases. If, however, the end point is set at 1975, the average wage increase in the hospital sector over the previous ten years was 13.0 percent compared to 9.9 percent in the private sector. On a cumulative basis, there was obviously considerable catch-up during this period. Between 1978 and 1983, the average annual increase in the private sector equalled or exceeded that in the public sector. If all public sector jurisdictions are aggregated, private sector increases have exceeded public sector increases by approximately one-half a percentage point per annum. Based on a 1968 index of 100.0 in each sector, the private sector index stood at 344 by 1983 and the public sector at 370.

Concentrating on private and public sector wage determinations in Ontario, Auld and Wilton (1986) showed that increases in both sectors were highly correlated. Between 1978 and 1983, public sector wage increases were 0.60 percentage points lower, on average, than wage settlements in the private sector. Of the four components of the public sector (see table 9), only the health employees achieved wage increases greater than did private sector employees because of some large settlements in 1981 and 1982. Education employees averaged a full percentage point less than the private sector in average annual wage increases.

The results of research comparing public and private wage increases in recent years is summarized by Finkleman and Goldenberg:

None of the serious comparative research on wage development in the private and public sectors bears out the popular perception, shared by the policy makers in a number of jurisdictions, that overall negotiated increases in the public sector have significantly outpaced those in the private sector, either in the decade prior to the imposition of wage and price controls in 1975 (the period on which most of the research has been based) or in the years that have followed....annual percentage base rate increases for settlements in the public sector, broadly defined, have

Table 8
Percentage Increase in Average Base Wage Rates, Canada, 1967 to 1983

Year	Federal	Public Sector			Private Sector	
		Provincial	Local	Health	Education	
	(1)	(2)	(3)	(4)	(5)	(6)
1967	—	8.5	12.5	7.9	9.9	7.8
1968	7.0	8.3	7.0	12.5	7.6	8.1
1969	6.3	8.5	11.4	7.2	6.4	8.6
1970	8.4	7.2	9.9	9.8	8.4	8.6
1971	6.6	7.9	9.4	9.4	6.9	8.0
1972	8.9	8.0	7.6	8.0	8.3	9.2
1973	12.3	10.1	9.9	12.0	9.4	10.1
1974	11.3	15.1	12.6	28.6	14.8	14.4
1975	14.3	20.0	17.8	26.6	20.8	14.4
1976	11.5	11.3	10.6		10.7	9.4
Average '67-'76	9.6	10.5	10.9		11.0	9.9
1978	6.6	7.3	6.4		6.7	7.6
1979	8.2	8.4	8.7		7.9	9.5
1980	10.8	11.2	10.4		9.7	11.5
1981	12.6	13.6	13.2		13.7	13.9
1982	7.8	10.6	12.9		11.3	9.6
1983	5.5	6.6	5.7		6.7	5.5
Average '77-'83	8.6	9.6	9.6		9.3	9.6

Sources: Auld et al. 1979 and Wilton 1986.

Table 9

Average Wage Settlements for Contracts Without Cola Clauses in Ontario, 1978 to 1983
(number of contracts signed in quarter in parentheses)

	Private Sector	Total Public Sector	Education Sector	Provincial Sector	Local Sector	Health Sector
1978 Q2	6.73 (62)	6.20 (88)	6.25 (33)	5.53 (3)	5.68 (26)	6.72 (26)
Q3	8.60 (83)	6.38 (61)	6.18 (32)	6.44 (3)	7.04 (12)	5.82 (14)
Q4	8.72 (52)	5.44 (75)	6.27 (38)	6.05 (2)	5.21 (5)	5.38 (30)
1979 Q1	8.88 (36)	6.99 (46)	7.08 (29)	10.71 (1)	7.02 (10)	5.88 (6)
Q2	9.67 (56)	7.60 (94)	8.07 (34)	7.90 (15)	7.38 (16)	7.00 (29)
Q3	9.03 (14)	8.82 (95)	7.55 (27)	9.22 (1)	8.97 (28)	9.57 (39)
Q4	9.62 (23)	8.19 (49)	8.19 (19)	— (0)	9.50 (6)	7.86 (24)
1980 Q1	10.85 (26)	9.05 (86)	8.36 (41)	10.11 (5)	9.29 (24)	10.12 (16)
Q2	9.83 (69)	9.07 (86)	8.90 (58)	9.87 (3)	8.82 (15)	10.20 (10)
Q3	11.77 (56)	10.37 (39)	9.45 (19)	11.76 (4)	10.81 (8)	11.40 (8)
Q4	12.04 (44)	10.13 (33)	9.69 (21)	10.04 (1)	10.74 (8)	11.65 (3)
1981 Q1	11.97 (32)	12.16 (45)	11.23 (13)	13.04 (9)	11.70 (15)	13.53 (8)
Q2	12.38 (47)	15.13 (122)	10.71 (41)	13.12 (3)	12.44 (22)	19.52 (56)
Q3	13.22 (15)	13.24 (48)	12.32 (32)	— (0)	12.88 (10)	18.75 (6)
Q4	11.81 (26)	14.45 (69)	12.74 (23)	— (0)	13.44 (7)	15.63 (39)
1982 Q1	10.64 (21)	13.66 (60)	11.69 (30)	12.70 (4)	12.49 (14)	20.26 (12)
Q2	11.42 (67)	12.25 (77)	11.55 (49)	14.00 (7)	12.46 (14)	14.95 (7)
Q3	10.95 (44)	11.20 (59)	11.04 (31)	14.46 (2)	11.49 (10)	10.90 (16)
Q4	9.54 (49)	7.99 (39)	8.70 (28)	6.99 (2)	5.99 (9)	— (0)
1983 Q1	8.78 (49)	6.88 (188)	7.14 (46)	6.39 (17)	5.29 (26)	7.49 (89)
Q2	7.35 (59)	5.77 (173)	5.80 (120)	5.24 (2)	6.10 (20)	5.46 (31)
Q3	6.27 (26)	5.21 (78)	5.28 (43)	5.00 (3)	5.44 (6)	5.07 (26)
Q4	5.12 (28)	4.92 (19)	5.18 (3)	— (0)	3.08 (2)	5.12 (14)

Source: Auld and Wilton 1986.

Note: Wage settlements are defined as percentage increases.

generally been on line with or even slightly lower than, increases in the private sector. (1983, p. 170)

The Determination of Wage and Salary Increases in the Public Sector

The issue of public sector wage determination has been examined extensively in recent years.³ In this section we review the evidence and comment on its importance in understanding trends in public sector compensation in Canada.

The question which preoccupied labour market experts in the late 1960s and early 1970s was whether public sector wages were determined in a different manner than those in the private sector. Until the mid-1970s conventional wisdom was that private sector labour market theory was of little use in explaining wage changes in the public sector (Fogel and Lewin, 1974). The following arguments were used to support this claim:

1. The production of services by the public sector does not depend on competitive conditions.
2. The absence of public service prices for outputs allows considerably more margin for discretion in establishing wages in the public sector.
3. There is no profit maximization motive for government and hence fewer incentives to hold down costs.
4. Government's monopoly on many services results in the absence of a conventional demand curve for labour.
5. Politics plays a major role in public sector wage determination.
6. Public sector unionization allows exploitation of employers by employees given in (4) above.

Thus, given similar models of wage determination for the private and public sector, one would expect to find the following:

1. Generalized labour market conditions do not explain wage change in the public sector. If they do, the result ought to be very different from the private sector.
2. A wage model that works for the private sector would not work for the public sector.
3. With respect to actual and expected inflation, public and private sectors would respond in different ways.

In his review of the empirical studies for Canada, Wilton (1986, p. 39) concluded that the widespread perception of a public sector "out of con-

trol" was "a serious distortion of economic reality." Public sector wages do respond to basic market forces just as they do in the private sector, as Auld found in 1980. The only exception to this rule is an arbitrated settlement where a statistically perverse relationship exists between wage changes and labour market conditions: increases in job vacancies are correlated with low rates of change in wage rates.

Not only was this true before and immediately after the Anti-Inflation Board was established, but it appears to be true for more recent years. Using quarterly data between 1978 and 1984, Wilton (1986) examined the relationship between wage increases and unemployment in both the private and public sector. He concluded that labour market conditions influenced wage outcomes in both sectors in similar ways.

UNIONISM AND PROFESSIONAL STATUS IN THE PUBLIC SECTOR

One of the most notable features associated with public sector compensation has been the rapid rate of unionization in the public service over the past 20 years, most of it occurring in the late 1960s and early 1970s. The cornerstone for today's public sector industrial relations framework is the Heeney Commission Report of 1965. The recommendations in this report led to the development of collective bargaining in the federal public sector, and shortly thereafter, in the provincial, local, health and education sectors as well. Between 1967 and 1977, the annual rate of growth in union membership for the Canadian Union of Public Employees was 8.0 percent; for the Public Service Alliance, it was 5.6 percent. Coverage became extensive. For non-office workers, 32 percent of all workers were unionized in 1966. By 1976, 98 percent of all workers were unionized. For office workers, coverage went from 24 to 92 percent in the same period. By 1975, the rate of growth in unionization at the federal level had fallen to 1.2 percent per annum, but it was as high as 22 percent at the provincial level (Auld, 1979).

There is relatively little evidence on the effect which unionization in the public sector has had on wage increases. After controlling for other variables, Cousineau and Lacroix (1977) argued that the initial contract for a newly certified bargaining unit in the public sector did obtain a wage premium for unionization. Robinson and Tomes concluded that:

because of the high proportion of unionized in the public sector, a substantial positive premium is estimated when union status is not controlled for. This provides evidence for the hypothesis that recently estimated rents accruing to public sector workers are in fact union differentials. (1984, p. 108)

Using an augmented price expectations Phillips curve and disaggregating by level of public sector in Ontario, Auld (1987) found that the effect of unionization on wage increases varied from sector to sector. The most significant results showed that the rate of unionization in the education sector influenced the rate of change in wages in that sector.

Professionalization

One explanation offered for the rapid growth in wages in some components of the public service, especially teachers, is the increase in the proportion of teachers holding higher level degrees (Easton, 1988). According to Gunderson, (1979) this phenomena has occurred at all levels of the public sector. Between 1931 and 1971, professionals (as defined by Gunderson) as a proportion of total public employees increased from 7.0 to 13.5 percent; with the growth of professional employees in this sector increasing more rapidly than in the private sector. Of all the professionals employed in Canada in 1971, over 70 percent were working for one level of government or the health/education sector. To our knowledge, there is no published work extending this analysis to the 1981 census.

Does the high degree of professionalization and unionization in the public sector create any unique problems for public sector management and industrial relations? Gunderson (1979b) answers "yes," but he argues that these unique problems do not necessarily affect wage rates in the public sector. Professionals are identified by unique features such as specialized education/training, occupational identity, imposed regulation, ethical codes and segmentation from the labour force. In government, they work in an environment where there are no prices, few measurable outputs and no profit motives. According to Gunderson, many professionals have experienced unfulfilled expectations and a sense of bureaucratic stagnation. They have turned to collective bargaining in one form or another. By assuming the trappings of trade unions, they have lost some of their status as professionals in the eyes of the public. While these unique problems do create problems for human resource management in the public sector, the effect on wage increases is likely to be minor.

REGIONAL DISTRIBUTION OF PUBLIC SECTOR WAGES AND SALARIES

Governments, at all levels affect the regional distribution of personal income. Wherever public sector employees work, the regional income is affected. When governments purchase materials and services from the private sector, they influence a particular region's personal and corporate

income. Finally, the regional distribution of income, is also affected by transfers to individuals and corporations.

Personal transfers and many business subsidies are formula driven and the regional outcome cannot be pre-determined by government. That is not the case for other expenditures, however. Governments can make discretionary decisions where civil servants will work and from what companies or businesses they will purchase goods and services. The latter approach has been used for many years to provide economic support to one region instead of another. For example, when all taxes paid by Albertans to the federal government were calculated, a recent report claimed that Alberta incurred a negative "net federal fiscal contribution" of \$58.5 billion.⁴ In terms of the net regional impact of the federal government on all provinces, there has been very little detailed work in this area.⁵

Since this chapter has concentrated on public sector compensation, the discussion is devoted to the provincial distribution of federal wages and salaries. Table 10 records federal payroll expenditures in each province as a percent of gross provincial product for selected years from 1971 to 1986. The average for all Canada is exceeded by the smaller provinces because Ontario's and Quebec's influence on the total wage bill is so strong. Federal payroll spending is relatively more important in the Atlantic provinces and Northwest Territories. There are no consistent trends over time, although one can detect the increasing importance of federal wages and salaries in Prince Edward Island, Quebec and Nova Scotia. By choosing the location for and size of the public bureaucracy, Ottawa can exert an impact on the regional distribution of income.

SUMMARY AND CONCLUSIONS

Public sector professional incomes have increased more rapidly than private sector professional incomes over the past 25 years. Second, for skilled office workers, there appears to be some premium for employment in the public sector, but this inference is drawn from a single census year (1971). Third, between 1975 and 1983, there is little variation in wage rates between the two sectors for specific occupations. Fourth, according to the 1971 census data, between one-third and over one-half of the public sector premium is due to superior (high education) wage-determining characteristics in the public sector. Fifth, with the exception of the health and education sector, the annual rate of change in base wages between the public and private sectors did not vary significantly between 1967 and 1983. Sixth, the degree and increasing level of unionism appears to have contributed to higher rates of increase in public sector wages in the earlier years.

Table 10

Federal Government Payroll in Each Province as a Percent of Gross Domestic Provincial Product for Selected Years, Canada, 1971 to 1984

Province	1971	1976	1981	1986
Newfoundland	5.7	6.5	6.0	5.7
Prince Edward Island	6.0	7.8	7.4	9.1
Nova Scotia	7.6	10.5	10.7	9.1
New Brunswick	6.3	7.1	7.5	6.5
Quebec	2.5	3.0	3.4	3.3
Ontario	3.0	3.8	3.5	3.4
Manitoba	5.1	5.3	5.5	5.1
Saskatchewan	2.8	2.8	2.6	2.7
Alberta	2.3	2.2	1.7	2.0
British Columbia	2.6	2.7	2.4	3.0
Yukon and Northwest Territories	9.6	10.8	8.9	6.5
CANADA	3.2	3.6	3.4	3.5

Source: Calculated from *Federal Government Employment*, Quarterly Statistics, Statistics Canada, Ottawa, and *Quarterly Economic Review*, Annual Reference Tables, Department of Finance, Ottawa, June 1987.

At first glance, the evidence appears somewhat confusing, but a careful inspection reveals that the underlying data base and time period differ in almost all the scenarios described above. The fact that professional federal civil servants' incomes have increased faster than private sector professional incomes is not at odds with the fact that base wage rates for unionized federal employees have increased at about the same rate as unionized private sector employees in similar sized bargaining units.

The increased educational qualifications for the professional public employee must not be ignored. Ottawa employs more Ph.D.s and M.B.A.s proportionately than it did 25 years ago. Whether such highly educated employees are necessary is another matter. The public sector had to compete for this skilled workforce and pay the premium associated with the educational background. Both the teaching and health sectors have experienced an increase in superior wage determining characteristics for some of their employees, causing their base wage rates to increase faster than in the private sector.

More and better data are required for a thorough and comprehensive comparison of the public and private sector. Comparative Occupational

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data should be collected on a consistent basis every five years. Base wage rate data should be supplemented with average wage rate data annually. Occupational-educational profiles of public and private sector employees should be completed every five years.

NOTES

1. See Auld and Wilton (1981) for a sample of the perceptions which existed in the pre-A.I.B. period.
2. We have included teachers/professors in our description here although the education sector is dealt with in more detail in Easton (1988).
3. See references in the bibliography to Auld, et al. (1979); Auld and Wilton, (1981), (1986); Auld, et al. (1980); Wilton, (1986) and Cousineau and Lacroix, (1977).
4. See R. Mansell and M. Percy, (1988).
5. The study by Irene Banks, (1977) is worth noting, particularly for the difficulties encountered in such research

PUBLIC SERVICE EMPLOYMENT, GROWTH AND STRUCTURE IN CANADA

In the late 1970s, the Institute for Research on Public Policy (IRPP) published three studies on the public sector which contained substantial data related to and analysis on public sector employment, growth and distribution (R. Bird et al, 1979; D. Foot (ed.) 1978 and M. Bucovetsky (ed.) 1979). These studies covered the following topics:

1. the size and growth of public sector employment,
2. the composition of public sector employment,
3. political influences on employment,
4. the professionalization of the public sector and
5. jurisdictional distribution of public sector employment.

The excellent analysis included in these publications will not be repeated here. Instead, we will update the data wherever possible and modify the earlier analysis when necessary.

THE SIZE OF PUBLIC SECTOR EMPLOYMENT

In order to determine the size of the public service in Canada, the definition of the public sector must be clarified. Using 1971 as a base year, Bird (1979) showed that the size of the federal public sector labour force ranged from 212,632 to 321,050, depending on the source of the data (see table 11). Similar problems exist for the provincial and local public sectors as well. While the absolute numbers are of some use for analytical purposes, it is more important that we examine public sector employment relative to the private sector.

In order to provide an overview of public service growth, figures 8 to 10 (and appendix table 6A) report data on the ratio of public service employment to total employment in Canada from 1961 to 1984. The following trends are observed:

Table 11
Comparison of Public Employment Data, 1971

Source	Total	Federal	Provincial	Municipal
	(1)	(2)	(3)	(4)
1. Census	609,840	299,025	161,465	147,025
2. Labour Force Statistics	601,000	—	—	—
3. Taxation Statistics	1,077,207	321,050	394,431	361,726
4. Statistics Canada	716,970	266,805	245,023	205,142
5. Civil Service Report	427,589	216,488	211,101	—
6. Federal Estimates	—	245,731	—	—
7. Pay Research Bureau	—	212,632	—	—

Source: Bird, R.M., *The Growth of Government Employment in Canada*, Institute for Research on Public Policy, Montreal, 1979.

Figure 8
Government Employment as a Percentage of Total Employment
1961 to 1984

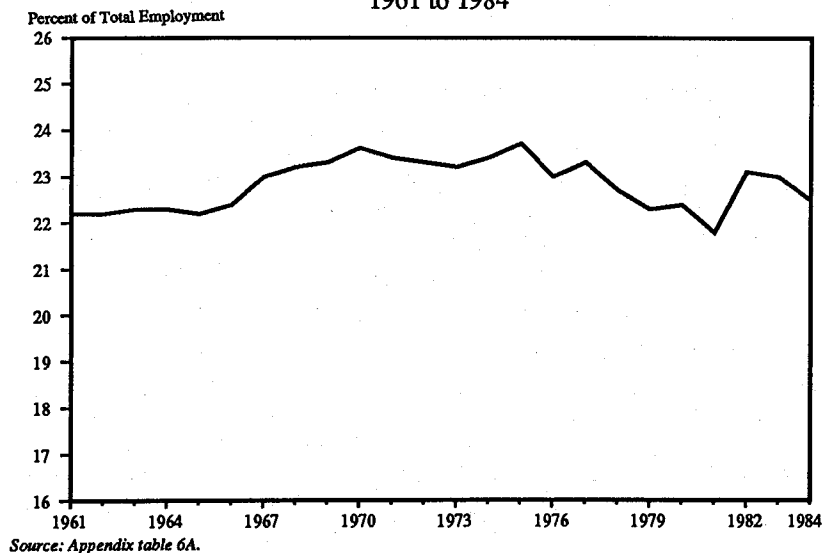


Figure 9
Government Employment by Level, 1961 to 1984

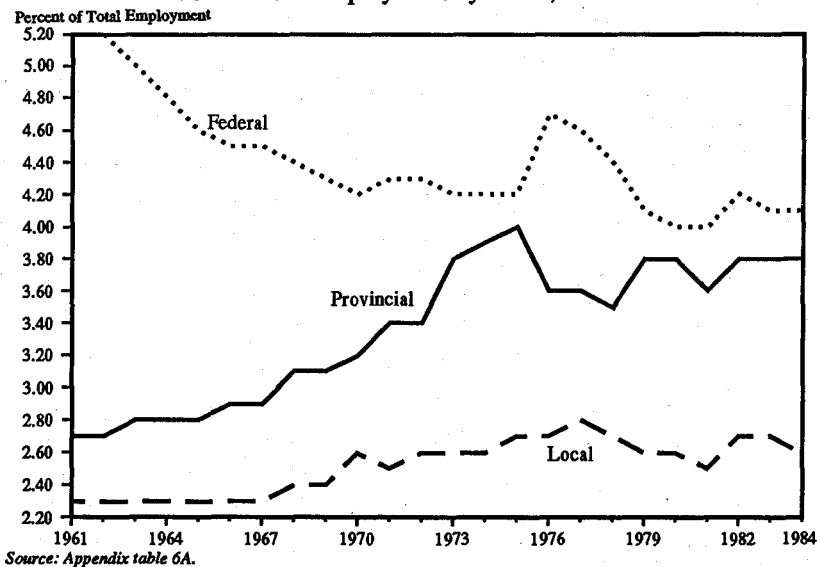
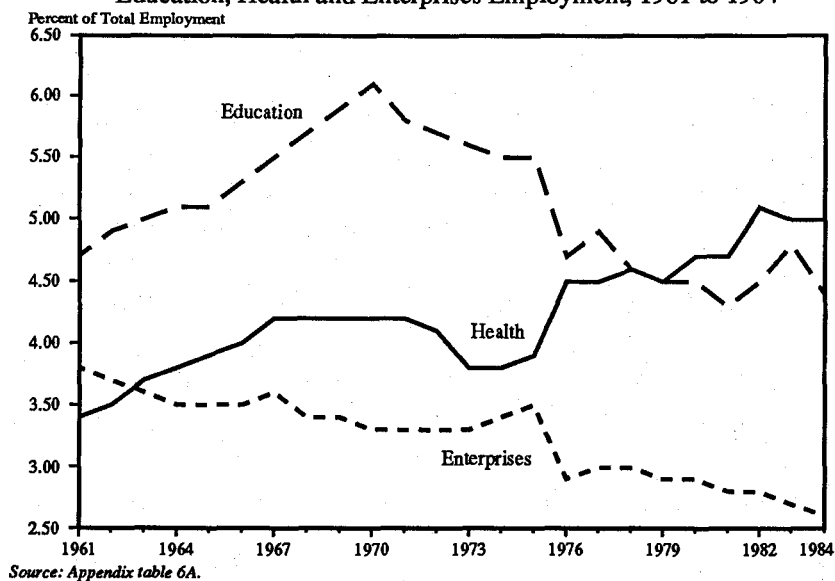


Figure 10
Education, Health and Enterprises Employment, 1961 to 1984



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1. Up to 1975, total public service growth only marginally exceeded growth in total employment, increasing the ratio from 0.222 to 0.237.
2. This growth was largely due to the rapid increase in employment at the provincial government level and some large increases, initially, in education. However, education started to decline in 1971.
3. From 1975 to 1981, the ratio declined, then increased significantly in 1982 and 1983 when the recession caused unemployment in the private sector to rise sharply. By 1984, the ratio had dropped slightly to its 1980 and 1966 level.

REGIONAL SIGNIFICANCE

The regional significance of public service growth can be seen in tables 12, 13 and 14 where federal, provincial and local employment is shown as a percentage of the labour force. These data show federal employment rising from 4.8 to almost 5.4 percent of the labour force between 1965 and 1975 then falling to just under 4.6 percent by 1985. The fastest growth occurred at the provincial level, as Hodgetts and Dwivedi noted in one of the first studies on public service employment in 1969. Alberta, Quebec and New Brunswick show the most substantial growth when the data are disaggregated by province. In relative terms, local government growth has been minor.

EMPLOYMENT PER 1,000 POPULATION

While the number of tellers in a bank or waiters in a restaurant per customer does not always correlate perfectly with the level of service or quality, it would be difficult to prove that it doesn't make any difference. As a broad measure of the level of service, we have computed the number of public servants per 1,000 population for the three levels of government between the period 1965 and 1985 (see tables 15, 16 and 17).

At the federal level there was substantial growth in employment per 1,000 population between 1965 and 1975; in fact it was almost a 50 percent increase. By 1985 federal employment per 1,000 had fallen off just slightly. Between 1965 and 1975, Prince Edward Island, Nova Scotia and New Brunswick experienced the greatest increases in the level of federal employment. Only Newfoundland, Quebec and Prince Edward Island experienced relatively noticeable increases between 1975 and 1985. Provincial service levels exhibited very large increases between 1965 and 1975; Alberta, New Brunswick, Prince Edward Island and the Yukon and

Table 12
Federal Government Employment as a Percentage of the Labour Force, 1965 to 1985
(Distribution by Province as at December)

	1965 ^c			1975			1985		
	Enter- prise ^b	General ^a	Total	Enter- prise	General	Total	Enter- prise	General	Total
Nfld.	—	.06	—	.07	.06	.13	.04	.06	.10
P.E.I.	—	.02	—	.01	.03	.04	.001	.03	.03
N.S.	—	.20	—	.07	.31	.38	.05	.26	.31
N.B.	—	.10	—	.08	.11	.19	.06	.10	.16
Que.	—	.48	—	.51	.49	1.00	.46	.52	1.08
Ont.	—	1.33	—	.60	1.48	2.08	.54	1.13	1.67
Man.	—	.15	—	.15	.15	.30	.16	.14	.30
Sask.	—	.09	—	.07	.10	.17	.05	.08	.13
Alta.	—	.18	—	.12	.23	.35	.14	.20	.34
B.C.	—	.29	—	.14	.31	.45	.14	.28	.42
Yukon	—	.04	—	.003	.01	.01	.004	.009	.01
N.W.T.	—	^d	—	.006	.02	.03	.005	.02	.03
Outside Canada	—	.05	—	.08	.15	.23	.04	.11	.15
Total	1.81	2.99	4.80	1.90	3.46	5.36	1.66	2.93	4.59

Sources: Bird and Bucovetsky, (1979, p. 100); Statistics Canada, *Federal Government Employment*, catalogue 72-004 (Ottawa: Statistics Canada) 1985.

- Notes: (a) Adjusted so 1975-85 includes members of the armed forces (1965 not available).
 (b) Provincial breakdown not available.
 (c) In 1975-85 post office is defined as an enterprise but is under general government in 1965.
 (d) Yukon and N.W.T. are lumped together in this year.

Northwest Territories showed increases close to 100 percent or higher in the number of civil servants per 1,000. Rapid growth continued until 1985 in Newfoundland and New Brunswick. In 1985, Ontario had the lowest ratio (17.5) and New Brunswick the highest (50.9). The large difference between the provinces does not necessarily reflect service levels or quality of public sector services. Instead, it might reflect efficiencies due to Ontario's large size and different classifications of just what constitutes public servants in each province.

Finally, at the local level, a very modest growth between 1965 and 1985 is observed. Ontario, in 1985, had the highest ratio of local public employees per 1,000 population, probably because of the high degree of urbanization in the province.

Table 13

Provincial Government Employment as a Percentage of the Labour Force, 1965 to 1985
(Distribution by Province as at December)

	1965			1975 ^b			1985		
	Enter- prise	General	Total ^a	Enter- prise	General	Total ^a	Enter- prise	General	Total ^a
Nfld.	.01	.13	.14	.02	.12	.14	.02	.17	.19
P.E.I.	—	.03	.03	.003	.04	.04	.002	.03	.03
N.S.	.02	.18	.20	.07	.19	.26	.04	.17	.21
N.B. ^c	.03	.11	.14	.04	.24	.28	.03	.26	.29
Que.	.19	.66	.85	.27	.85	1.12	.32	.82	1.14
Ont.	.31	.80	1.11	.35	1.04	1.39	.31	.93	1.23
Man.	.10	.12	.32	.12	.15	.27	.09	.14	.23
Sask.	.10	.14	.24	.89	.17	1.06	.10	.17	.27
Alta.	.11	.25	.36	.15	.44	.59	.14	.54	.68
B.C.	.11	.32	.43	.23	.39	.62	.17	.41	.58
Yukon	—	.003	.003	—	.01	.01	.001	.02	.02
N.W.T.	—	.005	.005	—	.03	.03	.001	.03	.03
Total	.98	2.75	3.73	1.33	3.67	5.00	1.24	3.71	4.95

Sources: Bird and Bucovetsky, (1979, p. 117); Statistics Canada, *Provincial Government Employment*, catalogue 72-007 (Ottawa: Statistics Canada) 1985.

Notes: (a) Total includes estimates for British Columbia (1965) based on average growth rate.
 (b) Employees of institutions and special funds are now included for all provinces.
 (c) N.B. considers elementary and secondary teachers as provincial employees.

The period prior to 1965 has been analysed by Foot and Thadane (1978), but they aggregated public employment over all sectors. Between 1947 and 1961, public employment per 1,000 population in Canada almost doubled. The major increases were in Prince Edward Island, where the increase was 334 percent and Quebec, where the increase was 240 percent. The lowest increases were in Ontario and British Columbia with 170 and 160 percent respectively.

GROWTH RATES FOR PUBLIC EMPLOYMENT

In terms of rates of growth in employment, table 18 graphically highlights the changes that have occurred over time and among levels of government. In terms of growth relative to total employment in Canada, the decade between 1956 and 1965 was the golden age for the public sector. In the

Table 14
Local Government Employment as a Percentage of the Labour Force, 1970 to 1985
(Distribution by Province as at December)

	1970			1975			1985		
	Enter- prise	General	Total	Enter- prise	General	Total	Enter- prise	General	Total
Nfld.	.001	.02	.02	.001	.003	.004	x	.02	.0 2
P.E.I.	—	.003	.003	—	.03	.03	x	.003	.003
N.S.	.004	.05	.06	.004	.05	.05	.004	.05	.05
N.B.	.003	.03	.03	.003	.03	.03	.002	.03	.03
Que.	.09	.70	.79	.09	.64	.73	.09	.49	.58
Ont.	.19	.99	1.18	.20	1.05	1.25	.18	1.07	1.25
Man.	.02	.10	.12	.02	.10	.12	.02	.08	.10
Sask.	.005	.08	.09	.005	.09	.10	.005	.09	.10
Alta.	.06	.19	.25	.06	.20	.26	.06	.25	.31
B.C.	.005	.23	.24	.005	.25	.26	.004	.23	.24
Yukon	—	.001	.001	—	.002	.002	—	.002	.002
N.W.T.	—	.001	.001	—	.002	.002	—	.007	.007
Total	.38	2.39	2.77	.39	2.45	2.84	.37	2.33	2.70

Sources: Statistics Canada, *Local Government Employment*, catalogue 72-009 (Ottawa: Statistics Canada) 1985; Bird and Bucovetsky, (1979, p. 129).

Notes: (a) Local level school authorities and municipal hospitals were not included.

(x) Confidential.

Table 15
Federal Government Employment per 1,000 Persons, Canada, 1965 to 1985
(Distribution by Province as at December)

	1965			1975 ^c			1985 ^c		
	Enter- prise ^b	General ^a	Total	Enter- prise ^b	General ^a	Total	Enter- prise ^b	General ^a	Total
Nfld.	—	8.9	—	12.6	11.4	24.0	9.7	13.3	23.0
P.E.I.	—	12.0	—	9.1	22.0	31.1	7.4	26.7	34.1
N.S.	—	18.6	—	8.5	38.3	46.8	7.0	37.5	44.5
N.B.	—	11.8	—	12.5	17.3	29.8	10.9	18.0	28.9
Que.	—	6.1	—	8.3	7.9	16.2	8.8	10.0	18.8
Ont.	—	14.1	—	7.4	18.3	25.7	7.7	16.0	23.7
Man.	—	11.3	—	14.8	15.5	30.3	13.8	16.2	30.0
Sask.	—	7.1	—	7.3	11.0	18.3	6.3	10.1	16.4
Alta.	—	8.7	—	6.7	12.9	19.6	7.7	10.8	18.5
B.C.	—	11.6	—	5.7	12.9	18.6	6.2	12.5	18.7
Yukon	—	65.0	—	15.8	53.8	69.6	14.8	48.3	63.1
N.W.T. ^d									
Canada	6.6	10.9	17.5	8.4	15.4	23.8	8.4	14.8	23.2

Sources: Bird and Bucovetsky (1979, p. 100); Statistics Canada, *Federal Government Employment*, catalogue 72-004 (Ottawa: Statistics Canada) 1985; *Economic Review*, Department of Finance, Ottawa.

- Notes: (a) Adjusted so 1975-85 includes members of the Armed Forces (1965 not available).
 (b) Provincial breakdown not available.
 (c) In 1975-85 post office is defined as an enterprise but is under general government in 1965.
 (d) Yukon and N.W.T. are lumped together in all years.

Table 16
Provincial Government Employment per 1,000 Persons, Canada, 1965 to 1985
(Distribution by Province as at December)

	1965			1975 ^b			1985		
	Enter- prise	General	Total ^a	Enter- prise	General	Total	Enter- prise	General	Total
Nfld.	.8	19.0	19.8	4.4	22.2	26.6	5.1	37.8	42.9
P.E.I.	.5	18.5	19.0	2.2	35.7	37.9	2.3	34.6	36.9
N.S.	1.9	17.4	19.3	8.3	23.6	31.9	5.8	24.6	30.4
N.B. ^c	3.9	12.9	16.8	5.4	36.0	41.4	5.6	45.3	50.9
Que.	2.4	8.4	10.8	4.4	13.8	18.2	6.3	15.9	22.2
Ont.	3.2	8.4	11.6	4.3	12.9	17.2	4.4	13.1	17.5
Man.	7.5	9.2	16.7	11.7	14.5	26.2	11.1	17.1	28.2
Sask.	7.2	10.7	17.9	9.9	18.9	28.8	12.9	21.9	34.8
Alta.	5.5	12.5	18.0	8.8	25.0	33.8	7.5	29.6	37.1
B.C.	4.6	12.7	17.3	9.5	16.0	25.5	7.5	18.2	25.7
Yukon	1.3	13.6	14.9	1.0	65.7	66.7	3.0	89.2	92.2
N.W.T. ^d									
Canada	3.6	10.1	13.7	5.9	16.3	22.2	6.2	18.7	24.9

Sources: Bird and Bucovetsky, (1979, p. 117); Statistics Canada, *Provincial Government Employment*, catalogue 72-007 (Ottawa: Statistics Canada) 1985; *Economic Review*, Department of Finance, Ottawa.

- Notes: (a) Total includes estimates for B.C. (1965) based on average growth rate.
 (b) Employees of institutions and special funds are included for all provinces beginning 1975.
 (c) N.B. considers elementary and secondary teachers as provincial employees.
 (d) Yukon and N.W.T. are lumped together in all years.

Table 17
Local Government Employment per 1,000 Persons, Canada, 1970 to 1985
(Distribution by Province as at December)^a

	1970			1975			1985		
	Enter- prise	General	Total	Enter- prise	General	Total	Enter- prise	General	Total
Nfld.	.2	3.0	3.2	.2	5.0	5.2	x	5.1	5.1
P.E.I.	.1	2.2	2.3	.2	2.5	2.7	x	2.8	2.8
N.S.	.5	5.6	6.1	.5	6.4	6.9	.6	7.9	8.5
N.B.	.4	4.3	4.7	.4	5.2	5.6	.4	5.8	6.2
Que.	1.3	9.7	11.0	1.5	10.4	11.9	1.7	9.5	11.2
Ont.	2.1	11.0	13.1	2.4	12.9	15.3	2.6	15.1	17.7
Man.	1.4	8.2	9.6	1.7	10.0	11.7	1.9	9.6	11.7
Sask.	.5	7.6	8.1	.6	9.7	10.3	.6	10.9	11.5
Alta.	3.2	10.0	13.2	3.6	11.3	14.9	3.4	13.5	6.9
B.C.	.2	9.1	9.3	.2	10.4	10.6	.2	10.2	10.4
Yukon	—	3.4	3.4	—	5.8	5.8	—	15.5	15.5
N.W.T. ^b									
Canada	1.5	9.4	10.9	1.7	10.9	12.6	1.9	11.7	13.6

Sources: Bird and Bucovetsky (1979, p. 129); Statistics Canada, *Local Government Employment*, catalogue 72-009 (Ottawa: Statistics Canada) 1985; *Economic Review*, Department of Finance, Ottawa.

Notes: (a) Local level school authorities and municipal hospitals were not included.
 (b) Yukon and N.W.T. are lumped together in all years.
 (x) Confidential to meet Secrecy Act.

Table 18

Average Annual Growth Rates in Public Sector Employment and Total Employment by Decade for Three Levels of Government in Canada, 1947 to 1985

Component	1947-55	1956-65	1966-75	1976-85
Federal	0.55	3.10	3.81	2.89
Provincial	9.12	8.26	5.44	3.33
Local	6.53	6.94	7.04	1.74
Total Public	5.34	7.64	5.31	2.82
Total Canada	5.10	3.83	5.24	1.85

Sources: Statistics Canada, *Federal Government Employment*, *Provincial Government Employment*, *Local Government Employment*, Ottawa.

Note: Excludes members of the Armed Forces.

Table 19

Public Employment by Category as a Percentage of Total Public Employment, Canada, 1947 to 1985

Component	1947	1961	1975	1980	1982	1985
Federal	31.0	22.8	15.5	14.3	13.2	18.3*
Provincial	16.6	19.8	20.6	20.8	19.9	18.8*
Local	16.7	17.9	19.6	21.2	21.4	21.7
Education	19.1	15.8	14.0	12.3	11.9	8.0
Health, etc.	16.6	23.7	30.3	31.4	33.6	33.2
Total Canada	11.9	17.0	19.3	17.3	17.0	18.2

Source: *Taxation Statistics*, annual, Revenue Canada, Ottawa.

Note: (*) Includes employees of Crown corporations. Excludes members of the Armed Forces.

decade, 1976-85, the local government sector displayed the most dramatic slowdown in growth of employment.

Next to the federal government, education was the largest component of the public sector in 1947 (table 19). By 1985, it had become the smallest component. Health accounted for only 16.6 percent of total public employment in 1947 but rose to 33.2 percent by 1985.

THE FUNCTIONAL DISTRIBUTION OF PUBLIC EMPLOYMENT

Society's needs change over time, voters demand new public services or changes in current programs. Often, there are corresponding changes in expenditures and the composition of public employment. Changes in the distribution of public expenditure by major function were described in chapter 3 of this study. The corresponding changes in employment are now reviewed.

One difficulty with this approach is that the definition of what constitutes a functional area of public employment has been changed. For example, defence disappears as a category by 1975 when it was included in the category protection of persons and property. The category natural resources was used in 1975 but not in 1985. Within these limitations, table 20 provides data on employment by functional activity for the federal government. The only major trend over the period is the decline in employment associated with protection of persons and property as a result of the decline in the size of the armed forces. The growth in transportation and communications employment before 1975 was the result of rapid increases in post office employment and new employment associated with the expansion of air travel. The low figure for 1985 is a direct result of the change in the status of the post office to a Crown corporation and its removal from direct government.

The functional distribution of employment at the provincial level is shown in table 21. The most dramatic increase between 1961 and 1985 was in education, rising from just over 6 percent of the public service to almost 22 percent by 1985. After a decline between 1961 and 1968, health related employment has remained relatively constant. The decline in transportation and communication has been dramatic, although total employment has risen in this area from 30,000 in 1961 to over 47,000 in 1985. However, the rate of growth in this area has slowed considerably in the last 10 years with only 4,000 new employees across Canada. Social welfare, the environment and recreation have been fast growth areas. These data must be interpreted with caution, however, since each province has its own definition of what constitutes a particular functional area. Statistics Canada aggregates these data as well as it can but decisions by one or more provinces in a given year to move a department from one area to another can affect the consistency of trends across all provinces.

At the local government level, the data from an earlier study (Foot, et al, 1978) of the years between 1967 and 1975 and unpublished figures for 1986 reveal a few minor trends in employment shifts (table 22). Social welfare and recreation have shown increases in relative employment. Slight declines in relative employment have occurred in the protection and

Table 20
Functional Distribution of Federal Government Employment, Canada, Selected Years,
1957 to 1985

Function	1957	1968	1975	1985
	(%)	(%)	(%)	(%)
General Government	16.3	16.1	19.6	18.5
Protection of Persons and Property	34.1	31.7	22.9	44.1(4)
Transportation and Communications	20.2	20.3	26.4	6.9(5)
Health	1.5	1.8	2.2	1.8
Social Welfare	13.5	13.3	11.6	5.2(1)
Recreation and Culture	1.3	1.9	2.4	2.3
Natural Resources and Environment	3.0	3.4	4.6	4.3(2)
Immigration/Citizenship	1.6	1.3	1.0	4.8(3)
Agriculture, Trade Industry, and Tourism	4.9	5.2	4.4	4.5
Education	0.8	1.1	1.0	0.5
Foreign Affairs and International Relations	1.1	1.1	2.1	2.5
Other	1.7	2.8	1.8	5.4
Total	100.0	100.0	100.0	100.0

Source: For 1957 to 1975, see Foot, Scicuna and Thadane (1978). For 1985, Statistics Canada, *Federal Government Employment*.

Notes: (1) Redefined.

(2) Authors' estimates due to category changes.

(3) Includes Labour Department in 1985.

(4) Defence included in 1957-68 and 1985 but not 1975.

(5) Post office is omitted when changed to Crown corporation.

public works area. A major problem, however, is that each province has its own classification system.

EMPLOYMENT BY OCCUPATIONAL STATUS

To understand the characteristics of personnel in the public service, it is helpful to examine the proportion of employees in categories such as administration, technical, and so forth. Trends in occupational classification

Table 21
Functional Distribution of Provincial Government Employees in Canada, Selected Years,
1961 to 1985

Function	1961	1968	1975	1985
General Government	8.5	10.7	10.3	9.6
Protection	11.4	16.1	14.0	12.9
Transportation and Communications	28.2	22.5	13.1	10.0
Health	28.6	19.5	21.0	21.0
Education	6.3	11.1	20.1	21.7
Recreation and Culture	1.0	1.2	2.1	2.7
Local Development	0.8	1.0	1.1	1.4
Social Welfare/Labour	3.3	4.8	7.1	9.3(1)
Natural Resources	8.5	7.9	4.9	6.4(2)
Agriculture, Trade Industry, and Tourism	3.4	4.6	4.5	4.2
Other	0.0	0.6	1.8	0.8
Total	100.0	100.0	100.0	100.0

Sources: For 1961-75, see Foot et al. (1978). For 1985, see Statistics Canada, *Provincial Government Employment*, annual.

Notes: (1) Split for 1985 into Labour, Employment, Immigration and Social Welfare.
 (2) In 1985 there are separate categories for Resources and Environment.

Table 22
Functional Distribution of Employment at Local Government Level, Selected Years

Function	1967	1971	1975	1986*
General Government	12.2	12.8	13.3	14.8
Protection	32.9	31.4	30.4	29.9
Public Works	17.9	16.9	16.8	—
Sanitation	5.7	4.9	4.0	2.5
Health	3.2	2.7	3.0	3.2
Social Welfare	4.2	5.8	6.5	8.3
Recreation	18.0	20.2	21.1	23.1
Water Works	5.3	4.6	4.0	3.1
Transportation	—	—	—	13.2
Environment/Development	—	—	—	1.8

Source: Foot et al. (1978).

Note: (*) We appreciate the help of M. Fathy, Statistics Canada, for providing us with the unpublished data for 1986.

may also help in understanding trends in public service compensation. Consistent data over time are available only for the federal government (see table 23). Table 23 shows a substantial increase in the proportion of personnel in the category of executive and scientific and of administrative. To the extent these areas require specialized training and advanced formal education, this type of shift contributes to rising overall wage and salary levels in the public service. Whether this trend is repeated at other levels of government is not known.

SUMMARY AND CONCLUSION

Although public sector employment has increased in the past 25 years, the rate of growth has only marginally exceeded total employment growth. Second, there are significant sectoral differences in public sector employment growth: provincial and health employment has grown more rapidly than total employment growth. Employment in education reached a peak in 1969, declined until 1979 and began to increase after that year. Third, federal public sector employment per 1,000 population was 17.5 in 1965 and 23.2 by 1985. In 1985 it was highest in Nova Scotia and the Yukon (44.5 and 63.1 respectively) and lowest in Saskatchewan (16.4). Fourth, provincial (including health and education) public sector employment per 1,000 population was 13.7 in 1965 and 24.9 by 1985. It was highest in the Yukon (92.2) and lowest in Ontario (17.5). Fifth, local public sector employment per 1000 population rose from 10.9 in 1970 to 13.6 in 1985, with the highest level occurring in Ontario and the lowest in Prince Edward Island. Sixth, in terms of the functional distribution of public sector employment, there are no strong federal trends. Employment is relatively high in the transportation, protection of persons/property and resources. At the provincial level between 1961 and 1985, there has been more employment in education and social welfare and less in health and transportation/communications. At the local level between 1967 and 1985, there has been more employment in the recreation and social welfare. Seventh, occupational category of employment over a 15 year period is available only for the federal sector. The data indicate a trend toward more employees in the executive, professional and administrative areas compared to support staff personnel.

Table 23
Total Federal Public Servants by Occupational Category^a

	1970	1975	1980	1985
<i>Officers</i>				
Executives and Scientific/				
Professional	16,919	25,073	24,626	30,102
% of Total	6.6	7.6	7.2	8.0
% Labour Force	.20	.25	.21	.24
<i>Administrative and</i>				
Foreign Services	25,615	48,467	52,954	60,204
% of Total	10.0	14.7	15.6	16.0
% Labour Force	.30	.48	.46	.47
<i>Technical</i>				
	18,327	27,298	28,259	29,658
% of Total	7.2	8.3	8.3	7.9
% Labour Force	.22	.27	.24	.23
<i>Support Staff</i>				
Administrative Support	55,646	79,212	78,548	76,938
% of Total	21.8	24.1	23.1	20.4
% Labour Force	.66	.79	.67	.60
<i>Operational</i>				
	87,030	101,428	112,292	131,797
% of Total	34.1	30.8	33.0	35.1
% Labour Force	1.03	1.01	.96	1.03
<i>Other^b</i>				
	51,456	47,102	43,626	46,817
Total	254,993	328,580	340,305	375,516
% Labour Force	3.03	3.26	2.92	2.94

Sources: *Public Service Commission of Canada*, Supply and Services, annual; Statistics Canada, *Federal Government Employment*, catalogue 72-004 (Ottawa: Statistics Canada) 1985.

Notes: (a) Statistics are reported as at December each year. They exclude members of the Canadian Armed Forces and post office Christmas help.

(b) "Other" includes employees of "special funds" whose occupational group was not available.

PRODUCTIVITY IN THE PUBLIC SECTOR

PUBLIC SERVICES AND PRODUCTIVITY

There are two interrelated problems concerning productivity and public expenditures. First, it must be determined whether the delivery of public services can be more productive. Even if delivery could become more productive, can it be measured and compared to productivity gains in private goods production? Second, it must be determined to what extent public expenditures contribute to or enhance productivity in the private sector. While the two problems do have common elements, it will be more useful to examine them separately.

PRODUCTIVITY IN PUBLIC SERVICE DELIVERY

William Baumol (1967) explained the growth in the ratio of taxes to GNP in terms of the need to transfer an ever greater share of wealth to government to sustain a given level of services. This theory is based on the idea that each unit of public service requires a fixed amount of labour. In the face of rising costs, the substitution of capital for labour as a means of improving productivity cannot be carried out.

Past studies have, in general, blamed slowdowns in aggregate productivity growth on both the private and public sector, usually with the assumption that public sector productivity is zero (Nordhaus, 1971, Lithwick, 1970, Bosworth, 1972, Economic Council of Canada, 1975). As Bosworth stated some years ago, "Productivity growth in Government is zero by definition: output is measured by labour input." (Bosworth, p. 538)

Charles Hulten's more recent statement leads to a similar conclusion that, "...the output of general government is defined to be equal to labor input, implying that the growth of total factor productivity exactly offsets the effect of non-labour inputs." (1984, p. 256)

Measuring the economy's final value of output is difficult if there are no physical units of output and no final prices. The only option is to measure value in terms of inputs. That is generally the practice followed in deriving the National Accounts. Unless output can be defined and implicit prices assigned to public sector outputs, it is somewhat inappropriate to compare productivity trends in the public service with the private goods sector. This is not only a public sector problem. A string quartet playing a Beethoven Sonata takes the same number of players and time today as it did 100 years ago. What is the gain in productivity? If it is zero, why have wages risen for good string quartets so rapidly in the past 100 years?¹

The term "productivity" itself can be confusing since it is often used in a variety of contexts. If productivity means the efficient use of inputs, then the ratio of real output to inputs constitutes such a measure. Most references to public sector productivity are in terms of one input only—labour or output per worker. A rise in output per worker could reflect (1) enhanced capital per worker, (2) changes in the type of capital used, (3) changes in entrepreneurship or management style, (4) technological change and (5) economies of scale. Labour productivity measures may therefore substitute for total productivity measures, but the cause of any productivity improvement is important yet difficult to pinpoint.

The following simplified example will highlight the problem. Consider two sectors of the economy, consumer goods and the government. The latter is characterized by a general administrative function.

	Consumer Goods Sector		Government Sector	
	Period 1	Period 2	Period 1	Period 2
Money Value of Expenditure	200	250	100	125
Deflator	1.00	1.00	1.00	1.25
Real Value of Expenditure	200	250	100	100

In the consumer goods sector, it is assumed that productivity and wages have risen by 25 percent without any change in prices. The real value of output then rises from 200 to 250 dollars. In the government sector, it is also assumed there is a rise in productivity of 25 percent resulting from the application of information technology to process transfer payments. Wages

also rise by 25 percent for the public sector. The standard practice of deflating money value of output by the price deflator is followed to arrive at the real value of output and the productivity measure. The same process cannot be carried out with respect to the public sector. Because of the difficulty in measuring the physical output of public services, money expenditure in this case is deflated by an index based on the cost of the inputs. Hence, real government expenditure in period two is the same as in period one, and there is no measured increase in productivity. Another example suggested by Bird (1979) is the displacement in a government department of ten clerical staff by a computer. Real output (in terms of the quality of service) may rise, but in the National Accounts there will be a reduction in government service output equal to the wages of the staff replaced.²

This example is oversimplified, but it serves to underscore the danger in making generalizations about the lack of any possible productivity improvement in the delivery of government services. One cannot assume, however, that just because measurement is difficult, there are significant productivity gains in the public sector. The important issue is whether public services demonstrate the ability to generate productivity increases based on reasonable output criteria. Hundreds of papers and books have been printed on the topic of measuring public sector benefits. Although somewhat dated, two of the best studies are Robert Dorfman's (1970) and Selma Mushkin's (1972). Public services for which outputs have been defined and occasionally measured in these and other studies are listed below:

Program	Output Measurement
Fire Protection	Dollar value of fire damage prevented
Police Protection	Incidence of crime (by type of crime)
Pollution Abatement	Reduced levels of contaminant
School Retention Program	Increase in number of students completing school
Highway Spending	Time travel study; reduction in accidents
Waste Removal	Tons per week disposed of

The difficulty with these measures lies in translating conceptual outputs into measurable units and assigning dollar values to the outputs. This, unfortunately, is not easy to do. In many public sector areas, the output is really an activity that can be mapped backwards into a set of inputs and forward into a set of characteristics which ultimately bestow utility on at

least some people. For example, the inputs of the Department of External Affairs involve, among other things, activities such as research, meetings, conferences and writing. These activities help provide information to individuals, resolve conflicts and enhance trade opportunities. We may be able to measure the decrease in high school dropouts, but what value in dollars can be assigned to this? Even if the point is reached where it is agreed that marginal benefits equal marginal costs, can the marginal cost schedule be further reduced to keep more students in school? There is obviously a limit, namely a zero dropout rate.

In the case of fire and police protection, output is measured by the reduction in the probability of fire, and so forth. With fire protection, a dollar benefit can often be attached to damage prevented, but, with police protection, much of the benefit is in psychological terms. If, within a given classification of crimes, it is accepted that the average damage is similar from one time to the next, then the reduced frequency of crime (or probability of occurrence) can be used as an output measure in productivity studies.

Pollution abatement raises another type of problem. The objectives can be achieved by direct expenditure on cleanup facilities or through legislation which either establishes emission controls (regulated standards) or mandates the installation of equipment to reduce pollution. When government spends money to achieve abatement, it is possible to measure the investment outlay against biological or physical improvements in air or water. These improvements in environmental quality can then be transformed into dollar terms related to recreational benefits, health cost savings or the value of an option demand for some activity associated with an improved environment.

In the case of legislation, the direct government cost includes preparing, monitoring and enforcing laws and regulations. But there will also be large private expenditures as firms attempt to meet the new legislation. If Hill's (1977) definition (that the reduction of external diseconomies is a public service) is accepted, then surely pollution abatement must be viewed as a service which needs to be measured and examined in terms of productivity. Perhaps any study of productivity has to be viewed in terms of the various methods (instruments) to achieve a certain goal. From the late 1960s through the early 1980s, researchers debated over the best way to reduce pollution at the least cost—direct legislation, pollution fines or emission taxes.

The major impediment to measuring productivity in the public sector is the difficulty in measuring output. Nevertheless, as noted earlier, measurement difficulties do not mean that productivity is zero.

The Baumol hypothesis has had its supporters (Bradford, Malt and Oates, 1969) and its detractors, who have argued that most public expenditures, are more likely to be capital—not labour—intensive (De Alessi,

Table 24
Payroll Intensity of Federal Expenditures by Function, Canada, 1961, 1975 and 1983
(percent)

Function	1961		1975		1983	
	GGE	G + S	GGE	G + S	GGE	G + S
General Government	48.5	48.8	41.3	53.4	36.5	55.1
Protection (except defence)	65.5	65.6	67.2	68.7	58.9	68.8
National Defence	45.1	45.2	55.4	55.5	39.4	40.8
Transportation and Communication	14.9	24.6	23.3	34.1	26.7	37.5
Postal Services	60.7	—	65.6	—	—	—
Health	3.9	48.6	3.2	54.6	2.9	46.6
Social Welfare	5.6	64.0	3.7	62.5	1.7	63.0
Education	8.8	35.6	2.6	6.5	1.4	5.0
Natural Resources	33.8	54.3	6.2	40.2	7.1	22.2
Agriculture, Trade, Industry	16.2	47.6	13.2	31.0	17.1	30.8
Recreation and Culture	50.9	55.6	32.0	44.7	31.2	43.1
Foreign Affairs	10.8	10.9	10.8	39.7	14.0	20.3
Miscellaneous	46.5	68.4	26.4	33.8	—	—
Total of above functions	25.9	—	17.0	—	—	—

Source: Statistics Canada, *Federal Government Employment*, catalogue 72-004 and 68-211.

Notes: GGE - payroll as a proportion of gross general expenditure.

G + S - payroll as a proportion of expenditure on goods and services.

1969; Orzechowski, 1974). Hulton and Robertson (1983) have argued that because the Baumol hypothesis is based on labour productivity, it is not appropriate to certain cases involving public sector output. Bird (1979) has suggested several sources of evidence which might be used to shed light on the question of public sector productivity in Canada. One source of data is the payroll intensity of federal expenditures (see table 24 for data from 1961, 1975 and 1983). Wages and salaries' as a proportion of total expenditure has declined significantly for general government. For non-defence protection and national defence the proportion increased between 1961 and 1973 but declined by 1983.

Transportation/communication increased over the period as well as the post office. Between 1961 and 1975, payroll's proportion of total expenditures decreased in health, social welfare and education. In natural resources, agriculture and recreation, the proportion decreased, then increased later. In foreign affairs, the proportion rose by 1983. Transfer payments ac-

Table 25

Payroll Intensity of Provincial Expenditures in Canada by Function, 1965, 1975 and 1983
(percent)

Function	1965 ^a	1975 ^b	1983
General Government	42	23	22
Protection	60	49	50
Transportation	23	17	16
Health	13	18	6
Social Welfare	5	7	7
Education	6	10	9
Natural Resources	52	32	11
Trade and Agriculture	29	13	41
Recreation	30	21	19
Miscellaneous	21	44	—
Other	—	—	39
<u>Total (less Other)</u>	17	20	12

Source: Statistics Canada, *Provincial Government Employment*, catalogue 72-007.

Notes: (a) Ratio of salaries and wages to gross general expenditure.

(b) All provincial governments (includes Yukon and N.W.T.).

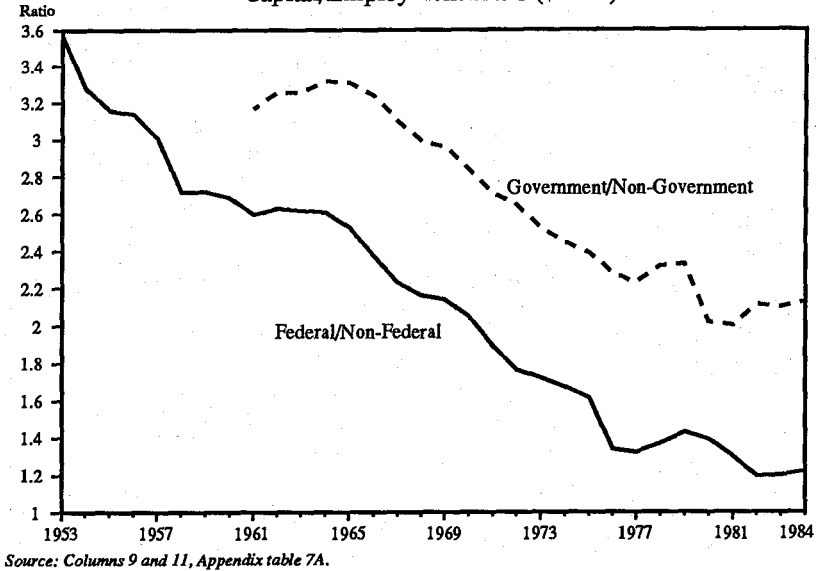
count for the proportion's size in some cases, particularly health, social welfare and education. The dramatic decline in the ratio for natural resources is probably due to the oil subsidies in the mid-1970s and onward.

If the ratio to be examined is payroll expenses as a share of exhaustive expenditures (transfers excluded), the picture changes somewhat. In only three cases—general government, protection and transportation/communication—did the ratio rise. In four cases—education, natural resources, agriculture and recreation—it fell in 1975 and 1983. In three other cases, the ratio was up in 1975 but down by 1983. In one case, it fell in 1975, but rose in 1983. The changes were, however, very small.

At the provincial level (see table 25), in four categories, the proportion has fallen. In two cases, the proportion fell between 1965 and 1975 but then rose—in one case, trade and agriculture, quite dramatically. In summary, the mixed results of the data suggest there is little empirical foundation to support the Baumol hypothesis.

Another approach involves analysing the degree of capital utilization across the economy. This can be approximated: divide the ratio of mid-year sectoral capital stock figures by the number of persons employed in that sector (see appendix table 7A). Columns (1) to (8) of appendix table 7A list the capital to labour ratio. For example, column (2) shows that the capital

Figure 11
Capital/Employment Ratio (\$1971)



labour ratio has risen; thus, capital intensity has increased. In the case of the federal government (column (3), the ratio has fallen between 1953 and 1984. For the non-federal government, the ratio has increased; thus, more capital per worker was being used.

Taking a single year, 1970 for example, the federal government had the highest value of capital per worker in the economy. Columns 9, 10, and 11 show the value of the ratio of ratios. Column (11), for example, is the ratio of real value of capital stock (federal government) to federal government employment divided by the ratio of real value of capital stock (non-federal government) to non-federal government employment.

Two of these ratio to ratio indices are shown in figure 11. The top trend illustrates the capital-labour ratio of the government sector divided by that of the non-government. The declining ratio indicates that capital intensity in non-government is rising relative to the public sector, or if capital intensity is falling, the decline is more marked in the government. This evidence lends some support to the Baumol (1967) hypothesis. However, the lower line in figure 11 suggests that the provincial/local sector is more capital intense than the federal sector, a result which is contrary to Baumol's predictions.

Recognizing the difficulty in measuring public sector output, C. Hulten (1984) examined productivity change in state and local government without using an explicit measure of output in the public sector. He used the characteristics approach to demand theory; where goods in the private household are purchased because of the utility-giving characteristics they possess. The appeal in the public goods case is obvious. Factor inputs produce traffic lights, police patrols and roads—all of which leads to travelling safety, speed and other characteristics.

After observing state and local public services, such as utilities, water, sewage and rail and bus lines, between 1959 and 1979, Hulten (1984) concluded, "The state-local government sector experienced zero or negative total factor productivity over the period 1959-79." (p. 264) Thus, the more precisely output can be measured, the easier it is to understand and thus evaluate the production process for any good or service. The task is easier if the output is unidimensional. Where a combination of inputs leads to a multi-dimensional output (police protection is an example), any evaluation of the production process becomes complicated. Many government services are labour intensive and require person-to-person contact. When the quality of service depends on the interaction between the provider and recipient of the service, an efficiency study, which can easily be used for machines, is useless.

Even if the problems associated with measurement are resolved, the lack of competition and profit motive will, it is argued, limit the efficiency of public service delivery. In recent years, a growing emphasis has been placed on the idea of contracting out public services to the private sector. Because of the growing interest in this approach as a solution to the alleged inefficiency in the public sector, we have devoted chapters 8 and 9 to this subject.³

PUBLIC SERVICES AND PRIVATE SECTOR OUTPUT

It is little understood what role public spending, particularly capital spending, plays in contributing to private sector productivity. Productivity increases in the private sector can be linked to transfer payments in the form of capital subsidies and direct grants for capital spending. Even operational budgets related to such things as telecommunications enhance the ability of the private sector to increase productivity. Corporations do pay for some share of public spending through taxation, but the link between corporate taxes and public expenditures is a tenuous one.

It is legitimate to ask why governments spend money to enhance private sector productivity. Aside from regional or sector income redistribution, governments may spend because of market failure—from a global society

point of view, for example, not enough is spent on research and development or skills retraining. Alternatively, it may be more efficient, from a natural monopoly viewpoint, to have a single telecommunication system.

Public spending on capital works or capital subsidies do not lead directly to any marketable output. Thus, it has not been possible to devise an acceptable statistical measure to analyse how changes in public capital inputs affect private sector output. Public sector output, as noted earlier, is measured in terms of inputs; it would be nonsensical to measure private sector output the same way.

The most widely used aggregate measure of productivity growth in the private sector is the percentage change in the ratio of real output to employment. If real output in the private sector is improved due to an increase in public expenditure or a new public expenditure, the value of output in the private sector will embody this effect. Employment values will not however reflect any public sector input (human or physical capital). Hence, the entire improvement in productivity is attributed to the private sector.

Consider, for example, the relatively new service portfolio for international trade. To encourage exports, the federal government establishes a multi million dollar bureaucracy, the services of which can be used by the private sector. What might cost an individual firm hundreds of thousands of dollars privately to gain access to a new foreign market is provided by the federal government at no cost or below actual cost. Thanks to the federal government, the firm has been able to raise its output/employment ratio, reduce its per unit output cost or increase gross revenues. The federal government will recoup some of the expenditure through higher tax revenues.

We are not in a position to measure this phenomena accurately. What is required is a major research effort to develop a detailed input-output model which would illustrate the important and indeed crucial links between the public and private sector. For example, it would be useful to know what proportion of total employment in a given area of public expenditure (e.g. environment) directly serves the private sector. In addition, knowledge of the dollar value of expenditure in a given functional area of public spending that contributes directly to private sector productivity would further increase our understanding of the link between the public and private sectors.

SUMMARY

If society is to understand and evaluate the role of public service expenditure, it must support research to refine the measurement of public service output and evaluate any productivity changes related to that output. Indirect approaches to measuring the extent of the Baumol hypothesis (using the

payroll intensity of various departments or the capital employment ratios for level of governments) provide mixed results. More sophisticated analysis, though limited, points to zero productivity growth.

Although some inefficiencies may exist in the public sector and sometimes the private sector could replace the public sector, there is a large class of public expenditures which contribute directly to private sector output (see Auld, 1985). These expenditures are made in some cases to correct for market failure. In others, the rationale for such expenditures lies in the government's desire to redistribute wealth inter-sectorally or inter-regionally. While such expenditures may be an input to a specific private production function, the opportunity cost associated with the expenditure could signal a net loss in global productivity. Little is known about the exact nature of this relationship, so a balanced evaluation of public services is not possible.

NOTES

1. We are indebted to Herb Grubel for this example.
2. For a further discussion of this see Auld (1985).
3. A recent discussion can be found in Bish (1986).

CONCEPTUAL APPROACHES TO THE DELIVERY OF PUBLIC SERVICES

INTRODUCTION

Over the past 40 years, governments have been shaping the aggregate level of economic activity more and more (see chapter 3). Over the past decade, governments have been urged to alter the production and delivery of government services in order to lower the cost and extent of government activity. The production and delivery of government services can take many forms, ranging from complete public provision through government departments, Crown corporations, special purpose commissions, agencies or boards to complete private provision by contracting out, using franchises and employing grants and subsidies, vouchers, volunteers and self-help organizations.

The intent in this chapter is to evaluate the merits of public versus private provision, leaving the more specific organizational arrangements (Crown corporations, contracting out, the use of franchises, grants and subsidies, vouchers, volunteers and self-help organizations, etc.) for the next chapter. In evaluating public versus private provision, at least two issues must be addressed. First, it must be determined whether the property rights and public choice literature can predict which organizational mode—public or private—will provide greater incentives to achieve efficiency. Second, the relative costs of providing services through the public and private sector must be shown empirically.

THEORY

Property Rights Theory

According to the property rights theory, the main difference between public sector agencies and private firms is the ease with which ownership of the firm can be transferred in the private sector as compared to the public sector (Palmer, 1983). Because the public sector cannot easily transfer ownership, the public sector is less efficient than the private sector.

Ease in transferring ownership leads to efficiency for a number of reasons. First, when ownership is concentrated in the hands of relatively few, they have a vested interest in ensuring that the firm is run as profitably as possible. Since owners have residual claimant status on the firm's assets, the owners are likely to ensure that the managers are maximizing the firm's wealth (Denny, 1985, p. 62).

Second, the presence of an equity market (where the low cost of transferring ownership takes place) affects the private firm's efficiency. If a firm is performing inefficiently, the value of the firm's shares will fall and the firm will be susceptible to a takeover or merger (Borcherding, 1983, p. 128). Thus, the equity market weeds out inefficient firms. The value of a firm's shares on the equity market can also serve as a yardstick against which the owners can monitor the performance of their managers (Ellison, 1985, p.43). If a manager is rewarded according to the value of the firm's shares then the interests of the owners and managers will be aligned (Palmer, 1983, p. 389).

Third, the ease of ownership transferability enables owners to concentrate their ownership in firms or industries where their entrepreneurial skills will be best utilized (Palmer, 1983, p. 389).

Furthermore, the difficulty with which ownership is transferred in the public sector causes inefficiency. For example, it is difficult to transfer shares in government firms, so there is no concentration of ownership. The owners of a public firm are all citizen-taxpayers. With such a diffuse ownership, the benefits of a firm's successful operation or the costs of a firm's unsuccessful operation (in terms of increased or decreased tax shares) are also extremely diffuse. Thus, the individual citizen-owner has little vested interest in the manner in which the public enterprise is run (Hanke, 1985, p. 12). Furthermore, the cost for an individual citizen to obtain accurate information on the enterprise's operation is extremely high. Even if an individual had this information, he has only indirect control of the enterprise through his elected political intermediaries (Palmer, 1983, p. 390). For a citizen to influence the way that a public enterprise is being run, he must use the political system and attempt to form an effective coalition. This is difficult and costly, especially when compared to the meagre

benefits the citizen is likely to receive for his efforts. It is no wonder that most citizens ignore the performance of Crown corporations. Public managers are thus free from pressure by their owners to operate efficiently.

The key insight of the property rights theory is that the ease of ownership transferability in the private sector creates conditions that force private sector managers to maximize the wealth of firms' owners. But, since it is difficult to transfer ownership in the public sector, public sector managers are not subject to the same pressure to maximize the wealth of their owners. Public bureaucrats have more freedom to pursue policies that enable them to increase their own personal utility or satisfaction.

Public Choice Theory

According to public choice theory, an individual bureaucrat's utility function can affect the bureaucrat's policy decisions. William Niskanen (1971) lists the following as the major aspects of a bureaucrat's utility function: salary, perquisites of office, public reputation, power, patronage, output of the bureau, ease of making changes, and ease of managing the bureau. Niskanen argues that all of these features are positively related to the size of a bureau's budget. Thus, bureaucrats will seek to maximize the size of the budget whether or not the marginal social benefits and costs of providing government services are equal.

A modification of Niskanen's theory suggests that bureaucrats want, among other things, larger budgets, since budget increases are some function of managerial effort (Borcherding, 1983, p. 132). Public managers will use relatively lower discount rates in assessing their firm's projects than their private sector counterparts, who are required by their close monitoring to be more careful when committing themselves to future expenditures. The public firm therefore has a higher capital-labour ratio.

Because public managers are not under the same high degree of scrutiny as private managers (as seen in examining the property rights theory), public managers have more freedom to operate their bureaus in a way that enhances their own personal utility. Although there has been some disagreement about exactly what policies and spending decisions the public managers make to enhance their own personal utility, it is generally agreed that these policy decisions may not be conducive to the efficient operation of the public firm.

PUBLIC VERSUS PRIVATE PROVISION: EMPIRICAL STUDIES

Since most services have been performed by the public or the private sector but not by both, there have been very few Canadian studies comparing the efficiency of public versus private (regulated or unregulated) provision of services. However, studies have been completed on a wide range of services in other countries.

Table 26 briefly records the conclusions reached in some of these studies. For almost all services, private sector provision is less costly (or more efficient) on a per unit basis. Without knowing the institutional framework within which each of these services is provided, it has been suggested that relatively less expensive private sector provision has a theoretical basis in the property rights approach or the public choice approach or both.

SUMMARY

Both the property rights and public choice theories predict similar utility functions for public and private sector managers but different constraints. Given that constraints faced by public sector officials tend to be more relaxed than constraints faced by private sector officials, these theories predict that the public sector will be less efficient (or more costly on a per unit basis) in the provision of some services. Indeed, the results of the empirical literature generally support these predictions).

These theories have been criticized because they concentrate on the comparative efficiency of service provision, when public sector managers and officials, may be pursuing other policy goals, such as income redistribution or stabilization. These goals must be pursued, but it is not certain what is the best way to achieve them. For example, using the public sector to redistribute income by subsidizing those who use a service rather than those who are needy may be neither effective nor efficient. An alternative and more efficient way of meeting this objective would be to deliver the service through the most efficient delivery mode with provision for using income transfers to redistribute income. This should avoid waste and direct the income transfers to those deserving assistance.

In essence, theoretical and empirical evidence demonstrates that greater efficiency is achieved by the private rather than public sector.

Table 26
Cost Differences, Public versus Private Provision

Activity: Author	Organizational Unit	Findings
1. Airlines: Davies (1971, 1977)	Australia/sole private domestic vs. its lone public counterpart.	Efficiency indices of private 12 to 100% higher.
2. Banks: Davies (1982)	Australia/one public vs. one private bank.	Sign and magnitude of all indices of productivity, response to risk, and profitability favour private banks.
3. Bus Service: Oelett (1976)	Municipal vs. private bus service in selected West German cities.	Public bus service 160% higher cost per km. than private equivalents.
Kitchen (1986)	Municipal department vs. privately contracted service in Ontario municipalities.	Statistically significant lower costs per km. under privately contracted operation.
4. Cleaning Services: Bundesrechnungshof (1972)	Public production vs. private contracting out in West German post office.	Public service 40 to 60% more costly.
Hamburger Senat (1971), Fischer- Menshausen (1975)	Public production vs. private contracting out in West German public buildings.	Public service 50% more costly than private alternative.
5. Debt Collection: Bennett and Johnson (1980)	U.S. General Accounting Office Study/federal govt. supplied service vs. privately contracted-for equivalents.	Government 200% more costly per dollar of debt pursued.
6. Electric Utilities: Meyer** (1975)	Sample of 60 to 90 U.S. utilities/public vs. private firms.	Very weak indication of higher costs of private production.
Moore (1970)	Sample of U.S. utilities— 27 municipal vs. 49 private firms.	Overcapitalization greater in public firms. Total operating costs of public production higher.

Table 26 continued

Spann* (1977)	Four major U.S. cities—public (San Antonio, Los Angeles), vs. private (San Diego, Dallas) firms.	Private firm adjusted for scale as efficient and probably more so with respect to operating cost investment (per 1,000 kwh).
Wallace and Junk (1970)	By regions in U.S./public vs. private firms.	Operating costs 40 to 75% higher in public mode. Investment (per kwh) 40% more in public mode.
7. Fire Protection: Ahlbrandt (1973, 1974)	Scottsdale, Arizona (private contract) vs. Seattle area (municipal) fire departments.	Municipal fire departments 39 to 88% higher cost per capita.
8. Forestry: Bundesregierung Deutschland (1976) Pfister (1976)	Public vs. private forest harvesting in West Germany, 1965 to 1975. Private vs. public forests in the state of Baden-Württemberg.	Operating revenues 45 DM per hectare higher in private forests. Labour input twice as high per unit of output in public compared with private firms.
9. Hospitals: Clarkson (1972)	Sample of U.S. hospitals/ private non-profit vs. for profit.	“Red tape” more prevalent in non-profits. Greater variation in input ratios in non-profits. Both suggest higher cost of non-profits.
Lindsay** (1976)	U.S. Veterans Administration vs. proprietary hospitals.	Cost per patient day less in V.A. hospital.
Rushing (1974)	Sample of 91 short stay hospitals in U.S. mid-South region/private non-profits vs. for-profit.	Substitution among inputs and outputs more sluggish in non-profit hospitals.
Wilson and Jadlow (1978)	1,200 U.S. hospitals/producing nuclear medicine/government vs. proprietary hospitals.	Deviation of proprietary hospitals from perfect efficiency index less than public hospitals.
10. Housing: Muth (1973)	Construction costs in U.S. cities—private vs. public agencies.	Public agencies 20% more costly per constant quality housing unit.

Table 26 continued

Rechnungshof Rheinland-Pfalz (1972)	Public vs. private cost of supplying large public building projects in the West German state of Rheinland- Pfalz.	Public agencies 20% more costly than private contracting.
Schneider and Schuppener (1971)	Public vs. private firm construction costs in West Germany.	Public firms significantly more expensive suppliers.
11. Insurance Claims Processing: Frech (1976, 1979)	U.S. Social Security Admin. contracting out of Medicare claims/mutual vs. proprietary insurance firms; mutuals vs. "other non-profit" (largely Blue shield) vs. proprietary insurance firms.	Mutuals 45 to 80% more costly than proprietary firms but less costly than "other non-profits."
12. Insurance Sales and Servicing: Finsinger* (1981)	5 public vs. 77 private li- ability and life firms in West Germany.	Same rate of return and no obvious cost differences be- tween organizational forms.
Kennedy and Mehr (1977)	Public car insurance in Manitoba vs. private in- surances in Alberta.	Quality and services of pri- vate insurances higher than those of the public one.
13. Ocean Tanker Repair and Maintenance: Bennett and Johnson (1980)	U.S. General Accounting Office/Navy vs. commer- cial tankers and oilers.	U.S. Navy from 230 to 500% higher.
14. Railroads: Caves and Christensen* (1980)	Canadian National (public) vs. Canadian Pacific (pri- vate) railroads.	No productivity differences recently, but CN less eff- icient before 1965, the highly regulated period.
15. Refuse Collection: Collins and Downes* (1977)	53 cities and municipalities in the St. Louis County area, Missouri/public vs. private contracting out modes.	No significant cost differences.
Columbia Univ. Grad. School of Bus. Stud.: Savas (1974, 1977a, 1977b, 1980), Stevens	Many sorts of U.S. cities/ municipal vs. private mon- opoly franchise vs. private non-franchise firms.	Public supply 40 to 60% more expensive than pri- vate, but monopoly fran- chise' only 5% higher than private non-franchised col- lectors.

Table 26 continued

(1978), Stevens and Savas (1978), Edwards & Stevens (1976)		
Petrovic and Jaffee (1977)	83 cities in Midwestern U.S./public vs. private contracting out modes.	Cost of city collection is 15% higher than the price of private contract collection.
Hirsch* (1965)	24 cities and municipalities in the St. Louis City-County area, Missouri/public vs. private firms.	No significant cost differences.
Kemper and Quigley (1976)	101 Connecticut cities/private monopoly contract vs. private non-franchise vs. municipal firms.	Municipal collection costs 14 to 43% higher than contract, but private non-franchise 25 to 36% higher than municipal collection.
Kitchen (1976)	48 Canadian cities/municipal vs. privately contracted firms.	Municipal suppliers more costly than private firms.
Savas* (1977c)	50 private vs. 30 municipal firms in Minneapolis.	No significant cost differences.
Pier, Vernon and Wicks** (1974)	26 cities in Montana/municipal vs. private firms.	Municipal suppliers more efficient.
Pommerehne (1976)	102 Swiss municipalities/public vs. private firms.	Public firms 15% higher unit costs.
Spann (1977)	Survey of various U.S. cities/municipal vs. private firms.	Public firms 45% more costly.
Bennett and Johnson (1979)	29 private firms vs. one public trash collection authority in Fairfax County, Virginia.	Private firms more efficient.
16. Savings and Loans: Nichols (1967)	California Savings and Loans/co-operative or mutuals vs. stock companies.	Mutuals have 13 to 30% higher operating costs.
17. Slaughterhouses: Pausch (1976)	Private vs. public firms in 5 major West German cities.	Public firms significantly more costly because of over-capacity and over-staffing.
18. Water Utilities: Crain and	112 U.S. firms/municipal vs.	Public firms 40% less pro-

Table 26 continued

Zardkoohi (1978)	private suppliers; case study of two firms who each switched organizational form.	ductive with 65% higher capital-labour ratios than private equivalents; public firm that became private experienced an output per employee increase of 25%. Private firm that became public experienced an output per employee decline of 40%.
Mann and Mikesell (1976)	U.S. firms/municipal vs. private suppliers.	Replicates Meyer's (1975) electricity model, but adjusted for input prices. Found public modes more expensive by 20%.
Morgan (1977)	143 firms in 6 U.S. states/ municipal vs. private firms.	Costs 15% higher for public suppliers.
19. Weather forecasting: Bennett and Johnson (1980)	U.S. General Accounting Office study/U.S. Weather Bureau vs. private contracted-for service.	Government service 50% more costly.

Sources: T.E. Borchering, W. Pommerehne and F. Schneider, "Comparing the Efficiency of Private and Public Provision: The Evidence from Five Countries," in *Nationalokonomie, Journal of Economics*, Supplement 2, 1982, by Springer-Verlag, pp. 130-133; and authors' compilation from the literature.

Notes: (*) No significant differences in costs or efficiencies.
(**) Public sector less costly or more efficient.

DELIVERING SERVICES: WHICH DELIVERY SYSTEM SHOULD BE CHOSEN?

INTRODUCTION

This chapter investigates whether there are specific types of public or private sector delivery systems that the public sector could use to provide services more efficiently without compromising quality. This issue has generated considerable theoretical and empirical work during the past few years.¹

The object of this chapter is not to provide a catalogue of the frequency with which various delivery schemes are used to provide public services in Canada. In fact, there is no current inventory of how often and the kind of alternative delivery modes that are used. Furthermore, it is beyond the scope of this book to construct such a list. Instead, we review the types of organizations that are used and the incentives and constraints existing under the various delivery schemes. Information of this type is particularly important given the current and growing emphasis on delivering services in a more efficient and less costly manner.

PUBLIC SECTOR PROVISION

Prior to World War II, public corporations were used much less extensively than government departments to deliver government services. By the 1960s and 1970s, however, this had changed. Government corporations had become more popular. By the 1980s, pressure to reduce the size of the government because of its perceived inefficiency slowed the creation of new public corporations. A number of government corporations were even sold at this time, and others have been earmarked for privatization.²

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We will discuss and compare the following public sector organizational modes: government departments, public corporations, boards, commissions and special purpose bodies.

Government Departments or Ministries

Government departments or ministries have historically been the main vehicle for providing government services. In the late nineteenth and early twentieth century, local, provincial and federal governments began to take over the private sector's responsibility for providing electricity,³ transit,⁴ and water purification and distribution.⁵ Government departments rather than public corporations, commissions or boards assumed direct responsibility for providing most of these services.

While elected politicians develop policies for government departments civil servants manage government departments. In principle, the activities of departments are more closely monitored and controlled by elected representatives. Furthermore, the way elected representatives make decisions (political debates and discussions in which trade-offs amongst policy alternatives must be made) should provide the basis for an integrated and coordinated approach to policy making.

One drawback to the departmental or ministry structure, is the relatively large number of bureaucratic regulations to which departments or ministries must adhere. Whether or not these regulations are responsible for generating losses in efficiency is a subject for empirical investigation. If operating costs are shown to be higher, these costs must be weighed against the benefits achieved from a more closely monitored and more highly coordinated policy making apparatus.

Public Corporations

Public corporations (or Crown corporations) are directly assigned their mandates and powers. They are responsible to the elected politicians; they are required to report all prescribed and relevant activities to an elected representative. Although elected politicians can exercise some control over these corporations, the corporate structure (by design) allows greater autonomy and independence compared with government departments or ministries. Autonomy may lead to greater economic efficiency and political impartiality.⁶ Difficulties may arise, however, if these corporations act contrary to other policies implemented by one or more levels of government.

Perhaps the greatest advantage in favour of a public corporation over a government department lies in the reduced number of internal government regulations facing these enterprises (for example, Treasury Board require-

ments at the federal level). In fact, public corporations are generally expected to follow marketing and production strategies similar to their private sector counterparts, even though there have been suggestions that private corporations provide services with greater efficiency and lower per unit costs.

Boards, Commissions and Special Purpose Bodies

In Canada, boards, commissions and special purpose bodies are responsible for providing a wide range of services,⁸ especially at the local level. Examples include school boards, police commissions, library boards, conservation authorities, recreation commissions, boards of health, utility commissions, transit authorities, and so forth. Some of these are funded almost entirely from government grants, while others receive a mix of funding from grants, taxes and revenue from the sale of services.

A number of arguments have been made in favour of providing government services through special purpose bodies rather than through government departments. Not all of the arguments, however, can withstand careful scrutiny. First, special purpose bodies were created because people believed that appointed experts rather than politicians and government officials could administer the operation and provision of a number of government services more efficiently. However, the growth in the size and technical expertise of the government over the past few decades challenges this belief.

Second, it has been argued that politicians have insufficient time to plan, administer and oversee all government functions. Therefore, it may be necessary to assign some services to special purpose bodies whose governing board consists of elected or appointed representatives. These bodies will reduce politicians' workload and allow greater citizen involvement in government. Opponents could argue that the size and technical expertise of the civil service are sufficient back-up support for elected politicians. Furthermore, special purpose bodies may create difficulties for citizens trying to figure out which public institution provides the services they need.

Of the many boards and commissions in existence, a large number enjoy considerable autonomy and financial independence. In fact, many of these bodies are little governments in themselves: they are independent and in no way subordinate to the elected politicians. The effect of this proliferation of decision making bodies has been to create a diffuseness of government organizations that is difficult for the citizens to understand and control. With responsibilities divided among such a large number of separate agencies, coordination of inter-related activities is difficult and often impossible to achieve.

Frequently, attempts by elected politicians to provide services are thwarted (or made more difficult) because of decisions made by special purpose bodies. For example, coordinated community and social services may be difficult because the relevant programs may fall under the jurisdiction of such diverse bodies as the Children's Aid Society, the housing authority, the library board, the health unit, and council. Similarly, actions taken by utility commissions, police commissions, parks boards, conservation authorities, industrial commissions, and planning boards may conflict with council's overall planning effort.⁹

Perhaps the most serious problem encountered with boards and commissions is the extent to which these bodies appropriate significant portions of government revenue. Indeed, this may be a greater concern for local governments than for either the provincial or federal authorities. In one estimate for Metropolitan Toronto, for example, approximately 60 percent of all net expenditures financed from own source revenues went to special purpose bodies.¹⁰ Perhaps the most outstanding examples of agencies in Ontario that lay claim to substantial local tax revenues are school boards and police commissions: councils have no legal power to withhold funds from them. Regardless of the level of autonomy exercised by these bodies, the existence of so many separate agencies often results in undue demands being placed on the treasury or undesirable cost cutting in areas where the legislature or municipal council has effective control. Because governments often cannot interfere with policy decisions of separate boards or commissions, they are denied their most effective means of exercising proper budgetary control.

Of considerable importance in evaluating expenditures by boards and commissions is the question of whether expenditures by these agencies could be handled more efficiently and effectively if placed under the direct control of federal or provincial legislatures or local councils. In some cases, the answer to this question is not obvious. Some limited evidence suggests, however, that a less costly and more efficient means of providing local services might emerge if the services are provided by local councils rather than local boards, commissions, or special-purpose bodies. For example, the only published Canadian study addressing this issue dealt with the organizational implication of providing water in urban municipalities in Canada.¹¹ The author of that study observed that the cost of supplying water through a separate water or utilities commission was significantly higher (in a statistical sense) than the costs of supplying it by a department directly responsible to city council.

Since the technique employed in comparing the costs netted out the influence of a number of variables affecting water supply costs, it was evident that the organizational structure itself had significantly influenced the cost. Higher costs were generated for two reasons: separate commissions

were less accountable to the public and unable to benefit from integration with other municipal functions. Furthermore, the cost differential between commissions and departments is not justified by a higher quality of service from commissions. Service levels in all municipalities tend to be standardized, so commissions can do little that could not be done by a regular government unit.

Undoubtedly, similar comments could be made about many other local services supplied by special-purpose bodies where their functions or programs could be carried out by municipal councils. A transfer of responsibility would eliminate the current morass of local government organizations. It would also allow local councils to establish priorities and to weigh the trade-offs between spending on education versus health, or health versus conservation, or conservation versus local transit and so forth. This improvement in the allocation of scarce municipal financial resources would produce a council that would be directly responsible for all municipal functions. The co-ordination of all municipal services and functions would be improved, and central budgeting control and long-range financial planning would be possible. Unfortunately, under the present system, where local councils have little or no control, conflicts often arise between commissions seeking to promote their own special interests and the municipality attempting to restrict tax rates. To overcome these conflicts and to assist in the provision of a better allocation of local resources, local councils must be given sole responsibility for making decisions on expenditures for local programs.

Finally, the great diversity of special-purpose bodies weakens accountability and responsibility to citizens. With the exception of very few boards and commissions (school boards and utility commissions in Ontario, for example), the membership of special-purpose bodies is appointed rather than elected. This position has been defended on the grounds that sensitive issues should be "protected from politics." An even stronger argument is that sensitive political issues should be placed directly under political control to ensure maximum accountability and responsiveness to the tax-paying public.

In essence the function and role of all boards and commissions should be reviewed seriously to eliminate those agencies for which an extremely strong case cannot be made for their retention. Such elimination could lead to greater political control, financial accountability, and efficiency of operation.

Summary

The use of separate boards, commissions, and special agencies, including Crown corporations, to deliver public sector services creates a number of

potential problems that would not exist if these services were provided by government departments. Such diversification of organizational modes at any level of government creates an environment in which trade-offs amongst various policy options is unlikely to be made. Fewer special purpose bodies would promote the development of a more politically accountable and economically efficient government.

PRIVATE SECTOR PROVISION

It has been argued that competitive forces in the private sector foster efficiency and lower costs. If effective competition is absent, there is no serious incentive to reduce costs and become more efficient in service delivery.¹² Furthermore, public agencies vis-a-vis private producers appear to face greater limitations imposed by bureaucratic regulations and interest groups. Hence, the presence of a profit motive and the absence of bureaucratic regulations may lead to more efficient production by private firms. Perhaps this fact has been demonstrated most significantly in the privatization of a number of British firms including Jaguar, Amersham International and National Freight Consortium.

At first glance, the number of private delivery schemes seems innumerable.¹³ While the most obvious is provision solely through a private firm, private sector involvement can take many forms, including contracting out and using franchises, grants, subsidies, vouchers, volunteers and self-help. Other less obvious modes of delivery include the use of regulation and taxation, demand reducing techniques and demand adjustment through the implementation of user fees.

Contracting Out

The current fashion is to privatize the provision of public services by contracting out.¹⁴ Contracts are typically awarded on a tender system where the lowest bidder is normally chosen. In addition, some jurisdictions have adopted a policy whereby regions are subdivided and contracts tendered for each sub-region. Thus, smaller firms are encouraged to vie for contracts, a situation that would not arise if all contracts were large. This policy stimulates increased competition, cost minimization and improved efficiency. In fact, in the United States, local governments have been known to submit their own bids along with those from private firms in order to increase competition.

Contracting out also allows firms to circumvent the bureaucratic regulations which lead to inefficiencies in public sector provision. Although the dangers of disruptions due to labour disputes and bankruptcy are increased,

they can be minimized if a number of small contracts are issued at each tender. Service disruption may thus be restricted to small regions, making temporary replacement an easier task. It has also been speculated that there may be an incentive for firms who undertake a large number of contracts to invest in research and development in order to improve efficiency.¹⁵

There is a danger, however, that concentration on efficiency gains may eventually lower the quality of services. A monitoring system could be established to ensure quality is maintained at an acceptable level. There is no *a priori* reason to believe that public sector monitoring will be any more effective or efficient than the imposition of a policy of tendering for service delivery on a relatively frequent basis (every one, two or three years, for example). Tendering, by itself, can create an incentive for a firm to maintain quality so that the contract will be renewed. Furthermore, tendering costs money and sometimes the cost is significant.

Overall, the incentive to contract out public services will depend on the degree of competition that can be achieved. If sufficient bids can be drawn from private firms and small jurisdictional contracts tendered, there will be an incentive to produce a more efficient delivery system.

Franchise Operations

Franchises are typically organized so that a private firm provides the service to residents within a specific geographic area and is paid directly by the users. Franchises may be exclusive (one producer) or non-exclusive (many producers). To ensure that users are not exploited, governments may wish to regulate price (the price set is based on knowledge of the firm's cost and a fair rate of return), especially if the service is provided by an exclusive franchise. Further regulations may be imposed to guarantee that quality standards are met and that all consumers within a specific area (served by the franchise) have access to the service if they pay for it.

The main reason for using franchises is to replace government with private firms that are assumed to be more efficient. The attractiveness of this organizational structure is mainly a function of the number of firms involved. The use of non-exclusive franchises should create a competitive environment, providing incentives for improved efficiency, lower costs and quality services.

Of course, one potential danger is that firms may merge and behave like monopolists. Clearly, this would undermine the reason for franchising. The key, then, is to strike a balance between enough competition to lower prices and a large enough market to facilitate efficiency in production. The number of choices available to consumers will vary directly with the number of producing firms. Where franchises are exclusive, a monitoring system and frequent tendering for the right to provide the service (similar to contracting

out) should maintain the necessary competitive forces to ensure high quality, low cost service.

One consequence of the dependence on franchise operations is that some families (low income families in particular) may discontinue the use of certain services. If families decide the service is too expensive, they may decide to do without or find a substitute. This has occurred primarily in smaller communities, where solid waste collection has been privatized and franchised. Not only is discontinuation of service insanitary, but it also leads to greater costs for existing users (economies of scale begin to disappear) and lower quality service. For services that are essential to the community (those generating negative externalities if they are not consumed), all residents must be required to purchase them for allocative efficiency. For users whose incomes are inadequate, governments may simply pay the fee for them. If services are not essential, then they should be treated as private goods or services and purchased only by those willing to pay the price.

Grants and Subsidies

Grants and subsidies are used by governments who want to make financial or in-kind gifts to private firms, households, or special purpose boards and commissions for specific programs or projects. These one-time gifts or annual payments are made on the premise that the receiving party, if it is a producer, is the more appropriate vehicle for providing the service. On the other hand, if the grant is to the consumer, he is able to buy the service from a private supplier.

Grants to producers are typically made to cover costs (library boards, for example) or in some cases to offset operating losses (transit services, for example). Although this policy is not as common as some others, it does have a specific purpose. It is used when it is felt that a service cannot be provided as inexpensively or as effectively as the government does.

While the provision of grants ensures that specific services will be provided, straight cash transfers merely benefit the users of the service. Since all taxpayers fund the transfers, non-users effectively subsidize the users. Such a distributional consequence may be questioned in the interests of equity.

If the provision of grants expands the available services, then their use permits additional choices for consumers. Whether or not these choices are of better quality is impossible to predict. Similarly, the impact on the efficiency of service delivery and costs will depend on whether the grant receiving body is able to provide the service at a lower cost than the government itself.

Because of the inequities facing non-users and the extreme competition for grant funds, considerable controversy is likely to emerge if governments move towards a more extensive implementation of this scheme.

Vouchers

Vouchers are yet another way of privatizing the provision of public services. Vouchers can be distributed by the government to citizens who are eligible for the service. The user then submits the voucher to the private firm of his choice. The firm, in turn, forwards the voucher to the government for payment (which is a constant amount per voucher of the same type).

Determining the cash value of the voucher (that is, the value that the government pays to each firm) is particularly important because it will affect the extent to which the firm attempts to improve its efficiency of production and delivery.¹⁶ For example, if the cash value of the voucher equals the average cost of each unit delivered by the firm, or if it equals the weighted average of costs incurred by all firms, it penalizes the more efficient producers. To overcome this problem, the per unit cash value should equal the average cost of the most efficient supplier. The advantage of this payment schedule is that a highly efficient firm can lower the costs to governments and, in turn, to taxpayers.

If economies of scale or scope do not exist, vouchers can provide an incentive for the creation of a fairly large number of producers. This will increase the choice available to citizens. For this reason, services such as daycare, homemaker services, foster homes and group homes may be well suited to a voucher system of service delivery. A potential benefit of increasing choice is that service quality may increase as well. This possibility depends largely on the effectiveness of the information network established among consumers. If the network is effective, the existence of competitive forces should lead to improvements in service quality and lower delivery costs. Reduced delivery costs, however, may be partially offset by increased monitoring and administration costs (to prevent voucher forgery, for example).

Although the use of vouchers will cause some administrative and monitoring problems that are not yet clearly identified, experimentation with a voucher system for certain services ought to be encouraged. Initially, vouchers might be used in areas where the government is providing assistance to non-governmental agencies, such as social services for low income families.¹⁷

Volunteers

Volunteers are used by various governments to supplement the present system of delivering specific services. In libraries and teachers' aids programs, volunteers are normally assigned to tasks which might not otherwise be completed. Smaller municipalities frequently have volunteer fire departments or a mix of volunteer and professional fire fighters.

Since existing labour is usually not replaced immediately, the use of volunteers will not necessarily lower delivery costs. Indeed, there may be some administrative costs in maintaining a volunteer staff. Training programs, guidance and management consume regular staff members' time.

While costs may be lower in the short run, the dependence on volunteers is likely to lower costs in the long run, especially if volunteers serve as substitutes for paid employees. Further cost savings arise in both the short and long run, if the use of volunteers permits extra service or longer hours of service. Whether or not this use improves the quality of existing services greatly depends on the quality of the volunteers and the attitude of recipients (the use of candy strippers in hospitals, for example, may improve the quality of hospital care).

A potential problem in using volunteers arises if they are available only at selected times (weekends or evenings, for example) or if they are not dependable. Further problems and costs might be incurred if a system of continual recruitment is necessary in order to staff the volunteer program.

Finally, there may be some important moral values (for society) to be gained from encouraging volunteer work.

Self-Help

The self-help concept is closely related to the concept of using volunteers. Self-help programs are designed so that individuals or neighbourhoods provide services for themselves. Typical examples include Neighbourhood Watch and Block Parent programs that have been set up in a number of urban areas. In some larger cities, particularly in the United States, residents on certain streets or in certain neighbourhoods have organized to hire security firms to protect the local residents' safety. The latter service is paid directly by the users.

Whether or not self-help groups (for many services) will be willing to become organized on their own is debatable. Unless it can be proven that delivery costs will fall and/or service quantity and quality rise (for example, improved security), citizens are unlikely to agree to undertake the activity. In addition, there is the problem of providing a service which "free-riders" can use. This problem will be worse if large set-up costs are required to es-

establish certain services. Given these potential problems, efficiency gains will be maximized only if most of the residents within a given jurisdiction agree to cooperate.

Conversely, if governments are able to convince all established groups or neighbourhoods to convert to self-provision (as a substitute for, rather than an addition to, the existing public service) then significant property tax reductions might be realized by taxpayers. These savings, however, may be offset or partially offset by increased personal costs associated with the delivery of the service.

The consequence of establishing self-help groups may be to create changes in the distribution of income rather than to generate lower costs overall. For example, consider a situation where the wealthier neighbourhoods of some jurisdictions withdraw from public provision and decide to undertake the activity themselves. Furthermore, suppose that the poorer areas of the district are unable to absorb the initial set-up costs and therefore choose to continue using the publicly provided service. If higher unit costs are created because of a loss of economies of scale, the scenario is created whereby higher property tax rates may be imposed on lower income families.

When faced with the possibility of establishing self-help groups in lieu of public provision, citizens may choose to contract the service out to a private supplier. This may or may not lead to lower service delivery costs. Further problems and increased costs may arise if the self-help groups decide after a short time that they would rather revert to public provision. Clearly, such indecision could create inefficiencies and higher costs. To avoid this, partial government assistance may be required continually—not just initially.

Private Non-Profit Agencies

A fair number of services have traditionally been provided by private non-profit agencies, such as Alcoholics Anonymous, the Salvation Army, United Way, and so forth. These organizations generate lower costs for governments as long as the services are to be provided by the public sector anyway. The quality of service provided by these organizations will depend on the quality of people working for them. One potential problem with non-profit organizations is they may not be stable. Complete withdrawal by governments may be difficult if continued provision of a service is desired.

Demand Reduction Techniques

Demand reduction techniques, such as the use of government advertising to ban the consumption of certain goods, can ultimately lead to a reduction in government expenditures. This type of government expenditure may

generate long term savings for society: unnecessary government expenditures are eliminated and citizens become more aware of important social concerns. Government advertising can generate benefits in the following ways: by promoting the use of car pools, by requesting the restriction of water consumption during dry seasons or peak periods, by promoting recycling programs, by advocating the use of seatbelts or the use of condoms, by promoting fitness programs and by providing information on the disadvantages of drinking and smoking. If demand reduction techniques are effective, there will be a reduction in government expenditures and a better allocation of society's resources in the long run.

User Fees

One way to initiate a more efficient level of service consumption is to introduce user fees in lieu of taxes for services that have private good characteristics—that is, the benefits from the service are not jointly consumed (if benefits are jointly consumed, users are unlikely to be willing to pay for them) and individuals can be excluded from consuming them. By charging for each unit of consumption, the consumer will be able to decide whether the extra benefits are equal to the fee charged. This should provide an incentive for quality service, lower costs and more variety.

A common criticism levied against user fees is the impact that such schemes have on the distribution of income. While income distribution questions are important, they should not be of prime concern if there are noticeable efficiency gains to be obtained from the implementation of a system of user fees. User fees or prices (assuming they are properly set) have the advantage of acting as a signal for correctly determining the quantity and quality of services desired. Furthermore, only prices can lead to a proper rationing of service output.

To handle distributional concerns, cash grants or specific subsidies can be given to deserving people (transit passes for the poor, assistance for daycare, food stamps for the needy, and so forth). At the same time, those who are able pay their own way.

MIX OF DELIVERY SYSTEMS

In addition to the large number of purely public and purely private delivery systems, a number of services are provided by some mix of organizations. The mix can take the form of provision by one government (level of government or department or special purpose body) for another department or it can consist of the private sector providing part of a service (generally via contracting out) for a government department or agency. In either case,

the intent is to take advantage of savings that arise from economies of scale or scope in the provision of a number of services. These economies are attributed to efficiencies gained from servicing a larger population or geographical area. Examples of governments contracting from adjacent and generally larger governments include road maintenance and repairs, operation and maintenance of municipal electric utilities (Ontario), repair of public works vehicles and delivery of transit services. Most governmental construction projects including buildings, roads, water and sewage lines. Certain professional services, such as engineering design, consultants studies and legal advice, are contracted from the private sector.

CONCLUSION

In this chapter we have provided a brief description of a number of alternative public and private sector organizational structures that are available for producing and delivering government services. The discussion concentrated on the incentives and constraints inherent in the alternatives rather than on a cataloguing of the frequency of use of each (primarily because of the difficulty of producing an accurate and detailed list).

While it is difficult to rank the alternatives to government provision of specific services, it is possible to construct a list of the criteria alternatives should meet. It must be determined whether efficiency will be improved significantly, whether monitoring costs will be prohibitive and whether a wider choice of services will be available to consumers. In evaluating the alternatives, income distributional issues have not been addressed because they are handled more effectively through a simple income transfer scheme.

Improvements in efficiency, expansion in consumer choice and mechanisms for monitoring the producing and delivering agents are more easily achieved through competition. Both additional production and delivery agents and incentives for managers of public sector departments or corporations could enhance competition.

Some criticize increased competition because of the additional cost of monitoring the agents to ensure that an appropriate quantity and quality of service is being provided. This criticism, however, may be unfounded because governments' request to tender for service delivery will promote quality. The opportunity for using alternative agents to delivery government services will create the competitiveness necessary to generate a more allocatively efficient level of output.

NOTES

1. For example, see Savas, (1982); Economic Council of Canada, (1986); Hatry, (1983).
2. For a more thorough discussion of this case, see Economic Council of Canada, (1986, ch. 2).
3. Artibise, (1971); Armstrong and Nelles, (1983).
4. Hatcher, (1975).
5. Artibise, (1971, pp. 297-322); and Jones and McCalla, (1979).
6. Supra footnote 2, p. 5.
7. Leibenstein, (1966).
8. For an inventory of provincial agencies, boards, commissions, advisory bodies and other public institutions in Ontario in 1977, see Bresner and Leigh-Bell, (1978).
9. Tindal and Tindal, (1979).
10. Kitchen, (1984, p. 382).
11. Kitchen, (1977).
12. See chapter 8 for a more detailed discussion of this.
13. For a more extensive and detailed discussion of private sector delivery schemes, see Hatry, (1983) and Savas, (1982, ch. 5).
14. For a discussion of the extent to which contracting out is used by local governments, see Kitchen, (1984, ch. 14), Bish (1986) and McDavid (1988).
15. Hatry, (1983, ch. 2).
16. In providing the service for which the voucher may be used, the quantity and quality of the service supplied must be stipulated.
17. It is interesting to note that some recent discussion has been surfacing on the use of vouchers for funding elementary and secondary education in British Columbia. This has emerged since the summer and fall of 1987 when the British Columbia Royal Commission on Education was established.

Chapter 10

SUMMARY AND CONCLUSIONS

Some of the popular beliefs about the public sector in Canada are really myths; others are substantiated by evidence. Before any general conclusions are suggested and the future agenda for research delineated, a summary of the main findings of this study is presented.

SUMMARY

The characteristics of public goods suggest that the label service is a more appropriate classification for the non-transfer side of public expenditures. The characteristics do not, however, always fit those currently used to describe and define a service in the private sector. Most notable is the absence of a transaction to secure the service. If one compares and contrasts the theoretical reasons advanced for growth in private services and the public sector, there are some similarities.

A review of real and nominal growth of public expenditures between 1951 and 1986 revealed the following facts:

1. While total public expenditures, as a percentage of GNE doubled over this period, this ratio was constant over the last five years. Furthermore, all components, with the exception of transfer payments, have declined since 1981.
2. Government transfer payments, especially interest on the public debt, represent the only area that has exhibited significant growth as a percentage of GNE.
3. The most noticeable growth in the public sector has occurred at the provincial level.
4. In the exhaustive expenditure area (non-transfers), health, education and welfare spending have increased the fastest.

With regard to employment and compensation in the public sector, it was shown that public sector professional salaries rose faster than private professional incomes over the post-war period. Second, in terms of base wage rate changes in the unionized private and public sector, the annual rates of increase in the two sectors did not vary significantly between 1967 and 1984. Wages in the health sector increased more rapidly than did average wages, while wages in the education sector, increased more slowly than did average wages. Third, there is a paucity of consistent time series data sufficiently detailed to carry out meaningful private-public total compensation comparisons.

Public sector employment has not grown faster than overall employment in Canada. Some sectors, such as health, have grown more rapidly than total employment, but this has been offset by declines elsewhere. At the functional level, there has been a mixed pattern of change over the past twenty-five years. The relative growth at the federal level, for example, has been in the protection of persons and property and in natural resources. At the local level, the relative growth has been concentrated in recreation and social welfare services.

The contribution of the public sector to overall productivity growth (Chapter 7) is obviously an important issue. While it is possible to conceptually define and sometimes measure public overhead capital, its role as an intermediate input in the production process is not well understood. Part of this is a result of not clearly understanding what the outputs of public service expenditures are. This also raises another issue—the potential for productivity improvements in terms of delivering public services. The evidence is conflicting according to some research, there have been aggregate productivity gains, but, according to other research, there have been zero or negative productivity improvements.

Chapter 8 reviewed the results of the empirical literature on the efficiency of public and private provision of services. The consensus is that the public sector is less efficient or more costly in the provision of some services. The discussion also highlighted the criticism that these studies, both empirical and theoretical, have concentrated on the comparative efficiency of service provision when, in fact, public sector managers and officials, it is alleged, may be pursuing other policy goals. While laudable, such goals must be pursued in a manner which is not only effective but also cost minimizing.

The discussion in chapter 9 concentrates on the incentives and constraints inherent in alternative methods of delivering public services. In evaluating the alternatives, income distribution issues ought to be ignored because they can be handled more effectively through the introduction of various concessions designed to respond to the unacceptable market-driven distribution of wealth. We also note that improvements in efficiency, ex-

pansion of consumer choice and mechanisms for monitoring the activities of the producing and supplying agent are more effectively achieved through competition. The introduction of more competition would force public managers to provide the necessary quantity and quality of services, as long as public managers are held accountable to citizens/consumers.

CONCLUSION AND REFLECTIONS

The Canadian public sector has been in transition over the past 25 years. Initially, it was predominantly a service sector, now, at least at the federal and provincial level, it provides compulsory insurance, and redistributes wealth through income payments and transfers in kind. The Canadian economy today is therefore cushioned by a large element of non-cyclical spending on services, creating directly over 2.5 million jobs. Considerable insurance against medical need, retirement and unemployment is provided by the public sector; as well, a complex set of grants, subsidies and subsidized services is used to redistribute wealth both to individuals and businesses.

The objective of this book was to examine the service sector and while this has been the main focus, it has not always been possible to separate the service aspect of government from the insurance and redistribution activities. Data on compensation and employment do not differentiate between those who deliver a service and those who process cheques. The rate of growth in the service components of the public sector has converged to zero, but this slow growth rate has been offset by the growth in the insurance and redistribution side of government. During this transition, most employees in the public sector have become better paid and have achieved higher levels of education, although there appears to be a widening gap between some public sector groups in terms of compensation. It is unclear whether differences in education, market forces or contract and labour negotiations are responsible for this gap in compensation. Further research is necessary.

The actual delivery of public services is also going through a transition. Public sector managers are willing to contract out certain public services. A major study is required to gather evidence on where contracting out has occurred (for all levels of government), why it has occurred, its effectiveness and available alternatives. We suspect the trend in this direction is a response, in part, to the general belief that the public sector is unproductive. The evidence on that issue is mixed and before contracting out is embraced widely, it must be proven that the public sector is actually inefficient.

The range of public services provided today by all levels of government covers a wide spectrum—from services financed, produced and supplied by government to those that are publicly financed but produced and supplied

by the private sector. Education is financed, produced and supplied mostly by the public sector, but this service could conceivably be financed, produced and supplied by the private sector. Concerns about externalities, income distribution and standards can all be handled through regulation and income-sensitive grants.

It is not clear that the current range of public services can be assigned neatly to government on the basis of the theory of public goods. Careful study is required to identify those services that are being assigned to the public sector on the basis of redistribution arguments at the expense of efficiency criteria.

Any review of the public sector begs the question; how large should the public sector be? Perhaps the question should be phrased; how large should the private sector be? Neither of these questions can be answered unless the criteria governing the government's political, social and cultural objectives are known. An alternative approach is to ask what services do Canadians want and can governments create the necessary legal and financial framework to allow these services to emerge through the private sector? Too often the question appears to be: how can government provide a service? This question precludes debate on the primary question: should government supply the service?

The actual delivery of public services is also going through a transition. Public sector managers are willing to contract out certain public services. A major study is required to gather evidence on where contracting out has occurred (for all levels of government), why it has occurred, its effectiveness and available alternatives. We suspect the need in this direction is a response in part to the general belief that the public sector is unresponsive. The evidence on that issue is mixed and before contracting out is considered, it must be proven that the public sector is actually inefficient.

The range of public services provided today by all levels of government covers a wide spectrum—from services financed, produced and supplied by government to those that are publicly financed but produced and supplied

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APPENDIX

Appendix Table 1A
Growth of Government Expenditures in Canada, 1951 to 1986
 (percent of GNE, nominal dollars)

Year	Total Expenditures	Exhaustive Expenditures	Transfers
(1)	(2)	(3)	(4)
1951	23.7	15.6	8.1
1952	26.2	17.7	8.5
1953	25.8	17.3	8.5
1954	26.7	17.7	9.0
1955	25.6	17.0	8.6
1956	25.0	16.9	8.1
1957	25.8	17.1	8.8
1958	27.9	17.6	10.3
1959	28.1	17.3	10.8
1960	28.8	17.2	11.6
1961	29.8	19.2	10.7
1962	29.7	19.1	10.7
1963	29.2	18.7	10.6
1964	28.6	18.2	10.4
1965	28.7	18.6	10.1
1966	29.6	19.4	10.2
1967	31.6	20.4	11.2
1968	32.5	20.8	11.7
1969	32.8	20.8	12.0
1970	34.9	22.0	12.9
1971	36.2	22.5	13.7
1972	36.6	22.2	14.4
1973	35.3	21.3	14.1
1974	36.7	21.6	15.0
1975	39.9	23.1	16.9
1976	38.9	22.5	16.4
1977	39.9	23.0	16.8
1978	40.1	22.6	17.5
1979	38.8	21.6	17.1
1980	40.3	21.8	18.5
1981	41.3	21.9	19.3
1982	46.3	23.8	22.5
1983	46.9	23.4	23.5
1984	46.6	22.7	23.9
1985	46.9	22.7	24.2
1986	45.9	22.3	23.5

Source: Calculated from reference tables 3 and 46 in *Quarterly Economic Review*, Annual Reference Tables, June 1987, Ottawa.

Appendix Table 2A
Total Government Expenditures by Economic Category, 1951 to 1986
 (percent of total government expenditures, nominal dollars)

Year*	Transfers to Persons	Interest on Public Debt	Other Transfers	National Defence	Gross Capital Formation	Civilian Wages	Other Civilian Goods & Services
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1951	19.6	11.7	3.1	22.1	11.9	20.9	10.7
1952	20.6	10.0	2.2	27.7	13.0	18.9	8.6
1953	21.3	9.1	2.4	28.0	11.1	20.3	7.8
1954	22.9	9.2	1.8	24.4	12.2	21.7	7.9
1955	22.9	8.8	1.7	23.5	12.6	22.2	8.2
1956	21.2	8.7	2.4	21.9	13.8	22.5	9.3
1957	23.0	8.7	2.3	19.8	14.7	23.3	8.3
1958	26.2	8.3	2.4	16.7	14.3	23.3	8.8
1959	25.6	9.6	3.4	14.6	14.8	23.3	8.7
1960	27.2	9.6	3.6	13.6	13.3	24.0	8.8
1961	22.3	9.7	3.7	13.2	13.8	28.4	8.9
1962	22.1	10.0	3.8	12.7	14.4	28.4	8.6
1963	21.4	10.3	4.4	11.3	14.2	29.2	9.3
1964	21.3	10.4	4.5	10.6	13.2	30.2	9.8
1965	20.7	10.1	4.4	9.4	14.7	30.3	10.4
1966	19.7	9.8	5.0	8.9	14.9	30.4	10.3
1967	21.3	9.5	4.6	8.2	13.7	31.0	11.6
1968	22.4	9.8	4.0	7.3	12.3	31.8	12.6
1969	22.6	10.2	4.0	6.5	11.2	33.2	12.4
1970	22.4	10.4	4.0	5.9	10.1	32.5	14.5
1971	23.5	10.3	3.9	5.3	10.5	32.8	13.7
1972	25.0	10.4	4.0	4.8	10.0	32.5	13.4
1973	24.9	10.6	4.2	4.7	9.5	32.6	13.4
1974	24.8	9.7	6.4	4.5	9.7	32.1	12.6
1975	25.0	9.6	7.8	4.0	9.2	31.7	12.8
1976	25.3	10.5	6.3	4.1	8.2	33.5	12.0
1977	25.5	10.7	6.0	4.2	7.8	33.2	12.7
1978	25.8	12.0	6.0	4.1	7.4	32.7	12.1
1979	24.7	12.9	6.6	3.9	6.9	32.6	12.4
1980	24.4	13.4	8.1	3.8	6.7	31.8	11.8
1981	23.8	15.2	7.9	3.8	6.3	31.2	11.9
1982	25.1	15.6	7.8	3.8	6.1	30.0	11.5
1983	26.3	15.5	8.3	3.7	5.4	29.6	11.2
1984	25.8	16.9	8.5	3.9	5.5	28.4	11.0
1985	26.0	18.0	7.5	4.2	5.6	26.6	12.0
1986	26.5	18.1	6.7	4.0	5.4	27.1	12.2

Sources: Calculated from reference tables 3 and 46 in *Quarterly Economic Review*, Annual Reference Tables, June 1987, Ottawa; *National Income and Expenditure Accounts*, Volume 1, 1926-74; *National Income and Expenditure Accounts*, annual, 1970-84; and *National Income and Expenditure Accounts*, Quarterly, 1986.

Note: (*) Each row adds to 100.0.

Appendix Table 3A
Expenditures by Level of Government, 1951 to 1986

(percent of GNE)					
Year	Federal	Provincial	Local	Hospitals	Canada and Quebec Pension Plans
(1)	(2)	(3)	(4)	(5)	(6)
1951	13.2	5.4	4.9	—	—
1952	16.4	4.9	5.0	—	—
1953	16.1	4.7	5.0	—	—
1954	15.9	5.1	5.7	—	—
1955	14.9	5.1	5.7	—	—
1956	14.0	5.3	5.6	—	—
1957	14.2	5.6	6.0	—	—
1958	15.4	6.0	6.4	—	—
1959	14.8	6.6	6.8	—	—
1960	14.6	7.1	7.1	—	—
1961	14.8	5.9	7.1	1.9	—
1962	14.3	6.0	7.5	1.9	—
1963	13.5	6.1	7.6	2.0	—
1964	13.0	6.3	7.3	2.0	—
1965	12.4	6.5	7.7	2.0	—
1966	12.6	7.0	7.8	2.2	—
1967	13.1	8.1	8.1	2.3	—
1968	13.1	8.5	8.4	2.5	—
1969	13.0	8.7	8.5	2.5	0.1
1970	13.3	9.8	8.9	2.7	0.2
1971	13.4	10.8	9.0	2.8	0.2
1972	14.3	10.7	8.6	2.7	0.3
1973	13.8	10.3	8.3	2.6	0.3
1974	14.8	10.7	8.1	2.7	0.4
1975	16.3	11.8	8.4	2.9	0.5
1976	15.3	11.7	8.5	2.9	0.6
1977	15.6	12.2	8.7	2.7	0.7
1978	15.8	12.4	8.4	2.8	0.7
1979	14.9	12.4	8.1	2.6	0.8
1980	15.6	13.0	8.0	2.8	0.9
1981	16.4	13.2	7.9	2.8	0.9
1982	18.8	14.7	8.6	3.1	1.1
1983	19.0	15.2	8.3	3.2	1.2
1984	19.6	14.8	7.9	3.1	1.3
1985	19.6	15.0	7.9	3.1	1.4
1986	18.6	15.0	7.7	3.1	1.5

Source: Calculated from data in reference tables 3, 46, 48, 52, 54 and 55 in *Quarterly Economic Review*, Annual Reference Tables, June 1987, Ottawa. Transfers are recorded as expenditures of the recipient government.

Appendix Table 4A
Government Expenditures by Function, 1965-86*

(percent of GNE)									
Year	Gen. Gov.	Trans. and Health	Comm.	Health	Social Wel.	Educat.	Debt Charges	Other	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1965	1.5	3.9	3.9	3.1	5.3	4.4	2.5	4.1	28.7
1966	1.6	3.7	4.1	3.1	5.2	5.1	2.3	4.5	29.6
1967	1.7	3.8	3.9	3.4	5.7	6.1	2.4	4.6	31.6
1968	1.9	3.6	3.8	3.6	5.9	6.4	2.7	4.6	32.5
1969	1.9	3.4	3.6	4.2	5.9	6.7	2.8	4.3	32.8
1970	2.2	3.5	3.6	4.8	6.5	6.7	2.9	4.7	34.9
1971	2.3	3.5	3.8	5.0	7.2	6.7	3.2	4.6	36.2
1972	2.3	3.4	3.8	5.0	8.0	6.4	3.1	4.3	36.6
1973	2.3	3.3	3.8	4.8	8.3	5.7	3.1	4.0	35.3
1974	2.7	3.2	4.0	4.8	8.7	5.8	3.1	4.4	36.7
1975	2.6	3.3	4.0	5.2	9.4	6.2	3.3	5.9	39.9
1976	2.6	3.4	3.6	5.1	9.3	6.2	3.3	5.4	38.9
1977	2.9	3.5	3.6	5.0	9.5	6.4	3.6	5.4	39.9
1978	2.9	3.5	3.5	5.0	9.4	6.2	4.1	5.5	40.1
1979	2.8	3.3	3.3	4.9	9.0	6.0	4.2	5.3	38.8
1980	2.8	3.3	3.5	5.1	9.5	5.8	4.6	5.7	40.3
1981	2.6	3.4	3.2	5.3	9.3	5.9	5.5	6.0	41.3
1982	3.0	3.7	3.0	5.8	11.2	6.2	6.0	7.4	46.3
1983	2.9	3.8	2.8	6.0	11.6	6.2	6.0	7.6	46.9
1984	2.8	4.1	2.6	5.9	11.4	5.7	6.7	7.4	46.6
1985	2.9	3.8	2.5	5.8	11.1	6.0	7.1	7.5	46.9
1986	3.1	3.8	2.5	5.8	11.1	5.5	7.0	7.0	45.9

Sources: Calculated from data in reference table 3 in *Quarterly Economic Review*, Annual Reference Tables, June 1987, Ottawa; Urquhart, M., *Historical Statistics of Canada*, Revised Edition, Toronto, Macmillan; and CANSIM.

Note: (*) Data prior to 1965 are not available in a form that is consistent with the period from 1965 to the present; hence, the pre-1965 period is excluded.

Appendix Table 5A
Real Growth of Government Spending in Canada, 1951 to 1986
 (percent of GNE, 1981 dollars)

Year	Total Expenditures	Transfers	Exhaustive Expenditures	Civilian Exhaustive Expenditures*	Civilian Exhaustive Expenditures Excluding Hospitals
(1)	(2)	(3)	(4)	(5)	(6)
1951	33.7	6.9	23.8	15.0	15.0
1952	34.3	7.4	26.9	14.9	14.9
1953	33.9	7.4	26.5	14.7	14.7
1954	34.2	8.0	26.2	15.8	15.8
1955	32.0	7.6	24.4	15.4	15.4
1956	30.5	7.3	23.2	14.9	14.9
1957	30.8	7.8	23.0	15.5	15.5
1958	32.5	9.1	23.4	16.7	16.7
1959	32.3	9.6	22.7	16.8	16.8
1960	32.9	10.4	22.5	17.0	17.0
1961	34.1	9.5	24.6	19.3	16.9
1962	33.8	9.5	24.3	19.2	16.8
1963	33.0	9.4	23.6	19.2	16.7
1964	32.5	9.4	23.1	19.1	16.5
1965	32.2	9.2	23.0	19.5	16.9
1966	32.8	9.4	23.4	20.0	17.4
1967	34.7	10.4	24.3	21.1	18.3
1968	35.3	10.7	24.6	21.7	18.8
1969	34.9	11.0	23.9	21.4	18.5
1970	37.0	11.9	25.1	22.7	19.7
1971	37.7	12.7	25.0	22.8	19.8
1972	37.9	13.7	24.2	22.3	19.4
1973	37.1	13.6	23.5	21.6	18.7
1974	38.8	15.1	23.7	21.8	18.8
1975	41.3	16.8	24.5	22.8	19.7
1976	39.8	16.5	23.3	21.6	18.6
1977	40.3	16.8	23.5	21.8	19.0
1978	40.0	17.3	22.7	21.0	18.2
1979	39.0	17.1	21.9	20.4	17.8
1980	40.8	18.6	22.2	20.6	17.8
1981	41.3	19.3	22.0	20.4	17.6
1982	45.5	22.2	23.3	21.6	18.6
1983	45.7	22.9	22.8	21.1	18.0
1984	44.9	23.1	21.8	20.1	17.1
1985	44.8	23.1	21.7	19.8	16.9
1986	43.3	22.2	21.1	19.4	16.6

Source: Calculated from data in reference tables 4, 40, 46 and 55 in *Quarterly Economic Review*, Annual Reference Tables, June 1987, Ottawa.

Note: (*) Exhaustive expenditures (column 4) minus defence expenditures.

Appendix Table 6A
Public Employment as a Percentage of Total Employment in Canada

Year (1)	Federal (2)	Provincial (3)	Local (4)	Education (5)	Health (6)	Enterprises (7)	Total (8)
1961	5.2	2.7	2.3	4.7	3.4	3.8	22.2
1962	5.2	2.7	2.3	4.9	3.5	3.7	22.2
1963	5.0	2.8	2.3	5.0	3.7	3.6	22.3
1964	4.8	2.8	2.3	5.1	3.8	3.5	22.3
1965	4.6	2.8	2.3	5.1	3.9	3.5	22.2
1966	4.5	2.9	2.3	5.3	4.0	3.5	22.4
1967	4.5	2.9	2.3	5.5	4.2	3.6	23.0
1968	4.4	3.1	2.4	5.7	4.2	3.4	23.2
1969	4.3	3.1	2.4	5.9	4.2	3.4	23.3
1970	4.2	3.2	2.6	6.1	4.2	3.3	23.6
1971	4.3	3.4	2.5	5.8	4.2	3.3	23.4
1972	4.3	3.4	2.6	5.7	4.1	3.3	23.3
1973	4.2	3.8	2.6	5.6	3.8	3.3	23.2
1974	4.2	3.9	2.6	5.5	3.8	3.4	23.4
1975	4.2	4.0	2.7	5.5	3.9	3.5	23.7
1976	4.7	3.6	2.7	4.7	4.5	2.9	23.0
1977	4.6	3.6	2.8	4.9	4.5	3.0	23.3
1978	4.4	3.5	2.7	4.6	4.6	3.0	22.7
1979	4.1	3.8	2.6	4.5	4.5	2.9	22.3
1980	4.0	3.8	2.6	4.5	4.7	2.9	22.4
1981	4.0	3.6	2.5	4.3	4.7	2.8	21.8
1982	4.2	3.8	2.7	4.5	5.1	2.8	23.1
1983	4.1	3.8	2.7	4.8	5.0	2.7	23.0
1984	4.1	3.8	2.6	4.4	5.0	2.6	22.5

Sources: Bird, *op. cit.*, 1979, p. 43; catalogue 72-004, 72-007, and 72-009, Statistics Canada, Ottawa; *Economic Review*, Department of Finance, Ottawa; and *Labour Force*, Statistics Canada, Ottawa.

Notes: From 1976-84, Municipal Enterprises are excluded. Education is defined as "teaching" from 1976 to 1984. Health is defined as "Health and Medicine" from 1976 to 1984.

Appendix Table 7A
Capital/Employment Ratios in Constant 1971 Dollars for Canada, 1953 to 1984^a

Year	All Industry (1)	Service Sector (2)	Federal Govt. (3)	Total Govt. (4)	Public (5)	Non Govt. (6)
1953	11,272	15,144	40,349	N.A.	N.A.	N.A.
1954	11,603	15,954	39,349	N.A.	N.A.	N.A.
1955	11,913	16,246	39,442	N.A.	N.A.	N.A.
1956	12,604	16,420	40,259	N.A.	N.A.	N.A.
1957	13,630	16,986	40,464	N.A.	N.A.	N.A.
1958	14,053	17,813	39,947	N.A.	N.A.	N.A.
1959	14,092	18,162	40,923	N.A.	N.A.	N.A.
1960	14,802	18,316	42,023	N.A.	N.A.	N.A.
1961	15,337	18,810	41,908	44,817	27,224	14,138
1962	15,226	19,085	43,014	46,499	27,855	14,263
1963	15,871	18,938	43,802	47,475	28,369	14,560
1964	16,305	19,199	44,176	48,874	28,846	14,721
1965	16,680	19,210	43,681	49,590	29,395	14,982
1966	17,367	19,323	42,165	49,861	29,657	15,389
1967	17,925	19,493	41,086	49,735	29,674	16,044
1968	17,944	19,926	41,460	49,932	30,040	16,700
1969	18,059	20,183	41,185	50,587	30,369	17,090
1970	19,354	20,592	41,715	50,526	30,866	17,791
1971	19,773	20,818	39,289	49,447	31,259	18,246
1972	20,071	20,984	37,548	49,218	31,995	18,573
1973	20,027	21,000	36,458	46,870	33,470	18,599
1974	20,318	21,244	35,859	46,455	33,347	18,961
1975	20,396	21,600	35,818	46,871	33,433	19,611
1976	23,184	N.A.	31,057	46,340	N.A.	20,347
1977	23,796	N.A.	31,219	46,672	N.A.	20,957
1978	23,930	N.A.	32,567	48,777	N.A.	20,999
1979	23,928	N.A.	34,075	48,927	N.A.	21,030
1980	24,254	N.A.	33,449	44,391	N.A.	21,933
1981	24,708	N.A.	31,960	44,898	N.A.	22,423
1982	26,654	N.A.	31,716	50,188	N.A.	23,842
1983	27,229	N.A.	32,862	51,182	30,951	24,383
1984	27,197	N.A.	33,283	51,778	33,924	24,318

Appendix Table 7A (continued)

Capital/Employment Ratios in Constant 1971 Dollars for Canada, 1953 to 1984

Year	Non-Public (7)	Non-Fed. Govt. (8)	Ratio (4/6) (9)	Ratio (5/7) (10)	Ratio (3/8) (11)
1953	N.A.	11,302	N.A.	N.A.	3.57
1954	N.A.	12,052	N.A.	N.A.	3.28
1955	N.A.	12,482	N.A.	N.A.	3.16
1956	N.A.	12,821	N.A.	N.A.	3.14
1957	N.A.	13,443	N.A.	N.A.	3.01
1958	N.A.	14,686	N.A.	N.A.	2.72
1959	N.A.	15,045	N.A.	N.A.	2.72
1960	N.A.	15,622	N.A.	N.A.	2.69
1961	14,253	16,188	3.17	1.91	2.60
1962	14,358	16,355	3.26	1.94	2.63
1963	14,548	16,718	3.26	1.95	2.62
1964	14,717	16,926	3.32	1.96	2.61
1965	14,921	17,265	3.31	1.97	2.53
1966	15,366	17,791	3.24	1.93	2.37
1967	16,040	18,424	3.10	1.85	2.23
1968	16,689	19,194	2.99	1.80	2.16
1969	17,061	19,540	2.96	1.78	2.14
1970	17,945	20,349	2.84	1.72	2.05
1971	17,965	20,788	2.71	1.74	1.89
1972	18,388	21,344	2.65	1.74	1.76
1973	18,190	21,197	2.52	1.84	1.72
1974	18,630	21,494	2.45	1.79	1.67
1975	19,325	22,247	2.39	1.73	1.61
1976	N.A.	23,072	2.28	N.A.	1.34
1977	N.A.	23,707	2.23	N.A.	1.32
1978	N.A.	23,811	2.32	N.A.	1.37
1979	N.A.	23,776	2.33	N.A.	1.43
1980	N.A.	24,139	2.02	N.A.	1.39
1981	N.A.	24,653	2.00	N.A.	1.30
1982	N.A.	26,693	2.11	N.A.	1.19
1983	26,212	27,335	2.10	1.18	1.20
1984	26,169	27,235	2.13	1.30	1.22

Source: 1953-75: *Fixed Capital Flows*, catalogue 13-522, Statistics Canada, Ottawa; and Bird, Richard and David Foot, *op. cit.*, 1978; 1976-84: *Fixed Capital Flows and Stocks*, catalogue 13-568, *Federal Government Employment*, catalogue 72-004; *Provincial Government Employment*, catalogue 72-007; *Local Government Employment*, catalogue 72-009, Statistics Canada, Ottawa; *Economic Review*, Department of Finance, Ottawa, 1985.

Note: (a) Net mid-year capital stock divided by average quarter employment for category indicated. Municipal employment for 1961-66 is an average of month-end data. Government enterprises and armed forces are excluded from federal government employment. The capital stock figures exclude housing and include the following in the government sector: federal, provincial and local governments, toll highways and bridges, water systems and urban and suburban transport. Total government was indexed to 1971 dollars using simple averages of the defined components.