

Part III

DETERMINANTS OF THE GROWTH OF SERVICES

A thorough understanding of the nature, determinants, and welfare effects of the service sector is helped by the kind of empirical information we presented in the first two parts of this study. However, empirical information by itself can be overwhelming and confusing, even if it is related to current policy issues and general speculation about fundamental trends in the economy, as we have attempted to do.

A less confusing and more purposeful organization of the empirical knowledge is possible only in the framework of a theoretical model which builds on basic economic principles. In this part of our study, we develop such a model which, by the nature of the beast, will be somewhat abstract and has to simplify complex phenomena. Its value can ultimately be judged only on its consistency with broad and well-known economic processes and its ability to predict developments through time and across different countries.

Our presentation begins with a new taxonomy of the service industries which differs from those found in the literature and discussed in chapter 2. We examine the merit of this taxonomy and present some empirical evidence on its relevance in chapter 8. Chapter 9 is devoted to an analysis of the determinants of the demand for privately purchased consumer services. The supply of services by the government is discussed in chapter 10. Producer services and international trade are the main topics of chapters 11 and 12, respectively.

CHAPTER 8

TOWARD A THEORY OF SERVICE DEMAND AND FUNCTIONS

In the first part of this chapter we present our basic taxonomy of service producing industries and explain its analytical rationale. In the second part we examine empirical evidence on the magnitude of each class of services in Canada.

THE BASIC TAXONOMY

We assume that all services produced in a modern economy fall into one of the following three classes:

1. Services bought by consumers in the private market, which we call consumer services.
2. Services provided by the government predominantly for the use of consumers. These are referred to as government services.
3. Services bought by producers in the private market and used in the further production of goods and services. These will be referred to as producer or intermediate (input) services. International trade in services will be discussed in a later chapter. It consists of some consumer services but is predominantly made up of producer services. The present chapter deals only with the domestic demand for and supply of services in the three basic categories.

The rationale for our fundamental taxonomy is that each category of services meets a distinctly different economic function and that the demand for each type is determined by forces sufficiently different to warrant separate analytical and empirical treatment. In addition, the growth of each category of services has different implications for welfare and international trade. At the same time, the number of categories is small enough to avoid excessive detail and permit the identification of the most fundamental forces at work.

Consumer Services

The clearest way to identify consumer services is from the obvious origin of the demand and the function of meeting the needs of individuals and families. The supply of consumer services is quite heterogeneous and is provided by individuals and firms. There are restaurants, hotels, financial services, communication services, public transportation, education, and insurance firms, facilities for amusement, recreation, care for hair, clothing, shoes, automobiles, household goods, and so on. This list is not exhaustive and its precise statistical coverage is discussed in the next section.

However, we should note here the treatment of two conceptual ambiguities. First, the essential difference between private and public consumption is the source of financing, not the mode of production. For example, most education in Canada is produced in government-owned facilities and through teachers paid out of coercively collected funds. This type of education service is considered to be part of government services. On the other hand, there are also private schools in Canada which are paid for by the consumers from discretionary income and produced by persons who are not employees of the government. Such education services are considered to be private consumption expenditures. If there were a voucher system for financing education, it would be possible to have the situation where the production is in the private sector but the payments come from the government, albeit indirectly through the vouchers. Under these conditions, education expenditures would be considered to give rise to private consumption in our taxonomy.¹

Secondly, Canadians spend money abroad on food, accommodation, transportation, entertainment, and many other types of consumption services. By analogy, foreigners make such expenditures in Canada. In principle, our estimates of private consumption expenditures should be adjusted for this foreign dimension. However, data do not permit us to do so because they fail to distinguish between spending by tourists and business travellers. This distinction is fundamental to our taxonomy since the spending by business travellers gives rise to the production and consumption of intermediate input services. It is well-known that a very large proportion of international travel involves business and that published statistics do not show separately the consumption and producer component of spending abroad.

From our reading of the popular press and personal discussions, we have gained the distinct impression that most people consider consumer services to be the only, or at least the most important, type of service produced in the economy. In fact, much of the literature in economics until recently has suggested the same. This perception is understandable since most people have contact with service industries only as consumers of the output of these industries. We should also remember the analysis of services by

Adam Smith and other economists of the 18th and 19th centuries which we presented in chapter 2. Adam Smith, in his famous reference to “musicians, lawyers and buffoons” considered the activities of these service workers to involve an “unproductive” use of resources. This view of the nature of service production still dominates the thinking of many people and policy-makers.

In a sense, consumer services deserve a central place in any taxonomy of service production activities. After all, consumption of goods and services is the ultimate determinant of economic well-being. And while consumption levels are not a perfect measure of welfare, most people accept the view that consumption, economic well-being, and welfare are highly correlated. We noted in chapter 2 that modern value theory implies that prices of goods and services reflect their relative value to consumers. Therefore, the amount of money spent on goods and services can be added up and considered to be a valid measure of economic well-being.

As a result of this treatment of services in basic economic theory, the demand for consumption services can be studied with standard economic theory. As we will see in the next chapter, the demand for consumer services is determined just like that for goods, by income and relative prices. However, our detailed investigation will show that the rate of female labour force participation is also a very important determinant of private service consumption. We will also document that while services have absorbed increasing proportions of total consumer spending in nominal terms, they have remained a nearly constant proportion in real terms.

Government Services

Government services in Canada are provided free or with a minimal charge to the general public. They consist predominantly of education, health, defence, and general administration, where the latter includes foreign representation, police protection, and the judiciary. We assume that all government services are for public and private consumption.

This assumption is unrealistic since some government services are inputs into private production. For example, there is the planning and economic analysis undertaken by DRIE in its regional economic development projects. Such services should be counted as producer services. In addition, as Schultz (1963), Becker (1981), and others have argued, education and health expenditures are a form of investment in human capital maintenance and additions. Defence expenditures may be considered to be an investment in national security rather than consumption. However, as we shall discuss further in chapter 10, it is difficult to make operational most of these distinctions between government service expenditures for consumption and

further production. For this reason, our model results in an estimate of total producer services that is biased downward.

It is important to note that the production of government services under discussion here involves the use of real resources which in economic jargon are known as "exhaustive expenditures." The best known of these types of government services are education, medical care, defence, and justice. The expenditures for these services need to be kept separate from government transfer payments which make up the bulk of spending on pensions and welfare. Only the exhaustive expenditures on the personnel, material, equipment, and buildings used in the administration of the pension and welfare systems are counted here as components of government consumption expenditures. It is well-known that this part of spending on social insurance programmes is only a small fraction of the total.

Our definition of government service expenditures excludes the bulk of the output of Crown corporations such as airlines, ferries, harbour authorities, and research institutes owned by governments. The rationale for this treatment is that these organizations sell their output in private markets, which is thus recorded as private consumption or producer service spending. However, some Crown corporations require government subsidies because the value of their sales exceed the cost of their inputs or they have loan guarantees. These subsidies are recorded as exhaustive government expenditures and thus enter our estimate of government services.

The government provision of services has grown rapidly in recent decades for reasons that are subject to lively debates among economists and political scientists. In chapter 10 we present a review of these debates since they are likely to provide useful insights into future growth of government service demand and supply.

Producer Services

Producer services consist most obviously of the statistical category named aptly business services, which contains computer, accounting, advertising, personnel, protection, and similar industries. However, they also include some industries that are better known to many people as sources of supply for consumer services. These are the financial, insurance, real estate, transportation, engineering, legal, storage, communication, hotel, restaurant, and many other service industries. Part of their output is used as inputs by business firms into the process of producing goods and other services. One of the important challenges of measuring the size of the producer service sector is to develop a methodology which permits the separation of producer and consumer services in these industries.

Producer services enter the economic process at all levels of production. For example, engineering services are contained in the production of cop-

per which in turn serves as an input into communications equipment and through it results in the production of telephone services bought by consumers. Of course, all the inputs into engineering, copper, and other intermediate products themselves use up communications and other services.

For this reason, one method of accounting for producer service output is based on input-output tables and the measurement of direct as well as indirect service inputs. We discuss this approach in some detail in chapter 12 where our main concern is with the way in which services enter international trade through embodiment in goods. In the current chapter, we use a simpler and more direct method for the estimation of producer services. We estimate producer services as the residual of total service output minus consumer and government service expenditures.

The importance of producer services stems in large part from the influence they have on economic growth and dynamism. In free market economies, technological and scientific developments constantly enhance the potential for greater efficiency in production. The satisfaction of consumers is continuously increased through better and cheaper products. This process of creative destruction, as it was called by Schumpeter, is realized to a substantial degree by entrepreneurial firms that draw heavily on highly educated workers. They also develop and apply new technological and scientific knowledge. They sell advice and deliver innovative services to other firms. In technical economic jargon, these firms in the service industries are the main vehicles through which the human and knowledge capital of society is produced and introduced into the production process. In addition, this producer service sector contains increasingly more specialized firms and technical experts. This process in turn generates economies of scale and greater efficiency. Further elaboration of these ideas is presented in chapter 11.

STATISTICAL PROCEDURES

Most obviously, the following discussion is necessary because neither Statistics Canada nor any other foreign statistical offices generate data on the size of output produced in the categories that we call consumer, government, and producer services. For this reason, we are forced to make our own estimates. Of course, in doing so, we have to use basic time series which are available in published form. We present our methodology below in some detail and document sources and calculations precisely. This information is provided mainly for scholars who wish to modify or replicate our estimates for other time periods and countries. For busy and non-technical readers our basic approach is summarized simply as follows.

Statistics Canada regularly publishes the value added (or GDP) of a special national income account compilation known as "service industries."

The other category in this grouping is "goods industries," and together they exhaust total production. From the service industries GDP, we subtract consumer spending on services which is found readily in the national income accounts.² An adjustment is needed to obtain the value added of the consumer service industries. Through this adjustment we move from expenditure to production data and make comparable the consumer service series with the series on total service GDP. Basically, the adjustment eliminates the goods that are part of the consumer spending on services, as for example the food in spending on restaurant services.

Next, we subtract from the total service GDP the exhaustive government expenditures.³ However, this figure includes spending on government buildings, roads, bridges, harbours, and similar, obvious goods. We assume that the value of this spending on goods is captured by the time series on government capital formation and make the corresponding adjustment.

The value of service industries output remaining after the subtraction of consumer service industry GDP and exhaustive current government spending is considered to measure the output of producer services.

A Detailed Description

Estimates of the GDP of the total service sector in Canada are compiled regularly by Statistics Canada as one of the special aggregations in the series titled, *GDP at Factor Cost by Industry*. These data are available in current dollars in the series 13-531 and 61-213 from 1947. In 1987, a special new compilation of the same series in constant 1981 prices was published as Occasional Paper 15-001 and covers the years from 1961 to 1981. Updates are available in series 634. From these publications we obtained the special compilation of a series titled "All Services." It is this series which underlies the benchmark information presented in our introductory chapters. It is shown as the top line in figure 42, expressing total services as a percent of nominal GDP. The equivalent in real terms is represented by the top line in figure 43.

Next, we obtained estimates of the amount of money spent on services by Canadian consumers found in Statistics Canada series 13-001 in nominal and real terms. However, these data are gross expenditures, and it was necessary to deflate them by subtraction of the intermediate inputs employed in the production of these services. For this purpose we estimated the ratio of value added to gross output of the broad categories of consumption expenditures from the publication *GDP by Industry* (61-213). The weighted average ratio for these industries was 0.6 in 1973 and, to simplify matters, we used this ratio to deflate the consumer expenditures for all the years in the time series noted below. The resultant statistic is the empirical counterpart to our conceptual index consumer service production.

It may be useful to elaborate briefly on the need to deflate gross consumption expenditures to obtain the value added or GDP of the consumption service industries. In principle, this deflation procedure eliminates from such consumer spending as restaurant services the value of the food and other goods recorded as intermediate inputs. It also eliminates intermediate inputs of services used by the consumer service industries. The adjustment is necessary because otherwise the sum of the government and consumer service expenditures could exceed the value of the total service sector GDP. The subtraction of the intermediate service inputs of the consumer service industries from total service GDP increases the value of the residual, which represents producer services. The deflation of expenditure data to obtain the value added of these service industries therefore is the correct procedure for our model.

The third series used in our empirical work is *Government Expenditures on Goods and Services, GDP Concept*. It has been published regularly in the basic series concerning Gross National Expenditure (Statistics Canada number 13-001 in nominal and real terms; the series in 1981 dollars was published in 1987). Information on government capital formation is found in the same publication, which represents spending on roads and structures and the acquisition of capital goods.⁴ This we subtracted from total government expenditures. It is the empirical counterpart of our concept of government service production.

The use of the three time series just described enabled us to estimate the magnitude of producer services as a residual in the following manner:

$$\begin{array}{r}
 \text{Total Service Expenditure and Product} \\
 \text{minus} \\
 \text{Consumer Service GDP} \\
 \text{minus} \\
 \text{Government Provided Services} \\
 \text{equals} \\
 \text{Producer Service GDP}
 \end{array}$$

EMPIRICAL RESULTS

We present our empirical results first in nominal dollars and then in real terms. The calculations in nominal terms do not represent a test of our model since theories of economic growth and the role of capital deepening concern real rather than nominal values. We present the nominal data here because they underlie much of the popular perception of the nature of the service sector and its growth. Most of the concerns over the future impact of service sector growth presented in chapter 2 are based on trends in current spending patterns.

Figure 42
Shares of Nominal GDP 1947 to 1983

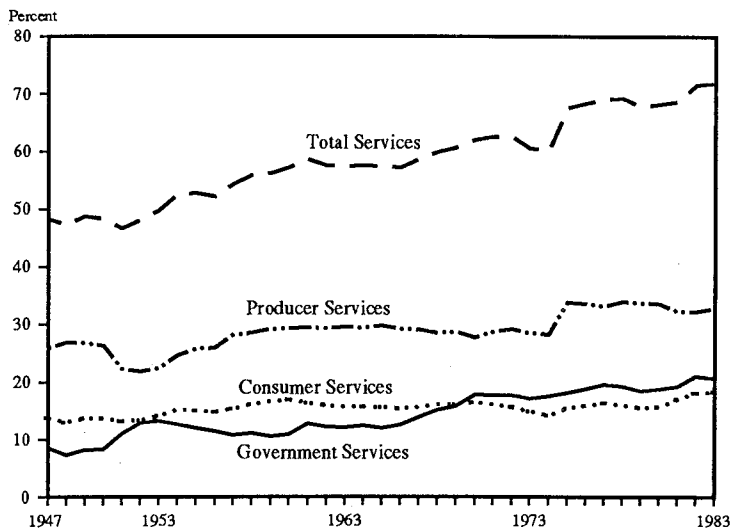
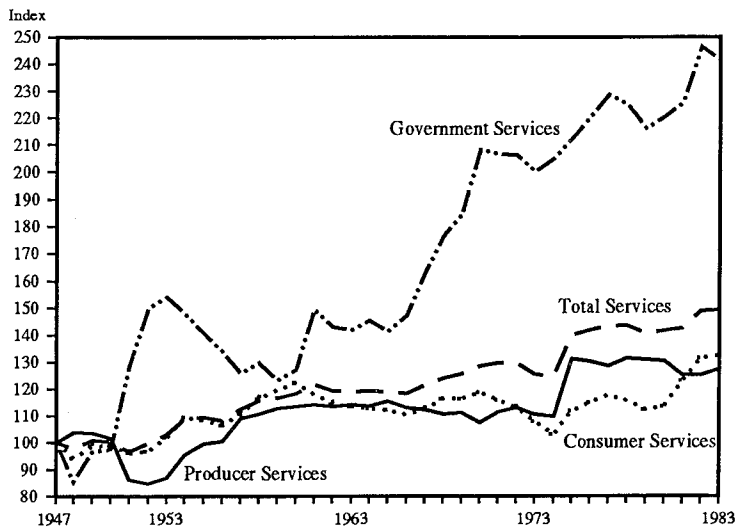


Figure 43
Nominal GDP Shares
Index 1947 = 100



Nominal Dollar Values

Figure 42 shows the time series of consumer, government, producer and total service production as a percentage of GDP. It is important to recall that these series represent spending on the value added or GDP of the industry groupings. As a result, the sum of these expenditures is equal to the service GDP figures presented in chapter 1, figure 2. Both figures 2 and 42 show that the percentage of total GDP produced by all three service sectors has risen from about 50 percent in 1947 to over 70 percent in the early 1980s.

For present purposes of analysis, the most outstanding facts revealed in figure 42 concern the levels of the three types of service production. In most recent years, both consumer and government service production have been about 20 percent of GDP. Producer services, on the other hand, have been about 35 percent. Given the emphasis on consumer and government services in the history of analysis of the service sector, the relative sizes of the three sectors is somewhat inconsistent with conventional wisdom and may come as a surprise to some readers.

In figure 43 we have indexed the share of GDP represented by the production of the three types of services as equal to 100 each. The graphics thus permit a clear interpretation of the growth of these shares through time. As can be seen, the share of government service output has grown at the most rapid rate by far, nearly 150 percent. The shares of consumer and producer services, on the other hand, have grown only about 30 percent each.

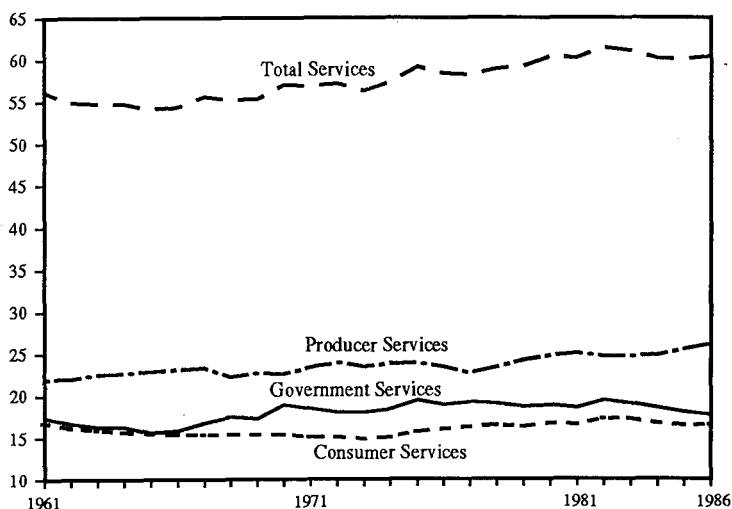
1981 Dollar Values

During the period under observation in figure 42, there have been consistent overall price increases and changes in the relative prices of goods and the three types of service production. Since economic demand functions and other important functional relationships typically are specified in terms of real quantities and relative prices, it is important to deflate the nominal series contained in figure 42. Unfortunately, relevant time series were available in 1981 prices only between the period 1961 and 1986. Readers should be aware of this difference in the years shown in the graphs covering the nominal and real variables.

The most important result of the calculations in real terms again concerns the relative sizes of the three basic types of service production and is obvious from figure 44. In recent years, about one-half of total service output in Canada consisted of producer services and about one-quarter each of consumer and government services. More precisely, consumer, govern-

ment, and producer service shares in real GDP in 1986 were 17, 18, and 26 percent, respectively.

Figure 44
Shares of Services, 1981 Dollars



Of almost equal importance are the different rates at which the share of these service sectors in GDP have been growing during the period under observation. To illustrate these developments as clearly as possible, we present figure 45. In it, the share of GDP represented by each sector's output in 1961 is scaled to 100. The lines trace the development of these shares thereafter.

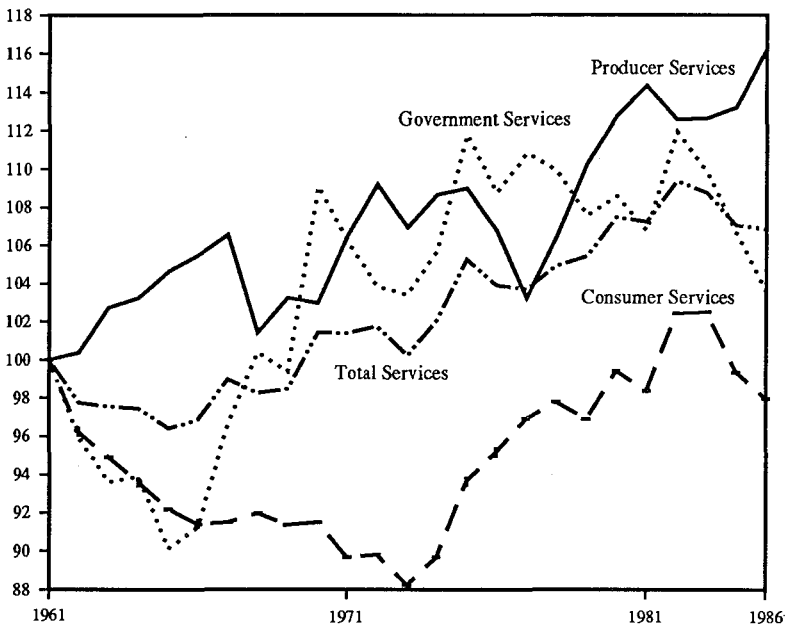
As can be seen, the proportion of total services in GDP rose only 10 percent between 1961 and 1982 and since then has fallen nearly 3 percentage points. There has been a reduction in the share during the early 1960s and an increase of equal size during the last half of the 1960s. These developments point clearly to the danger inherent in theorizing about and extrapolating trends over relatively short periods and in nominal terms.

At the very least, the alarmist predictions about the total loss of goods production in Canada and the United States, which we reviewed in introductory chapters, have to be seen in a much different light. During the last 25 years and in real terms, the share of real output generated by the service sector has risen only about 7 percent and since 1982 has been shrinking.

Consumer Services

Figure 45 reveals that the production of consumer services as a percentage of real output remained virtually at the same level between 1961 and 1986. The share of this sector actually fell by 11 percent between 1961 and 1974. Since then it has recovered and, after going slightly above the 1961 level in 1983 and 1984, has once more fallen below that attained in the first year.

Figure 45
Shares of Services, 1981 Dollars
1981 = 100



The cycles and trend in the evolution of consumer service production in real terms revealed by these data also go against conventional wisdom. The income elasticity of demand for consumer services as a whole between the beginning and ending years has been slightly less than one. During half of the years in the period, it has been less and during the remainder somewhat greater than one. We return to a more detailed examination of the determinants of the demand for consumer services in the next chapter.

Government Services

In figure 45 it can be seen clearly that the proportion of GDP consisting of real services produced by governments tended downward during the early 1960s and rose to new peaks in 1970, 1975, and 1982, years of low business activity. Since 1982, the share has fallen sharply to where in 1986 it was only about 3 percent above the 1961 level and nearly 10 percentage points below its historic peak in 1982.

The share of government services and the sharp drop in the most recent years may also come as a surprise to many readers. It appears to be inconsistent with growth in the nominal share shown in figures 42 and 43. It is also in conflict with the widely documented development that the share of government spending in national income has been rising continuously during the post-war period and in recent years has approached 50 percent (see Walker and Pipes 1988). These inconsistencies are explained by two factors. First, much of the growth in government spending in recent years has consisted of transfer payments and the record here is of exhaustive spending. Secondly, the well-known spending figures are in nominal terms while the time series under observation here is adjusted for price changes.

In chapter 10 we will consider these issues in greater detail and analyse the possibility that the results have been distorted by a systematic underestimate in the quantity of government services produced. This bias is likely to be due to the fact that productivity gains in government production are assumed to be zero when there is a strong presumption that they are positive.

However, taken at its face value, the trend in government service production once again conflicts with much conventional wisdom about the real sources of growth in the service sector generally. Going beyond the immediate concerns of our present study, the finding points to the importance of the theories of the public choice school of economics led by James Buchanan. Special interest groups can be made to vote in desired ways more effectively by well-targeted transfer programmes than by the provision of public goods like defence and education. According to this theory and in the face of growing taxpayers' resistance, a growth of transfer at the expense of exhaustive expenditures may be expected.

Producer Services

The share of real producer services in GDP can be seen in figure 45 to have grown nearly 20 percent between 1961 and 1986. This growth has been cyclical and appears to be negatively correlated with the time series on the share of government services. The cycles are clearly caused by the fact that the demand for producer services is determined largely by producers of

goods and services for final domestic and foreign demand. It therefore fluctuates with the rate of change in aggregate demand and output.

In our view, the level and growth of producer services is one of the most important findings of this study. A review of the literature on service sector economics reveals that the importance of producer services has been overlooked by the 19th century classics, the creators of the stages taxonomy of the 1930s, and by the standard modern references like Fuchs and Baumol. With some exceptions, the economic role of producer services has been neglected until a few publications took up the theme in some detail in the 1980s. However, to the best of our knowledge, there have been no successful attempts to measure either the level or growth of producer services in the economy.

In chapter 11 we present a detailed analysis of the economic function played by producer services in the Canadian economy. In the process we show how their dominance seriously undermines the concerns about deindustrialization and the stagnating effect of service sector growth which have pervaded so much of the semi-popular literature of the 1970s. In addition, in the policy-oriented chapters we discuss the role which producer services can play in regional and general economic development strategies.

SUMMARY AND CONCLUSIONS

In this chapter we proposed the classification of services into three distinct categories, consumer, government, and producer services. The rationale for this taxonomy is that each of these types of services is subject to distinctly different determinants of demand and output. They also influence economic growth and welfare in different ways.

Consumer services have been the focus of analysis of the service sector historically. Our empirical evidence suggests that the share of nominal GDP consisting of consumer services has risen consistently during the post-war period. At the same time, the share in real terms has fluctuated around a remarkably constant level. The conventional wisdom about consumer services as an engine of growth for the sector is put into question by this finding.

The dramatic rise of government service production in nominal terms supports the view that much of the stimulus for the growth of the service sector has come from collective spending during the post-war years. However, after adjustment for price changes, the share of government service output has risen only about 3 percent.

One of the most interesting findings of this chapter is the fact that producer services represent both the largest and the most rapidly growing component of the service sector, both in nominal and real terms. Producer

services are central to the growth of productivity and the size and health of this sector bodes well for the future of the Canadian economy.

At the most general level, the conceptual and empirical results of this chapter put into question concerns about the detrimental effects of service sector growth which have been discussed in the 1970s literature and which were reviewed in chapter 2. Our results suggest that vigorous service sector growth in market economies has not been and is not likely to be a sign of weakness but is an expression of a vital and dynamic private sector.

NOTES

1. In the United States, our taxonomy would treat as private consumption expenditures the medical services provided through private insurance companies like Blue Cross and Blue Shield. On the other hand, it would treat as public consumption expenditures the medical services provided under public assistance programmes like Medicare.
2. It is equal to the service component of C in the well-known Keynesian consumption function $C=a+bY$.
3. This is equivalent to G in the well-known Keynesian formula for aggregate income and expenditure $Y=C+I+G$.
4. Throughout the post-war years this government capital formation has been around 10 to 15 percent of total exhaustive government expenditure. The depreciation of the existing capital stock is counted as current exhaustive expenditure. It may also be worth noting that defence equipment is not considered to be investment and instead is counted as current expenditure.

CHAPTER 9

CONSUMER SERVICES¹

There are several reasons why the study of consumer services is important for a thorough understanding of the service industries in Canada and for our ability to predict future developments and design economic policies. First, consumer services have played a central role in the history of economic thought on the service industries generally. Before and during the early years of modern industrial societies, the service sector consisted predominantly of consumer services. As we noted in the introductory chapters, during this time almost all service work was performed by personal servants of the aristocracy, landlords, and wealthy merchants.

In earlier chapters, we discussed how the thinking of 18th and 19th century economists still has significant influence on public understanding of the nature of the service industries today. One of the most unfortunate aspects of this understanding is the notion that service production represents an unproductive use of resources. The national income accounting system of communist countries even now reflects this early dogma on the service sector in that it does not count as part of national income the output of firms and individuals producing personal services.

Secondly, in Western industrial countries a modified version of this classical view of the service sector still has some vocal adherents. It has recently prompted Browne (1986) to publish a paper with the title, "Taking in Each Other's Laundry—The Service Sector." This title refers to the argument that much of the growth of the service sector in recent years has been prompted by the shift of service production from households into the commercial sector. It is considered to have been prompted by the increased participation of females in the labour force. It has the important implication of overstating real economic growth since under current national income accounting practices output in households is not counted, while the same output in the commercial sector is reflected in the statistics.

Third, the classical view of consumer services also implies that they are a luxury. This is one reason conventional wisdom in technical economics

has it that the demand for consumer services has an income elasticity greater than one. This view is consistent with the growing share of services in the economy and has resulted in the prediction that the service sector will absorb an ever-increasing proportion of national output. Bringing into this prediction the notion that these services are largely unproductive, we have the ingredients of alarmist views about a pathology of modern industrial economies which we reviewed in the opening chapter.

In this chapter we review briefly the existing literature on the demand for consumer services, present some econometric estimates of a demand function, and analyse the economic and policy implications of these estimates. This chapter is somewhat more technical than most others in this study. This is caused by the very nature of the analysis, the main contribution of which is the rigorous specification and econometric estimation of a demand function. However, for readers only interested in the results of the analysis, they can be summarized briefly as follows.

The demand for consumer services in Canada during the post-war years has been determined by the income of households and the price of consumer services relative to other prices the consumer faces. The use of these variables alone to model the demand for consumer services generates the traditional result that the income elasticity of demand for consumer services is somewhat more than one.

However, the econometric properties of the estimate suggest that a variable is missing from the model. According to some intuitively appealing theories about household production, the missing variable is readily seen to be the female labour force participation rate. Econometric estimates confirm the validity of this notion and the results are revealing in some ways and challenge conventional wisdom in others. The estimates imply that increases in the female labour force participation rate have been responsible for 63 percent of the increase in the consumption of services by households. It also implies that 16.4 percent of the recorded increase in real national income per capita during the period 1961 to 1985 reflects a shift from household into commercial production. The other main implication of the regression estimates is that with the female labour force participation rate included as a determinant of demand, the income elasticity is 0.6 and not above one, as has been found by others. One important policy implication of these findings is that the demand for consumer services may be expected to be less in the future when the female labour force participation rate reaches a maximum or begins to decline. It is not advisable to count on the growth in income alone to drive the demand for consumer services in the future.

DEMAND FUNCTIONS IN THE LITERATURE

The theory of the demand for services by households is rather straightforward. Following the most fundamental price theory models, the demand by households for specific services like housekeeping, laundry, hair care, and eating out is considered to be an increasing function of income and a decreasing function of relative prices. Consumption decisions involve substitution away from higher- and into lower-priced goods. One of the most interesting of these substitutions is considered to have been made possible by the introduction or reduction in the price of new products which permit traditional services to be performed by machines, such as refrigerators, vacuum cleaners, electric irons, and washing machines.

The main challenges in the study of the demand for services stems from econometric problems. During the post-war years the collection of household survey data for the construction of national income data, especially on consumption and prices, created a large database. During the 1960s, the availability of computers and the development of econometric techniques resulted in pathbreaking studies of demand functions by Houthakker and Taylor (1966) and Prais and Houthakker (1971). Schweitzer (1969) and Tulpule and Powell (1978) have made similar studies for Canadian and Australian consumers, respectively. The Tulpule and Powell study was characterized by the use of especially sophisticated econometric techniques which, some might say, give rise to some question about the meaning of the results. Thus, they used the so-called twice extended linear expenditure system and introduced constraints in the form of the so-called Frisch parameter in order "to ensure that the average elasticity of substitution among commodities, which proves very elusive to estimate on the basis of any one set of time series data, is consistent with the weight of the evidence on this matter" (Tulpule and Powell 1978, p. 2). In the context of the Fraser Institute service sector study project, Bernstein and Geehan (1988) used translogarithmic expenditure functions to estimate demand for insurance services in Canada; and Scarfe and Krantz (1988) have estimated demand for the services of the hospitality industry.

These and other studies have found that the income elasticity of demand for services ranges between 0.6 and 2, with an average of slightly above 1. The income elasticity of demand is high for some services, such as fancy restaurant meals and other traditional luxury services. On the other hand, for a wide variety of personal, household, and recreation services, the income elasticity is quite low because modern technology has produced substitute goods like appliances for household services and modern electronic devices for entertainment inside the home. Bernstein and Geehan found an income elasticity of demand for insurance services of about 1.5 (p. 27). Scarfe and Krantz found the real expenditure elasticity of the demand for meals at chain restaurants to be 0.67 and at independent, more luxury type

restaurants to be 1.27. However, we should note that these results were obtained by the use of the female labour force participation rate as an independent variable in an application of our model developed below.

There exist no fundamental price theory models that can explain the demand for the aggregate of consumer services as contrasted with the demand for individual services. This may be one reason why there does not appear to exist in the literature any models or econometric estimates of the demand for the sum of consumer services. This is somewhat surprising since national income statistics contain consistent data on the service component of consumer demand in nominal and real terms. Perhaps the neglect of this database has been because the focus in economic theory and econometrics during the 1970s and 1980s has been on matters other than demand and consumption functions.

The only study concerned with the demand for aggregate services is by Summers and Heston (1988). It arose out of a major project on international income and price comparisons which the authors undertook for the United Nations. Its main finding is that the share of service output in real GDP has been remarkably constant during the period 1970 to 1975 and rose only slightly during the following five years. They found this result to be robust to a number of changes in the definition of the service sector and econometric specification. However, this study is of limited relevance for the current purposes of analysis, especially since it did not make the basic distinction between consumer, government, and producer services, which is so central to our study.

INCOME AND PRICE VARIABLES ALONE

In this section we present the results of an econometric exercise that follows rather mechanically the standard techniques used in the early literature on the demand for individual goods and services. The basic data underlying our estimates are found in figure 46. They are straightforward numbers from the published sources found in the footnote to the graph. They indicate that the demand for services represented about 38 percent of total nominal consumption expenditures per capita in 1961 and about 46 percent in 1985. In 1971 dollars, there has been a marginal increase of this percentage between the beginning and last year of the period under study. The task of the econometric exercise is to explain the trend and fluctuations in the real service consumption pattern during this period.

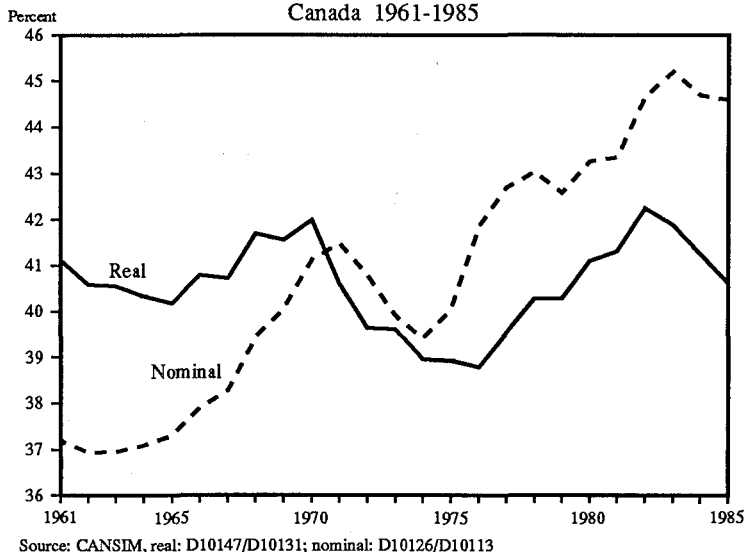
The demand equation for real Canadian consumer spending on services for the period 1961 through 1985 was estimated with the following results:

$$\begin{aligned} \text{Ln } (S) = & -1.175 + 1.172 \text{ Ln } (TE) - 0.39 \text{ Ln } (PS) & (1) \\ & (-8.6) \quad (16.81) \quad (-2.48) \end{aligned}$$

where S is the real service expenditure per capita, TE is total real consumption expenditure per capita and PS is the relative price of services, \ln means natural logs and the values in parenthesis are t values. The number of observations is 25, R squared is 0.989 and the Durbin-Watson statistic is 0.42 (uncorrected).

As can be seen, the estimated income elasticity in this equation is statistically significant, has the theoretically expected sign, and is consistent with that found in other studies. The price elasticity coefficient is significant and has the expected sign. However, the level of the Durbin-Watson statistic reflects a high degree of auto-correlation of residuals which in turn suggests the omission of a variable.

Figure 46
Real and Nominal Expenditures on Services as a Proportion of
Real (1971 constant dollars) and Nominal Total Consumption Expenditure
Canada 1961-1985

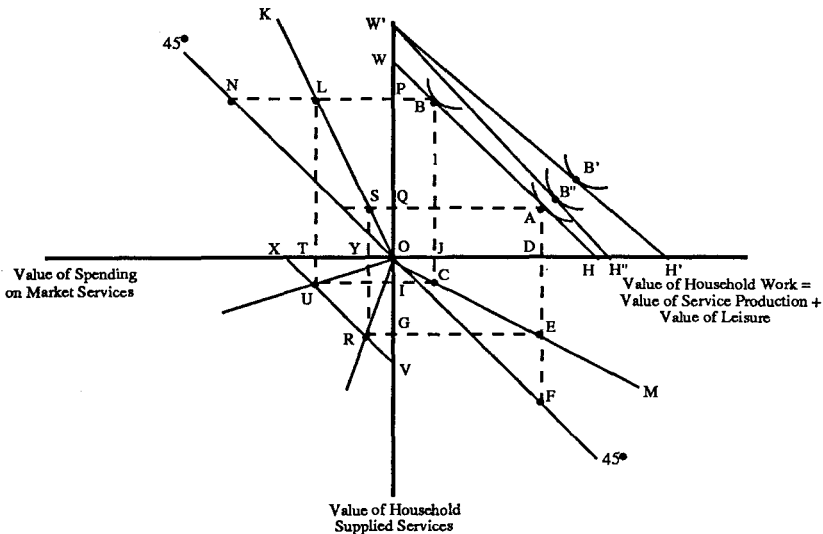


A MODEL OF HOUSEHOLD PRODUCTION

In the search for this omitted variable we constructed a model of household behaviour in which changes in the female labour force participation rate is an exogenously given, driving force. It is developed in figure 47, and an algebraic formulation is found in the appendix to this chapter.

In figure 47 the northeast quadrant shows the choice facing the representative woman between work in the market and time spent at home. The vertical axis measures the value of earnings obtained from work for a wage. The distance OW represents the maximum income the woman can earn by working full time per time period at the going wage rate.

Figure 47
Market Work = Money Income



The horizontal axis shows the value of production at home, which is assumed to consist of services for in-home consumption and leisure. Services are valued at market prices and leisure is valued at the opportunity cost of market work. The relative price of the two types of activities is assumed to be equal to one initially. The distance OH represents the maximum value of leisure and household service output attainable if the woman does not sell any of her labour services in the market.

The budget constraint facing the woman is obviously a straight line since any increase in market work requires a decrease of equal size in time spent in the home and the value of the output produced in the two situations is constant at the given wage rate and price of services. A taxonomy of causes for the shift of the budget constraint and for movement along it is presented below.

Leisure Service Production

The line OM in the southeast quadrant shows the functional relationship between the time spent in the home and the allocation of this time between the production of services and leisure. For the sake of simplicity it is assumed that a fixed proportion of the time is used for the production of services and leisure. For this reason, the OM line goes through the origin and is a straight line. The vertical distance between the axis and OM is the amount of service production. The distance between OM and the 45 degree line represents the value of leisure consumed.

We assume that, *ceteris paribus*, the amount of time spent on leisure is an increasing function of the efficiency of domestic service production which itself is a function of the quantity of household machines used. A reduction in the relative price of such goods as vacuum cleaners and dishwashers increases the quantity demanded and thus a greater consumption of leisure. In figure 47 such a change is reflected in the counter-clockwise rotation of the OM function. The value of home produced services is measured on the vertical axis of the southeast quadrant. Thus, the choice between home and market activities at point A results in domestic service production of $DE=OG$ and leisure consumption of EF.

Market Goods and Service Demand

The line OK in the northwest quadrant shows the functional relationship between the woman's income from work and the amount of spending on market services. With earnings at OP, the value of services bought in the market is $LP=OT$. The distance NL represents spending on goods. For the sake of simplicity, this amount is considered to be a constant fraction of market income.

The slope of the OK line is assumed to be a function of the relative price of goods and services. The more costly are services, the steeper is the function.

Equilibrium at Different Market Participation

Given the preceding behavioural assumptions, we now establish that an increase in the proportion of time a woman spends in working in the market results in an increase in the ratio of market to home produced services. For this purpose, consider position A on the line WH, which represents a woman who spends only a relatively small amount of time working in the market. Her home consumption and production of services is $DE=OG$. Her income from market work is OQ, of which $QS=OY$ is spent on market services. The resultant combination of home and market produced services

consumed is given by the point R. The slope of the function OR reflects the ratio of the two types of services.

Now consider another woman who opts for the combination of work in the home and the market indicated by point B. It reflects a relative preference for work in the market. From the preceding analysis, it is obvious that the combination of home and market produced services consumed is given by the point U and the ratio OU.

Given that all the functions drawn in figure 47 are straight lines, it follows that other combinations of time spent in the home and in the market along the budget constraint WH result in combinations of market and home produced service consumption along the straight line VX.

The most important conclusion derived from our analysis is that the ratio of market to home produced services consumed by a representative household is an increasing function of the proportion of the time which the woman in that household spends working in the market rather than in the home.

Determinants of Market Participation

In the following section, we define a woman to be out of the labour force if she is at a point like H in figure 47. Labour force participation takes place if she chooses a point away from H on one of the budget lines. Such a choice can be due to three analytically distinct causes.

First, it is caused by a totally exogenous change in tastes. It is not accompanied by any changes in wage rates or the price of market services in terms of wage rates. Therefore, in terms of figure 47 it shows up as a movement from H to A or B.

Secondly, it is caused by an increase in the wage rate while the preference function remains unchanged. The time budget line H'W' is drawn parallel to HW under the assumption that the price of market services in terms of female wage rates has remained constant.

Under these conditions, the movement to the new equilibrium such as B' reflects the income elasticity of demand for market work. It is an empirical question whether this elasticity is positive or negative and how large it is. In figure 47, the position of B' indicates an increased demand for market work relative to H or A, which we assume to be the response of the representative woman to a higher income. This appears to be a reasonable assumption given the simultaneous increase in wage rates and female labour force participation rates observed in Canada through the post-war years.

Third, again assuming unchanged tastes, it is caused by an increase in the wage rate and a simultaneous decrease in the price of market services in

terms of the wage rate. Such changes are reflected in the budget line $W'H''$ which is anchored at point W' by assuming that the increase in wages has been the same as in the preceding case. Under these conditions, the reduction in the cost of market services lowers the value of the work done in the home. This shortens the intercept of the budget line with the horizontal axis and causes $W'H''$ to be inside the $W'H'$ line. This case appears to best describe post-war developments in the United States and Canada during the period under observation when increases in real wages were greater than increases in the prices of market services.

In this case, both income and price effects determine the change in the allocation of work effort in the home and the market as for example from H to B'' in the diagram. If the increased wage rate leads to greater work in the market, as we assumed in the preceding case, then the reduction in the implicit value of service production in the home strengthens the demand for market work due to the income effect alone, if home produced services are a normal good.

In sum, our model implies that increased female labour force participation results in a substitution of market purchased services for home produced services. It also suggests that changes in taste for work in the market, increased wage rates, and decreases in the cost of market services in terms of wage rates, lead to increases in female labour force participation rates under reasonable assumptions about income and price elasticities.

EXPANDED ECONOMETRIC RESULTS

The preceding theoretical model causes us to postulate that female labour force participation rates (F) should be an argument in the demand function for market services and that the partial derivative with respect to service demand should be positive:

$$S = f(TE, PS, F), \quad dS/dF > 0.$$

We retain the assumption made in the demand studies cited above and consider that the supply of market services is infinitely elastic. Under this assumption, the econometric estimates reflect a movement along each of the three functions determining the demand for services. The validity of our assumption about the infinite elasticity of supply of market services can be defended on the following grounds.

First, it is the influence of a changing participation rate, F , on the demand for services that we wish to measure. Modelling this as a recursive system separates the influences of the participation rate on both supply and demand from one another while allowing us to estimate using the ordinary least square technique. Influences of the participation rate on the supply of services will be captured through the coefficient on PS in the reduced form.

The influence of the participation rate on the demand for services will be given directly by the coefficient on F . Consequently, we may make statements about changes in the equilibrium quantities of consumer services purchased due to changing demands for consumer services brought on by changing participation rates.

Secondly, consumer service industries employed about 2.7 million people in 1985, representing only 24 percent of the total labour force. Throughout the period under study, this fraction and therefore the real service demand per capita have remained almost constant. It seems reasonable, therefore, to assume that the supply of labour to the consumer service industries is infinite at the going wage rate in the market.

Third, the factor inputs in the consumer service industry, such as labour and capital, are not specialized. It may be presumed that they can and have been attracted from other industries through only marginal increases in payment.

Fourth, the increases in the relative wages of women, which have been associated with the increases in female labour force participation rates during the period under observation, should not be interpreted as evidence of increased demand for labour from the consumer service industries. As a number of studies have shown, these wage gains of women relative to men are explained almost totally by relative increases in the human capital of women. These increases in human capital in turn are attributable to changes in taste and technology, a discussion of which would take us far beyond the scope of this study.

Econometric Results

The econometric results of our model under the preceding assumption are as follows.

$$\text{Ln}(S) = 1.009 + 0.348 \text{Ln}(\text{TE}) + 0.703 \text{Ln}(F) - 0.007(\text{PS}) \quad (2)$$

(6.86) (6.09) (15.42) (-0.13)

The number of observations is 25, R^2 is 0.99 and the Durbin-Watson statistic is 2.07 (uncorrected).

As can be seen, all three regression coefficients have the expected sign, and the coefficients on the total expenditure (TE) and female labour force participation rates (F) have t values that make them statistically significant at the 5 percent level of confidence. The improvement of the Durbin-Watson statistic is dramatic and suggests that our model may have led to inclusion into the estimation procedure of the variable omitted in the original calculations. The coefficient on the female labour force participation rate

(F) implies that a 1 percent increase in F has been associated with a 0.7 percent rise in the demand for commercial consumer services.

Some Other Supportive Evidence

Innovative results of the sort just presented tend to raise questions about their validity and whether they may not be the outcome of some special conditions in Canada during the time period studied. For this reason, it is useful to report that estimates of equivalent demand functions for real aggregate consumer services have been made successfully for the United States and France. The following table was taken from Hammes, Rosa, and Grubel (1989).

Var:	C	Ln(TE)	Ln(PS)	Ln(F)	R ² (Adj.)	DW
U.S.	1.05 (1.08)	0.64 (8.45)	-0.06 (-0.89)	0.45 (3.47)	.99	.74
France	-4.20 (-1.38)	0.95 (6.09)	-0.33 (-2.61)	0.98 (2.57)	.99	2.00

where the variables are defined in the same way as in equation 2 and the numbers in parenthesis reflect t statistics. Both equations were obtained after the application of the Cochrane-Orcutt technique for the correction of first order auto-correlation. This adjustment was not made in the case of the Canadian data.

Further, in the spirit of providing support for the basic model presented here, we note that analogous results were also obtained in a study of India by Trivedi (1988). However, there is an important difference as the female labour force participation rate in India has been virtually zero. The shift parameter which improves the econometric property of the demand function and which can be rationalized by a theoretical model is the rate of urbanization in India.

Finally, strong evidence in support of the model is implicit in the estimates of demand functions for restaurant meals by Scarfe and Krantz (1988) mentioned above. The demand for meals at fast food chains is influenced relatively more heavily by the female labour force participation rate and less by total service expenditures than is the demand for meals at independent restaurants. What this means is that spending on meals at McDonald's with the kids is determined predominantly by the labour market behaviour of women while the demand for fancy restaurant meals is

sensitive to income. The validity of this proposition is quite obvious, but it also explains why demand function estimates can be improved by the inclusion of the female labour force participation rate as a parameter which shifts the traditional price and income variables.

SUMMARY AND ECONOMIC IMPLICATIONS

The theoretical model and econometric results of this chapter are different from those found in the existing literature. If they are correct, a fundamental reassessment will be needed of the view that the income elasticity of demand for services by consumers on average is greater than one. Only the passage of time and the critical evaluation of our work by other scholars will permit a final judgement to be reached on this finding. We therefore urge readers to consider our econometric results as preliminary and treat the following economic implications with the circumspection which all such new findings should be given.

Taken at face value, the demand equation estimates have some interesting economic implications. First, the female labour force participation rate in Canada rose from 28.7 percent in 1961 to 54.35 percent in 1985, a gain of 89 percent. Since the elasticity of this variable in the equation is 0.7, it follows that fully 63 percent of the increase in the consumption of services by households has been due to the monetization of household work due to women entering the labour market. Secondly, the proportion of real market services consumed by households remained roughly constant at 26 percent of GNP during the period 1961 to 1985. The demand equation implies that in the absence of the rise in the female labour force participation rate the demand for real consumer services would have been 63 percent less. Therefore, aggregate demand and GNP would have been 16.4 percent (0.63 times 0.26) smaller in the absence of the increased female labour force participation rate.

These findings about the sensitivity of the demand for consumer services have an important implication for future demand. Since the female labour force participation rate is already rather high, further increases in the future may be expected to be smaller than they have been in the last 25 years. Under these conditions, growth in demand for consumer market services will be slower than in the post-war years. If there is a change in tastes and average family size increases, the participation rates may actually fall. Under these conditions, the demand for these types of services will remain constant or fall absolutely in real terms.

APPENDIX

An Algebraic Formulation of the Household Production Model

Assume that the representative woman spends a maximum of T hours a week on either work in the home H or in the market M .

$$H = a \cdot T \quad (N1a)$$

$$M = (1-a) \cdot T \quad (N1b)$$

where $0a$ and T is exogenously determined by social custom.

The time spent in the home is allocated between the production of service S and leisure L :

$$S = b \cdot H \quad (N2a)$$

$$L = (1-b) \cdot H \quad (N2b)$$

where 0 . The value of total income Y is defined as the sum of income from work $M \cdot W$ where W is the wage rate, from service production valued at the market price of services P , $S \cdot P$ and from leisure production valued at the opportunity cost of work W , $L \cdot W$:

$$Y = M \cdot W + S \cdot P + L \cdot W \quad (N3)$$

Now assume that the demand for market services MS is a constant fraction e of market work income:

$$MS = e \cdot (M \cdot W) \quad (N4)$$

and the value of home service consumption HS is equal to the value of home produced services:

$$HS = S \cdot P \quad (N5)$$

Under these assumptions we get through substitution and transformation:

$$MS/Y = e - e[HS/Y - (L \cdot W)/Y] \quad (N6)$$

This equation shows that the share of the total income of the representative woman spent on market supplied services is a decreasing function of the shares of total income spent on home produced services and on leisure.

By substitution, equation 6 can also be written as:

$$MS = eY - ae[b \cdot T \cdot P - (1-b) \cdot T \cdot W] \quad (N7)$$

Differentiating the MS with respect to a , the proportion of time spent in home production, we get:

$$d(MS)/da = -e[b \cdot T \cdot P + (1-b) \cdot T \cdot W] \quad (N8)$$

which implies that the demand for market services is a decreasing function of the proportion of total work time that the representative woman spends working in the home.

NOTES

1. This chapter is based on work co-authored with David Hammes who has done most of the econometric work.

CHAPTER 10

GOVERNMENT SERVICES: DEMAND AND SUPPLY

In this chapter we analyse the sources of demand and supply of government services in Canada. The reasons for this analysis are implicit in the data found in chapter 8, where the importance of Canadian governments as the supplier of services to the public has been documented. These services were about 8 percent of nominal output in 1947 and reached 20 percent in 1983. This represents a growth of about 150 percent and has made government a larger supplier of services than the consumer service industries. The development of the share of government service output in real terms has not been as great as that in nominal terms. This fact and the drop in the share since the early 1980s are interesting and important phenomena that deserve further study.

The focus of our analysis is on determinants of the level and growth of the government service sector. We have chosen this focus because it provides useful insights into the likely future development of this part of the Canadian service industries. Auld and Kitchen (1988) have studied in some detail the size of the government sector as part of the Fraser Institute service sector study project. For this reason, we do not repeat here detailed data on spending. However, we have assembled some statistics on the composition of consolidated government spending at all levels by functions which shed some light on the relevance of modern theories of government spending.

PUBLIC GOODS AND MARKET FAILURE MOTIVES

Until well into the 1970s, the public goods and market failure model of government spending provided the dominant paradigm. This model is held in high repute in some intellectual circles even today. It was formulated during the 1920s by A.C. Pigou at Cambridge University in England. During the post-war years, its most articulate and influential exposition

came in a book by Richard Musgrave, which served as the standard reference in most graduate courses in economics in the United States and Canada. The theory was also well represented in introductory textbooks, where it has influenced the thinking of many generations of university graduates. These graduates, of course, are today's leaders in the community, industry, politics, media, and universities.

Modern economic price theory and general equilibrium analysis have resulted in a thorough understanding of the conditions under which free markets result in the efficient allocation of resources. This economic theory provides the norm by which the actual performance of economies is assessed and market failures are identified. There are three main classes of such market failure, public goods, income redistribution, and economic instability.

According to the standard public finance theory, public goods are provided by private markets at inefficient levels because of externalities. That is, the social benefits of consumption exceed the amount of revenue which the producers can recover through private market sales and which are needed to cover costs of production. The most widely-cited examples of public goods are lighthouses, roads, and education. Ships use lighthouses to assure safe passage, but ship owners cannot be charged because it cannot be established reliably and at acceptable cost that the service of the lighthouse was actually used. In the case of most city and rural roads, the cost of collecting fees from users is so high that incentives for private construction and maintenance of these facilities are inadequate to assure an efficient supply. Some of the benefits from education accrue to society as a whole because educated persons are better informed voters and more responsible citizens. For this reason, private spending on education is less than socially optimal. Government spending on defence, domestic protection through police, the justice system, fire protection, and public transport have all been justified on the grounds that they involve market failures and the need for public goods provision.

Alternatively, some private spending and production may have negative externalities. Through them the welfare of others is reduced without appropriate compensation. The favourite examples in this category involve pollution and congestion. Public spending on buses, subways, and freeways is justified on these grounds.

A particularly important public good has been argued to exist in the markets for insurance such as health and unemployment. Costs of marketing and administration, control of moral hazard behaviour, and the self-selection of risks for these types of insurance are alleged to be particularly high. As a result, premiums have to be at such a level that some customers cannot afford to purchase the insurance. At the same time, the failure of some people to have such insurance generates costs on the rest of society.

These costs may be direct and severe, through the spread of infectious diseases, or more indirect as the sick and unemployed are forced into crime or become public nuisances through begging. The reduced spending power of the unemployed can result in cumulative processes of economy-wide recession and depression. The provision of public insurance for medical care and unemployment has been justified both on the grounds that the government can do so more cheaply and because private spending does not reflect the general social benefits and therefore is inadequate.

The power of these arguments for the government supply of public overhead facilities, education, and other public goods has been and remains very great. The arguments have been used to justify the massive expansion of government that began in Canada at the turn of the 20th century and accelerated greatly after the second World War. This expansion may also have been stimulated by the growing technical and social complexity of society in recent decades. However, there is little doubt but that the ideas about market failures have been instrumental in paving the way for government to take on an ever-increasing role in the correction of these failures.

Income Redistribution

Many Canadians believe that income distribution created by forces of the market alone is undesirable regardless of the causes for this outcome. In the views of many, therefore, more equal income redistribution by governments results in a more desirable pattern, the achievement of which is a public good. However, there is a more important justification for income redistribution policies than the public goods argument. It is closely intertwined with the argument for public insurance noted above. According to this argument, the economic uncertainties of modern industrial society result in poverty for some people, even if they have been prudent in the management of their affairs and the purchase of insurance. Wars and inflation have thrown many older people into poverty by destroying the real value of the financial assets they had set aside for retirement. Accidents, poor health from early age, and catastrophic illnesses leave in poverty people who are unable to purchase medical insurance or who have bought amounts that turn out to be inadequate in retrospect. Unemployment caused by unforeseeable technical change condemns many to poverty.

A public good is created by the government provision of insurance against such incidents of poverty. By making the programmes available universally and by financing them through the use of compulsive levies, administrative costs are low. It is further alleged that the public accepts these programmes readily since almost every member of society perceives a risk that at some point in his or her life he or she may fall victim to these hazards of modern life and will need the insurance benefits.

The Government of Canada began to provide social insurance coverage for old age income, medical needs, income loss due to accidents, single motherhood, unemployment and many others during the 1960s, either as new or massively expanded old programmes. During the 1970s and 1980s, the size and scope of these programmes expanded massively, partly as a result of deliberate policies. However, some of the expansion was due to the internal dynamics of the programmes themselves. We will consider this below.

Economic Instability

Business cycles have always been considered to be one of the most important forms of failure of market economies. To combat them, Canada's financial system was brought under the control of the government through the creation of the Bank of Canada. The Great Depression of the 1930s was an unacceptably harsh economic event, and Keynesian economic theory was designed to explain it and prevent its recurrence.

This theory suggests that market economies are not only subject to periodic recessions but also can remain for very long periods in serious conditions of underemployment equilibrium without market processes automatically restoring full employment. Keynesian theory thus provided the rationale for deficit spending during recessions and resulted in increased expenditures on public goods. However, during the 1960s, one of the most influential ideas in modern economics was born which provided a rationale for deficit spending not just during recession but permanently. The idea is that unemployment can be lowered through the acceptance of a higher rate of inflation, the so-called Phillips' curve trade-off.

All of these ideas provided powerful rationale for increased government spending and permanent deficits. Combined with the justification of spending on the grounds of public good and the social benefits of public insurance programmes, the state was set for a massive post-war expansion of government spending for the provision of government services.

Some Data

The most widely-discussed and best known spending programme is that of the federal government. It represented 16 percent of GDP in 1950, 14 percent in 1965, and 25 percent in 1984. Yet, federal spending is only part of the story. In Canada, three levels of government spend money and collect taxes. Numerous spending programmes involve the inter-governmental transfer of funds so that it is not possible simply to add up the budgetary outlays of these three levels of government. Instead, it is necessary to draw on estimates of spending that consolidate all three levels. This information

is published by Statistics Canada (*Statistical Yearbooks* and *Consolidated Government Finance*, catalogue 68-202) with a long lag, presumably because of the difficulties associated with obtaining the relevant data. According to this source, between 1965 and 1984, government spending as a proportion of GDP rose from 32 to over 50 percent. This figure is clearly much larger than the one presented in figure 42 which showed that the provision of government services absorbed about 12 percent of GDP in 1965 and about 20 percent in 1983. As we noted before and as we will discuss further below, the difference between these two measures of government spending is due to transfer payments which are included in the former and excluded from the latter set of statistics.

According to these figures, government spending generally and spending on public services during the post-war years has experienced a growth which has been spectacular by any standard. The growth rates as well as the levels reached are certainly unprecedented in the history of Canada. Will these growth rates of overall spending be sustained in the future or will growth become zero or even negative? Will the provision of government services continue to contribute to the growth of the service sector in Canada?

Future Spending

The answers to these questions can be attempted at two levels. At the first level, the answer is sought in the paradigm of the public goods model developed in this section. The crucial issue here is the relationship between the marginal productivity of resources spent by the government on public goods relative to the marginal productivity of resources used in the private sector. Part of the public goods paradigm is faith in the ability of technical analysis to provide information needed to assess the productivity of most public spending. In the case of programmes where benefits cannot be quantified readily and subjected to technical analysis, the paradigm suggests that the political process provides the relevant information about the benefits as they are perceived by the public.

This model of government spending creates a strong presumption that levels are always efficient and grow at a socially desirable rate. For instance, technical analysis may be expected to predict that the reduced birthrate in Canada will result in a reduced need for educational services at all levels. According to the model, this conclusion will result in lower spending on education. Examples of this kind of technical analysis can be found in the Fraser Institute service sector study project.

In the studies of the university system by West (1988) and of the lower education system by Easton (1988), the simple conclusion about the role of the birthrate is shown to be in need of modification due to a large set of

other influences. In a study of the medical sector, Brown (1987) argued that an aging population and the development of life-prolonging medical procedures tend to raise the demand for medical services. On the other hand, he noted that greater efficiency of the system and some characteristics of the new procedures may make demand growth less than predicted by the simpler forecasts. Similar considerations can be raised for other categories of government spending.

In this model, the political process can be relied upon to give appropriate signals to politicians about the social insurance and other transfer programmes for which benefits cannot be measured and technical analysis is quite unsuitable. Politicians are forced by the democratic election process to consult regularly and intensively with their constituents. This process assures that dissatisfaction of the public with the levels and composition of such spending programmes is transmitted to parliament and translated into appropriate action. The same process can also generate information about public perception of the efficiency of spending on public goods at a more technical level.

It is easy to see that people who believe in the public goods paradigm of government spending and services tend not to be concerned about the level and growth rate. The public essentially gets from the government what it wants and what is efficient to deal with the failures of market economies. By these standards, the growth of the government service sector discussed in preceding chapters and documented further in the last section is no reason for concern. Depending on the development of technology, the population, and public preferences, the production of government services may rise, decline, or fall. Whatever the outcome, since these determinants tend to change slowly, there is little chance that changes in levels or rates of growth will be dramatic.

The second level at which the answer to these questions about the future of government service spending can be attempted involves going outside the public goods paradigm. We do so in the next section.

THE PUBLIC CHOICE MODEL OF SPENDING

During the 1970s, the so-called public choice school provided an alternative explanation of the level, growth rates, and composition of government spending. This school has many scholarly proponents and different branches, the most important of which are represented by the writings of James Buchanan, Gordon Tullock, William Niskanen, and Mancur Olson. The work of James Buchanan has been given much publicity, and its importance was acknowledged in 1986 when he received the Nobel Prize in Economics.

The success of this school has been prepared by the very growth of the spending programmes themselves, the magnitude of which was noted above. By most reasonable interpretations of the nature of the market failures and conditions giving rise to them, there existed a presumption that government spending would eventually eliminate their consequences or, at the very least, reduce them significantly. However, this does not appear to have been the case. In spite of the massive increases in spending and the devotion of resources to assuring the efficiency of the spending process, the problems appear to have remained the same. Some even argue that market failures and the need for government spending are greater than ever before.

Selfish Motives of Politicians and Bureaucrats

The public choice school interprets these developments as evidence of a fatal flaw in the public goods school of government spending. This flaw consists of the failure to take into account the nature of the political and bureaucratic processes used in determining the spending on and the delivery of services. According to this school, politicians and bureaucrats are not simply neutral, technical agents who interpret the need for the correction of market failures and for government spending. Instead, they are individuals who are driven by the same set of motives as all others in the economy. They wish to maximize income, power, and status.

Politicians seek to assure their re-election. They do so by providing government services and other concentrated benefits to special interest groups, which in return provide campaign contributions and votes in future elections. The costs of these special interest spending programmes are diffuse, largely unknown, and mostly small for all those who have to bear them. For example, the costs of direct subsidies and tax breaks or benefits provided through social insurance programmes to farmers, commercial fishermen, artists, interest groups like women and Indians, special industries, and scientists amount to only very small sums for each Canadian per year. As a result, it does not pay to organize political opposition to such spending. Politicians do not have to pay the costs of effective opposition. In a world where the public has accepted the idea that deficit spending does no economic harm, even the political cost of high average levels of taxation can be avoided.

Bureaucrats have considerable discretionary power in making spending decisions and interpreting the need for more government activities and spending. The larger the budget and personnel under their control, the higher are their salaries and prestige. Therefore, they have a bias in favour of interpreting facts such that they result in increased government spending and activities.

Both politicians and bureaucrats are inclined to use the rhetoric of the public goods school of government spending to influence public opinion and deflect whatever criticism tends to develop about the taxes or deficits needed to finance the programmes. The spending on farmers is propagandized as being necessary to counter the market failure of unstable and low incomes and the lack of reliability of pure market-determined supplies. Subsidies to women's groups are justified to rectify past and present discrimination against them in private markets. In technical analysis, there is a bias to find market failures that justify the continuation, increase, or introduction of programmes under the jurisdiction of government employees. For example, social workers may be expected to have a bias which makes them find cases of poverty and need which require their services. Offices for the appeal of discrimination against women will find cases to justify their existence. The need for financial assistance to farmers will be interpreted favourably by those whose responsibility it is to administer it.

In sum, the public choice school of government spending sees it much less as the outcome of the motive to correct market failures than predominantly of the motive to benefit politicians, the deliverers of government services, and private interest groups. This school claims that, as a result, spending is excessively high and consists of an inefficient mix of programmes.

Misreading Market Failures

The public choice school of spending has another important criticism of the public goods school. This criticism focuses on the assessment of the frequency and magnitude of market failures on which the rationale for public goods spending is based. At the most general level, the same motives of political and bureaucratic self-interest which drive the conception and level of programmes also operate in the interpretation of evidence on the existence of market failure, be it empirical or analytical.

In particular, the public goods school fails to understand how in the longer run institutions of the market tend to develop or change so that inefficiencies due to externalities of private spending decisions are eliminated, or in technical terms, are internalized by private producers and consumers. One of the most widely-cited ideas of post-war economics in this field is the Coase theorem. It develops the conditions under which externalities are internalized by new institutions.

A famous example made in this context concerns beekeeping, once considered to be the classic example of a production externality. According to the model, the keepers of honey-bees convey large benefits on the growers of fruit trees and bushes since in collecting honey they also pollinate the blossoms and significantly increase the yield of fruit. According to the

model, since fruit growers do not compensate the beekeepers, there is a market failure and underinvestment in the activity which requires a government subsidy. As it turns out, without government help, beekeeping has developed specifically to serve the needs of fruit growers. Beehives are trucked through North America, travelling north with the advance of spring, to provide pollinating bees as the blossoms require them. The beekeepers' revenue from fees levied on the owners of the orchards exceeds the revenue from the sale of the honey. A technical and market solution has developed and resulted in the elimination of the externality.

The public choice school also believes that many externalities are due to the inappropriate assignment of property rights by government. For example, Canada's fishing industry is notoriously in need of government subsidies in one form or another since costs always seem to outrun revenues, private returns are low, and bankruptcies are frequent. The root of the problem lies in the free access by all comers to fishing grounds, which results in what is well known as "the tragedy of the commons" after the experience of many New England communities in the 19th century where free access to community lands resulted in overgrazing and destruction of the resource.

Technological innovations in fishing periodically bring high returns to their users, and they are introduced widely. However, the increased fishing efforts deplete stocks. Returns, even with the new capital, fall below normal. Attempts to limit effort have not been successful. Whatever form the limitation takes, be it the number of ships, the size of the ship, or the number of days for fishing, the same process repeats itself and returns fall below the opportunity cost of the capital and labour. Paying subsidies to fishermen helps them only temporarily since with the infusion of such funds more effort is called forth. The only solution lies in the assignment of property rights for the fish in the sea or rivers.¹

Income Inequalities and Business Cycles

The public choice school of government spending also disagrees with the view that income inequalities require government intervention. They see private charity looking after the genuinely needy. They cite studies which show the high turnover of individuals and families in the lower and upper levels of income distribution and accuse the redistributionists of taking a static view of the dynamic process of economic and social change in market economies.

At the same time, Charles Murray (1983), Tom Sowell (1976 and 1978), and others have argued that social insurance programmes designed to reduce income inequalities and increase economic and social mobility have the opposite effect. Many social insurance programmes have become per-

manent public charity programmes that create dependency among recipients and destroy incentives to get out of the poverty trap and join the economic mainstream. They do so by making receipt of benefits dependent upon the condition of poverty, single motherhood, living in depressed areas, and many other similar conditions. Grubel, Maki, and Sax (1975) have shown that the existence of the benefits increase incentives to become victims of the hazard against which the social insurance programmes are supposed to protect them.

Sowell, in a particularly powerful analysis, has shown that many minorities in U.S. history have been in similar basic circumstances as those of the Blacks in recent decades. All these minorities have escaped poverty and discrimination. A member of the Black minority himself, he believes that the waves of poor Americans from Poland, Germany, Italy, Japan, China, and the Jews who joined the economic mainstream faced the same obstacles and basic abilities as the Blacks in recent decades—except one. In earlier times, there were no government programmes that made receipt of public funds dependent upon staying poor.

Today it is widely accepted among economists and a large part of the general public that unemployment insurance programmes raise the incidence of unemployment. Many believe that without payments for single parents there would be considerably fewer families in this state.

There has also been a sweeping reassessment of the argument that market economies have a tendency to create wide business cycle swings and can settle at deep levels of unemployment equilibrium. Monetarists have blamed the Depression of the 1930s on the compounding of policy errors by central banks. After the founding of these banks at the turn of the century, they created excess quantities of money and were responsible for the boom and inflation of the 1920s. In attempting to combat the consequences of their earlier mistakes, they erred again, this time by imposing unnecessarily restrictive monetary policy. In the process, they kept the world in a continuous state of underemployment during the 1930s.

During the 1970s, the central banks of the world acted on the belief that there existed a Phillips' curve trade-off. This resulted in the creation of too much money and inflation during this period, which in turn could be stopped only by restrictive monetary policies and a severe recession in the early 1980s.

According to this assessment of the causes of economic instability, the most extreme cases were caused by government action, not the operation of private markets. Accordingly, increased levels of spending and deficit financing are now needed to pull market economies out of slumps and lower unemployment rates permanently. The arguments in favour of increased spending levels and deficits are merely rationalizations for the

more fundamental motives of having government spending serve the interests of the politicians and bureaucrats.

The most telling argument against counter-cyclical stabilization policy, however, is that the attempt will lead inexorably to persistent government deficits. Slump-fighting deficits and peak-cooling surpluses could work in a Keynesian world where governments and their policies are governed by the cerebral and detached “predispositions of Harvey Road,” as Keynes’ biographer Sir Roy Harrod called them. In the real world, surpluses are never realized. Pressure to spend simply overwhelms whatever splendid motives for counter-cyclical surpluses might otherwise guide the government.

The Problem of Government Failure

In sum, according to the public choice school, the provision of government services tends to be excessive for two reasons. First, spending proponents tend to have an exaggerated view of the existence and magnitude of market failure due to ignorance about market processes which internalize externalities about the efficient method for dealing with the tragedy of the commons and about the magnitude of the problem of inequalities and of economic instability. Second, the selfish motives of politicians and bureaucrats lead to overspending and spending on projects that serve their own purposes rather than genuine public needs. In fact, it is probably less ignorance than expediency which prevents the adoption of efficient methods for dealing with the tragedy of the commons and operating a stable monetary and fiscal environment.

It can readily be seen that the combination of these two influences can make government spending excessive, of the wrong kind, and bring it under constant upward pressure. Under these conditions, we therefore have an explanation of the phenomenon of the last decades. Spending has grown at very rapid rates and has absorbed ever-increasing shares of national income which means, of course, that it grew more rapidly than population and income. Instead of politicians and bureaucrats suggesting that there is enough spending, there is a constant flow of proposals for more spending on old programmes and the development of new ones. The need for these programmes is justified by reference to conditions which make it seem at least as urgent as they were three decades ago when the level of spending was much lower.

The proponents of the public choice theory of government spending accept the proposition that there are market failures. They do dispute, however, the implication that they need to be corrected by government spending. One effective way of summarizing the essence of the argument is embodied in the concept of “government failure.” According to it, the overspending and wrong mix of government programmes just discussed are

evidence of government failure in running the economy. According to the new school, the relevant criterion for deciding on government programmes is the magnitude of market failures relative to the magnitude of government failures. The fundamental mistake made by the public goods school has been to compare an imperfect market system with an ideal system of government intervention. If the relevant comparison is made, it is clear that society is better off accepting the market failures than the government failures.

SUMMARY AND EVALUATION

In the preceding sections we have presented the arguments of both schools of government spending as fairly as we can. This is not the place to adjudicate the correctness of one or the other, and we leave it to readers to make up their own minds. Instead, we conclude this chapter by turning to some recent developments, evaluate them in light of the two theories, and speculate about their meaning for the future of the government services sector.

The late 1970s and early 1980s have seen a growing resistance of taxpayers to high levels of taxation and government spending. The California tax revolt against local governments in the late 1970s was the most dramatic manifestation of this development. In both Canada and the United States, the major parties have responded to the public mood by promising to reduce the growth and perhaps even the level of spending.

Available statistics imply that Canadian politicians have kept their promises to some degree. In figure 48 and 49 we can see that the share of government spending consolidated at all three levels of government as a percent of GDP has remained constant between 1975 and 1979 and between 1982 and 1984. During the years of recession and slow economic growth 1979 to 1982, the share rose 10 percentage points. The rise during the latter period is consistent with efforts to stabilize or reduce spending since during recessions many outlays rise automatically.

Of special importance here are the costs of unemployment insurance and other welfare programmes that are designed to assist people who have been injured by economic downturns. On the other hand, the following periods of prosperity should have reduced the size of this spending, and the share should have fallen again. However, it has not and instead has remained at the level attained during the last year of the recession.

Let us assume that the evidence is consistent with the proposition that Canadian governments have made efforts to bring spending under control. Certainly, independent of the facts, the rhetoric of the leaders of Canada's main parties in recent election campaigns carries the same message. How are these developments explained by the two competing theories? The public goods school interprets them as evidence of diminishing returns and

Figure 48
Consolidated Government Spending as a Percentage of GDP

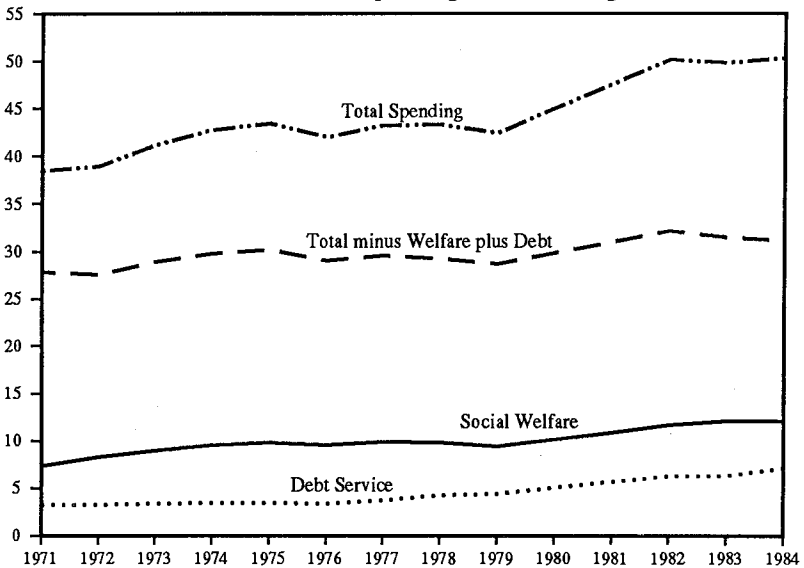
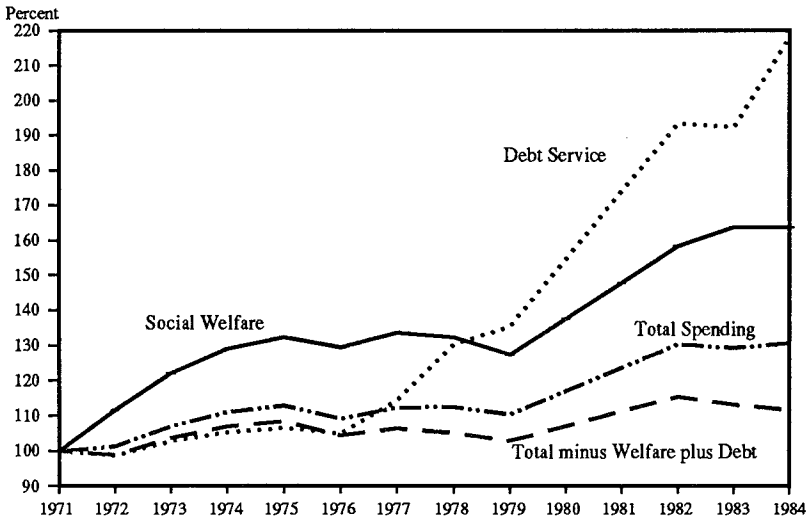


Figure 49
Consolidated Government Spending as a Percentage of GDP
1971 = 100



the attainment of the condition where the marginal productivity of spending is greater in the private than the public sector. The public choice school suggests that total spending has reached a crucial level at which the sum of the outlays catering to special interest groups is so large that it has become politically profitable for a substantial proportion of taxpayers to attack the level and the system.

The Composition of Spending

It is difficult to prove or disprove the validity of the two competing hypotheses in a formal way. However, we believe there is one aspect of the public choice model which lends itself to some empirical analysis and lends support to it. According to the public choice model, spending cutbacks result in the loss of fewer votes the less concentrated are the benefits of the programmes. For example, the benefits of defence outlays are relatively diffuse, and its beneficiaries make up a small block of voters. Spending under the unemployment insurance programme, on the other hand, provides significant benefits to a large and influential group of voters. In general, reductions in spending on government services are less costly politically than are cutbacks in social insurance programmes.

In figures 48 and 49, we present data on consolidated government outlays which we have aggregated into three different categories that correspond roughly to the analytical classes discussed above. The spending categories are outlays on debt service, social welfare, and a residual which consists of total spending minus the outlays on debt and social welfare. The first two are roughly equal to transfer payments, and the remainder corresponds to what we have called government services. In the following we disregard debt service payments on the grounds that politicians have very little discretion over them, except in the longer run through the size of the deficit. Moreover, their determination is not a central part of either of the theories of government spending under investigation here.

Figure 49 shows clearly that spending on welfare programmes has been rising much more quickly than that on government services during the period 1971 to 1984. As a percentage of GDP, outlays for welfare and government services have risen 65 and 15 percent, respectively. The share of welfare spending has risen every year since 1979, while that for services has fallen since 1982. In chapter 8 we presented data on the production of government services which is available for more recent years than are the data used in the graphs in the current chapter. Figure 45 shows that the share of government services in real terms and as a percentage of GDP has dropped sharply since 1982 and that this trend has continued through 1986.

In our view, these data lend some support to the public choice theory of government spending, or at least they are consistent with that theory.

Figure 50
Government Expenditure on Key Services as a Percentage of GDP

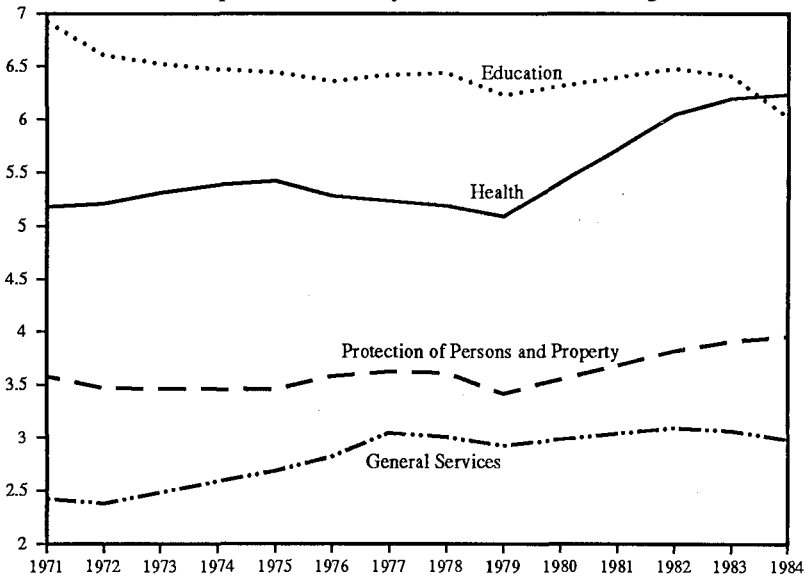
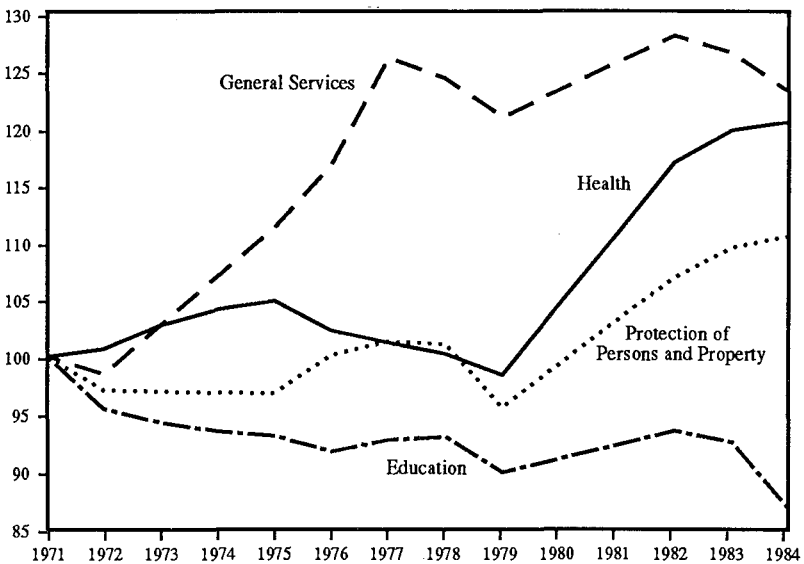


Figure 51
Government Expenditure on Key Services as a Percentage of GDP
1971 = 100



Politicians are more likely to reduce the growth or level of spending on programmes the less influential are the interest groups affected by them.

In figures 50 and 51 we present the trend of expenditures consolidated for all three levels of government in the special categories of government services, health, education, protection of persons and property, and general services. Of these, health programmes have the largest constituency since they affect almost all Canadians. Growth in this programme is therefore least likely to be controlled, according to the public choice school. The data are consistent with this view. Outlays for health as a percentage of GDP have risen over 20 percent since 1979. General services, on the other hand, have remained a rather constant fraction of GDP since 1977, roughly the start of public concern over spending levels, and fallen since 1982. This trend is consistent with the public choice school model given the diffuse effects of this type of spending on interest groups.

Spending on education has been trending downward throughout the period, though as Easton (1988) has shown, real spending per child has risen substantially. Fundamentally, therefore, because of the large demographic changes during the last 20 years, the figure adjusted for the student population should be considered. The increases in this figure are consistent with the public choice school, since teachers and other deliverers of education services are well-organized and vocal proponents of their interests. In addition, parents with children in school are often a powerful lobby group in support of more and better services.

Finally, we have spending on defence, police, and the judiciary. The 12 percent growth in the share of GDP in this category since 1979 is not consistent with public choice school predictions. The deliverers of this government service are not well-organized and powerful interest groups. One can either accept the trend in this category of spending as evidence against the public choice school or explain it on the basis of special circumstances. The special circumstances are that during this period military spending in the United States increased, first during the last years of the Carter administration and then under President Reagan, after years of decreases under the spirit of détente. Canadian policies reflect the change in U.S. policies.

The Future of Government Services

In this chapter we have presented two models designed to explain the growth in government spending generally and of government services in particular. The public goods theory of long standing has recently been challenged by the public choice theory. The latter is supported somewhat by recent trends in government spending and composition. If it is correct and continues to gain adherents at the rate it has during the last 20 years, then politicians in Canada and elsewhere will be under increased pressure to

curb the growth in spending and possibly even reduce the levels already attained. Under these conditions, the production of government services will not continue to grow at the rate it has between 1965 and 1981, which has seen its share in GDP rise 12 percent (see figure 45). Instead, the decrease of 10 percent in the share experienced between 1982 and 1986 is more likely to continue into the future.

We conclude this discussion of government service production with the following comment on recent developments. We consider it unfortunate that the reduction in government expenditures noted above has fallen so disproportionately on the production of services rather than on transfer payments under the social insurance programmes. Government services like education, health, the judiciary, defence, transportation facilities, and general administration tend to increase the productivity of Canadian labour and other resources. As we discuss in the next chapter, many of them represent a form of human and knowledge capital formation which is essential to economic growth. Much of government service spending is in effect in the form of producer services.

Spending on social insurance programmes, on the other hand, does not have the same effect on productivity. It raises the welfare of beneficiaries in the short run, but in the longer run it destroys incentives for work and risk-taking by both the recipients and those who have to pay the taxes to finance the programmes.

For these reasons, we consider it to be very much in the interest of Canadians in the longer run if spending cuts would, at the very least, be made to affect equally both transfer payments and spending on productive services. It would be even better still, if the former could be cut more than the latter. We also recommend changes in the manner in which these services are delivered. There is no need to have government employees produce education and many of the more general services. The general issues of privatization have been discussed widely in Canada, and we will not pursue the topic further here.

NOTES

1. One of the market solutions suggested for this problem is auctioning the right to catch a certain number of fish. The total size of the allowable catch would be set to maintain an optimum stock of fish. The price paid for the fishing rights under competition would tend to assure that efficient fishermen earn a return on capital and labour sufficient to keep them in the industry and free of the need for subsidies.

CHAPTER 11

PRODUCER SERVICES, BIMODALISM, AND CONTRACTING OUT

One of the most important findings of our study of the Canadian service industries is the relative magnitude and growth rate of the producer service sector during the post-war years. This finding has permitted us to put an innovative interpretation on the role of the service sector in economic development. It also makes irrelevant many fears about the adverse consequences of the growth of the service sector generally found in the literature since they are based on the perception of the service sector as the producer of consumer and government services.

In this chapter, we consider more of the facts and issues surrounding the producer service sector. We do so by reviewing briefly relevant parts of the neo-classical theory of economic development with a special emphasis on the role of human and knowledge capital and of specialization and roundaboutness. To this theory we add the idea that the producer service industry is the main vehicle by which increases in the stock of human and knowledge capital are introduced into the productive process. Because of the innovative nature of this exercise, there is not much relevant literature to be reviewed. As a consequence, our analysis of this type of service is much shorter than that of the other types.

Because producer services are related to the issues of bimodalism in income distribution and contracting out services by goods producing firms, we conclude this chapter with a brief review of these issues.

PRODUCER SERVICES

In chapter 8 we defined producer services as those used as intermediate inputs by the producers of other goods and services, either for final consumption or for use in further production. The output of the producer service sector was estimated as the residual of total service sector GDP minus the

value added of the consumer service industries and of government service production. According to our estimates, producer services have represented about 35 percent of Canadian GDP in recent years, or one-half of the total service sector output. In real terms, the share of GDP represented by producer service output rose 20 percent between 1961 and 1986 while the share of the other two types of services remained nearly unchanged.

What are the causes of this high level and growth of the producer service sector? To answer this question, we consider it useful to remind readers of the basic models of economic growth and their most important extensions during the 20th century. Until the 1930s, one of the central propositions of economic growth theory had been that the productivity of labour was an increasing function of the quantity of capital and land per worker. In this model, capital was considered to consist of machinery, buildings, and social overhead investment.

Austrian economists viewed this model to be deficient. Their views are found in the writings of Boehm-Bawerk (1884) and of the Swedish economist Wicksell (1901). Economists writing in this tradition argued that for additions to the stock of capital per worker to raise productivity, it is also necessary for the production process to be reorganized and become more "roundabout." There needs to be more specialization of labour and capital, more stages of production with increasing numbers of intermediate products. We return to this idea of the Austrian school later and discuss its relevance to the growth of the modern producer service industries.

Human and Knowledge Capital

The so-called Fisherian revolution, named after its originator who taught economics at Yale during the 1920s and 1930s, added to this view of economic development the notion that the concept of capital should be defined more broadly. It should include not just the traditional physical capital and land but also human and knowledge capital.

He defined human capital as all investment in human beings which raises their productivity. The most important of these are education and on-the-job training. But it also includes health care, nutrition, and even the kind of moral and ethical standards which make for honesty and reliability of workers and create a willingness to work hard. Knowledge capital is all the scientific and engineering knowledge which permits the design of more efficient machinery and products. It also includes the knowledge which makes for the efficient organization of firms and society in general.

Fisher's suggestion for treating the three forms of capital as equivalent is justified by two characteristics which they have in common. First, the different types of capital are substitutes as well as complements in production. Worker productivity can be raised by training as well as by the use of larger

numbers and more sophisticated machinery. At the same time, given the quantity and quality of physical capital, labour and total factor productivity are higher the more human capital is embodied in the operators of the machinery. Sophisticated models have been developed which show that in efficient equilibrium entrepreneurs choose simultaneously an appropriate mix of human, physical, and knowledge capital. At the most general level, efficiency in the allocation of all forms of capital requires that the marginal products of all three forms of capital are equal.

Second, the production of all three forms of capital basically involves the same cost in the form of forgone consumption. The building of machines requires the use of labour, land, and capital which cannot be used simultaneously to produce goods and services for current consumption. Persons acquiring human capital through education, training, and medical care, just like the producers of real capital goods, are using resources that are not available for current consumption goods production. The same is true for the resources used in research and development.

The importance of human and knowledge capital in the real world was first discovered in a pathbreaking study by Robert Solow in the 1950s for which he received the Nobel Prize in Economics in 1987. His study has stimulated much further research by Edward Denison, Zvi Griliches, Dale Jorgenson, and others. In one of the most recent studies in this tradition, Jorgenson and Fraumeni (1987) estimated that human capital comprises over 70 percent of the total capital stock in the United States in recent years. There is little doubt that appropriate research would find similar figures for all modern industrial countries, including Canada.

Understanding the role of human and knowledge capital in the growth of productivity and living standards has had much influence on economic policies. One of its most interesting applications is in efforts to explain such phenomena as the rapid economic recovery of Germany after the massive destruction of the country's physical stock of capital during the second World War. The model suggests as an explanation that most of the country's human and knowledge capital survived the war intact. On the other hand, the model can also explain why massive infusions of physical capital into developing countries often yield disappointingly small increases in output. It is simply that the human and knowledge capital needed to work the imported machinery and equipment are not in place. Of course, a related issue is the framework of culture and legislation which may encourage or discourage economic development, but that is another topic worthy of separate consideration elsewhere.

Producer Services as Conveyors of Human and Knowledge Capital

Our contribution to these models of economic growth is to suggest the following extension. Human and knowledge capital are introduced into production processes predominantly through firms which are heavy users of highly-skilled manpower and scientific and technical knowledge. These firms are considered to be part of the service sector by Statistics Canada and other national statistical offices.

In our analytical and statistical exercises in preceding chapters we have identified these firms as belonging to different industries. First, there is the services to business management industry, as defined in the statistical nomenclature. It consists of firms producing computer, advertising, engineering, scientific, and many other services which are obviously predominantly serving private firms, though they also sell to government, the non-profit sector, and consumers. However, we have broadened the definition of producer services to include those parts of the output of firms producing financial, transportation, communication, hospitality, insurance, education, health care, and distribution services which are not purchased for final consumption. We also included, conceptually but not empirically, in our estimates as producer services those parts of government service production not destined to final consumers. These include transportation, communication, scientific, statistical, and many other services.

We postulate that the bulk of these producer services have human and knowledge capital as one of the main inputs. Their output thus embodies these human and knowledge capital services. As these outputs are used as inputs into the further production of goods and services, they end up embodied in goods and services for final use and export.

Roundaboutness and Specialization

The idea of the Austrian school about the roundaboutness of production and increasing specialization can also be used to raise our understanding of the nature of producer services. According to this idea, the use of more and more of the same machinery and tools by a given worker leads quickly to diminishing returns.

The productivity of a worker with a shovel is raised very little, if at all, by his use of another. What is needed is digging equipment in the form of backhoes or bulldozers. The use of this greater amount of capital results in more specialization. Whereas the worker with a shovel could be used to dig a ditch and level a roadway, the backhoe is needed for the ditch and the bulldozer for levelling. The increased use of capital also makes the production process more roundabout. The worker with the shovel could do practically all the work in building a road. Workers with modern earthmoving

equipment do only part of it. The production of shovels and modern equipment also differs in the degree of specialization and roundaboutness. The shovel could be produced by a blacksmith from material bought from an ironmonger. The production of modern earthmoving equipment obviously requires many more stages of production. All the design, engineering, and mechanical skills used in the production of a backhoe are "roundaboutly" engaged in ditch digging.

Some dynamic aspects of the process of development stressed by the Austrians are brought out by the following model. Robinson Crusoe increased the roundaboutness of production when he constructed a fishing net. He did so because it enabled him, over the technical life of the net, to catch more fish than he could have through the use of the labour spent in making the net and the use of the same fishing effort without the net.

In a more complex society, fishing nets are produced by specialists who use machinery, human skills, and scientific knowledge in their own production processes. In turn, the machinery, skills, and scientific knowledge are produced by further specialists. All of these production processes increase roundaboutness and the "distance" between ultimate consumers of final output such as fish and the activities of these producers of intermediate inputs. The prices of these intermediate inputs must be high enough to earn producers at least normal returns. At the same time, these intermediate inputs must yield a positive net return to their users. Otherwise there is no market for them.

We think it is useful to consider the providers of producer services to be one important set of specialists in this process which generates ever-increasing roundaboutness, specialization in production, capital deepening, and increases in labour and other factor productivity.

The massive growth of the human capital stock, which has resulted in it being 70 percent of the productive capital of modern industrial states today, has created strong incentives for more roundaboutness and specialization. New occupational specializations are emerging continuously in all the professions such as law, medicine, accounting, and teaching. The natural and social sciences fields of inquiry are becoming increasingly narrower. This process has been going on for a long time and may be expected to continue to do so in the future. The disadvantages of this process of specialization and the need for more generalists have always been known and lamented. Obviously, on average, the benefits from specialization exceed the costs.

Many of the specialized professionals and scientists tend to sell their services through small firms. These firms in turn make up the producer service sector which gives so much dynamism and entrepreneurship to the high technology industries. There are hundreds of such firms in computer industry centres like the Silicon and Ottawa valleys. Without ready access to

the human and knowledge capital offered by these firms, much of it at the frontiers of specialized science and technology, the well-known large firms in these centres would be much less productive.

However, application of human and knowledge capital also goes through the more mundane channels of more established and often large industries. Many of these are better known for their consumer service output, like the financial, insurance, and communications industries. In these industries, human and knowledge capital are applied constantly to find more efficient methods for production of old services and to design better new services. The same process of innovation has been strong in recent years, particularly in retailing, hospitality, and transportation industries, which have a reputation for relatively stagnating technology and product evolution. The Fraser Institute service sector study project documents the dynamism of firms in these individual industries.

Of course, the preceding analysis does not imply that producer service industries are the only channel through which human and knowledge capital are introduced into the production process. Highly-skilled people are also employed directly by goods producing firms, where they are not counted as part of the service industries. The main point of the preceding analysis is to suggest that the producer service industries are one of the main ways in which human and knowledge capital accumulation, increased specialization, and roundaboutness manifest themselves in a growing economy.

The Embodiment of Services

One interesting implication of our model of the producer service sector is that it results in the embodiment of these services in goods and services for final use and export. We elaborate on this point further here because of its implications for the future of the service sector generally and the nature of international trade in services.

If the accumulation of human and knowledge capital continues, according to our model the growth of the producer service sector will continue also. Our data on the recent evolution of this sector suggest that it is likely to grow more rapidly than output itself. It follows therefore that goods and services in final use and export will consist of ever-increasing amounts of embodied services. There is no theoretical limit to this proportion of embodied services in the value of such goods and services.

The history of industrialization illustrates this growth in the share of human and knowledge capital delivered through producer service industries embodied in goods. The vast bulk of the production costs of Henry Ford's first cars consisted of the costs of labour and simple material. The input of the research, accounting, marketing, finance, and legal departments and the

purchase of such services from outside firms constituted a small proportion of the total.

Today, these same inputs represent a large and growing fraction of the total value of the car. The cost of the electronic brain of a car, for example, is only to a very small extent made up of expenditures on material and unskilled labour. The vast bulk consists of payments to science and engineering firms which have developed the electronic know-how and design and sold to the company components which involved little manufacturing cost. Lee Iacocca (1985) notes in his autobiography that the Chrysler company spends more per car on medical services for its workers than it does on steel. This fact further illustrates the extent of the use of producer services if we view medical services for workers to be a service input like marketing and accounting. Factories of the future in which automated machinery is operated by just a few workers represents the ultimate stage in the embodiment of producer services in goods.

Such automated manufacturing processes have long been considered to be the source of comparative advantage of industrial countries in competition with developing countries. In the next chapter we present a model of international trade which builds on our model of embodied services.

Summary and Policy Conclusions

The relatively large size of the producer service industries and their historic growth rates make them an important part of employment and value added, not only for the service sector but for the economy as a whole. In addition, producer services are significant contributors to the productivity growth of the Canadian economy because through them additions to human and knowledge capital stock are integrated into the production process.

The large share of human capital in total wealth in modern industrial societies suggests that the diminishing returns in this form of capital formation in the past have been less than in physical capital formation. It is likely that this relationship will also hold in the future. We can therefore expect to see a continuation of the trend toward the relative growth of human and knowledge capital and with it of the producer service industries. One important implication of this model of producer services is that demand for them is both derived from and determined by forces generated by the industry. It is derived in the sense that increases in the output of goods and services raises demand for them as input. But through the ability to raise productivity and create comparative advantage in the user industries, the producer service sector also makes its own demands.

The policy implications of these characteristics are clear in principle. Policies which encourage industries that use producer services will stimulate demand for them simply as a by-product. However, policies which en-

courage the development of producer service firms can also be expected to stimulate the growth of the industries using them. The difficult problem is to know empirically the conditions under which it is more advantageous to subsidize producer service production rather than its use. However, our model and empirical findings suggest that government policies need to take account of the crucial role of producer services in the development process. If development policies have to be undertaken in the absence of solid empirical knowledge about relative rates of return, they should be neutral in their relative impact on the two sectors.

CONTRACTING OUT

One of the most disturbing and difficult problems encountered in the study of the service sector is what has variously been called the process of “dehiving” (Momigliano and Siniscalco 1982), “unbundling” (Tschetter 1987), “vertical disintegration” (McFetridge and Smith 1988) and “contracting out.” All of these terms describe a process through time which results in service functions previously performed inside a goods producing firm after a certain point being bought from outside suppliers. Since these changes closely resemble those found under the more general process of contracting out of manufacturing as well as service production, we choose to use this term here. One advantage arising from the use of this term is that it is well-known. There has been much political debate and economic analysis surrounding the efforts of Canadian governments and large corporations in recent years to contract out some of the functions traditionally carried out in-house.

The importance of the phenomenon of contracting out for the study of the service sector generally stems from the statistical treatment of service production. Services, like accounting performed by an employee of a manufacturing firm, in all output and employment statistics are counted as part of the goods producing sector. When the same accounting services are purchased by the manufacturing firm from an independent accounting firm, they are recorded as service sector employment and value added.

It follows, therefore, that when a manufacturing firm ceases to produce its accounting services in-house and purchases them, statistics show a growth in the relative size of the service at the expense of the goods producing sector. Yet, for most purposes of analysis, this is a misleading statistic. Most fundamentally, the output and employment of services has not increased. In terms of the analytical emphasis of this chapter, the same change shows up as a misleading growth in the relative size of the producer service sector.

We should also note here that the growth of the service sector and of producer services through time can be due to another development which

has nothing to do with either contracting out or the process of human and knowledge capital deepening discussed above. This development involves the relatively more rapid growth of firms which require more service inputs than the rest. Tschetter (1987) has examined this question in his study of the U.S. economy. He found that during the post-war years changes in the mix of U.S. industries have accounted for a negligibly small proportion of the increase in the demand for services. In the following we do not discuss further this phenomenon and instead concentrate on the issue of contracting out.

Some Determinants of Contracting Out

A fundamental price-theoretic model of contracting out needs to be based on the theory of the firm, which deals with the determinants of the decision to organize labour and capital into units which engage in some activities but not others. McFetridge and Smith (1988) studied contracting out in Canada in the framework of the Fraser Institute service sector project and used the well-known theories of the firm by Coase (1937), Williamson (1979), and Casson (1987) to formulate testable hypotheses. Other authors, like Momigliano and Siniscalco (1982) and Tschetter (1987) used somewhat more intuitive arguments about the determinants of contracting out. As a result, the basic principles are quite clear. Contracting out is encouraged by the following factors.

First, increases in the complexity of business operation make it more difficult to monitor the performance of employees. It becomes easier and cheaper for managers to use negotiations with outside suppliers rather than contracts with employees to assure that they obtain service inputs at the lowest cost.

Second, increases in specialization and rates of change in technological know-how make it more profitable to hire certain types of expertise in the market than to produce it inside the firm. Some professional expertise in law, accounting, and finance is so specialized that one firm requires it only rarely but in a region there may be enough such demand that a person or firm with such expertise is fully employed. In the case where expertise requires constant updating and the investment is risky, buying it outside results in a shifting of costs and risks which fit better into the strategic plan of the firm.

Third, decreases in the cost of information and communication result in lower transactions costs of obtaining services in the marketplace. This reduces the advantage of fixed contracts with employees in the firm. For example, a firm in a small town may have found it advantageous in the past to employ lawyers with specializations relevant to their needs. Efficient communication and transportation has lowered costs and facilitated access

to legal specialists employed by law firms located in larger cities. As a result, the firm can find it cheaper to draw on outside expertise and close its law department. David Gill (1988) in his study of the legal profession in Canada has discovered the operation of this trend. It is driven by both the greater specialization noted above as well as the cheaper access to this expertise. He found, however, that most firms retain a small staff of lawyers not so much to do the legal work as to monitor the cost and performance of outside advisers.

Fourth, the legal environment and the effects of unionization have tended to increase the non-wage costs of employees. For example, the need to provide paid holidays, make provisions for sick-leave, give lengthy notices before lay-off, make large severance payments, engage in consultations before work re-assignments, and many other such provisions raise the total costs to a firm from hiring workers, particularly for large firms in the manufacturing sector and some government operations. Smaller firms that are not unionized are exempted from social legislation due to their size and have lower operating costs. Under these conditions, larger firms find it advantageous to purchase, rather than produce internally, services which are subject to these kinds of legislation and union rules.

Forces Favouring In-house Production

Counteracting the incentives for contracting out are developments which favour in-house production. First, and most important, in many industries the pace for product, process, and marketing innovation has accelerated with the availability of micro-electronics and other recent scientific advances. Such innovation requires the maintenance of commercial and technical secrecy. This is more easily maintained through in-house operations than outside purchases.

Second, recent advances in computers and related electronic equipment have increased the ability and reduced the cost of monitoring the performance of a firm's employees. For example, records of telephone calls make it possible to document the number and nature of sales calls made throughout the day where previously only expensive personal supervision would have assured control over the effort of the employees.

Third, the increasing size of firms, combined with the low cost of communication and transportation make it possible to maintain in-house increased professional specializations. For example, the Ford Motor Company can have in its Canadian headquarters taxation, legal, or computer experts with very specialized expertise who can be employed by Ford operations throughout the world because of low-cost telephone links and travelling opportunities not available in the past. This clearly reduces in-

centives to contract out these service specialties, especially if they work in areas where commercial secrecy is important.

Empirical Evaluation

It is clear from the preceding discussion of incentives which encourage and discourage contracting out that the net effect can be determined only empirically. Unfortunately, the lack of data makes it impossible to test rigorously any hypothesis that can be developed from the preceding theoretical considerations, though some suggestive testing has been done.

One empirical test of the effects of unionization undertaken by McFetridge and Smith (1988) resulted in the rejection of the hypothesis that it had an influence on contracting out. As is so often the case in such empirical studies, unionization has two opposing effects. On the one hand, it creates incentives for contracting out as we noted above. On the other hand, the power of the unions may be such that they can prevent the operation of these incentives. So it is not really a surprise if the data do not reveal evidence of the operation of the incentives for contracting out.

One of the most appealing tests undertaken by McFetridge and Smith is simple and straightforward. They obtained census data which revealed the number of Canadians who work in different occupations. They also obtained data collected by a different method which show the number of people in the same occupations who work for goods producing firms. The difference between these two numbers indicate the extent to which occupations are employed in the service sector and therefore available for hire by goods producing firms. A comparison of this difference between two census dates, properly adjusted for the total labour force, provides a measure of contracting out.

The results of this calculation reveal a small increase in the phenomenon in recent years. However, the data are not very reliable. The cautionary note in the introduction to the census volume containing the information on occupations is worded very strongly. It suggests that the comparability of occupational classifications between censuses is low because of changes in the classifications and, most important, the fact that respondents classify themselves. This results in a situation where a large proportion of all respondents do not fit into established occupational classifications and statisticians have to use more or less arbitrary methods to assign them.

Another test used by McFetridge and Smith involves the ratio of value added to sales volume by firms and industries. The more contracting out there is, the smaller the ratio. The results of this test similarly indicate a very small amount of contracting out. However, this result is also subject to strong qualifications since the ratio is subject to many influences other than contracting out of services. General Motors in recent years has divested it-

self of many of its subsidiaries producing automobile components. As the experience of Ford and Chrysler and even more so of the Japanese car producers has shown, there are significant cost advantages to use of outside suppliers for the bulk of components. These kinds of developments result in a decrease in the ratio of value added to sales, but data do not permit attribution of changes in this ratio to changes in the sourcing of goods and service inputs. At the same time, there have been waves of mergers in many industries. These have the opposite effect on the statistics and show increases in the ratio of value added to sales which have little to do with the phenomenon of contracting out.

Summary of Results

After careful analysis of theoretical arguments and empirical data, McFetridge and Smith conclude that there is evidence of some but not very much contracting out in Canada in recent years. They warn that this result should be treated with caution for the reasons sketched above. However, they provide the best available information on the subject. Encouragement about their reliability can also be derived from the fact that studies of the phenomenon by other authors have reached the same conclusion, like Tschetter (1987) for the United States and Momigliano and Siniscalco (1982) for Italy. In a sense, our model of economic development with its emphasis on the role of human and knowledge capital, increasing roundaboutness, and specialization also supports these findings. The growth of the service sector is the expected outcome of a continuing and natural process of capital deepening. The existence of this process weakens the case against the interpretation that the growth of the service sector is merely a statistical illusion created by contracting out.

THE VANISHING MIDDLE CLASS

Barry Bluestone and Bennett Harrison (1986) have studied U.S. earnings and employment data for the years 1973, 1979, and 1984 to measure changes in income distribution through time. They found that "nearly three-fifths of the net new employment generated between 1979 and 1984 was low wage, compared with the less than one-fifth during the preceding period." At the same time, the growth in the middle and upper income classes has been smaller.

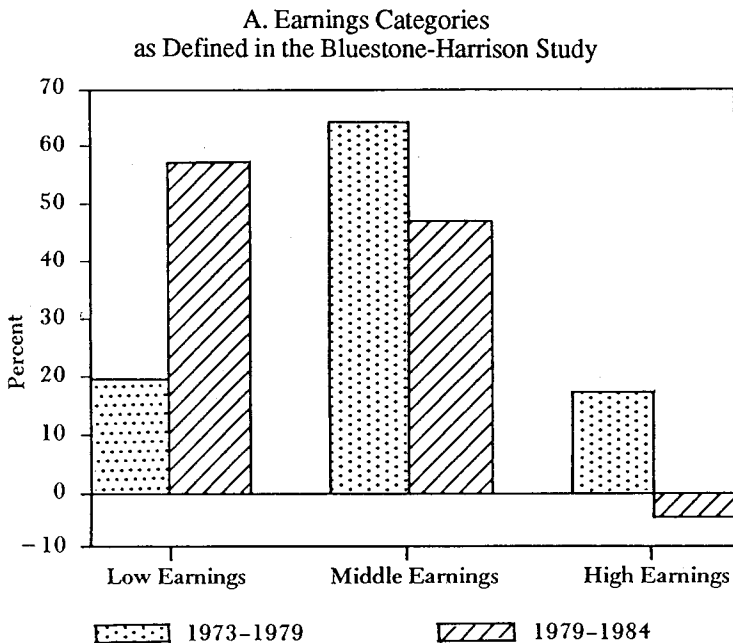
This finding created much furor in the United States. It was used to argue on political grounds that the economic policies of the Reagan administration resulted in the vanishing of the middle class. It was also used to argue for the liberal agenda of industrial strategies, protection, and labour market intervention. It struck a sympathetic cord with large seg-

ments of the U.S. population since it seemed to be consistent with some very obvious developments. Real average wages had not increased significantly during the period. The spread of fast food restaurants was rapid and the obvious employer of many workers at low pay rates.

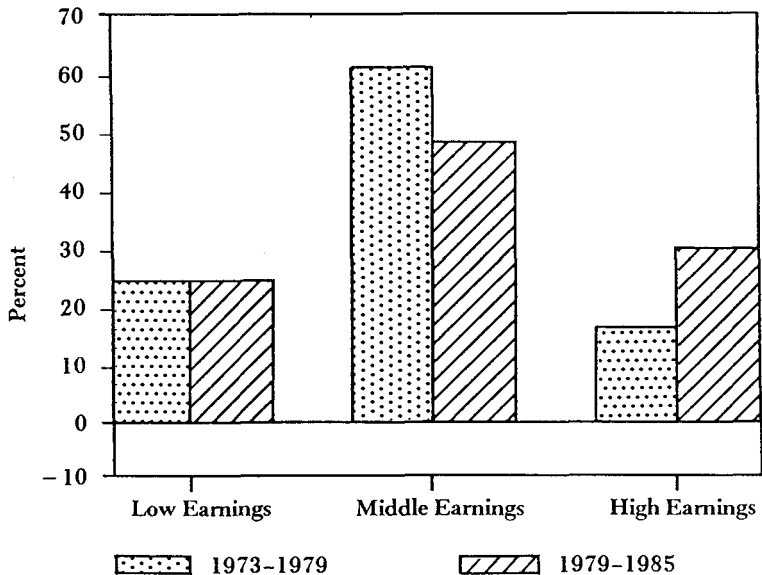
New Evidence

The latest U.S. evidence on the distribution of income does not support this pessimistic view. Indeed, a study by Marvin H. Kosters and Murray Ross (1988) of the same data used by Bluestone and Harrison but updated to take into account census revisions and other adjustments reveals almost the opposite impression. As can be seen in figure 52, the earnings categories established in the Kusters-Ross study reveal the impression of stability in low paying jobs and a slight reduction in middle earning jobs associated with migration toward high earning jobs.

Figure 52
Comparison of Shares of Net Additions
to Employment by Earnings Category



**B. Constant-Dollar Earnings Categories
as Defined in the Kosters-Ross Study**



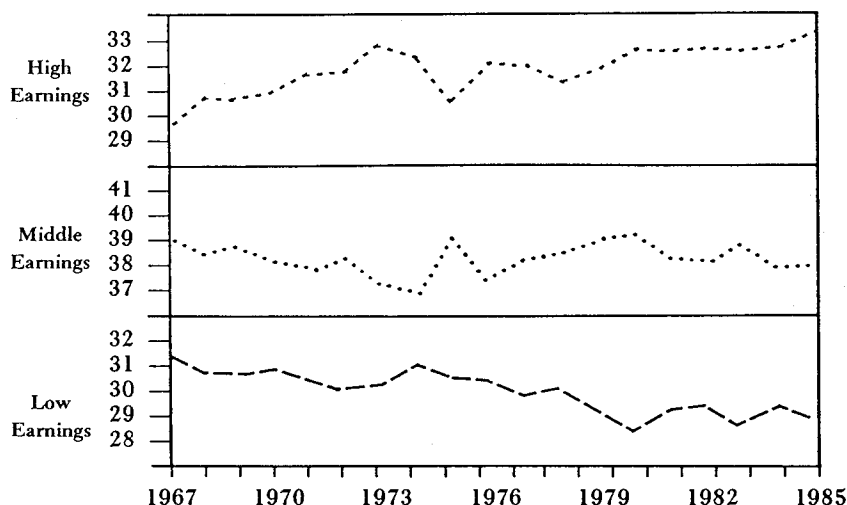
Source: Reprinted with permission of the author from: *THE PUBLIC INTEREST*, No. 90 (Winter 1988), pp. 13 & 14, (c) 1988 by National Affairs, Inc.

A time series analysis conducted by the authors (figure 53) reveals, as one might expect, a certain amount of fluctuation in the job shares that is reflected in the particular time aggregates depicted in the chart. A temporal analysis of the job structure data reveals quite clearly that over time there has been relative stability in the share of middle income job categories, a decline in low paying jobs, and an increase in the proportion of high paying jobs.

We cannot enter here into the technical details concerning the differences between the two studies which arrived at such very different conclusions. However, two points are worth noting. First, during the 1970s, the U.S. government began the publication of a new Consumer Price Index which differed from the traditional one by the way in which housing costs are measured. Trends in inequality are slightly less under the use of the new index, which is alleged to be a more accurate record of consumer costs. A second difference lies in the definition of the middle class. In the Joint Economic Committee study, it is equal to those whose incomes are more than 50 percent above and less than 200 percent below the median. Kosters and Ross changed the upper cutoff point to 150 percent above the median in order to minimize the influence on the results by changes which take place at the extreme ends of the distribution. As it turns out, none of the ad-

justments made have a dramatic impact on the results individually. However, together they produce the changes noted above.

Figure 53
Employment Shares by Earnings Category Based on Current-Year
Medians, 1967-1985
(in percentage)



Source: Reprinted with permission of the author from: *THE PUBLIC INTEREST*, No. 90 (Winter 1988), pp. 13 & 14, (c) 1988 by National Affairs, Inc.

One of the most important findings of Kosters and Ross is that income earners in the bottom of the distribution typically do not have low wage rates. Instead, their earnings are low because they work only part of the year. In fact, 76.1 percent of the workers earning less than half the median income have been part-year workers. "Young workers who have not yet finished high school account for a major share of workers with low earnings... Year-round, full-time workers who are between the ages of 25 and 64 and who have more than 12 years of schooling are extremely unlikely to have low annual earnings: they account for only slightly more than 1 percent of workers in the low-earnings category" (p.16).

Producer and Consumer Service Jobs

We find the Kosters and Ross results persuasive, not least because they are consistent with our own findings about the nature of the service sector. As we noted above, the bulk of the growth of the service industries in Canada

has not been in consumer services, which are characterized almost symbolically by McDonald's and other fast food restaurants and low wage rates. The bulk of the growth has been with firms in the producer services sector. This sector also has some occupations with low pay like janitors and retail clerks. However, as we pointed out in our discussion of the nature of producer services, they are dominated by occupations through which human and knowledge capital increases are injected into the economic system. Persons with high human capital earn high wages.

More precisely, in chapter 6 it was shown that the educational attainment of service sector workers is higher, on average, than those engaged in what has been called goods production. This higher average level of knowledge capital employed in services production is largely because there are fewer individuals employed in service production who have less than nine years of training and a relatively larger proportion who have a university degree. There appears, as is evident from figure 31, to be about the same level of utilization of those with more average educational endowments in both goods and services production.

In Canada the general impression about the growth of low-paying jobs has to be modified by some findings in the study of the food, beverage and accommodation industry by Scarfe and Krantz (1988). They found that estimates of the wage levels in that industry are based, in part, on wage data that do not include an accurate measurement of tips. This implies that there may be a systematic underestimation of wages in these industries yielding incorrect casual impressions about the contribution of this sector to the evolution of the income distribution.

Scarfe and Krantz also found that the fast food industry in Canada had experienced relatively rapid growth during the last 20 years. But in considering the influence of this trend on the income distribution debate, it is important to remember that in Canada as well as in the United States the industry is the main employer of part-time and part-year workers. Low incomes due to the expansion of opportunities for young persons to participate in the labour market are socially desirable in the view of most people. They certainly imply much less of a criticism of market developments and the growth of service industries than if the low income earners were full-time workers and heads of households.

The study by Weiermair (1989) also provides some evidence on the bimodal income distribution hypothesis. Weiermair finds that the inequality of income distribution, as measured by the Gini coefficient, has actually improved in the services sector and that by comparison with manufacturing, the services sector has a more uniform income distribution. While Gini coefficients have some well-known difficulties, this evidence is consistent with other findings, suggesting that Canadian experience may parallel the U.S.

Summary and Conclusions

The concern over the effects of service sector growth on income distribution in Canada stems totally from findings in the United States and a presumption that industrial developments in the two countries tend to be very similar. The U.S. findings of a vanishing middle class have been subjected to a careful review. It showed that they are very sensitive to a set of assumptions, alternatives to which are equal if not more plausible than those made by the original analysts. Alternative, minimally changed assumptions reverse the original conclusions. We find these results persuasive, especially in light of our own study which showed that the bulk of the expansion of the Canadian service sector has been in producer services and occupations with high levels of training. We also believe that in the interpretation of low income data in Canada it is essential to differentiate between low wage rates and low income, as was done in the U.S. study.

In total, we believe there is strong presumption in support of the view that the growth of the service sector in Canada during the 1980s is a continuation of a process with a long history. This process has seen the relative expansion of the producer service sector which was driven by capital deepening and an increased supply of workers with high skills and high wage rates. A continuation of this trend is seen in the relative growth of high income earners.

CHAPTER 12

INTERNATIONAL TRADE IN SERVICES

For a substantial part of the 1980s, U.S. international trade deficits were high and rising while the share of tradable goods production in GDP continued its historic decline. As a result, concerns developed in the U.S. about the country's ability to pay for goods imports, especially should these trends continued in the future. The obvious solution to this problem appeared to lie in the expansion of U.S. export of services, the production of which was considered to be a strong source of U.S. comparative advantage. However, this type of trade has been historically subject to much protection and regulation in all countries. Moreover, the post-war institutions and negotiations for a more liberal global trade regime under the General Agreement on Tariffs and Trade (GATT) had no provisions for dealing with trade in services.

For these reasons, at Punta del Este the U.S. government demanded that the expansion of the next traditional GATT negotiations, the so-called Uruguay Round, be made to include services. There were also demands for creation of a special GATT for services. In the face of strong opposition to such a move by developing countries, in particular Brazil and India, a compromise was reached at Punta del Este. In the upcoming Uruguay round of GATT negotiations, trade in goods and trade in services will be treated as separate agenda items. There will be no formal trade-off of concessions in the two parallel negotiations. The creation of a special GATT for services will be studied.

As a member of GATT, the Canadian government has been and in the future will be drawn into these negotiations automatically. In addition, the Canada-U.S. free trade agreement signed in 1988 has an entire section devoted to provisions for the bilateral liberalization of trade in services. Since the implementation of this agreement will take many years, considerable interest in services trade in the Canadian government and among concerned politicians is likely to remain.

The political interest in trade in services has stimulated academics to consider the topic, which previously had been relatively neglected in international trade theory and empirical work. In Canada, the Institute for Research on Public Policy produced a number of important and useful studies on the subject as part of the government-sponsored broader project on the services sector.

We devote this chapter to international trade in services primarily because we have developed an innovative approach to the subject which has not been covered adequately in other publications. From reading the preceding chapters of this study, it should come as no surprise that our innovative approach is based on the concept of producer services and the extent to which they are embodied in goods. The chapter also flows easily from a number of papers written by Grubel (1987b and 1988) for international symposia dealing with services trade.

Thinking on international trade in services is often muddled by a lack of precision and ignorance about basic facts. In the next section we present a taxonomy of service trade which is designed to clarify the subsequent discussion and put into focus our main analytical contribution regarding embodied services trade. Following sections deal with the different types of service trade, and the chapter closes with a discussion of some policy implications flowing from the analysis.

TYPES AND LEVELS OF SERVICE TRADE

Table 7 presents a taxonomy of types of international trade in services. In it, we suggest that there are three basic types of service trade. They are trade in factor services, trade accompanying the temporary movement of people and goods, and trade in embodied services. The magnitude and importance of these different types of service trade for Canada and the U.S. are shown as the first column of figures in table 7. The numbers reflect bilateral flows for the year 1983 and have been taken from recent issues of the *Survey of Current Business*.

Under each category of service trade we present the values of exports, imports, exports plus imports, and exports minus imports. The sum of exports and imports is an index of the importance of trade which is free from the influence of bilateral imbalances. The difference between exports and imports, on the other hand, serves as an indicator of comparative advantage or disadvantage. In the definition of trade, Canada is the home country. It is clear, however, that Canadian imports equal U.S. exports. Since absolute dollar figures can be quite misleading given the different sizes of the Canadian and U.S. economies, we express the four bilateral trade figures as percentages of the 1983 U.S. and Canadian GDP, respectively, in the last column of table 7.

Table 7
Types and Levels of Service Trade Between Canada and the United States,
1983, Canadian Dollars

	\$ million	Percent of GDP	
		U.S.	Canada
I Factor Service Trade			
A Returns to Foreign Assets			
Canadian Imports	14,302	.384	3.523
Canadian Exports	2,518	.068	.620
Exports + Imports	16,820	.452	4.144
Exports - Imports	-11,785	.317	-2.903
B Fees and Royalties			
Canadian Imports	1,287	.034	.317
Canadian Exports	453	.012	.112
Export + Imports	1,739	.047	.428
Exports - Imports	-834	.022	-.205
II Trade Due to Temporary Movement of People and Goods			
A Travel and Transportation			
Canadian Imports	4,934	.133	1.215
Canadian Exports	3,477	.093	.857
Exports + Imports	8,410	.226	2.072
Exports - Imports	-1,456	.039	-.359
B Other Private Services			
Canadian Imports	792	.021	.195
Canadian Exports	433	.012	.107
Exports + Imports	1,225	.033	.301
Exports - Imports	-359	.010	-.088
III Embodied Service Trade			
Canadian Imports	18,012	.484	4.438
Canadian Exports	20,058	.539	4.942
Exports + Imports	38,070	1.023	9.379
Exports - Imports	2,046	-.054	.504

Source: *Survey of Current Business*, June 1984, table 10A, p. 64.

TRADE IN FACTOR SERVICES

The best known and largest component of international trade in services consists of factor service trade. This trade is made up of the earnings of assets held abroad, long and short term, as debt and equity which yield interest, dividends, and reinvested earnings. Income from human and knowledge capital is not included in this category. We should also note that factor service flows are the consequence of international capital movements. These are recorded in different sections of the balance of payments statistics. Capital movements and factor service flows are obviously closely related empirically and in negotiations. However, their separate treatment in the statistics and political discussions is of longstanding, and we continue it here by discussing only the factor service flows.

It is interesting to note that factor services in the form of the income of labour, land, physical, human and knowledge capital have not been considered in preceding chapters as part of the service sector. Other studies of the service industries take a similar approach. International trade in these factor services, on the other hand, is very important quantitatively and politically. Its link to trade in services will be discussed below in the section dealing with policy issues.

Section IA in table 7 shows that in 1983 Canadian payments to the U.S. owners of assets in Canada, the sum of imports plus exports and the net of imports minus exports, were \$14.3 billion, \$16.8 billion, and \$11.8 billion, respectively. Comparison with all the other entries in the table show that the returns on Canadian assets are by far the largest component of services trade, except for embodied services trade, which will be discussed below.

Factor service trade has two outstanding characteristics. First, the U.S. enjoys an overwhelming surplus. Second, the quantitative importance of the trade is very asymmetric given the different sizes of the two countries. The last two columns of table 7 show that for the U.S. economy the bilateral figures with Canada are equal to fractions of 1 percent of GDP while for Canada they represent 3 to 4 percent of GDP. These figures serve as yet another reminder, if one is needed, why issues of direct foreign investment are relatively so much more important in Canada than the U.S.

Fees and Royalties

The second component of factor service trade consists of fees and royalties which represent charges for the use of patents, brand names, copyrighted material in the form of books, films, recordings, musical scores, computer software, medicines, and similar goods and services. We treat fees and royalties here as factor services because they represent returns to knowledge capital, sometimes referred to as intellectual capital.

The data in table 7 show that the sum of exports and imports of fees and royalties was \$1.7 billion in 1983 in bilateral exchange. This sum is obviously very small as a percentage of GDP in both countries and is quite small relative to the other entries in the table. Noteworthy again is the fact that Canada has a negative balance of \$0.83 billion on this account with the U.S.

Labour Services

The absence of labour service trade in table 7 is worth a brief comment. This statistic should record the earnings of Canadian workers on temporary work visas in the U.S. and, analogously, the income of U.S. workers in Canada. Data on this trade are not available because it is very small or burdened with special data collection problems. It is also possibly included in other private services discussed below. However, the statistics of bilateral trade between Mexico and the U.S. contain data on labour service trade. It reflects the earnings of Mexican agricultural workers employed in the U.S. If free trade in services between Canada and the U.S. is introduced, trade in labour services may well become an item important enough to warrant statistical coverage.

A recent article titled "A GATT for Guestworkers," in *The Economist*, (April 2-8, 1988, p. 15), suggested that freeing trade in labour services could substantially increase world welfare and that the developing countries should link negotiation over it to the other service trade liberalization talks. We might add that in the Canada-U.S. free trade agreement such a link has already been made and large gains in welfare may be expected from its implementation.

SERVICE TRADE DUE TO THE MOVEMENT OF PEOPLE AND GOODS

Trade in this category is seen in table 7 to consist of travel and transportation (A) and other private services (B). We believe that many useful insights about the nature of this trade, its determinants, and policy issues can be derived by consideration of the following essential characteristics. This trade cannot take place directly in the manner of goods trade, where the object being exchanged crosses the border. Services do not exist as separable, tangible units. They are instead processes, the delivery of which requires the presence of a person.

As a result of this characteristic, all service trade requires that borders are crossed by the absorbers or deliverers of services. These are mostly persons but, as we discuss further below, they can also be goods. These characteristics of service trade follow from Hill's (1977) definition of ser-

vices. According to it, a service transaction leads to the transformation of a good or a person. The transformation is achieved through direct contact of the deliverer of the service with the person or object being transformed.

We should also note that such border crossing for the absorption or delivery of services must be temporary, not more than six months according to the definitions of most statistical offices. Longer stays abroad are considered to result in the migration of people and capital flows, which is treated differently in statistics and theoretical analysis.

According to our model, people who move abroad to absorb services are business travellers, tourists, students, and medical patients. They absorb transportation, restaurant, education, medical, and many other services as part of work, recreation, or medical treatment.

The delivery of services abroad involves teachers with all kinds of special knowledge; business consultants with expertise in management, computers, advertising, accounting, and engineering; truck and bus drivers behind the wheels of their vehicles, and airline personnel taking care of passengers in planes.

Goods also give rise to services trade. These goods are usually capital equipment owned by the residents of one country and placed abroad temporarily for the absorption or delivery of services. Examples of such service transactions are found in the absorption of services by U.S. ships that are repaired in Canadian harbours and Canadian planes that are cleaned at U.S. airports.

Services delivered abroad are exemplified by U.S. oil drilling rigs operating on Canadian soil and Canadian trucks which transport goods between the border and U.S. destinations.

The statistics in the accompanying tables and graphs show that travel and transportation are quantitatively important in trade between the two countries. Exports plus imports represent 0.23 and 2.1 percent of GDP for the U.S. and Canada, respectively. Canada has a small deficit on this account. It is due mainly to a significant imbalance in tourism, which sees more Canadians taking holidays in the U.S. than Americans coming to Canada.

The category other private services is dominated by business services. The value of trade in this sector is quite small, with exports plus imports summing to about \$1.2 billion in 1983. However, this trade is important for policy because the business service industry has had the most rapid domestic growth of all service sector categories in Canada and the U.S. in recent years. It is also believed to present significant opportunities for expanded trade and specialization between the two countries as well as being closely tied to trade in goods.

EMBODIED SERVICES TRADE

In preceding chapters we developed the taxonomy of consumer, government, and producer services and established empirically the importance of producer services in Canada. The relevance of producer services for international trade lies in the fact that services can be traded only in two ways. They can be traded through the movement of persons and goods, as discussed in the preceding section. Alternatively, they can be traded through the shipment of material substances which embody services. There is no other trade in services.

The embodied service trade model can best be understood with the help of the following example. Economic consulting services can be sold to foreigners without the movement of the consultants only if the analysis is shipped after embodiment on paper, electronic storage devices, or electronic signals. The same is true about medical, engineering, musical, motion picture, marketing, accounting, insurance, legal, financial, and any other conceivable service.

For the purposes of analysis, it does not matter that customs agents and statisticians have great difficulty measuring some of the material substances in which these services are embodied. The essential point is that they are material substances and measurable in principle. In fact, if one can believe some of the reports about electronic and mail surveillance undertaken by the national security agencies of modern states, practical methods for measurement are available.

The idea of embodied services trade provides a very useful unifying principle for the analytical treatment of all international trade. Producer services are embodied to varying degrees in conventional goods. Services for export are embodied in material substances in the same way. The ratio of value added of services relative to the manufacturing cost of all traded material lies along a spectrum which has no natural or obvious dividing line between goods and services as distinguished analytically or in trade statistics.

According to this model, it is totally arbitrary and unnecessary to treat the sale abroad as a goods export, a disk containing a computer programme, and as a service export, a disk containing an economic report. In both cases the value added embodied in the disks and created by the activity of service producing agents exceeds by a large margin the value added of the manufacturer of the disks.

The consideration of international trade in services as analytically identical to trade in goods enormously simplifies the study of the determinants and welfare effects of international trade. This is so because under this approach the vast body of existing international trade theory can be applied with only minor modifications and extensions. In particular, the well-

known Heckscher-Ohlin theorems about factor proportions and the extensions of the model into worlds of imperfect competition and intra-industry trade are applicable nearly without qualification.

Measurement of Embodied Service Trade

Input-output tables can be used to estimate the direct and indirect service inputs embodied in a dollar's worth of final output of every industry. This has been done by Momigliano and Siniscalco (1982) for Italy and Cox and Harris (1989) for Canada, using the methodology developed by Leontief in his famous post-war study of the factor contents of U.S. exports and imports. Cox and Harris found that a dollar's worth of Canadian exports in 1981 contained an average of about 25 cents worth of services. The embodied services in a marginal dollar's increase in export, however, was 40 cents. It is, of course, not surprising that this estimate from the Canadian input-output tables is very close to the 30 percent figure we presented in our analysis of consumer, government, and producer services in chapter 8.

As an aside, we wish to note that there are many opportunities for further modelling and testing found in this model of embodied service trade and input-output tables. For example, it is possible to use the input-output data to measure global and bilateral balances in embodied services trade and to trace their development through time. The results can be subjected to tests about comparative advantage, the role of human and knowledge capital, and the growing service intensity of production. They can also be used to put into useful perspective the heated debates over the importance of other forms of trade in services and the protection afforded them. Such studies have not yet been undertaken.

It would have been desirable to calculate trade in embodied services for Canada and the U.S. by applying the estimated amount of embodied services for each industry to the relevant industry's imports and exports. Unfortunately, we were unable to do so and instead used a more rough and ready method. Our estimates were made under the assumption that a dollar's worth of both Canadian and U.S. traded goods contains an average of 30 cents of embodied services. This seemed to be a reasonable figure in light of the Cox-Harris estimates from the input-output tables and our own estimates of producer services. Under these assumptions, 30 percent of the bilateral merchandise trade between Canada and the U.S. represents embodied services trade. Figures in column 1 under section 3 of table 7 give estimates based on 1981 bilateral merchandise trade.

From the table, it can be seen that embodied service trade is quantitatively very important. Exports plus imports of embodied services in bilateral trade represent 1 percent and 9.3 percent of GDP for the U.S. and Canada, respectively. The embodied service trade is larger than all the other types of

service trade in balance of payments statistics combined, as can be seen from table 7.

The merchandise trade balance favoured Canada in 1981. Therefore, the embodied service trade balance was also favourable for Canada. As it turns out, from calculations not shown here, the favourable balance on embodied service trade was just large enough that year to offset the deficits on the nonfactor service trade which left nonfactor service trade between the two countries balanced almost exactly.

POLICY ISSUES CONCERNING FACTOR SERVICES

The analysis now uses the preceding taxonomy to discuss outstanding policy issues concerning trade in services.

Direct Foreign Investment

The liberalization of direct foreign investment in services will be an important agenda item during the Uruguay Round of GATT negotiations. It is important to note that this is so in spite of the fact that direct foreign investment involves capital flows, which should be considered in the capital account of the balance of payments and which traditionally have not been the subject of GATT negotiations. Since most of the issues to be discussed have more in common with other direct investment restrictions than services, they would more appropriately be discussed in entirely new types of negotiations over direct investment policies generally.

However, given the Uruguay agenda, we expect the negotiations over the liberalization of investment in service industries will focus on the removal of legislation limiting foreign ownership. This legislation owes its existence to the view that many service industries, but especially those in the financial service sector, are crucial to economic development, planning, and stability.

The demands for liberalization of foreign service investment will be formulated under the principle that every foreign firm should have "the right to establishment under national treatment." This principle simply means that foreign investors have the automatic right to establish a business if they meet the same conditions imposed on domestic investors.

Most emphatically, this principle does not mean that a country loses the right to regulate its industries in ways it considers to be in the national interest. For example, a government may strongly regulate its banking industry and have a separation of commercial and investment banking, specific capital and liquidity requirements, and mandated lending and borrowing rates. The setting of these and other rules remain an undisputed ex-

ercise of national sovereignty, however much they may conflict with market ideologies or interfere with efficiency.

Not permitted under the principle are rules and regulations which apply only to foreign-owned enterprises. Many countries have such rules in place. A case in point is Canada's regulation that the assets of foreign-owned banks may not exceed a certain proportion of the sum of all assets of Canadian-owned banks. Other countries exclude foreign-owned banks from certain types of business, such as government bond dealing. Under the principle of national treatment, such discriminatory practices are prohibited.¹

Economic principles suggest that the universal applicability of national treatment to foreign investment increases efficiency since only commercial competitiveness determines the success of enterprises. Its operation also increases competition since actual or potential entry by foreign firms limits the strength of domestic oligopolies. The removal of such limitations will give rise to especially large benefits in industries in which the regulated environment has created opportunities for collusion and the dominance of regulatory bodies.

The adoption of the principle of right to establishment and national treatment will be opposed strongly by some governments which will argue that the right to exclude foreign owners is one of the most important prerogatives of national sovereignty. They will point out that even countries like the U.S. and Germany have violated the principle of nondiscrimination in the treatment of foreign investment, even though they profess a strong commitment to liberal foreign investment policies. They will recall that recently, when direct foreign investment appeared to threaten the national interest, the governments of these countries acted to protect it. For example, during the heyday of OPEC, it was made quite clear that legislative barriers would be used to prevent the foreign takeover of U.S. firms important for defence production, like IBM and McDonnell Douglas. In Germany, the government prevented the purchase of a large block of Mercedes Benz Company shares by Arab interests, which would have given them significant control over the operation of that firm.

From the preceding discussion it is clear that there will be much hard bargaining before the world will have a code of liberalization of foreign service sector investment which is acceptable to and adopted by all countries. Overcoming conflicts between efficiency and ideology in political, democratic environments is never easy. The difficulties may be expected to be even greater in an international forum involving many countries with different cultural traditions and economic systems.

Labour

The liberal treatment of foreign labour by both the exporting and importing countries might similarly be codified during some international negotiations in the future. Such a code might protect the human rights of foreign workers and the stability of countries, the economies of which are exposed to severe disruptions by the sudden expulsion or recall of foreign workers. However, there are no plans for the formal discussion of these issues during the Uruguay Round, though a recent article "A GATT for Guestworkers," in *The Economist*, (April 2-8, 1988) launched the idea.

Intellectual Property Rights

One of the two most important issues on the agenda for the Uruguay Round concerns the protection of foreign-owned patents and copyrights. The issues are clear in principle.² In the modern industrial world, much of current and future productivity is due to the use of scientific, engineering, and commercial knowledge. This knowledge is costly to produce and easily devalued through copying by competitors. The production of adequate amounts of knowledge in market economies requires that creators of knowledge enjoy legal protection from competitors through patents and copyrights.

Economic theory suggests that efficiency is attained when the protection of knowledge producers is so long and secure that the creation of knowledge capital results in the equality of the marginal productivity of all forms of capital, in particular real and knowledge capital. While the formal theoretical efficiency conditions are clear, empirical information on its attainment in the real world has not been produced. However, most analysts agree that the efficient length is neither zero nor a very long period, like 100 years. In fact, most countries have enshrined in national legislation patent protection of 10 to 15 years. In the absence of more solid information, it may be best to consider that these national laws were put into effect after a careful weighing of costs and benefits to the public interest and that they come close to achieving it.

For the present purposes of analysis, it should also be noted that little is known about the reduction in incentives and the rate of knowledge capital formation which results from the refusal of some governments to provide foreign owners of knowledge capital the same protection they provide to indigenous owners. It is theoretically possible that existing national protection generates too much knowledge capital in the world so that reduced incentives from such behaviour move the global stock lower and closer to efficiency. However, it is also possible that such behaviour produces the opposite effect.

The preceding arguments and lack of knowledge may well be used by some governments in the Uruguay Round discussions to defend their discrimination against foreign owners of intellectual capital.

Another argument likely to be used for this purpose involves the basic theorem from neo-classical economics that in efficient equilibrium the price of any good or service is equal to the marginal cost of producing it. Since the marginal cost of using existing knowledge such as a pharmaceutical formula is zero, the efficient price for its use should also be zero. Accordingly, the efficiency of the world economy would be increased if countries would use foreign-owned knowledge without compensation to the owners.

This argument neglects the difference between short- and long-run marginal cost. The resultant error becomes readily apparent when we consider that the theorem also implies that empty seats in movie houses and on airplanes should be given away free whenever they are not sold to paying customers. Under such an arrangement, the supply of movie houses and airplanes would vanish quickly. In the longer run, free use of commercial and industrial knowledge similarly would reduce the stock and rate of production of new knowledge, possibly by a large amount. As a result, countries which have benefited from the free use of the knowledge in the short run can easily be made worse off in the longer run.

Some intellectuals and politicians, especially those from developing countries with a strong preference for socialist ideology, will argue at Uruguay for the right to use foreign intellectual property without compensation on the grounds that their peoples are poor and deserve charitable treatment. They will remind politicians from industrial countries that this form of charity is politically very convenient for them since it can be hidden readily from the scrutiny of the voting public. It is difficult to reply to this argument except on the similarly moralistic grounds that poverty is not a sufficient justification for the theft of intellectual and commercial property.³

In sum, it is apparent that negotiations over the protection of intellectual property rights will be difficult. The difficulties will be reduced only somewhat by the creation of the common analytical and knowledge base sketched here. They will also be reduced somewhat by acceptance of the basic principle that the primary objective of such international negotiations is to assure the creation of an efficient trading system, not the redistribution of wealth.

POLICY ISSUES CONCERNING PEOPLE SERVICE TRADE

We know of no country which has restrictions on the sale of tourist, medical, and educational services to foreigners. Some countries have regulations

to assure that such temporary visits are not used to overcome more stringent laws on permanent immigration. Others regulate the use of socialized medical and educational services by foreigners to protect the financial integrity of the system. These regulations are designed to protect the integrity of important national programmes. They do not create inefficiencies in the international economy and are not subject to formal criticism in the international community.

On the other hand, many governments have restrictions on the freedom of their citizens to travel abroad for the absorption of tourist, medical, and educational services. Most of these restrictions are part of a system of import licensing and economic planning. Their liberalization is best considered in the Uruguay Round session concerned with the use of import restrictions for balance of payments reasons.

Since restrictions on people service imports are relatively few and small, have little quantitative impact, or belong on another agenda, they are likely to be discussed little, if at all, at the Uruguay Round.

People Service Exports

People move abroad to deliver services under two institutional arrangements. First, their business is headquartered in the home country. People go abroad only to do whatever is needed to provide the service to a foreign customer. For example, engineering consultants from Canada go to the U.S. to inspect locations and gather information necessary to design a plant. Most of the design work on the project is then done at the Canadian base of the firm. Other trips by the consultants may be necessary, as during construction of the plant, but Canada is the home base of the engineers.

Under the second arrangement, firms in the service industries have subsidiaries or branches abroad. It is well known from the theory of direct foreign investment that the success of such foreign operations depends crucially on the maintenance of effective management control and of the corporate culture. These objectives can be achieved only by staffing foreign operations with persons who have been trained at headquarters and who work there periodically for prolonged periods of time.

Many countries have severe restrictions on the temporary immigration of persons who wish to deliver services under either of these arrangements. For example, Canadian immigration authorities are known for enforcing very stringent conditions and lengthy and costly procedures before they issue temporary work permits to foreigners. United States immigration authorities in recent years have begun to ask for work permits even from Canadian academics who deliver lectures or seminars for which they are paid.

It is clear that the liberalization of service trade requires the ready issue of temporary work permits to the foreign deliverers of the services. The value of liberalized direct investment in services is diminished by restrictions on the issuance of such work permits.

Negotiations over the removal of such restrictions are likely to be difficult in the Uruguay Round because the policy interferes with the exercise of national economic sovereignty, manpower policies in this case. The basic conflict is between efficiency gained through the use of the least cost providers of the service from abroad and the loss of employment opportunities for citizens. Citizens who can be identified as the losers of jobs through liberalization have effective interest group lobbying, while foreigners do not. At the same time, potential gainers of jobs in the service export fields typically are not represented by political lobbies. All these elements are the ingredients for much hard bargaining at the Uruguay Round.

POLICY ISSUES CONCERNING EMBODIED SERVICES TRADE

Embodied service trade may enter the Uruguay Round of negotiations in the following ways. First, there may be demands for the removal of restrictions on the sale of services from abroad, such as Irish sweepstakes tickets, which require the presence of neither a foreign firm or person. It should be noted that in this case again, liberalization does not mean that countries have to change domestic regulations. If the sale of sweepstakes tickets is prohibited because all gambling is illegal, then this policy need not be changed. Similarly, if the sale of insurance requires registration and prudential supervision of firms, then foreign companies which do not follow this regulation can legitimately be prohibited from selling insurance through the mail.

Second, the existence and quantitative importance of embodied service trade suggests a strong link between negotiations for free trade generally and free trade in services. The unrestricted movement of mail and electronic signals embodying services may have to become an explicit item for the traditional GATT negotiations.

Third, one of the important problems likely to confront the negotiations arises even if there is complete acceptance of the principle of right to establishment under national treatment. The problem arises because national regulations in many countries are anti-competitive and anti-trade. Some governments will attempt to use moral suasion and appeals to self-interest to achieve changes in this environment, but it is doubtful that such exhortations will produce results. Under these conditions, gains from trade in direct foreign investment in service industries will be limited. Many of the fears of the effects of deindustrialization on international trade will remain.

The realization that a very large and growing proportion of the service sector consists of producer services which end up embodied in goods and influence competitiveness suggests that concerns over deindustrialization are unwarranted. Even if U.S. service sector firms cannot expand strongly abroad, their effect on domestic goods production and competitiveness will assure that the country has sufficient goods for export to pay for the imported goods demanded.

SUMMARY AND CONCLUSIONS

In this chapter we developed a taxonomy of international trade in services which is based on insights about the nature and composition of the domestic service economy developed in this volume. We then used this model to sort out the issues regarding liberalization of international trade in services which are likely to be discussed in the upcoming Uruguay Round.

We argued that one important focus of the discussions will concern direct foreign investment. There will be demands for the universal adoption of the principle of the right to establishment of foreign service industries under the condition that they meet all the regulatory requirements imposed on domestic firms in the industry. The adoption of this principle does not mean that signatories have to change their domestic regulatory environment in any other way.

The second important focus of negotiations will be patents and copyrights. The economic issues in this field are difficult conceptually and little is known empirically about optimal rates of protection of knowledge capital producers. There are clear trade-offs between benefits from the global, collective protection of these rights in the short and the long run. These issues are also clouded by ideological arguments and notions of equity. The resolution of existing conflicts promises to be difficult.

Trade in people services gives rise to the need for international agreement on the conditions under which temporary work permits are issued to the deliverers of services abroad. Granting the right to establishment and national treatment for service industries loses much of its value if the issuance of such permits is not established simultaneously.

The regulation of national service industries will not be subject to negotiations at the Uruguay Round except for rules discriminating against foreigners. As a result, even after successful negotiations of the issues noted above, many regulations are likely to remain which in effect reduce the level of trade and investment. The concept of embodied service trade suggests that these conditions will not do great harm to industrial countries with large and growing service sectors. The producer service industries will assure that the remaining goods industries are competitive internationally

and that their output enters into international trade after embodiment in goods.

As in other trade liberalization efforts under GATT in the post-war years, the negotiations will be difficult and proceed slowly because of conflicts between efficiency and the pursuit of ideological and other policy goals by governments. The difference is that service industries, particularly finance, have been considered traditionally to involve the national interest more strongly than goods production. In addition, because of the high labour intensity of many service industries, they have above-average political interest group power to block deregulation.

NOTES

1. There have also been complaints about discriminatory practices used by publicly-owned enterprises in the selection of suppliers of certain services by foreigners. Best known here are the tendencies of national postal and telecommunications authorities in Japan and Western Europe to rig the bidding mechanism for orders such that foreign firms are effectively excluded. The liberalization of such practices should be covered under the subject of preferential state purchasing practices in the conventional GATT negotiations. There is nothing special about telecommunications services in this context.
2. For a discussion of the issues see also Grey (1987).
3. In most Western law codes there are no penalties when persons steal to save their lives. However, this situation is hardly applicable to developing countries. Even under the best of circumstances, the amount of the resource transfers generated by adherence to likely international intellectual property right treaties is negligibly small for most developing countries.

PART IV

SUMMARY OF INDUSTRY STUDIES AND POLICY CONCLUSIONS

The Fraser Institute research project on Canada's service sector consists of 18 studies of individual service industries and seven special projects dealing with such aspects as productivity, franchising, and labour markets. The purpose of the following two chapters is to present the findings of the industry studies concerning a range of industrial organization and other economic aspects which we consider to be of special interest to policymakers. Where possible, generalizations about the service industries will be drawn from the evidence on individual industries.

In designing the industry studies, we attempted to ensure that each author would analyse key questions about employment, output, productivity, competition, and a number of other areas. For this reason, authors were asked to build their studies around a template that outlined all these questions. The authors have followed this advice quite closely and, as a result, the industry studies together represent a valuable base of information for the analysis of developments that affect all service industries.

However, as will be seen below, generalizations are not easy. The Canadian service sector is extremely heterogeneous. It includes the highly technical, capital-intensive and rapidly growing telecommunications industries; the education sector, which is very labour intensive, has seen little technical change and grows slowly; and other industries in between these two extremes on a wide range of characteristics. In fact, the main conclusion reached after a careful reading of the industry studies is that of their overwhelming diversity. For this reason, generalizations presented below are relatively weak and small in number. On detailed issues of employment, output, productivity, and so on, there are no substitutes for reading the individual studies.

The concluding chapter contains policy implications which flow from the Fraser Institute research project on the Canadian service sector. It draws

on all the individual studies produced for this project. On major issues concerning the growth and impact of the service sector on the Canadian economy, it draws heavily on the preceding chapters.

The recommendations in this section are not new or strong and certainly offer no panaceas to Canada's economic problems generally or the problems of regional economic development in particular. We present some innovative insights, but the nature and strength of the policy problems will hardly be affected by them.

The most important message for policymakers is that Canadians would benefit from further reductions of government presence in the service sector. The general message is the one economists are likely to send whenever they are given the opportunity to do so. They point to the almost iron law that economic problems have no "solutions" analogous to the solutions available to engineering problems. In the economics of public policy, there are merely trade-offs. Diminishing the urgency of one problem creates new or worsens old ones. Improving the welfare of one group or region via redistribution policies inevitably means the decrease of welfare in another. Attempts to raise employment, productivity, the proportion of women in high-paying jobs, or to achieve any of the myriad economic and social goods that voters demand through direct governmental action cannot be successful without the imposition of costs on other segments of society.

Nevertheless, we hope our study will be useful to policymakers. Perhaps at the margin it will make them more reluctant to create new or maintain old programmes of intervention in the market. Perhaps it will make them more reluctant to take advice from those who offer solutions and predict disaster unless they are adopted. At the very least, our technical analysis should help in designing more rational policies should politicians find them necessary in spite of our reservations against more intervention.

CHAPTER 13

GROWTH, REGIONAL ISSUES, AND GOVERNMENT

In this chapter we summarize briefly the main findings of individual industry studies on one topic at a time. The topics were chosen after consultation with technicians in the government of Canada who frequently deal with the service sector in the design of policies and in response to initiatives from politicians. Individual studies are identified by the name of the author. A full list of authors and studies is found in an appendix to the book.

We set out the nature of the problem initially, then present the findings of individual studies, and conclude each section with some generalizations. The overwhelming impression is that generalizations about service industries are very difficult. They simply are too heterogeneous in almost any conceivable dimension. Specific policy recommendations are few. The only recurring theme is the need for less government intervention and more competition in most of the industries.

GROWTH AND ITS DETERMINANTS

Information on the historic growth performance of individual service industries provides an essential background for all subsequent analysis. Determinants of this growth have to be known for a full understanding of the phenomenon.

Industry Evidence

1. Chant found that the GDP of deposit-taking institutions in Canada grew at an annual rate of 1.4 percent as compared with the 1.2 percent growth rate of overall GDP during the post-war years. Employment rose rapidly during the period 1960 to 1980 and has slowed since, though part-time employment appears to have been on the rise in recent years. This growth is

attributable to the expansion of types of services offered by the industry and readily bought by households and business.

2. Auld and Kitchen noted the rapid increase in total government expenditures, which went from 24 percent of GNE in 1951 to 46 percent of GNE in 1986. Demographic developments alone cannot explain this increase. Only detailed analysis at disaggregate levels permits understanding of the determinants of this dramatic growth in government spending.

3. Acheson and Ferris found that the wholesale and retail sector value added and employment have grown more rapidly than GDP and overall employment during the period 1971 to 1986. This development reflects the demand of consumers for higher quality, greater specialization, and more convenient shopping. Interestingly, the wholesale sector has grown more rapidly than the retail sector, suggesting that it has also benefited from increased specialization and probably the disintegration of functions previously undertaken within the manufacturing sector.

4. According to Gill's findings, between 1971 and 1985 the GDP of the legal profession rose 50 percent and the number of privately-practising lawyers has tripled. Both indices of growth exceed those for the entire economy by a large margin. The private household sector has not been responsible for this growth in the demand for legal services. Most of the growth has come from government and business.

5. West found that undergraduate enrolment in universities has risen since 1980 despite a decrease in the age cohort 18 to 24 in Canada. Most of this increase has been due to greater enrolment by females and foreigners. In 1984/85 the latter represented 4 percent of undergraduate and 11 percent of the graduate population. The increase in enrolment has been accompanied by expenditures which have remained at a nearly constant 1.5 percent of GDP.

6. Easton found that the proportion of GDP devoted to elementary and secondary education services by governments fluctuated somewhat during the last 35 years, but has not decreased with recent declines in enrolment. Real expenditures on vocational training have risen only slightly during the last 15 years.

7. Palda found that revenues of the advertising industry have grown at an annual rate of 13 percent since 1976. Private advertising expenditures grew at a rate smaller than GDP. The large growth of total revenue has been due to dramatic increases in advertising expenditures of the federal and some major provincial governments.

8. According to the study of the insurance industry by Bernstein and Geehan, between 1961 and 1985 total industry sales grew at the same rate as GDP. Cross-section studies show that the income elasticity of demand for insurance by households is 1.25, but actual demand is also heavily in-

fluenced by demographic characteristics of the population, such as age and sex. The shift from whole-life to term insurance and the creation of RRSP programmes have had important influences on the composition of insurance industry sales and the size of investment portfolios.

9. The accommodation, food, and beverage industry studied by Scarfe and Krantz has grown during the post-war years at roughly the same rate as GDP. However, within the industry there have been differential rates of growth, with hotels at the bottom and unlicensed restaurants at the top of the scale. Foreign travellers have been an important source of increased demand, but the bulk of demand has come from households due to higher income and increases in the female labour force participation rate. The latter has had a particularly significant influence on the sales growth of restaurant chains.

10. The engineering industry in Canada studied by Hammes during the years 1970 to the mid-1980s has grown more rapidly than GDP. Demand for these services stems half from the private sector and half from government. Ten percent of the industry's output is exported. Demand is highly cyclical and related strongly to the level of construction. There is some evidence that growth in recent years has been most rapid in activities not tied to or bundled with capital construction activity.

11. Maki's study of employment agencies and personnel suppliers found that in recent years their growth ceased to be related to the growth of traditional sources of demand. Instead, demand has been driven by the rapid growth in female labour force participation rates and of part-time workers. The popularity of these agents of intermediation in the labour market is because women and part-time workers have higher rates of turnover and absenteeism than the general labour force. Employment agencies are more important in tight labour markets than in slack ones, are concentrated in larger cities, and derive most of their business by meeting the demands for clerical workers. Agencies have increasingly specialized in narrow segments of the market. Maki also studied the market for security and investigation services. He found that it has a diversified client base but that most of its demand stems from the finance, insurance, and real estate industries. Given that these industries tend to be related to population, the regional distribution of the industry is the same as that of the population.

12. Palmer found that the demand for transportation industries comprising trucking, railroads, and taxis has been growing somewhat more rapidly than GDP. Revenues from freight for trucks and railroads have constituted somewhat more than 3 percent of national output through the post-war years. The demand for bus services has not kept up with the growth of GDP.

13. Watson found that the overall demand for leisure and recreation activities has an income elasticity of demand greater than one. An analysis of

household income data suggests that the demand for leisure by heads of households falls until the age of 50 and thereafter rises again. He also found that rising wages and the increased entry of women into the labour force has reduced the total time women spend on various forms of amusement.

14. In his study of the real estate brokerage industry, Jenkins found that it has grown more rapidly in terms of output and employment than the corresponding national aggregates. This development is due to the fact that Canadians are moving more often. The current rate of turnover is twice that of the early 1970s.

15. Brown noted a rapid growth in spending on health care during the post-war years, but especially since the inception of the public health care system in Canada. Demand for this service has been driven by demographic factors, new technologies, treatment methods, drugs, and the organization of the system itself. Through the absence of user fees, use of the system is encouraged by consumers, and it has been necessary to reduce usage by controls on supply. The management of the system is considered to have resulted in conditions which are superior to those existing in other countries, especially the United States and the United Kingdom. Brown is optimistic about the future demands on the system on the grounds that modern medical advances are likely to keep people healthier for longer and reduce historically long periods of need for expensive care.

Generalizations

The bulk of the service industries have grown in Canada mainly as a function of the growth in income and total expenditures. For a few, like private advertising, household demand for legal services, the chain food segment of the restaurant market, and bus service, growth has had an income elasticity of demand less than one. Those with the highest income elasticity of demand, like non-private advertising, education, medical care, amusement and recreation, and the government sector itself, were driven by the growth in public sector spending. The expansion of some, like telecommunications and to some degree banking, derived a boost from technological advances in micro-electronics and computers. Shifts in demand have depressed the growth of consulting engineers because overall construction activity has been depressed. Demographic changes such as the increased female labour force participation rate have stimulated the growth of personnel agencies and the suppliers of temporary staff.

International trade has not been a major determinant of demand for services since, by their very nature, they are not tradable directly. In banking, and to an even more limited degree in retail and wholesale trade, competition from foreign-owned firms exists. However, Canadian enterprises in these industries are also exporting through investments abroad. In real es-

tate brokerage, some general retailing, and the restaurant industries, foreign competition is represented by franchise operations owned abroad.

On the issue of contracting out, none of the researchers were able to obtain hard evidence. Indirect evidence, as generated by ingenious techniques applied by some of the industry studies, discovered evidence of some but not substantial contracting out. The study by McFetridge and Smith, devoted explicitly to this issue, reached the same conclusion.

REGIONAL ISSUES

The Canadian government faces the legislative mandate to assure a minimization of regional income differences in the country. For this reason, it is of some interest to examine whether service industries tend to concentrate regionally and in urban centres. Of further interest are the determinants of such regional concentration, if it exists, such as the nature of technology, industrial organization, or foreign control. The evidence on this question follows.

Industry Evidence

1. Globerman, concerned with telecommunications, found that basic telephone services, as measured by the magnitude of exchange lines and completed calls, are distributed regionally in the same way as the population. This means that about 60 percent of the industry is found in Quebec and Ontario. Access to other types of telecommunications services tends to be somewhat more concentrated in urban regions, and the settlement procedures of Telecom Canada result in a greater regional concentration of revenues. This is undoubtedly due to the relatively greater presence of large firms and some government agencies in urban agglomerations, which in turn tend to be concentrated in Ontario and Quebec. Significant regional differences were found to exist with respect to access to cellular phone services and interconnections. These can be explained by the licensing activities of the Department of Communications and provincial regulatory bodies.

2. Chant, dealing with deposit-taking institutions, found that most of their business activities require personal contact with customers and therefore are distributed regionally according to the distribution of the general population. Increased use of telecommunications and computers has reduced the role of branches in some operations. However, the resultant concentration of activities has left largely unchanged the pattern that had existed before.

3. Auld and Kitchen studied the supply of government services. They found that public sector employment regionally corresponds to the distribu-

tion of the population. Federal government spending and the percent of federal government payrolls in regional GDP appears to favour Atlantic Canada at the expense of some other provinces, but especially Alberta.

4. Acheson and Ferris in their study of wholesale and retail trade, found that it provides employment strictly proportionately to the distribution of the population. Given the nature of the retail business, this is as expected. Economies of scale in the wholesale business and the size of employment in this sector obviously are insufficiently large to change the results expected by consideration of the retail sector alone.

5. Gill's study of the legal profession found that in recent years total sales have become somewhat less concentrated in Ontario, which had 47 percent in 1971 and only 41 percent in 1986. However, even the latest figure represents a greater percentage than that warranted by Ontario's share of the Canadian population. This concentration is due less to economies of scale than to the concentration of corporate headquarters in the province and the existence of different legal institutions in Quebec.

6. Palda's report on the advertising industry shows that 87 percent of total revenues of Canada's industry originate in Ontario and Quebec, probably with most of them in Toronto and Montreal. Economies of scale and agglomeration are responsible for this pattern of revenues.

7. In his study of consulting engineers, Hammes found that value added and employment in the industry are concentrated, disproportionately to population, in regions other than Atlantic Canada. He suggests that this result is due to the relatively small industrial base of that region.

8. Maki found that employment agencies and personnel services are disproportionately concentrated in Ontario and Quebec; security and investigation services somewhat less so. The concentration of employment and personnel services is related to the disproportionately large industrial and commercial base of central Canada. The size of security and investigation services is strongly influenced locally by rules and regulations and the availability of public services, all of which influence the regional pattern of private production and employment.

9. Watson found that TV, film, and recording industries are concentrated in central Canada due to the strength of agglomeration economies even though there appear to be significant economies of scope. A recent trend toward increased specialization among firms has not changed the concentration of the industry.

10. Lower and higher levels of education studied by Easton and West, respectively, have produced regional distributions of employment that are strictly proportional to population, as might have been expected given the nature of the education process and the sources of financing.

11. In the study by Jenkins, it was noted that while the real estate brokerage industry is closely tied to its local customer base, there is some tendency for the concentration at corporate headquarters of some activities relating to the firm as a whole. However, it is difficult to disentangle statistically this effect from the observed variations of the industry's output across regions which are due to higher incomes and higher turnover rates in home ownership which in turn are determined by a host of economic and institutional factors.

Generalizations

In the case of service industries which rely for their business on personal contact with customers, their regional distribution is determined by the distribution and, to some degree, the income levels of the population. Industries in this category include retailing, branch deposit-taking activities, basic telephone services, insurance, transportation, hospitality, education, and health services. The regional distribution of industries which provide intermediate business services like some banking, legal, advertising, transportation, employment and personnel services is found to mirror the regional distribution of business. The concentration of corporate head offices in Toronto and Montreal accounts for a significant part of the geographic disparity of these industries.

Agglomeration and external economies have been found to be behind the concentration of only the TV, film, and record industries in Toronto and Montreal. These same economies may well be responsible for the concentration of corporate headquarters in these cities and thus indirectly responsible for the concentration of the business service industries there. It has generally not been possible to establish whether there are additional agglomeration and external economies from the operation of these service industries which have added to the regional concentration of population and economic activity.

The introduction of teller machines and electronic accounting and control systems has reduced the autonomy of local branches of deposit-taking institutions. This encourages the centralization of some functions. In retailing, on the other hand, the availability of electronic inventory control systems has increased the autonomy of retail stores and resulted in less centralization of some functions.

Government employment follows population distributions, but transfer payments favour Atlantic Canada at the expense of Alberta and, to a lesser degree, British Columbia. Because of the heavy concentration of the film, broadcasting, and recording industry in Toronto, subsidies to these activities favour that city.

THE ROLE OF GOVERNMENT

Government influences the rate of growth, nature of output, and regional distribution of service industries through regulation, taxation, and subsidies. The evidence on this influence follows.

Industry Evidence

1. The government's regulation of the telecommunications industry was found by Globerman to have contributed to the more rapid diffusion and lower cost of these services to areas with low population densities. In recent years, overall growth of the industry appears to have been retarded somewhat especially by the provincial regulatory environment which has slowed the rate of introduction of new services, cellular systems, and interconnection. The allocation of spectrums by the Department of Communications has shaped growth. There is reason to believe that, on balance, the existing regulatory regime has restrained growth in both the carrying facilities and equipment use in the industry.

2. Chant's report of the deposit-taking industry identifies it as one of the most regulated activities in Canada. Changes in the regulatory environment have increased competition in recent years and served the interest of consumers. The question of further deregulation confronts the government with difficult trade-offs between the public interest in the form of better and lower cost services on the one hand and in the form of reduced safety and overall economic stability on the other.

3. Acheson and Ferris found that direct government involvement in wholesale and retail trade in Canada is restricted to alcohol and gasoline, where it has resulted in greater uniformity of retail prices across regions than can be found in the private sector. They noted that in the private sector the government can and has played a beneficial role by setting universal packaging codes. In combination with the use of computers, the introduction of the Universal Distribution Code has resulted in large economies in the gathering of information needed for efficient inventory control and production management. The government can also play an important role in keeping Canadian retailers informed about world-wide developments in point-of-sale payments systems, and it can assist the industry in achieving an efficient co-ordination of such systems.

4. As the employer of 59 percent of non-private practice lawyers, as the operator of law schools and the courts, the government obviously is very heavily involved in the industry for legal services. In addition, the government heavily regulates the industry. Gill recommends an end to the regulation which prohibits partners of lawyers and other professionals from operating in the same firm. He also suggests that law firms be allowed to

incorporate in firms with limited liability. This would have the advantage of permitting them to raise large amounts of capital needed for some legal activities.

5. West found that private returns to higher education are high and social returns are low. This suggests that the system would be made more efficient if the share of financing by students is increased through higher tuition rates and that borne by governments through general taxes is lowered. He also noted that productivity levels and gains in universities have been reduced by the incentive structure inherent in government operation of the system. To remedy this situation, he recommends the introduction of a voucher and contingent loans system by the government, leaving operation of universities to the private sector.

6. In the advertising industry, Palda found that government regulation and self-regulation encouraged by government are not important. The government's involvement in the industry primarily takes place through direct purchase, which has made the Government of Canada the largest and the Government of Ontario the third largest advertisers in the country.

7. The industry supplying Canadians with accommodations, food, and beverages studied by Scarfe and Krantz is taxed heavily. This taxation has reduced its growth since it has resulted, *ceteris paribus*, in higher prices for these services relative to those for other consumer goods and services. Health and safety standards, licensure, regulation of the environment, and other regulations affecting the industry have had the effect of making entry into the industry more difficult. However, the industry has remained competitive and efficient.

8. Hammes found that governments are a major consumer of engineering services. Interprovincial trade in these services and therefore gains from trade and specialization are severely restricted by local preference policies of provincial governments. Firms appear to have greater difficulties in securing federal government contracts the further distant they are from Ottawa. The private engineering sector is larger and more dynamic in provinces where government and Crown corporations have the smallest amount of in-house engineering. This suggests that large benefits may be derived from the privatization of government-operated engineering activities. Hammes also notes that a large web of subsidies and insurance schemes aimed at encouraging exports do not yield benefits corresponding to the costs.

9. Operation of the insurance industry, studied by Bernstein and Geehan, is heavily influenced by the requirement that domestic liabilities be matched by domestic assets. The need for this regulation may be questioned in light of the ever-increasing sophistication of financial instruments that permit hedging against foreign risks while reaping benefits from the international diversification of assets. Another regulation concerns the sale of insurance by the other three pillars of the financial system. The merit of this

regulation is subject to widespread public debate which has been driven in part by the recent innovations in communications and information technology. The issues are obviously complex and involve many powerful interest groups.

10. Easton deplores the operation of the system for financing primary and secondary education by the government. It almost totally fails to link performance of teachers to their pay. To remedy this situation, he urges the introduction of a voucher system which gets parents involved in the evaluation of teacher performance by permitting them to send their children to schools that meet their standards of quality. Under such a system, only schools and teachers who meet the quality standards of parents will prosper and ultimately survive.

11. The development of employment agencies in Canada is hampered by provincial legislation which prohibits charging fees to job applicants, reports Maki, and he urges a re-examination of the merit of such regulation in today's world. He also notes that there may be excessively difficult and overlapping regulation and registration of firms and individuals providing security services.

12. Palmer's study of the transportation sector notes that past regulation has had as one of its main objectives and effects the cross-subsidization of regions and special types of activities. Deregulation will result in the expansion of those activities and regions which had been taxed under the regulatory regime. Increased specialization in delivery systems will provide services to regions which previously had benefited from cross-subsidization. He expects deregulation to result in greater productivity and efficiency in the transportation sector.

13. According to Watson, the government has had a very pervasive influence on the cultural industries in Canada through direct funding, tax expenditure, and regulation. The latter has resulted in much cross-subsidization. He questions whether these policies are needed, whether they are efficient in achieving their social objectives, and cites evidence to the effect that some may have been counterproductive.

14. In the real estate brokerage business, the role of government has been to foster the maintenance of anti-competitive behaviour in the industry, notes Jenkins. Despite effective deregulation in 1976, brokerage rates remain at a uniform 7 percent, in contrast with changes that took place in the securities brokerage industry. The federal government has failed to use its powers under the competition act to counter the increasing concentration of the industry which has been caused by economies of scale and the computerization of marketing. It has also failed to take action against the anti-competitive practice of a closed Multiple Listing Service system which prevents entry into the business. Provincial governments have permitted the industry to restrict entry through exercise of licensure laws. They

have done so by increasing education requirements, limiting entry into school systems, full-time status requirements, and restrictions on advertising.

15. The role of government in health care during the last two decades has been found pervasive by Brown. Through acceptance of the fee-for-service payments system from the private sector, while at the same time removing the rationing aspect of this procedure for consumers, the government has created incentives that make for the use of procedures and treatments, the life-improving and life-prolonging merits of which sometimes are questionable. In addition, the government has encouraged the increase in the supply of medical services through the operation of subsidized medical schools which seems excessive, given population growth and demographic characteristics.

Generalizations

Government policies have influenced the growth and the composition of almost all service industries. A summary of or generalizations about these influences is not feasible here, with the exception of two aspects.

First, most of the studies noted that government regulation introduced rigidities which reduce the ability of the industries to respond quickly and strongly to new developments in technology, demographics, and consumer tastes. The requirement for cross-subsidization of services was noted as an especially serious impediment for growth in several industries like telecommunications and transportation.

Second, in cases where government operates services through its own employees, as in education and hospitals, the efficiency of the industry is impaired by the lack of competition. This affects the productivity of labour and the quality of output since consumers cannot effectively register their preferences. The labour requirements and costs of lower education services have risen strongly in spite of decreases in enrolment and growing complaints about the quality of education.

Government subsidies to the education of lawyers and medical doctors have resulted in growth rates of supply outstripping growth rates of population and income by wide margins. Questions have been raised about the social returns to the work which this expanded manpower has been doing. In medicine, the excess supply has been handled by the use of non-market rationing devices which carry with them inefficiencies and inequities. In the field of real estate brokerage, the government granting of licensure rights has resulted in the exercise of some undesirable restraint on entry.

CHAPTER 14

SCALE ECONOMIES, ADJUSTMENT, INNOVATION, FREE TRADE, FUTURE RESEARCH, AND DATA PRIORITIES

In this chapter we follow the pattern used in chapter 13. Topics concerning industrial organization and other policy-relevant characteristics of service industries are introduced and set in a policy context. The main findings on these topics from each of the Fraser Institute service sector projects are summarized briefly. Each section concludes with some generalizations made by drawing on these summaries.

ECONOMIES OF SCALE AND SCOPE

Economies of scale due to plant size encourage the concentration of industries. Depending on the extent of these economies, they can make it possible for one plant to supply all of Canada or even the North American continent. These traditional types of scale economies have obvious implications for the regional distribution of employment and income and have provided the rationale for Canadian protection. This protection has resulted in the development of branch plants of U.S. firms which found that at the Canadian tariff-protected price it was more profitable to produce the goods in Canada than import them. This was so in spite of the fact that at the small Canadian plant average costs were higher than in the United States.

Economies of scale due to the length of runs occur when within a given sized plant the number of different types of goods produced is decreased. It is as if each product could be produced under conventional scale economies of its own. This phenomenon has been identified as the cause of the rapidly growing world trade in goods that are very close substitutes, such as automobiles and clothing. It was also seen as an explanation of the fact that the formation of the European Economic Community and free trade among its members did not result in the concentration of industries. Instead, all

countries tended to retain the industries they had before. Free trade merely forced shrinking the number of product lines produced within each plant. These types of scale economies have also made it economic to have world market mandating. This takes place when firms produce a specific product model only in one location, as when only one model of an automobile is produced on one assembly line in a plant. These economies have reduced the regional concentration of industry and raised hopes about the possibility of having economic growth spread widely and evenly through all regions of Canada and the world.

However, in recent years the application of computers and sophisticated production management techniques has reduced the importance of scale economies due to the length of runs. Automobile producers can economically manufacture a range of models on one assembly line and do not need one such line for each model. This has restored incentives for the regional concentration of industry, with obvious implications for regional development.

Also important for economic development planning are economies of agglomeration. They may well be the most important determinant of the finding that labour productivity is an increasing function of the size of urban areas and have been interpreted as the cause of the economic dominance of large, densely populated regions in all industrial countries of the world.

It should be clear from this cursory description of the different types of scale economies that enormous difficulties exist in measuring each, due to both conceptual problems and the lack of data. Certainly, within the constraints of the service industry project, individual authors have not been able to carry out rigorous studies of these economies. The results of their reviews of the literature and more casual empirical work are as follows.

Industry Studies

1. Globberman, in his examination of telecommunications, reports on numerous studies of economies of scale in the industry. While there is evidence that there are such economies, they do not extend over the output produced by major terrestrial carriers. Small and large carriers have very similar productivity levels, which implies that economies of scale are not overwhelmingly large. Estimates of product specific economies of scale and economies of scope are both limited and contradictory.

2. Chant found that larger enterprises in the deposit-taking industries account for an extremely large proportion of total assets. He attributes this preponderance of large firms to the benefits from asset diversification across both types of instruments and regional and other characteristics of borrowers. The regulatory role of government and especially its function as

the provider of safety of deposits has encouraged the large size of firms since the government can be counted on not to let large banks fail. Computer technology had once been believed to contribute proportionately more to the growth of large firms. However, technology has turned out to be quite divisible, and medium- and small-sized firms have benefited as much as large institutions.

3. Acheson and Ferris found that small firms dominate in retailing and large firms in wholesaling. The computerization of activities has initially benefited large firms and wholesalers in the functions related to the maintenance of credit records, personnel files, accounting, and inventory control. However, more recent computer technology has extended most of these benefits to smaller firms, and it is likely this trend will further strengthen the competitive position of small relative to large retailers.

4. In his study of the legal profession, Gill notes that law firms are generally small, and while they have adopted computers more slowly than their large rivals, recent advances in computers and software have permitted them to close the technological gap. The historic distribution of firms by size is likely to remain unchanged, given the current legal and regulatory environment.

5. West found little evidence that economies of scale will enhance the productivity of research and teaching in so-called centres of excellence in universities.

6. According to Palda, the size of advertising firms and their ability to specialize are constrained by the requirement that they cannot serve rival clients in the same industry. He believes Canadian firms in the industry have reached maximum efficient size.

7. In the insurance industry, economies of scale or scope are not pervasive, according to Bernstein and Geehan.

8. Scarfe and Krantz attempted to measure scale economies in the Canadian hospitality industry. In cross-sectional data they found no evidence to reject the notion that there are constant returns to scale. However, on the basis of time series combined with cross-sections, there was some evidence of the existence of scale economies though their effects appear to have been modified by the simultaneous inward shift of the production function. The authors are cautious about the validity of their findings because the data failed to make an adequate distinction between full- and part-time workers in the industry, essential in the estimation of labour productivity as a function of scale and through time.

9. In the engineering industry studied by Hammes, the importance of economies of scale has diminished and the returns to specialization increased. This may be the main explanation of the fact that the number of small firms with less than five employees has grown, and the growth rate of

each has been greater than that of larger firms during the period 1978 to 1984. The four largest firms in the industry account for 30 percent of total output.

10. Easton found that a few available studies of schools show the existence of scale economies. However, he is skeptical about these results since they make inadequate adjustments for the preponderance of private schools in the population of small schools, transportation costs, and quality of output. When schools are aggregated into districts, diseconomies of scale appear.

11. Economies of scale are non-existent in the industries of personnel and security services studied by Maki. As a result, the firms in the industry are small and in recent years have declined in average size.

12. In all the transportation industries studied by Palmer, the trend has been toward increased specialization designed to fill narrow market niches. He found some limited scale economies in the dispatching functions of taxi companies, which has encouraged concentration.

13. In the real estate brokerage industry, Jenkins found that in recent years the importance of large national and even international firms has increased. He attributes this development to the economies they were able to enjoy through the computerization of marketing activities. Existing institutional restraints on MLS use prevent smaller firms from enjoying the same economies in spite of the availability of micro-computers.

Generalizations

Available evidence for most of the service industries surveyed suggests that the optimum scale of operations is small relative to the size of the industry and most markets. Evidence also suggests that economies of scope combined with economies of scale are not important. Examples of industries for which these conditions are characteristic are legal, advertising, engineering consulting, personnel and security, retailing, education, health care, road transport, and hospitality services. In these industries, therefore, the incentives for regional concentration are weak.

In some of the operations of the service industries, economies of scale do exist, as in telecommunications, banking, insurance, and rail transportation. However, available evidence suggests that optimum scales of operation have been reached and that they have not resulted in concentration greater than population and the business that these industries serve.

The evolution of computer technology has initially favoured concentration of some functions in corporate headquarters. However, the latest development of micro-computers has offset some of this tendency and

returned some of the benefits of decentralized control and decision making to retail stores and transportation.

INDUSTRY ADJUSTMENTS AND PRODUCTIVITY DUE TO INNOVATION

For an adequate understanding of how important recent technological innovations impact on regions and specific industries, it is useful to examine the way service industries have adjusted to the challenges of new technology, especially the information revolution driven by computers and electronic communications. The main issues are whether they have raised productivity, been labour saving, resulted in the development of new products, and changed industrial organization. Most of the analysis in other sections of this report bear on this topic, and the following highlights some developments which have not been mentioned elsewhere.

Industry Studies

1. In the telecommunications industry studied by Globerman, the technological revolution has resulted in major changes in the industry. Precise measurement of the effects on productivity is difficult since they have been linked with the exploitation of economies of scale and scope and the development of new types of services. However, productivity gains in the industry have been much above the national average. In total, the new technology has been labour saving and has increased the already existing tendency of the industry to employ workers with more than average skill levels.
2. The new technology has had major influences on the deposit-taking industry. Chant found that during the period 1961 to 1972, innovation occurred mainly in the internal work procedures of the firms, and they generated large increases in the output per worker. More recent innovations extended to the offering of new services and financial instruments. The rationalization of clerical procedures has decreased the demand for labour with low skills while product innovation has increased the demand for those with high skills. This has increased the margin by which the industry's average skill levels exceed those of the general labour force. However, it is not clear whether innovations in the industry have changed the total labour requirements of the deposit-taking institutions for while the clerical functions are carried out more efficiently, the product innovations have also increased the total demand for this type of work.
3. In the government sector studied by Auld and Kitchen, measurement of the effects of new technology on output are hampered by the lack of adequate data. However, they found that the share of total spending on labour

has decreased, suggesting that a substitution of capital for labour has taken place.

4. Acheson and Chant found that the new technology has resulted in increased centralization of the information gathering functions of the retail and wholesale business through the acquisition and use of scanning devices and computers. At the same time, it has permitted the decentralization of decision making which is based on the use of this information. The retail sector has simultaneously been transformed institutionally by the trend towards marketing aimed at specialized sectors of the market for consumers. The effect of these changes on productivity has been marginal since value added in the retail sector has grown only slightly during the period 1972 to 1985. However, in the wholesale sector, productivity gains have kept pace with those in manufacturing.

5. In the legal profession studied by Gill, the introduction of computer technology has resulted in substantially greater productivity of clerical workers and decreased demand for them. On the other hand, spending on persons with paralegal training has increased. The share of labour in total expenditures has remained unchanged.

6. West notes that productivity in the education of university students has remained constant. Modern technology has substantially reduced the cost and increased the speed of some clerical functions associated with student registration and the scheduling of courses and examinations.

7. According to Palda, the advertising industry has been able to use modern technology to increase monitoring of shopping behaviour and therefore to provide customers with more, better, and lower cost information about the effectiveness of their product. The organizational structure of the industry has not been affected by the new technology. Advertising services to business have enjoyed moderate gains in productivity due to the use of new technology. The entire industry is characterized by the high average skill levels of its employees. It employs relatively large numbers of university graduates.

8. In the insurance industry studied by Bernstein and Geehan, the introduction of new technology has contributed to an annual average rate of productivity growth of about 1 percent between 1962 and 1977. However, in the life insurance industry alone, annual gains in productivity were 3.95 percent, of which technical change accounted for 65 percent. In contrast with the financial sector, the insurance industry has lagged in the introduction of new products which take advantage of the new technology.

9. The main impact of computer technology on the engineering service industries studied by Hammes has been the marketing of engineering designs which are not directly associated with major capital expenditure, a phenomenon known as the unbundling of services. However, the produc-

tivity of engineers appears to have risen more slowly than that in the overall economy, though Hammes notes that this result may be due to difficulties associated with an appropriate definition of output and the deflation of fee income.

10. Easton found that the real cost of elementary and secondary education per student has risen at an annual average rate of 6 percent in recent decades. New technology does not seem to have an impact on the input requirements of the education industry. Since there are no adequate measures of the output of the school system, it is impossible to measure productivity in this sector.

11. Maki used earnings as a proxy to measure productivity in the personnel and security services industries. He found that they rose more slowly than in the rest of the economy although he is uncertain about this result since he could not adjust the earnings data for fringe benefits. The technological changes appear not to have had much influence on the productivity of the industry.

12. The railway and trucking industries enjoyed increases in real factor productivity in recent decades, but by some measures the real productivity of passenger bus services has declined. Palmer expresses concern about the reliability of the latter finding since there are not data available on passenger-kilometres in the bus industry.

13. Jenkins found that the new technology has had a profound effect on the real estate brokerage industry. It has increased greatly the productivity of the marketing and listing part of the business. There has been experimentation with the use of TV technology and computer sorting to bring information about real estate property to individual customers, processes by which technology substitutes for the work of agents. Productivity in the industry has risen as a result, particularly in the clerical aspect of marketing functions. However, gains have been constrained by practices which limit the average sales per agent to five per year.

14. In the hospitality industry, the application of the new technology has been and is likely to be limited, find Scarfe and Krantz. The industry will continue to rely on workers characterized by relatively low skill levels, part-time employment, low wages, and a preponderance of females.

15. According to Brown, the new technology of medical care has resulted in a steady increase in the skill requirements of workers in the health care field. Some particularly powerful and expensive diagnostic devices have increased the early diagnosis of some illnesses and increased cure and survival rates. The measurement of productivity in health care is almost impossible, given the difficulties associated with defining and measuring appropriate units of output. As a result, the decreased productivity implicit in growing numbers of ever more highly-trained workers by

given sized hospitals or care homes is a misleading index. The quality and quantity of care of patients has also increased.

Generalizations

Competition has forced all the service industries to adopt the new technology of computers and telecommunications. The transition has generally been smooth. The demand for some types of labour, particularly in the clerical fields, has fallen. The demand for more highly-skilled workers generally has risen since the technology permitted the development of new, skill-intensive service products. Increased business activities have lessened the decrease in the demand for the unskilled.

For economists and policymakers, the most interesting aspect of the new technology is its impact on productivity. All of the service industry studies note the difficulties that exist in the measurement of service output quantities and quality which create much uncertainty about the reliability of findings concerning productivity changes in these industries. Uncertainty about the measures of productivity are also due to changes in the mix of labour input with respect to education levels and the use of part-time workers. These changes have important implications for the assessment of labour productivity, and they are not always documented properly in available statistics. However, the unqualified use of available evidence suggests that experiences of industries differ widely.

At one extreme, productivity gains have been above the economy-wide norm in the telecommunications, trades, railways, and trucking industries. At the other, they have been below that norm in passenger bus, consulting engineering, and education services.

In the deposit-taking and retail service industries, the authors presented analytical models and some empirical evidence about the effect of technical change that differ from the more traditional approaches. They show that changes in the industries' technology and output mix have raised the productivity of other industries while they have not affected traditional measures of productivity for the industries themselves. Thus, more efficient, reliable, and speedy payments mechanisms and new instruments for borrowing and lending created by banks have benefited firms, private consumers, and other users. Consumers have benefited from more targeted outlets, more comfort, and better stocks in retailing. It is likely that such productivity gains have also been enjoyed by the users of other industries' services like advertising, personnel and security, and hospitality at the same time that the productivity of these industries has grown very little.

In the health care sector, measured productivity has fallen through time, but this is very likely due to the inadequate measurement of the industry's output and inputs, as we noted in other contexts above.

In some industries, like education, productivity gains have been limited largely to certain areas where the new technology could be applied readily, as in the registration of students.

TECHNOLOGY AND FREE TRADE

Canada is a wide open economy which faces stiff competition from abroad but also has the opportunity to gain from exports. Of great interest to policymakers is the likely impact of the new technology and of free trade with the U.S. on the prospects for exports. The information on this question contained in the industry studies reviewed here is limited for two reasons. First, by their very nature, services cannot be traded directly as are goods. Their export requires that they be embodied in material substances, whereupon the trade issues become the same as those facing goods. Alternatively, the services are delivered by firms and persons who operate abroad during a temporary stay, or they are absorbed by foreigners in Canada, as are for example, tourists. For these people services, the international policy issues concern the right to establishment, national treatment, and temporary work permits.

Second, the question of international trade in services has been the main subject of inquiry by the Institute for Research on Public Policy, and Fraser Institute authors have been asked to minimize their work in this field. Nevertheless, there are some insights on this topic found in the individual industry studies.

Industry Studies

1. Globerman noted that due to existing regulations international trade in telecommunications services has been minimal. However, further deregulation, the existence of the necessary physical plant, and the free trade agreement with the U.S. will open opportunities for trade.
2. The main impact on the advertising industry which stems from abroad is seen by Palda in the so-called globalization of marketing and advertising of consumer products. On the one hand, grand marketing and advertising strategies are planned and executed centrally in the country in which the products originate. On the other, local conditions tend to require modification of these and local expertise is required. There is no way to predict the ability of the Canadian advertising industry to capture its share of this advertising expenditure.
3. Exports by the engineering industry are a small but growing section of total fee income, found Hammes. Exports have been concentrated in economic sectors where the Canadian industry has been specialized, such

as forestry, mining and hydro-electric dams and equipment. The industry is building its trade on the advanced technology of these industries in Canada.

4. Jenkins found that the real estate brokerage industry makes some payments abroad. They take the form of franchise payments but in recent years have amounted to no more than 0.4 percent of total outlays of the industry.

Generalizations

The service industries have quite readily adopted the new computer and communications technology. In deposit-taking, real estate brokerage, trade, legal, and some others, the initial benefit has been to large firms and internal, clerical functions resulting in savings on labour devoted to repetitive clerical functions. In more recent times, the availability of micro-computers and software has permitted these benefits to spread to smaller firms. In addition, the development of new service products made possible by computers and communications technology has become widespread, especially in retailing, banking, real estate brokerage, and health care. Deregulation taking place at the same time as new technology becomes available has resulted in increased specialization as well as offering new products in rail and truck transport. Education has rationalized some clerical functions.

International trade is not an important aspect of Canada's service industries. In some industries where Canadian firms have a comparative advantage, the main concern is with the right to establishment, national treatment, and the issuance of work permits for their personnel. Industries in this category are banks, some retail chains, legal services, consulting engineers, and trucking. Competition from the presence of foreign subsidiaries already exists in Canada. It is unlikely to become much stronger as a result of the free trade agreement with the U.S.

AGENDA FOR FUTURE RESEARCH

Researchers who have dealt at length with the economics of individual service industries are in a good position to suggest what areas of knowledge are needed for a greater understanding of the industry. Researchers of the service industries project have been asked to set out an agenda for research priorities. Their findings may be summarized as follows.

Industry Studies

1. Globerman identified as research priorities the influence of rate rebalancing relative to the consequences of perpetuation of cross-subsidies built into the current rate structure; the likely direction of international trade flows.

2. Chant considers of great importance research on the question of whether deposit insurance encourages “irresponsible” lending; and the optimal restrictiveness of financial markets, in particular the merit of retaining the distinctiveness of the “separate pillars” of the financial industries.

3. In view of the current debates, Auld and Kitchen attach great priority to research that sheds light on the issues surrounding contracting out of production in its different forms. One aspect of the problem concerns the existence of some functions that should remain totally in the public sector.

4. Acheson and Ferris would like to see research on questions concerning the merit of comparable worth legislation; the impact of the new competition act with some emphasis on the role of retail price maintenance practices on vertical and horizontal competition; and the consequences of permitting private marketing of alcoholic beverages.

5. An understanding of the insurance industry would gain, according to Bernstein and Geehan, from research on economies of scale and scope in the property and life insurance industries; the estimate of demand functions for different types of insurance which meshes with demographic characteristics of consumers; re-estimate of the insurance industry’s output which includes imputed interest as part of value added.

6. Easton attaches priority to studies that establish the financial effect of shifting students from public to private schools; the quality of education as an output; and the value of education as an input in the production of Canada’s GDP.

7. Maki would like to see a study of the effect of regulation and deregulation on the personnel and security agencies.

8. Understanding of the Canadian entertainment industry would be increased, according to Watson, by general equilibrium studies that estimate the cross-elasticities of demand for various types of entertainment. He also thinks it desirable to study who the ultimate beneficiaries of current subsidies are.

Generalizations

The most frequently suggested areas for further research concern the effects of government policies on efficiency and welfare. Topics mentioned were privatization and deregulation of service industries. In addition, the researchers saw the need to study the effects of new legislative initiatives like equal opportunities for labour, competition law, and tax policies.

It was suggested that economies of scale and scope be studied for the insurance, financial, and leisure sector. The two authors concerned with education deplored the absence of adequate recent studies of social returns to education.

PRIORITIES FOR DATA COLLECTION

Economic theorizing without empirical testing and measurement is of extremely limited value to understanding the economy and to the design of welfare-improving policies. Practical limits on theoretical work that lead to testing and measurement are set by the scarcity of economic data, particularly in the service sector.

Yet, it is clear that the cost of data collection is very high and expected returns often are less than the costs. This dilemma requires Statistics Canada to make many difficult decisions about the optimum allocation of its resources for data collection. To help Statistics Canada in this difficult task, researchers of the service industries were asked to identify priorities for the collection of data which they believed would permit better theorizing, measurement, and ultimate understanding of the industries they studied. The following summarizes their recommendations without providing the rationales they have advanced or their speculation about the cost of collection.

Industry Studies

1. Globerman would like to see disaggregated data for trade in telephone services and other categories of telecommunications separate from postal, telex, and similar transactions: output data for interconnect, cellular radio, and reselling segments of the industry.
2. Chant thinks it useful if data could be collected on the number of full- and part-time employees in the deposit-taking industry.
3. Information on the wages and salaries of government employees relative to those working in the private sector, including breakdowns by occupations, are seen as the data priority by Auld and Kitchen.
4. In the trade sector, Acheson and Ferris would see great benefits from the collection of consistent time series that shed light on industrial organization and time-use studies that bring out the amount of time shoppers use in this activity.
5. West notes data gaps on the volume and quality of education received by Canadians abroad and foreign students in Canada: non-market benefits of education, private returns to professional education, drop-out rates of students by universities, the rate of substitution and complementarity of formal education, and on-the-job training.
6. Palda would like to see data on the medium-sized and small firms that supply the advertising industry in Canada: corporate financial statistics and measures of foreign trade and ownership of the industry.

7. Statistics Canada is requested by Bernstein and Geehan to treat independent insurance agents and brokers as part of the insurance industry and not as other industries.

8. Scarfe and Krantz see as a data priority the collection of statistics on capital stocks and full- and part-time employees of the hospitality industry.

9. Real output measures of the engineering industry could be improved, according to Hammes, by data which distinguish between fees that are derived on a time schedule and on a project basis; the reporting base for business categories should be narrowed to permit the identification of new and traditional business services; international trade statistics should separate engineering from other types of consulting business.

10. Maki suggests that data be made to separate employment agencies from personnel suppliers, more consistent data be generated on establishment size, and input data and output data be made consistent for the measurement of productivity.

11. In the transportation industry, Palmer finds a lack of information on specialty services, which have grown rapidly in recent years.

12. Watson would like to see greater time consistency in the surveys of leisure expenditures by Statistics Canada.

Generalizations

The most widely expressed suggestions for further data collection concerned three broad areas. First, greater disaggregation of industry statistics on the basis that the new technologies and economic development generally have resulted in increased specialization and growth in parts of the industries which in the past were very small or did not exist at all.

Second, several authors deplored the absence of data on the characteristics of employees with respect to full- and part-time employment. Some authors also suggested the need for data on other inputs used by service industries, especially capital.

Third, researchers who found that much technological change in some service industries primarily affected the efficiency of household production, as in retailing, finance, and entertainment, saw a need for more time-use studies which would permit measurement of this effect.

At a more general level, research priorities suggested were for more comparability of survey data through time and more information on international trade generally.

CHAPTER 15

SUMMARY AND MAJOR CANADIAN POLICY ISSUES

In this concluding chapter we return to the policy issues discussed in the review of the literature in part one. In particular, we consider the possibility that the growth of the service sector involves a serious market failure which requires government intervention, that it results in unemployment, the loss of the middle class, and balance of payments problems. For this purpose, we draw on the analytical and empirical parts of this as well as the other studies in the Fraser Institute service sector project.

It is to the credit of Canadian politicians and technocrats that they have not been influenced by the literature reviewed in part one which predicted that growth of the service sector would produce many harmful effects. There have been no major policy initiatives to influence the growth and direction of development of the service sector. At the same time, it was wise, in the light of the challenging ideas in the literature, to initiate a major study of the service sector which could provide a basis for rational policy-making in this field in the future.

The bulk of work undertaken by Fraser Institute researchers on the service sector project and in this study is objective and scientific. Analytical conclusions and empirical findings are presented carefully and can be replicated by other scholars. This may limit the audience of these studies, but the cost is worth the benefits in terms of the increased scholarly acceptability and usefulness of the knowledge which they have created. The heart of the findings of the studies may well be made available to broader audiences by special efforts of the authors and the work of professional popularizers.

While the vast bulk of the knowledge on the service sector worked out for this project and book is neutral and scientific, the policy sections cannot and do not have the same characteristics. The very nature of specific policy analysis produces this result. Try as one may, recommendations for specific

policies involve so many unknowns that science ends and art and politics take over. This is why, in the project studies and this book, the authors were reluctant to make specific recommendations and made very few of them. When recommendations were made, pro-market biases intruded.

General economic policy recommendations, on the other hand, are on much firmer ground. Economists know with a great deal of confidence the effects of price controls, taxes, regulation, and subsidies. This knowledge is at the centre of all the Fraser Institute's work. But it goes further. It is part of the essential tool kit of the vast majority of economists. For this reason, the economists who wrote the service sector project studies have presented many more general than specific policy recommendations. The following chapter is in the same tradition. Its main emphasis will be on dealing with the big policy issues surrounding the growth of the service sector.

SOME GENERAL BACKGROUND

All the studies in the service sector project were carried out in the presence of a number of constraints. Readers will find it useful to know what they were because they set the tone and direction of much of the work that was done. They also importantly determined what should have but could not be done.

Limits of Available Information

The empirical work on the service sector in Canada has had to rely on existing data generated by Statistics Canada under the United Nations system of national accounts. This system has been designed to capture data on material production with much greater detail than on service sector output. During 1988, some special compilations of service sector output and employment have been generated by Statistics Canada. While they were useful, they did not provide insights of a major nature about the issues to be discussed below.

During the post-war years, the definition of the concept of services has undergone a rather fundamental change. Fuchs and Baumol (1960) articulated the perceptions which had dominated the thinking of economists in the years before and during the design of the United Nations system of national accounts. In this approach, thinking about services centred on the description of their *characteristics*, the most important of which were their intangibility and non-storability. Since the publication of a fundamental paper by Peter Hill in 1977, focus of the definition of services has turned to the *production process* characterizing them. Thus, services are considered to involve a change in the condition of a person or object. This is carried out by the agent delivering the service, who has to be in close personal con-

tact for this purpose. This new approach to thinking about services is still under scrutiny by economists. It may be some time before it will influence the collection of current data or the re-estimate of past service sector growth, if it ever will.

The Problem of Heterogeneity and Generalizations

The most outstanding impression produced by the study of Canada's service sector is its heterogeneity. It contains large industries, like retailing and transportation, and small industries, like accounting and the legal profession; labour intensive industries, like business consulting, and capital intensive industries, like telecommunications; industries with small rates of productivity growth, like hotels and restaurants, and with high rates of productivity growth, like airline transportation; industries with relatively large numbers of women, like restaurants, and industries with relatively few women, like security personnel; industries with high rates of pay, like medicine, and with low rates of pay, like domestic services. The list of such characteristics is very long and while each has been addressed in the context of some policy issue, the very diversity of the service sector makes it difficult to generalize about any and to reach strong conclusions about policies. The following summary reflects this fact.

Policies in the Age of Deregulation and Privatization

As a final introductory remark, it should be noted that the service sector project underlying this report was undertaken in a new intellectual environment concerning the effectiveness and desirability of economic policy. As we discussed in more detail in chapter 10, until the mid-1970s thinking about the role of government had been under the strong influence of Pigou and Musgrave. In the models of these authors, governments could and did deal efficiently with market failures and needs for income redistribution and public goods.

The validity of these models has been questioned empirically and on very fundamental grounds concerning the nature of man and political institutions. Out of this questioning came the models of Buchanan, Tullock, Stigler, Downs, Olson, and Niskanen. They have raised serious questions about the ability of modern political and bureaucratic systems to correct market failures, provide public goods, and make changes in income distributions that increase overall welfare.

A large fraction of the economics profession now believes that as a result of the behaviour of politicians and bureaucrats who attempt to maximize their own welfare, government policies serve the interests of special groups in society, or bureaucrats, or politicians, or all three, rather than the public

interest in general. Analysis supporting this new model of government is found in all the industry studies in the Canadian service sector project under review here. The new model has also made authors very reluctant to produce recommendations for active policies. Instead, it has led them to recommend policies which result in less government involvement and more competition in the service industries.

Recommendations for the deregulation of industries dominate the studies of the transportation, telecommunication, banking, and insurance industries. Recommendations for reduction of the legislatively protected powers of self-regulation stand out for the medical, legal, teaching, accounting, real estate, and other professions studied. Calls for privatization of many activities are found in the studies of general governments. Private and competitive systems for the delivery of the mail, education, and medical services are urged for these important service industries.

It is clear that these types of policy recommendations are not considered desirable by politicians and bureaucrats whose interests are damaged by them and by those who have retained their faith in the old model of government. These individuals will not like the conclusions reached by the Canadian service sector studies in general and of individual industries in particular.

DEINDUSTRIALIZATION AND PRODUCTIVITY

The process of the adjustment from the inflation of the 1970s to price stability in the 1980s was accompanied by high rates of unemployment, an absolute decrease in industrial and natural resource production, slowdown in productivity, and an accelerating growth of share of service sector employment and output in Canada and the rest of the industrial world. These developments spawned a number of studies which extrapolated these trends and concluded that Western market economies were headed for persistently high unemployment rates, sharply reduced productivity growth, the inability to pay for material imports, and the destruction of the highly paid middle class of unionized workers in the traditional goods producing industries. Many of these studies identified the growth of the service sector as both the cause and manifestation of a pathology of market economies which required innovative government initiatives. Deindustrialization with all its negative social consequences was to be prevented by appropriate industrial policies.

The influence of these ideas and models on public thinking has been significant. They have found ready acceptance among those inclined ideologically to favour government intervention. We believe that they have also been responsible for the large and growing interest in studies of the service industries by international organizations, governments, including the

Government of Canada, and groups of scholars and national income accountants. It is for this reason that we consider of primary importance the findings of the Canadian service sector study project which deal with the issues of deindustrialization, unemployment, and the growth of productivity.

Our study of the Canadian service sector has introduced a fundamental distinction between services which are demanded by consumers in the market, services which are provided by the government, and producer or intermediate input services which are used in the further production of goods and services. The growth and relative sizes of these different types of services have never been measured before, and the findings come as a surprise to many observers. In Canada in recent years, producer services have represented about one-half of all services, consumer and government services one-quarter each. During the last 25 years, the share of producer services in real GDP has risen 20 percent, that of consumer services has remained constant, and that of government services risen just marginally.

Consumer Services

The constancy and relatively small size of the consumer service sector has important implications for one of the arguments in the deindustrialization debate. This argument is that the growth of the service sector reflects an unproductive use of labour and therefore is undesirable. The notion of unproductive personal service production is old and has its origin in the idea that servants provide services for rich people. The labour used in this industry cannot be used to produce food and other tangible goods which can be used to raise living standards and to obtain objects of wealth.

It has been believed widely that the income elasticity of the demand for these services is high and that the overall growth in income would result in ever-increasing shares of real national income being devoted to the production of these services. Our results suggest that consumer services do not absorb an increasing share of national income. One important reason for this development is that modern technology continuously results in the availability of substitutes for services used in the household and traditionally bought in the market, such as vacuum cleaners, refrigerators, washing machines, and electronic entertainment devices.

A second important characteristic of the growth in consumer services in the recent public debate has been the argument that it involves "doing each other's laundry." This process is the outcome of increased female labour force participation rates. Women who enter the labour force tend to reduce or cease the household production of services, such as laundry, cooking, and child care services. With the money they earn, they purchase these same services in the market. Since household production is not recorded in the national income accounts but market production is, the increase in the

female labour force participation rate results in a growth in the service sector and national income which is a statistical artifact. Therefore, past growth in output and welfare in Canada are smaller than the statistics show. This performance of the Canadian economy is alleged to strengthen the case for an industrial policy designed to reduce the phenomenon and to produce greater economic growth by the appropriate redirection of resource use.

Our empirical analysis shows clearly that the share of consumer services in GDP has remained constant. This implies that the substantial *growth* in the share of GDP represented by the *total* service sector is not a statistical artifact but reflects genuine economic growth. In addition, our work has resulted in the first estimate of the magnitude of the growth in the consumer service sector which is attributable to the increase in female labour force participation rates in Canada. Modelling of the household economy and econometric estimates imply the following. Of the total absolute growth in per capita spending on consumer services during the last 25 years, about 65 percent of the increase in the demand for consumer services has been due to the near doubling of the female labour force participation rate from 29 to 54 percent.

We should note that the shift of female workers from household into market production may be presumed to have raised welfare since it was done voluntarily. It was driven by a culturally and technically determined increase in the education levels of women, later family formation, smaller family size, and the increased availability of part-time employment opportunities. As a result of these largely exogenous developments, the monetization of household activities is likely to have raised overall productivity of the economy. Therefore, the estimate of the degree of monetization represents an upper boundary to the extent to which it is a statistical artifact.

The results of the study of the consumer service sector have some important implications for expected future growth in demand for these services. Future growth is limited as female labour force participation rates reach the theoretical limit of 100 percent, and it may be expected to slow down much before it reaches this extreme. If and when female labour force participation rates decrease, there will be a decrease in the demand for consumer services.

Government Services

Critics of government spending often fail to make a distinction between exhaustive and transfer and nominal and real expenditures. The importance of this distinction was brought out by our analysis. On the one hand, the share of nominal exhaustive government expenditures in GDP rose 150 percent

since 1947, while the share of total services rose only 32 percent. On the other hand, the share of exhaustive government spending in real terms rose steadily from 1964 until 1981, when it reached a peak increase of 14 percent. Between 1981 and 1986, the share has fallen so by last year it was virtually back at its 1961 level.

This finding refutes those critics of economic growth who argue that much of the growth in GDP in recent years has been due to the growth in real government spending. This argument implies that the private sector alone would have produced much less growth and that increased government spending is needed to assure future growth in national income. This is clearly not the case. Growth in the private economy has been so strong that the share of real government spending has remained constant over the entire period and decreased sharply after 1982.

It should be noted that the relative decline in the supply of real government services is consistent with the new view of government spending. It is difficult to target this type of spending for the benefit of interest groups which pay for it through voter loyalty and financial support to the party in power. Transfer spending is much more suitable for the achievement of these objectives.

However, we should note that our findings about the development of real government service supplies are subject to three important qualifications. First, the growth in spending is biased downward because of the way in which productivity gains are treated in the estimate of real government output by Statistics Canada. By assuming that real growth in output of government is proportional to the growth in real spending on labour, the estimate neglects gains in the productivity of this labour. Such gains may well have been substantial in medicine and general government services, where modern technology and computers have been used increasingly. Unfortunately, there are no data to permit quantification of this bias.

Second, we do not know what the optimally efficient level of government service supplies is. It is conceivable that the observed reduction in the share has made the system more efficient and that further reductions are needed.

Third, the analysis has abstracted from the question whether government services have been or should be produced by its employees or by the private sector. This is clearly an important issue to be discussed in the section dealing with privatization. If private sector production of government services increases efficiency, a reduction in the share of GDP spent by government would be consistent with the maintenance of constant real public service supplies in the past and in the future.

Producer Services

One of the most important findings of the Canadian service sector study has been the discovery that slightly less than one-half of its output is used in the further production of goods and services and that its share in real GDP has grown over 20 percent during the last 25 years. These facts shed an entirely different light on the debate over deindustrialization, market failure, and the need for government intervention from that found in the literature which assumed that service sector growth came from consumer spending.

The growth in producer services is part of the process of capital deepening in society which has been the source of ever-increasing productivity and living standards in Canada. In particular, the accumulation of human capital in the form of education and of knowledge capital in the form of technical know-how has been accompanied by the growth of specialized firms and professionals. These agents sell their services to others who use them to increase the productivity of their factor inputs. Seen in the broad context of overall economic development as modelled by the Austrian school of economics, the process of capital deepening is typically accompanied by increased specialization, of which service sector growth is an important manifestation.

From this perspective, growth in the service sector is an integral part of economic development and prosperity in Canada. It has the result that the production of goods in manufacturing, agriculture, and mining requires increasingly fewer workers because the use of producer services simultaneously substitutes for labour in these sectors and raises the productivity of those in the industries. There is no theoretical limit short of 100 percent to the amount of services which can be embodied in goods. International trade in goods and all kinds of material substances which embody knowledge is the vehicle through which the bulk of international specialization in the production of services is carried out and generates the traditional welfare gains from trade.

From the perspective of the deindustrialization debate, the shrinking of the goods producing and the growth of the service producing sectors is not an undesirable trend and reflection of market failure. To the contrary, in a market economy, producers who purchase service inputs as substitutes for labour do so because it is profitable and raises productivity as measured by market prices. It is the signal of a healthy and growing economy.

It does not matter to the preceding conclusions that gains in productivity in many service industries have been small and occasionally even negative, as was shown in several of the specialized industry studies in the project. Competition, ease of entry, and lack of effective and prolonged legal protection of innovations in the producer service sector results in the quick dispersion of the economic rent from entrepreneurial activities. The

beneficiaries of the innovation are the users in the material goods industries, other service industries, and the government. In the framework of the service sector project, it was not possible to quantify the effects which increased service sector inputs and innovation have had on the goods producing sector in Canada. The difficult task of doing so should be a top ranking item on an agenda for further research.

Producer services include wholesale and retail activities, telecommunications, finance, insurance, transportation, government, and medical services, as well as the better known business services in the fields of accounting, management consulting, legal, marketing, and personnel management. For this reason, we believe that growth in producer and overall services is not primarily attributable to the information revolution brought about by modern electronic technology and computers. These innovations have pervaded all Canadian industries and undoubtedly have stimulated many productivity increasing new services. However, the process of capital deepening, increasing specialization, and growth of the service sector was going on well before the electronic revolution and is likely to do so once the technology has settled down.

Key Policy Implications

The finding of the importance of producer services has some strong implications for economic policy concerns of Canada's federal and provincial governments. Given the role of producer services in the growth of productivity and international competitiveness, it may well be that spending a given amount of subsidy on producer services generates more employment, output, and productivity in all of Canada and in specific regions than does the more standard spending on production facilities and social overhead.

The preceding and central conclusion is expressed conditionally because, while the principle is clear, it has not been possible to establish whether or to what extent it holds empirically. The main reason for this state of affairs is that almost all government policies and spending programmes have biased effects on the goods and service producing sectors. For example, education spending subsidizes human capital formation, but heavy reliance on income taxation reduces the net return to it since there is no allowance for depreciation, as there is in the case of real investment. Health expenditures raise the value of human capital and government spending on research and development assist the formation of human and knowledge capital. On the other hand, depreciation and depletion allowances, the taxation treatment of securities, many programmes for the guarantee of loans and outright subsidies favour large corporations which are concentrated in the goods producing sector.

Yet, the modern theory of government spending once more provides a certain presumption regarding the overall balance of the bias. Subsidies for the construction of factories, buildings, docks, and other physical objects are much more effective in attracting public attention and the loyalty of identifiable voter groups in specific regions than are subsidies to service industries. Firms in that industry tend to be small and use little physical equipment, so they are relatively invisible. Knowledge and human capital are mobile regionally and even internationally and therefore cannot be counted on to benefit in the longer run the region of interest to politicians. As the specific industry studies in the service sector study show, the telecommunications and transportation industries are obvious exceptions to this generalization.

In general, however, due to all of these factors, it may well be that policies designed to increase overall and regional development have been biased against producer services and in favour of material goods production. If this is the case, Canadian policies for regional development can benefit from a greater emphasis on policies which increase the growth of producer services and through it the productivity and competitiveness of the goods producing sector.

CONTRACTING OUT

One of the most vexing issues which has haunted the study of the Canadian service sector and similar studies in other countries is the possibility that all or a significant proportion of the observed growth in the service sector has not been genuine but only a statistical artifact. The fundamental cause of this possible problem stems from the statistical treatment of service producing workers, like accountants, lawyers, and janitors who are employed by goods producing firms. They are counted as employees of and contributors to the output of the goods producing sector. Thus, if for some reason, firms in the goods producing sector reduce or cease the employment of such service workers and contract for their purchase in the market, the statistical record shows that the service sector has grown and the goods sector has shrunk. Yet, under these conditions, the total output of services in the economy has not changed.

If the process of contracting out and consequent statistical reclassification of service industries output has been responsible for the observed growth of the sector, the theories and policy conclusions presented above are not warranted. Of course, for the same reason, the concerns over deindustrialization and other undesirable consequences of service sector growth would also be misplaced.

The study by McFetridge and Smith attempted to assess the existence and magnitude of the contracting out effect in Canada. They used the

theory of the firm to develop a theoretical model which permitted a study of the decision to produce services in-house or to purchase them in the market. Factors working in favour of contracting out are the process of increased specialization and the accompanying need for large sales which often are not attainable within the firm. Contracting out also permits firms to escape some onerous costs due to employment conditions imposed by unions and legislation. It also reduces the cost of dealing with unstable and unpredictable demand.

There are also influences which reduce the demand for market purchased services and reduce the level of contracting out through time. These arise from the opportunity to monitor work quantity and quality more closely and cheaply when it is done in-house, which is the main explanation for the existence of firms in the first place. Such monitoring is especially important when a firm requires commercial and industrial security. It can be assured most effectively if accounting, legal, marketing, research, and similar activities are undertaken within the firm.

In the modern world, competition increasingly focuses on the development of new and cheaper production processes for standardized goods. It also involves the development of products and services with new characteristics of quality and performance. This competition operates against contracting out and in principle might be strong enough to offset the trend toward specialization and risk-shedding which encourages contracting out.

In light of the preceding theory and of casual evidence, contracting out should not be expected to have been a major factor in the growth of the service sector in recent years. Unfortunately, data needed for a more rigorous empirical study of the contracting out phenomenon are not available. The biggest deficiency stems from the absence of either cross-section or time-series data on the number of employees in the different service occupations in different industries. Therefore, the empirical work had to rely on several much more indirect measures of the phenomenon.

McFetridge and Smith compared the number of individuals in different service occupations reported in the census with the number of individuals working in the service industries as reported in industry and labour force survey data. They also used data on occupational employment by industries and in specialized service firms, like janitors. Finally, they employed input-output data to measure the purchase of business management services by manufacturing firms relative to the value added by goods producing workers.

The evidence implies that while some contracting out has taken place, it has not been major. We may be reasonably confident that the observed growth of the service sector and the explanations of the phenomenon are valid. This conclusion has been strengthened by findings in a study of contracting out in the United States undertaken by John Tschetter of the

Bureau of Labor Statistics. He reports almost the same, negligible effect of contracting out on the growth of the service sector that has been found for Canada by McPetridge and Smith.

EMPLOYMENT AND UNEMPLOYMENT

One of the major aspects of the debate over the merit of service sector growth has been its role in generating employment. Theories of service sector development from the 1930s emphasized that the agriculture and raw material producing sector had gone through a period of increasing productivity and satiation of demand for its output which resulted in shrinking employment. Labour released from this sector found work in the manufacturing sector. However, manufacturing has gone through a similar cycle of productivity gains and demand satiation, releasing labour which found employment in the service industries.

The spectre of our age is that the service industries may go through a similar process of productivity gains, especially through the application of labour-saving technology spawned by the information and electronic revolution, the ultimate satiation of demand and decreasing need for labour. However, there is the basic problem that no private sector industries, like manufacturing and services in earlier cycles, can absorb the labour made redundant in the service sector. A complicating factor in this picture is international trade, which is also driven by major technological advances in transportation and communication and has permitted developing countries with low labour costs to encroach on the markets for manufactured goods and services in the industrialized countries.

These theories have had considerable appeal as an explanation of the upward trend in the unemployment rates in industrialized countries during the 1970s and the very high levels in the early 1980s. They provide yet another rationale for the institution of industrial strategies in support of manufacturing industries, especially in the field of high technology, and for the imposition of restrictions on trade with developing countries.

Our findings about the size and role of producer services in the economy deal effectively with the concern that higher unemployment is the inevitable consequence of growth of the service sector. The service sector is not the residual employer of last resort, supported by government and the unproductive process of doing each other's laundry. Instead, the service sector provides some of the most important ingredients for increases in productivity and the maintenance of international competitiveness. This ingredient is human and knowledge capital. It is marshalled and introduced into the goods producing sector by the myriad professionals and highly-skilled individuals who, typically organized in small firms, constitute the most dynamic part of the service sector. Without this sector, the Canadian

economy might well have been less competitive and unemployment rates even higher.

At a somewhat different level of analysis we should point out that since 1982 the unemployment rate in Canada has fallen dramatically and has reached levels, especially in Ontario and Quebec, which are inconsistent with the predictions of the doomsayers at the beginning of the decade. Furthermore, the same periods of high unemployment have resulted in new analytical approaches to its explanations. Emphasis on the traditional Keynesian demand deficiencies has been replaced by the analysis of labour market distortions. Following international trends in this approach, Grubel's (1986) analysis makes a strong case for the proposition that unionization together with generous social insurance benefits can account for the high and rising unemployment levels during the 1970s. Both the decrease in actual cyclical unemployment rates and the theoretical explanation of its secular growth put into serious doubt the relevance of the idea that service sector growth and unemployment rates are causally related.

THE VANISHING MIDDLE CLASS

The popular media have done much to create the new conventional wisdom that the growth in employment in recent years has been predominantly in the lower and upper ends of the income distribution. The result of these trends is alleged to have been the vanishing of the middle class of workers, most of whom were skilled, unionized workers in the manufacturing sector.

It is easy to understand the origins of this conventional wisdom. One of the most visible economic developments of the last few decades has been the growth of the fast food restaurant chains like McDonald's and Kentucky Fried Chicken. It is well known that these types of restaurants pay low wages and employ large numbers of unskilled persons. At the same time, there has been a widespread introduction of computers in the economy. Persons capable of operating this new equipment are typically professionals in the upper level of the income distribution. The traditional, unionized work-force with its high wages in manufacturing has been squeezed by the massive imports of automobiles and other manufactured goods from developing countries.

In 1987, a U.S. study based on official statistics found strong support for the view of a shrinking middle class or a bimodal income distribution as it also has been called. The finding was used by politicians and critics of market economies as another argument to urge the adoption of strategic planning in both the United States and Canada. This study contributed much to making intellectually respectable the conventional wisdom in Canada today that economic growth in recent years has resulted in the shrinking of the middle class.

No studies of the Canadian labour market have been attempted to replicate or refute the findings from the United States. Nevertheless, our research has led us to suggest that the conventional wisdom based on the U.S. findings is almost certainly false.

First, the U.S. study itself has come under strong criticism. Its results are very sensitive to seemingly minor assumptions which all such studies have to make. Equal or more sensible assumptions imply that there have been no changes in the income distribution during the last two decades.

Second, in the same study critical of the original U.S., findings it was pointed out that the low income earners are almost 90 percent part-time and part-year workers, such as students. Their wage rates are high enough so that full-time work would bring their earnings above the poverty line. Their low incomes are because they cannot devote the normal amount of time to paid employment.

Third, we have noted in our own study that consumer service output, which includes fast food restaurants, has not increased as a share of GDP. The growth of employment in the fast food industry most likely, therefore, has involved a shift of workers from one to another branch of the consumer service industries. The growth in service output generally has come from the producer service sector. Firms in this sector typically sell the services of human and knowledge capital. Human capital in the form of formal education and on-the-job training, of course, are the main determinants of high personal wage rates and incomes.

For all of these reasons we believe there is a strong presumption that the growth of the service sector in recent decades has not changed the income distribution of Canadian wage earners anymore than it has in the United States. If there has been a growth in part-time and part-year employment in the fast food industry, net of the loss of such jobs in other sectors, we consider this a welcome increase in the opportunities for Canadians to participate in the labour market. It is not a development which supports calls for an industrial strategy and a change in the basic market system that has served Canadians so well for so long.

DEREGULATION AND PRIVATIZATION

Until about a decade ago, it went without question that if governments took on the responsibility to supply certain services to the public, the service would also be produced by the government or a Crown corporation. It was also an unquestioned practice for government to grant exclusive monopoly rights to certain firms in transportation and utility industries on the condition that their business be supervised by a regulatory authority which protected the public interest.

The merit of these forms of government involvement in the economy has now come under serious question. Emanating from Great Britain under Margaret Thatcher's leadership, and following an example set in British Columbia's privatization of government-owned firms that had been acquired by a social-democratic administration, a movement towards deregulation and privatization has swept the world. It has won success and praise by technical analysts in almost all circumstances where it has been introduced. Opposition has come mostly from ideologues and those who have tended to lose from the resultant increase in competition. The idea of deregulation and privatization has also reached Canadian politics and economics.

This fact is very noticeable in the policy chapters and some of the more technical analysis of several of the studies in the Fraser Institute service sector project. Authors who analysed the education sectors have recommended strongly that voucher systems be introduced to create competition for teachers and schools. The study of the medical sector recommends more contracting out of services which for no good reason are now carried out by government employees. The study of the government sector makes similar recommendations for many activities. The creation of competition for and the privatization of the post office is suggested in another study.

Authors who studied the much-regulated financial, transportation, entertainment, and telecommunications industries noted that the heavy hand of regulation is a serious obstacle to the further dynamic development of these industries. This is especially so since new technologies have permitted competition to take many new and different forms. In particular, these new technologies have reduced the need for cross-subsidization of services. This subsidization had previously been considered necessary as a matter of social policy in support of certain types of customers and regions and had been enforced by the regulatory authorities.

The arguments for and against privatization and deregulation are complex. This is so not only because they involve difficult technical economic analysis but because they result in the redistribution of income and relatively small and widely distributed gains in efficiency to many consumers. The losers in this redistribution are bound to object to the policies and often use very persuasive language about the public interest in doing so. And, of course, politicians are not too happy with deregulation and privatization since it deprives them of one of their most cost-effective methods for courting special interest groups in their fights for loyal voters.

The relatively dull reading of technical arguments and the presentation of empirical evidence detailing the benefits of the policies are no match against such argumentation in the public arena. Serious students of the privatization and deregulation debate will find much excellent analysis in

support of these policies in the studies of the service industries, most of it in a form which lends itself to popularization and rhetoric.

INTERNATIONAL TRADE IN SERVICES

International trade in services is an important topic for politicians and academics. In the political arena, the liberalization of international trade in services will be discussed at the forthcoming Uruguay Round of negotiations under GATT. Its liberalization is a pathbreaking part of the Canada-U.S. free trade agreement. Academics have attempted to understand and measure trade in services, partly in response to the interests of politicians and the general concerns over deindustrialization noted above. While this study is concerned with Canada's service industries, we included a chapter on international trade because of some useful insights that have arisen from our analysis of the domestic service sector. The findings of this chapter may be summarized briefly as follows.

Much of the concern over trade in services expressed at Punta del Este deals with national restrictions on direct foreign investment in service industries. It is therefore not concerned with trade in services but international capital flows. We expect, nevertheless, that demands for liberalization of these capital flows will be made in the context of negotiations over free trade in services.

In all likelihood, these negotiations will focus on the universal adoption of the principle of "right to establishment under national treatment." This principle simply means that foreign firms in the service industries will be allowed to open business if they meet all the regulatory requirements imposed on domestic firms. This does not mean that national regulation has to be harmonized internationally. It simply means that national rules that apply only to foreigners would be illegal.

The Uruguay Round of negotiations will also deal with demands for the protection of intellectual property rights. They should be considered to be the services of knowledge capital, not services in the conventional sense. Issues surrounding the protection of intellectual property will lead to difficult bargaining. The reasons for this are a lack of understanding of the nature of knowledge capital and a desire by the governments of some developing countries to obtain certain short-run benefits at the expense of uncertain long-run costs.

Nonfactor services are traded through the temporary movement of people across borders, either to absorb or deliver the services. Negotiations for the liberalization of this people service trade will focus on the assured issue of temporary work visas for persons who want to sell their services abroad. During their stay abroad, such persons may be employed by a company either in their home country or in the foreign country. The latter situa-

tion arises regularly as firms maintain control over the operation of a foreign subsidiary by staffing some high level jobs with persons from headquarters. Such control through persons familiar with headquarter policies and practices is so important that, according to many analysts, the value of the right to establishment is diminished significantly without the ready issue of temporary work permits.

In this study we also have identified the only other way in which nonfactor service trade can take place. It requires the embodiment of the services in material substances, which are written or electronic transmission systems. This analytical proposition builds on insights about the nature and magnitude of producer services developed in chapters 8 and 11. In light of this model, services are embodied in varying amounts in all internationally traded material substances. Therefore, trade in what has been traditionally called services is simply part of all trade in goods and material substances.

The embodiment of services model has two important implications. First, traditional theories about the benefits and determinants of trade in goods apply directly to nonfactor and non-people services. Second, free trade in material substances assures the unrestricted exchange not just of goods but also of nonfactor services. The policy implications of this conclusion are clear and direct. Free trade in a wide range of services is assured by conventional free trade in all goods and material substances.

It remains to be seen whether we have been successful in our attempt to analyse the nature of trade in services and to sort out the issues of liberalization through the use of insights gained from the study of the domestic Canadian service sector.

REFERENCES

- Acheson, Keith and Stephen Ferris. *Retail and Wholesale Trade Services in Canada*. Vancouver, B.C.: Fraser Institute Service Sector Project, 1988.
- Adie, Douglas. *The Post Office*. Vancouver, B.C.: Fraser Institute Service Sector Project (forthcoming).
- Ansari, Mohammed I. *A Study of the Structural Effects of an Export Boom in a Resource-Based Economy: The Canadian Experience, 1962-83*. Ph.D. dissertation, Department of Economics, Simon Fraser University, 1988.
- Auld, Douglas and Harry Kitchen. *The Supply of Government Services*. Vancouver, B.C.: Fraser Institute Service Sector Project, 1988.
- Barnock, B., R.E. Baxter and R. Rees. *The Penguin Dictionary of Economics*. Harmondsworth: Penguin Books, 1972.
- Baumol, William. "Macroeconomics of Unbalanced Growth." *American Economic Review*, 57, (1967): 415-26.
- . "Productivity Policy and the Service Sector." Fishman-Davidson Center for the Study of the Service Sector, Discussion Paper #1, April 1987.
- Becker, Gary. *A Treatise on the Family*. Cambridge: Harvard University Press, 1981.
- Bell, David. *The Coming of Post-Industrial Society: A Venture in Social Forecasting*. New York: Basic Books, 1973.
- Bernstein, Jeffrey I. and Randall R. Geehan. *The Insurance Industry in Canada*. Vancouver, B.C.: Fraser Institute Service Sector Project, 1988.
- Bhagwati, Jagdish N. "Splintering and Disembodiment of Services and Developing Nations." *The World Economy*, June 1984.
- Birch, David L. *The Job Creation Process*. Cambridge, Mass.: MIT Program on Neighbourhood and Regional Change, 1979.
- Blackaby, Frank, ed. *De-industrialization*. London: Heinemann Educational Books, 1978.

- Block, Walter E. and Michael A. Walker, editors. *Discrimination, Affirmative Action, and Equal Opportunities*. Vancouver, B.C.: The Fraser Institute, 1982.
- Bluestone, Barry and Bennett Harrison. *The Deindustrialization of America*. New York: Basic Books, 1982.
- . *The Great American Job Machine: The Proliferation of Low-Wage Employment in the U.S. Economy*. Washington: Joint Economic Committee, 1986.
- Boehm-Bawerk, Eugen V. *Capital and Interest: A Critical History of Economical Theory*. 1884, reprinted, New York, 1932.
- Brander, James A. and Barbara J. Spencer. "International R&D Rivalry and Industrial Strategy." *Review of Economic Studies*, 50, (1983): 707-722.
- Brown, Malcolm C. *Caring For Profit: Economic Dimensions of Canada's Health Industry*. Vancouver, B.C.: Fraser Institute Service Sector Project, 1987.
- Browne, L.E. "Taking in Each Other's Laundry—The Service Economy." *The New England Economic Review*. (July/August 1986).
- Browning, H.C. and J. Singleman. "The Emergence of a Service Society: Demographic and Sociological Aspects of the Sectoral Transformations of the Labor Force in the U.S.A." Springfield, Va.: National Technical Information Services, 1975.
- Buchanan, James M. and Gordon Tullock. *The Calculus of Consent: Logical Foundations of Constitutional Democracy*. Ann Arbor: University of Michigan Press, 1962.
- Casson, Mark. *The Firm and the Market*. Cambridge, Mass.: MIT Press, 1987.
- Chand, Ranga. "Growing Service Sector Threatens To Lower Overall Productivity Growth." *The Canadian Business Review*. (Summer 1983a).
- . "Why the Dramatic Increase in Service Sector Employment?" *The Canadian Business Review* (Autumn 1983b).
- Chant, John F. *The Market for Financial Services: Deposit-Taking Institutions*. Vancouver: Fraser Institute Service Sector Project, 1988.
- Clark, Colin. *The Conditions of Economic Progress*. London: MacMillan, 1940.
- Coase, Ronald. "The Nature of the Firm." *Economics*, 4, (1937): 386-405.

- Coffey, W.J. and M. Polese. "Trade and Location of Producer Services: A Canadian Perspective," *Environment and Planning*, 19 (5) 1987.
- Cox, Donald and Rick Harris. "The Service Contents of Canada's Goods Production." Paper prepared for the Fraser Institute Service Sector Project, 1989.
- Daly, Donald J., ed. *Research on Productivity of Relevance to Canada*. Ottawa: Social Science Federation of Canada, 1983.
- Daly, Donald J. and Donald McCharles. *Focus on Real Wage Unemployment*. Vancouver: The Fraser Institute, 1986.
- Department of Regional Industrial Expansion. *Employment Dynamics: Focus on Canada's Service Sector 1978-1984*, Ottawa, 1987.
- Denison, Edward. *Accounting for United States Economic Growth 1929-1969*. Washington: Brookings Institution, 1974.
- . "Is US Growth Understated Because of the Underground Economy?" *Review of Income and Wealth*, (1985).
- Diewert, Erwin. "Productivity in the Service Sector," Paper prepared for the Fraser Institute Service Sector Project, (forthcoming).
- Eatwell, John, Murray Milgate and Peter Newman. *The New Palgrave: A Dictionary of Economics*. New York: Stockton Press, 1987.
- Ehrenreich, Barbara. "Is the Middle Class Doomed?" *New York Times Magazine* (September 7, 1986).
- Feige, Edward L. "How Big is the Irregular Economy?" *Challenge*, (Nov./Dec. 1979).
- Fisher, R.G.D. "Production, Primary, Secondary and Tertiary," *Economic Record*, June 1939.
- Fuchs, Victor. *The Service Economy*. New York: National Bureau of Economic Research, 1968.
- . "An Agenda for Research on the Service Sector." Chapter 12 in Inman (1985).
- Gershuny, J.I. and I. Miles. *The New Service Economy: The Transformation of Employment in Industrial Societies*. New York: Praeger Publishers, 1983.
- Gill, David. *The Market for Legal Services*. Vancouver, B.C.: Fraser Institute Service Sector Project, 1988.
- Ginzberg, E. and G.J. Votja. "The Service Sector of the U.S. Economy." *Scientific American*, (1981).

- Globerman, Steven with Deborah Carter. *Telecommunications in Canada: An Analysis of Outlook and Trends*. Vancouver, B.C.: Fraser Institute Service Sector Project, 1987.
- Gordon, Robert J. "The Postwar Evolution of Computer Prices." NBER Working Paper No. 2227, 1987.
- Grey, Rodney C. "Services and Intellectual Property Rights." Paper prepared for the Institute for Research on Public Policy, Victoria, B.C., 1987.
- Grubel, Herbert G. "All Traded Services are Embodied in Materials or People." *The World Economy*, 10, 3 (September 1987b): 319-330.
- _____, ed. *Conceptual Issues in Service Sector Research: A Symposium*. Vancouver, B.C.: The Fraser Institute, 1987a.
- _____. "Capitalism Needs Risk-, Not Profit-Sharing." *Kyklos*, 40, 2 (1987ciac).
- _____. "Direct and Embodied Trade in Services: Or Where is the Service Trade Problem." in *Trade and Investment in Services in the Asia-Pacific Region: An Emerging Issue*. Edited by Chung Lee and Seiji Naya. Boulder, Col.: Westview Pres, 1988.
- _____. "Issues in Free Trade in Services Between Canada and the United States." *Economic Aspects of Regional Trading Arrangements*. Edited by David Greenaway. Hemel Hempstead: Harvester-Wheatsheaf, (forthcoming 1989).
- _____. *Why is Canada's Unemployment Rate so High?* Vancouver: The Fraser Institute, 1986.
- _____. "The Costs of Canada's Social Insurance Programs." In George Lerner, ed., *Probing Leviathan: An Investigation of Government in the Economy*. Vancouver: The Fraser Institute, 1984.
- Grubel, Herbert G. and David L. Hammes. "Household Service Consumption and Its Monetization: Or, How Much of Each Other's Laundry Are We Doing?" Fraser Institute Discussion Paper No.4., 1987.
- Grubel, Herbert G., Dennis Maki and Shelley Sax. "Real and Insurance-Induced Unemployment in Canada." *Canadian Journal of Economics*. May 1975.
- Grubel, Herbert G. and Zane Spindler. "Bonus Pay Systems for Greater Economic Stability." *Canadian Public Policy*, (June 1984).

- Grubel, Herbert G. and Michael Walker. "Modern Service Sector Growth: Causes and Effects." In *Services in World Economic Growth*. Herbert Giersch, ed. Tuebingen: Moor, (forthcoming 1989).
- Hammes, David. *Shaping Our Nation: An Economic Analysis of Canada's Consulting Engineers*. Vancouver, B.C.: Fraser Institute Service Sector Project, 1988.
- Hammes, David, Jean-Jacques Rosa and Herbert Grubel. "The National Accounts, Household Service Consumption and Its Monetization." *Kyklos*, (1989).
- Henson, H. and M. C. McCracken. "A Close Look at Productivity Growth." *Monthly Economic Review*, Informetrica, (August 1986).
- Hill, Peter T. "The Service Sector: Current State of Knowledge and Research Frontiers," in Grubel (1987a).
- _____. "On Goods and Services." *Review of Income and Wealth*, (December 1977).
- _____. "Do-It-Yourself and GDP." *Review of Income and Wealth*, 25, 1 (March 1979).
- Houthakker, Henrik S. and L.D. Taylor. *Consumer Demand in the United States, 1929-1970, Analysis and Projections*. Cambridge, Mass.: Harvard University Press, 1966.
- Iacocca, Lee. *Iacocca: An Autobiography*. Toronto: Bantam Books, 1984.
- Inman, Robert. *Managing the Service Economy*. Cambridge: Cambridge University Press, 1985.
- Jenkins, Alexander. *Home Sweet Home: Real Estate Brokerage in Canada*. Vancouver, B.C.: Fraser Institute Service Sector Project, 1989.
- Jorgenson, Dale and Fraumeni, Barbara. "The Accumulation of Human and Non-Human Capital 1948-84." Cambridge: Harvard University, 1987.
- Kosters, Marvin and Murray Ross. "A Shrinking Middle Class?" *The Public Interest*, (Winter 1988).
- Kravis, Irving B. *Services in the Domestic Economy and World Transactions*. New York: National Bureau of Economic Research, 1983.
- Krugman, Paul. "Increasing Returns, Monopolistic Competition and International Trade." *Journal of International Economics*, (September 1979): 469-479.
- Kutscher, Ronald. "Some Aspects of Service Sector Growth in the United States." In Grubel (1987a).

- Kutscher, Ronald E. and Jerome H. Mark. "The Service Producing Sector: Some Common Misperceptions." *Monthly Labour Review*, (April 1983): 21-24.
- Lancaster, Kelvin. "A New Approach to Consumer Theory." *Journal of Political Economy*, (1966).
- Lerner, George. *Business Services*. Vancouver, B.C.: Fraser Institute Service Sector Project, (forthcoming).
- MacCharles, Donald. Paper prepared for the Fraser Institute Service Sector Project, Vancouver, B.C.: Fraser Institute Service Sector Project, (forthcoming).
- Magun, S. "The Rise of Service Employment in the Canadian Economy," *Relations Industrielles—Industrial Relations*, 3, 1982.
- Maki, Dennis. *The Market for Employment, Personnel and Security: A Service Sector Analysis*. Vancouver, B.C.: Fraser Institute Service Sector Project, 1988.
- Mark, Jerome H. "Measuring Productivity in Services." *Monthly Labour Review*, (June 1982): 3-8.
- . "Measuring Productivity in Service Industries: The BLS Experience." A Paper presented at a Symposium on Technology and the Services Industries, National Academy of Engineering, Hanover, New Hampshire, BLS mimeo, 1987.
- McEnery, John. "Lord Aldington's Disservice to Wealth Creation." *Economic Affairs*. February-March 1986.
- McFetridge, Donald G. and Douglas A. Smith. *The Economics of Vertical Disintegration*. Vancouver: Fraser Institute Service Sector Project, 1988.
- McKenzie, Richard. "The Emergence of the 'Service Economy': Fact or Artifact?" In Grubel (1987a).
- McKenzie, R.B. with S.D. Smith. *The Good News About US Production Jobs*. St. Louis: Center for the Study of American Business, 1986.
- McRae, James J. and Martine M. Desbois, editors. *Trade and Non-Traded Services: Problems of Theory, Measurement and Policy*. Halifax: Institute for Research on Public Policy, 1988.
- Melvin, James. "Trade in Services and Services in Trade: An Overview of the Theoretical Issues." In Grubel (1987).
- . "Trade in Services: A Theoretical Approach." in McRae and Desbois, 1988.

- Mirus, Rolf and Roger S. Smith. "Canada's Irregular Economy." *Canadian Public Policy*, VII, 3 (1981).
- Momigliano, Franco and Domenico Siniscalco. "The Growth of Service Employment: A Reappraisal." *Banca Nazionale del Lavoro Quarterly Review*, (September 1982): 269-306.
- Murray, Richard. *Losing Ground*. New York: Basic Books, 1983.
- Musgrave, Richard. *The Theory of Public Finance*. New York: McGraw-Hill, 1959.
- Ott, Mack. "The Growing Share of Services in the U.S. Economy—Degeneration or Evolution?" *Federal Reserve Bank of St. Louis Review*, 69, 6 (June-July 1987): 5-22.
- Palda, Kristian S. *The Role of Advertising Agencies in Canada's Service Sector*. Vancouver, B.C.: Fraser Institute Service Sector Project, 1988.
- Palmer, John P. *An Economic Analysis of Canada's Ground Transportation Sector*. Vancouver, B.C.: Fraser Institute Service Sector Project, 1988.
- Philips, L. *Applied Consumption Analysis*. Amsterdam: North-Holland Publishing, 1974.
- Pindyck, R.S. and D.L. Rubinfeld. *Econometric Models and Economic Forecasts*. New York: McGraw-Hill Book Company, 1971.
- Prais, S.J. and Henrik Houthakker. *The Analysis of Family Budgets*. Cambridge: Cambridge University Press, 1971.
- Radwanski, George, Study Director. *Ontario Study of the Service Sector*. Toronto, Ontario: Ministry of Treasury and Economics, 1986.
- Read, L.M. "Canada Post: A Case Study in the Correlation of Collective Will and Productivity." In *Research on Productivity of Relevance to Canada*. Donald J. Daly, ed. Ottawa: Social Science Federation of Canada, 1983.
- Riddle, Dorothy I. *Service-Led Growth: The Role of the Service Sector in World Development*. New York: Praeger Special Studies, 1986.
- Rugman, Alan M. "Multinationals and Trade in Services: A Transactions Cost Approach." Dalhousie University Discussion Paper, 1987.
- Sampson, Gary P. and Richard H. Snape. "Identifying the Issues in Trade in Services." *The World Economy*. June, 1985.
- Scarfe, Brian and David Krantz. *The Market for Hospitality: An Economic Analysis of the Accommodation, Food and Beverage Industries*. Vancouver, B.C.: Fraser Institute Service Sector Project, 1988.

- Schultz, Theodore. *The Economic Value of Education*. New York: Columbia University Press, 1963.
- Schweitzer, T.T. *Personal Consumer Expenditures in Canada, 1926-75*. Ottawa: Economic Council of Canada, 1969.
- Sharpe, Andrew. "The Impact of the Growth of the Service Sector on Aggregate Productivity Trends." Ottawa: Department of Finance, draft paper, 1986.
- Shelp, Ronald K. *Beyond Industrialization: The Ascendancy of the Global Service Economy*. New York: Praeger Special Studies, 1981.
- Smith, Adam. *The Wealth of Nations*. Edited by Edwin Cannan. New York: G.P. Putnam and Sons, 1904.
- Solow, Robert M. "Technical Change and the Aggregate Production Function." *Review of Economics and Statistics*. August 1952.
- Sowell, Thomas. "'Affirmative Action' Reconsidered." *The Public Interest*, 42 (1976): 47-65.
- _____. "Are Quotas Good for Blacks?" *Commentary*, 65(6) (1978): 39-43.
- Stanback, T.M. Jr. *Services: The New Economy*. Montclair, N.J.: Allanheld, Osmun, 1981.
- Statistics Canada. *Consolidated Government Finance*, Ottawa, catalogue 68-202.
- _____. *GDP by Industry*, Ottawa, catalogue 61-213, various issues.
- _____. *Historical Statistics of Canada*, Ottawa, 1983.
- _____. *1981 Census of Canada, Population, Labour Force, Industry by Occupation*. Ottawa, catalogue 92-923.
- _____. *Population: Labour Force—Industry by Demographic and Educational Characteristics, Canada, Provinces, Urban, Rural Non-Farm and Rural Farm*, Ottawa, catalogue 92-921.
- _____. "Selected Cities, 1984," *Family Expenditure in Canada*, Ottawa, catalogue 62-555, 1986.
- _____. *Statistical Yearbooks*, Ottawa, various years.
- Stern, Robert, editor. *Trade and Investment in Services: Canada/US Perspectives*. Toronto: Ontario Economic Council, 1985.
- Stigler, George J. *Trends in Employment in the Service Industries*. Princeton: Princeton University Press, 1956.

- Summers, Robert. "Services in the International Economy." Chapter 1 in Inman (1985).
- Summers, Robert and Alan Heston. "The International Demand for Services." University of Pennsylvania, Discussion Paper #32, The Fishman-Davidson Center for the Study of the Service Sector, 1988.
- Swan, Neil M. "The Service Sector: Engine of Growth?" *Canadian Public Policy*, Supplement, (1985): 344-350.
- Tatom, John A. "Why has Manufacturing Employment Declined?" *Federal Reserve Bank of St. Louis Review*, (December 1986): 15-25.
- Trivedi, Vishpati. *A Study of India's Service Sector*. Ph.D. dissertation submitted to the Department of Economics, Simon Fraser University, 1989.
- Tschetter, John. "Producer Services Industries: Why Are They Growing So Fast?" U.S. Bureau of Labor Statistics, mimeo, 1987.
- Tulpule, A. and Alan A. Powell. "Estimates of Household Demand Elasticities for the ORANI Model." Preliminary Working Paper No. OP-22, Impact Project Research Centre, University of Melbourne, 1978.
- Walker, Michael and Sally Pipes. *Tax Facts 6*. Vancouver, B.C.: The Fraser Institute, 1988.
- Watson, William. *National Pastimes: The Economics of Canadian Leisure*. Vancouver, B.C.: Fraser Institute Service Sector Project, 1988.
- Weiermair, Klaus. *The Labour Market and the Service Sector*. Vancouver, B.C.: Fraser Institute Service Sector Project, 1989.
- West, Edwin G. *Higher Education in Canada: An Analysis*. Vancouver, B.C.: Fraser Institute Service Sector Project, 1988.
- Wicksell, Knut. *Lectures on Political Economy*, first published 1901. Translated into English by E. Classen and L. Robbins, London: 1935.
- Williamson, Oliver. "Transactions Cost Economics: The Governance of Contractual Relations." *Journal of Law and Economics*, (1979): 233-261.

Appendix to References

The following is a complete listing of the books published by The Fraser Institute for the Service Sector Project.

Acheson, Keith and Stephen Ferris. *Retail and Wholesale Trade Services in Canada*. 1988.

Adie, Douglas. *The Post Office*. (forthcoming).

Auld, Douglas and Harry Kitchen. *The Supply of Government Services*. 1988.

Bernstein, Jeffrey I. and Randall R. Geehan. *The Insurance Industry in Canada*. 1988.

Brown, Malcolm C. *Caring For Profit: Economic Dimensions of Canada's Health Industry*. 1987.

Chant, John. *The Market for Financial Services: Deposit-Taking Institutions*. 1988.

Diewert, Erwin, Jim Markusen, Frank Mathewson, Don MacCharles and Rick Harris. *Topics in Service Sector Research*. (forthcoming).

Easton, Stephen T. *Education in Canada: An Analysis of Elementary, Secondary and Vocational Schooling*. 1988.

Gill, David. *The Market for Legal Services*. 1988.

Globerman, Steven with Deborah Carter. *Telecommunications in Canada: An Analysis of Outlook and Trends*. 1987.

Grubel, Herbert G., ed. *Conceptual Issues in Service Sector Research: A Symposium*. 1987.

Grubel, Herbert G. and Michael A. Walker. *Service Industry Growth: Causes and Effects*. 1989.

Hammes, David. *Shaping Our Nation: An Economic Analysis of Canada's Consulting Engineers*. 1988.

Jenkins, Alexander. *Home Sweet Home: Real Estate Brokerage in Canada*. 1989.

Lerner, George. *Business Services*. (forthcoming).

Maki, Dennis. *The Market for Employment, Personnel and Security: A Service Sector Analysis*. 1988.

- McFetridge, Don G. and Douglas A. Smith. *The Economics of Vertical Disintegration*. 1988.
- Palda, Kristian S. *The Role of Advertising Agencies in Canada's Service Sector*. 1988.
- Palmer, John P. *An Economic Analysis of Canada's Ground Transportation Sector*. 1988.
- Scarfe, Brian L. and Murray Krantz. *The Market for Hospitality: An Economic Analysis of the Accommodation, Food and Beverage Industries*. 1988.
- Watson, William. *National Pastimes: The Economics of Canadian Leisure*. 1988.
- Weiermair, Klaus. *The Labour Market and the Service Sector*. 1989.
- West, Edwin G. *Higher Education in Canada: An Analysis*. 1988.