PAPER 4.2

A FRAMEWORK FOR STATISTICS ON EMPLOYMENT IN THE SERVICES SECTOR

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Introduction

Significant developments have affected the social and economic environment in Canada over the last two decades. Growth in economic activity has slowed substantially since the sixties. The unemployment rate has increased over the last three decades averaging 10.2% for the first six years of the 1990s; it is particularly high for the young - ages 15 to 24. The employment share of the service sector has reached three quarters of total employment by 1995, up from 58% in 1969.

The high level of unemployment in Canada and in other industrialized countries has been a major concern for both government and society. Labour market issues, however, cannot be dissociated from the performance and pattern of economic activity generally. To understand these linkages better, the core statistics available on labour markets and the economy need to be supplemented by more detailed data, analysis and insight. It is in this perspective that a working group was recently established at Statistics Canada, bringing together expertise existing in various parts of the agency. The group is expected to define the issues to be addressed, and to plan and undertake studies of a macro and micro nature on labour markets and the economy.

The purpose of this paper is threefold: first to provide background information on the economic and labour market situation in Canada; second, to formulate a number of questions to be explored[1]; and third, to set a framework for the types of labour market statistics that need to be gathered, particularly for the service sector. Provided in the last part of the paper is a description of various labour data bases existing at Statistics Canada. Comments and suggestions will be appreciated. It might also be desirable if at the September meeting we could explore initiatives that can be jointly undertaken.

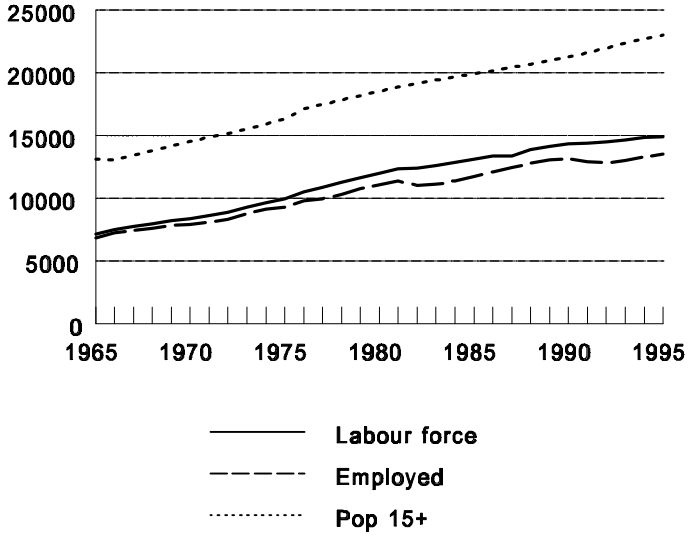
[1]We wish to express our appreciation to Garnett Picot for his valuable contribution to this paper.

A. Labour markets and the economy: background

1. The labour market [2]

General

Figure 1: Overview of labour force



In the first six years of the 1990's, 420 thousand jobs were created in Canada, a 0.5% average annual increase. The average annual increase was four times this rate in the 1980's, and six times this rate in the 1960's. Employment reached 13.5 million in 1995, 58.6% of the working age population, compared to 54.5% in 1970. The working age population increased at a relatively low rate since the early 1980's. The labour force grew more quickly, however, because of a continuation of a longstanding trend towards increased labour force participation evident since the 1960s. Participation rates have been declining gradually since 1990, the first continuous decline in the participation rate since the 1950's

The moderate increase in the working age population over the last six years, coupled with the declines in the participation rates led to a historically low growth rate in the labour force during the 1990 to 1995 period. Despite these developments, the labour force increased over the six years at nearly twice the rate of growth of employment, which has resulted in a two percentage points increase in the unemployment rate from December 1989 to December 1995, standing at 9.8% in July of 1996. The average unemployment rate for the last four decades has risen progressively, from 4.2% in the

[2] Data on the working age population refers to the population ages 14 and over for the period 1945 to 1965, and to the population ages 15 and over after 1965. Some of the widely used time series were adjusted for the period 1966 to 1975 to make them comparable to data published after 1975.

Estimates from 1976 onwards include an adjustment for population which reflects census under coverage and inclusion in the target population of non-permanent residents. These changes should not affect the analysis and trends in this paper.

Table 1 in this paper is based on the adjusted data whereas Tables 3, 4 and 5 use the unadjusted data. There may therefore be slight differences in some of the statistics presented in these tables for the 1960s and 1970s.

1950's to 9.4% in
the 1980's. It peaked at a record level of 11.9% in 1983 (Table 1).

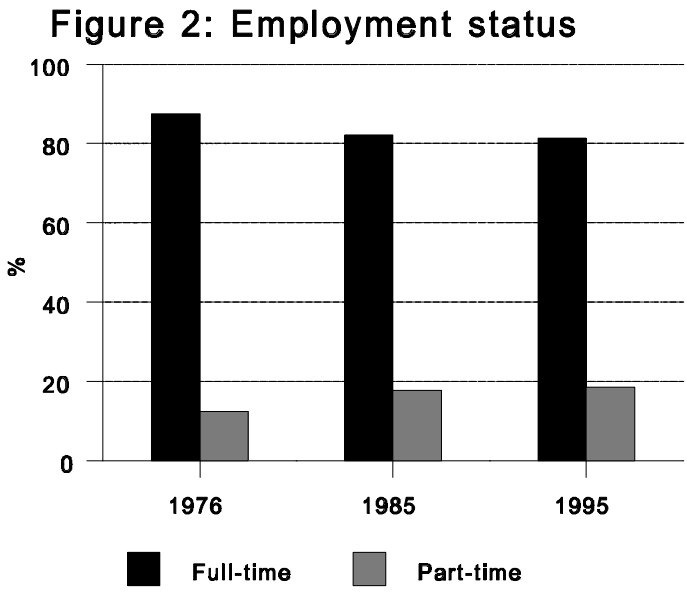
TABLE 1 Overview of labour force, 1960-1995

	Average Annual % Increase			Average Annual Level	
	Population[3] age 15+	Labour Force	Employment	Unemployment Rate	Participation Rate
1950-59	2.3	2.1	1.8	4.2	53.5
1960-69	2.0	2.8	2.9	5.0	55.5
1970-79	2.5	3.6	3.2	6.7	60.7
1980-89	1.4	2.0	2.0	9.4	65.8
1990-95	1.6	0.9	0.5	10.2	65.9

Source: Labour Force Survey (Cat. No. 71-220XPB)

Full-time, part-time and self-employment

For the years 1990 to 1995, part-time employment rose at an average annual rate of 2.5%, a much higher rate than for full-time employment, which rose by only 0.2% per year. However, part-time employment has grown more slowly than full-time employment in the last two years. In the 1980s, the respective annual growth rates were 3.9% and 1.7% on average. Whereas part-time employment was responsible for 29% of net new jobs created in the 1980's, its contribution from 1989 to 1995 was over 80%.



In 1976, the share of part-time employment in total employment was less than 14%. By 1995, it had increased to nearly 19%. Full-time employment declined significantly during the 1981 to 1982 and 1991 to 1992 recessions. In contrast, part-time employment continued to increase steadily.

[3] Population 14 years and over from 1946 to 1965.

TABLE 2 Labour Force: Full-time, Part-time Employment

	Average Annual % Increase		
	Total Economy	Full-time	Part-time
1980-89	2.0	1.7	3.9
1990-95	0.5	0.15	2.5

Source: Labour Force Survey (Cat. No. 71-220XPB)

Self employment increased on average at a faster rate than total employment from 1981 to 1995. Self employment accounted for 16% of all new jobs created during the period, raising its share of total employment to about 11% in 1995 up from 9.6% in 1981.

Age Groups

As noted earlier, high rates of unemployment for those 15 to 24 years of age are a major concern. This group's share of the labour force declined in the 1980s and more so in the period 1990 to 1995. The drop in the 1980s was entirely due to the shrinking of this group's share in the working age population, reflecting the drop in the fertility rate that has been observed since the mid 1960s. In the first six years of the 1990s, the decline stemmed from the continued shrinking of this group's share in the working age population and from a decline in their participation rate. Despite these developments, the unemployment rate for the young, ages 15 to 24, has been historically high in both periods.

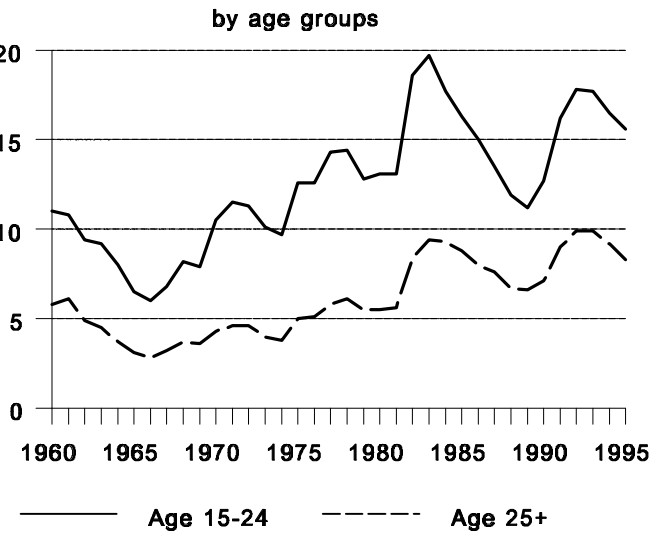
TABLE 3 Labour Force: Age groups, 1960 to 1995

	Employment Average Annual % Increase			Average Annual Level					
				Unemployment Rate			Participation Rate		
	Total	15-24	25 +	Total	15-24	25 +	Total	15-24	25 +
1960-69	2.7	4.1	2.4	5.1	8.3	4.2	55.1	51.0	56.5
1970-79	3.4	4.2	3.2	6.7	11.9	4.8	60.0	60.1	59.9
1980-89	2.0	-0.9	2.8	9.4	15.0	7.6	65.8	68.5	65.1
1990-95	0.5	-3.1	1.3	10.2	16.1	8.9	65.9	65.1	66.1

Source: Labour Force Survey (Cat. No. 71-220XPB)

Over the last fifteen years, the share of total employment represented by those aged 15-24 has dropped substantially, from 24% in 1980 to 14% in 1995. Employment for this group declined at an average annual rate of more than 3% a year in the last six years, continuing the trend started, although at a much lower rate, in the 1980's. The loss of jobs was particularly strong during the recession periods. Employment for this group declined by 0.7 million from 1979 to 1995 while it increased by 3.4 million for those aged 25 and over.

Figure 3: Unemployment rate



The unemployment rate for 15-24 years old averaged more than 16% in the period 1990 to 1995, much above the rate of 8.9% for those 25 years and over. In the 1980's the respective rates were 15% and 7.6%. While the unemployment rate for the group aged 25 years and over increased on average as well, it remained far below the rate experienced by the young.

Gender

Of the 420 thousand net increase in employment over the period 1990 to 1995, the vast majority - some 90% - were filled by women. Employment for men increased marginally by 0.1% a year, compared to 1.1% for women. Furthermore, the small net increase for men came entirely from part-time jobs. In contrast, women experienced increases for both part-time and full- time jobs. For each age group (15 to 24 years of age, and 25 years of age and over) women fared better. For the age group 25 years and over, female employment increased on average at twice the rate for men. Although employment declined for both women and men 15 to 24 years of age, the average annual decline was less pronounced for women than for men - 2.9% for women, compared to 3.3% for men. For both men and women in this age group, the decline was completely accounted for by

the loss of full-time jobs. For the age group 25 years and over, full-time and part-time jobs increased for both men and women.

TABLE 4 Labour Force: Gender

	Employment			Unemployment Rate			Participation Rate		
	Average Annual % Increase			Average Annual Level					
	Total	Men	Women	Total	Men	Women	Total	Men	Women
1960-69	2.7	1.8	5.1	5.1	5.9	3.2	55.1	79.3	31.4
1970-79	3.4	2.4	5.3	6.7	6.6	6.9	60.0	78.3	42.1
1980-89	2.0	1.2	3.3	9.4	9.2	9.6	65.8	77.4	54.6
1990-95	0.5	0.1	1.1	10.2	10.6	9.7	65.9	74.1	58.0

Source: Labour Force Survey (Cat. No. 71-220XPB)

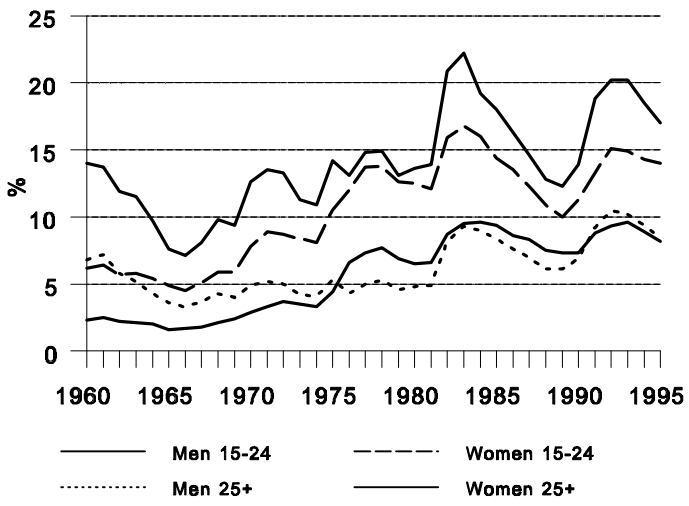
In the 1980s also, employment increased at a higher rate for women than for men - an average annual increase of 3.3%, nearly three times the rate recorded for men. Of the 2.3 million new jobs created in this decade, two-thirds were filled by women. Employment in the age group 15 to 24 declined for both men and women, but at a significantly lower rate for women, 1.2% compared to 0.4% for men. For the age group 25 years and over, employment increased at a considerably higher rate for women, 4.5%, compared to 1.7% for men.

TABLE 5 Labour Force: Gender/Age

	Employment	Unemployment Rate
	Average Annual % Increase	Average Annual Level

Figure 4: Unemployment rate

by age and sex



	Men		Women		Men		Women	
	15-24 years	25 years and over	15-24 years	25 years and over	15-24 years	25 years and over	15-24 years	25 years and over
1960-69	3.3	1.4	5.1	5.2	10.4	4.7	6.4	2.6
1970-79	3.9	2.0	4.6	5.7	13.0	4.7	10.5	5.1
1980-89	-1.2	1.7	-0.4	4.5	16.4	7.1	13.4	8.2
1990-95	-3.3	0.8	-2.9	2.0	18.1	9.1	13.8	8.7

Source: Labour Force Survey (Cat. No. 71-220XPB)

In the first six years of the 1990's, with the exception of 1994, the unemployment rate for men was consistently higher than for women. The average annual unemployment rate for men was 10.6% from 1990 to 1995, almost 1% higher than for women. Unemployment rates were highest in the 15 to 24 age group, where they were more than 18% on average for men, and 13.8% for women. The gap in the unemployment rate for men and women was much narrower in the case of the 25 years and over group.

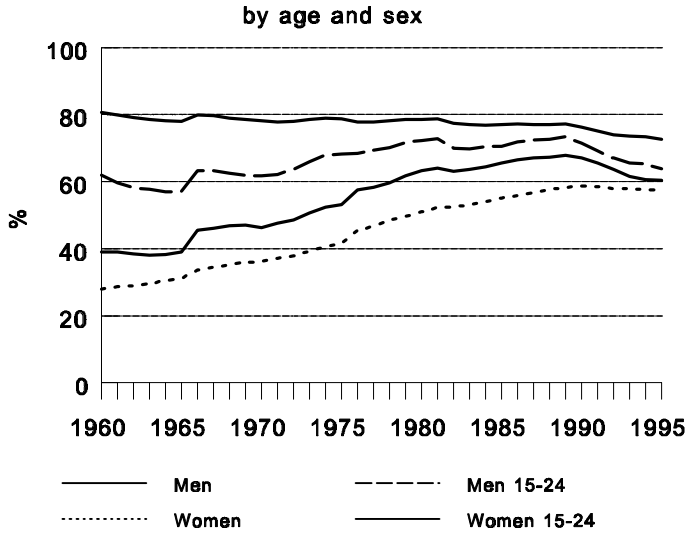
Despite a strong performance in employment growth in the 1980's, women experienced a higher unemployment rate than men. The higher unemployment rate for women occurred entirely in the 25 years and over age group, where the female unemployment was one percentage point higher than the 7.1% recorded for men. It should be noted that the participation rate increased significantly for this group.

The total participation rate increased over the years to 67.5% by 1989, and then gradually declined to 64.8% in 1995. The increase in the 1980's was more than accounted for by women as the rate declined for men. From 1990 to 1995, participation rates declined for both men and women, and more so in the case of men than women.

The participation rate for women has doubled since 1960, to 57.4% in 1995. The increased participation rate and the relatively stronger employment performance of women raised the female share of total employment to over 45% in 1995, from less than 27% in 1960.

Figure 5: Participation rate

by age and sex



2. The economy

Developments in the labour market are largely dependent on the performance and the structure of the economy. In this section labour markets will be examined in light of developments in the economy.

General

The overall performance of the economy was rather modest over the period 1990 to 1995. The average annual growth of GDP was 1.2%. During the recession years of 1990 and 1991, GDP, in real terms, declined by 0.3% and 1.8% respectively. During the following four years, GDP grew at an average annual rate of 2.4%. This is well below the average annual growth for the six years, 1983 to 1989, following the 3.7% GDP decline in 1982, which was marked by the recession. Average annual growth for the 1980's was 3.0%. Over the longer term, economic growth has slowed by more than one percentage point annually in each of the last three decades.

TABLE 6 GDP, Productivity and Labour Force

	% Average Annual Increase			Level
	GDP Real Terms	Productivity[4]	Employment[5]	Unemployment Rate
1960-69	6.0	3.7	3.0	4.8
1970-79	4.2	1.9	2.9	6.7
1980-89	3.0	1.2	2.0	9.4
1990-95	1.2	0.5	0.6	10.2

Source: Input Output Division

Besides economic growth, other important factors having an impact on the labour market are productivity and the industrial mix of the economy.

Economic growth in the 1980's as well as from 1990 to 1995, was accompanied by labour productivity gains as measured by GDP per person-hour. Labour productivity increased on average by 0.6% from 1990 to 1995, less than half the rate experienced in the 80's. This, coupled with the significant deceleration in GDP growth led to an average employment growth rate of only 0.5% in the period 1990-95 compared to 2.0 in the 1980s. With the labour force increasing at a higher average rate than employment over the 1990 to 1995 period, the unemployment rate rose from 7.5% in December 1989 to 9.4% by the end of 1995.

[4] GDP for person hours.

[5] Persons.

Industry Perspective: Goods Versus Services

In the 1980's, as well as during the period 1990 to 1995, goods producing industries in the business sector experienced an average annual GDP growth rate well below that of the services producing industries. The average annual growth rates for goods and services were 2.4% and 4.1% respectively in the 1980's. While growth for both goods and services slowed in the period 1990 to 1995, the rate of increase for services was nevertheless nearly three times higher than for goods. As productivity gains were stronger in the goods producing industries than in services, the gap in employment growth rates between goods and services producing industries was even more pronounced. Employment in the services producing industries grew by 3.1% annually during the 1980's, five times the rate for goods. Over the period 1990 to 1995, employment in the services producing industries continued to increase while it declined for goods. It should be noted that labour productivity gains in the goods producing sector remained relatively strong during this period and this could be attributed to restructuring and investment in new technology and equipment.

By 1995, services, including the non-business sector, accounted for three quarters of total employment, and for two thirds of GDP. These shares were up from 55.5% and 58.9% respectively in 1961.

TABLE 7 GDP, Productivity and Employment: Services and Goods Producing Industries

	Business Sector					
	% Average Annual Increase					
	GDP		Productivity		Employment	
	Goods	Services	Goods	Services	Goods	Services
1960-69	6.2	6.3	5.4	2.7	1.0	3.3
1970-79	3.3	5.6	2.1	1.9	1.1	4.3
1980-89	2.4	4.1	1.9	1.2	0.6	3.1
1990-95	0.7	1.8	1.7	0.3	-1.2	1.3

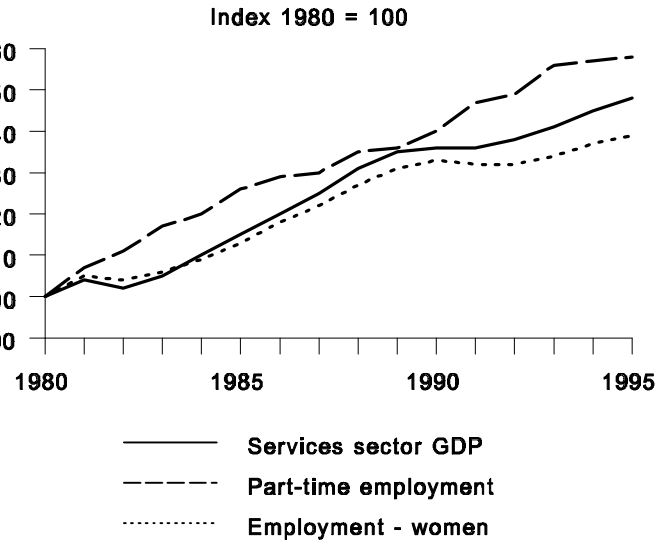
Source: Input Output Division

As noted earlier, over the period 1990 to 1995, there was a net increase of 420 thousand jobs, resulting from the addition of close to 700 thousand jobs in the services sector and the loss of 275 thousand jobs in the goods producing sector. These jobs were full-time jobs, mostly held by men. The losses were, however, recovered by increased employment in the services sector, although 43% were part-time jobs.

For the whole period since 1979, there was a net increase of 2.8 million jobs in the economy, all of them in the service sector. Close to two thirds of these new jobs were full-time. Women held two-thirds of all new jobs, both full-time and part-time.

Over the period 1979 to 1995, the female share increased in total employment. In the services sector, this share reached 53% from 48% in 1979. These gains were attributable to increases in full-time employment as the share of part-time employment for women declined. Nevertheless, women accounted for close to 70% of all part-time employment.

Figure 6: Services and women employment



B. Emerging research issues

The preceding overview of employment patterns in Canada over the last twenty years shows the reflection in the labour market of the changes occurring in the Canadian and world economies over the same period.

The major changes in labour supply to occur over the period are the arrival on the labour market of the large baby boom cohort, the increasing participation of women and the general upgrading of the educational level of the population. On the demand side of the ledger, there has been a general slowdown in job creation associated with the lower growth rate experienced since 1975. There has also been the continuation of a long-standing secular shift in labour demand from the goods-producing to the services producing sector. The globalization of markets and production has also been associated with changes in the industrial and occupational structure of labour demand - the disappearance of low education, low skill jobs and increasing demand for high skill, high education jobs is being felt. Increasing international trade and the drive to maintain competitiveness in the world

economy have also brought about new workplace practices, including new staffing practices that may have had an effect on the status and duration of jobs on one hand and the skills and education required in high performance workplaces on the other. Many questions arise from the convergence of these trends and factors, some of which are discussed below.

1. Job and earnings stability

There is much concern about rising instability of employment. There is a sense that the link between the worker and the firm has weakened in the 1990s, with a higher probability of layoffs, fewer full-time permanent jobs and more temporary, short-term jobs, etc. The implications of this are significant. Many of the major labour market issues of today stem from this concern about job stability. This would include rising earnings polarization and the decline in real earnings of less skilled and younger workers, many of whom may be working fewer hours per week or weeks per year, hence increasing earnings instability; potentially rising demand for the use of UI and possibly welfare; pension issues, as workers with unstable work histories may not be able to develop adequate pension coverage; training issues, as job changes may call for more education and training; a greater focus on labour adjustment, as job mobility increases, etc.

2. Increasing levels of non-standard employment

The number of non-standard jobs (i.e. part-time, temporary, contract-based) is increasing, while the share of regular, full-time jobs is on the decline. The Economic Council of Canada documented such a shift in Canada in a report in the early 1990s. As non-standard work is more highly concentrated in the services than in the goods sector, an increase in services sector employment could account for the rise in non-standard employment. However, the Economic Council found that the rise in services employment explained only a small part of the increase in non-standard work. This form of employment has been rising within industries, and is not primarily due to the changing composition of employment.

3. "Core/Contingent" staffing practices

There is a notion that many firms are moving to a "core/contingent" staffing practice, where highly skilled workers form the employment core, holding full-time jobs that involve significant amounts of training, and at the same time the firms maintain another group of employees who are engaged only when they are needed. They may be on contract, or hold temporary jobs.

While there is much discussion about this core/contingent staffing practice, there is little statistical evidence on it. We simply do not have data sources at the present time that will tell us about the extent to which firms are moving to such a practice, or what its implications are. We are hoping that surveys like the " Workplace and Employee Survey" that we are currently piloting will tell us more about issues such as this. We do know,

however, that full-time employment has not been expanding in the past year or two in the manner one might expect at this point in the business cycle.

The labour market position of the contingent workers may be deteriorating, possibly leading to the kinds of polarization that have been observed in the labour market. We know very little about this.

4. Rising earnings polarization

Inequality in employment earnings has been rising in Canada, the U.S. , the U.K. and other countries. This has taken the form of very significant declines in the real earnings of lower-paid, lower-skilled workers, while the earnings of the more highly paid are rising. The initial hypothesis regarding the underlying cause was that this rising polarization was due to the disappearance of "average paying" manufacturing jobs. These were being replaced, it was argued, by more polarized service sector jobs - low paying consumer service sector jobs and higher paying business services sector jobs. In particular, it was argued that the expansion in the lower paying parts of the services sector was responsible for the decline in earnings among the less well paid workers.

Research at Statistics Canada and elsewhere has indicated, however, that while the increase in the share of employment in the services sector did contribute to the rise in earnings polarization, it accounted for only a small proportion of the total increase. We estimated that 15% to 20% of the rise in earnings inequality during the 1980s was related to this change in the composition of employment (i.e. a greater share of jobs being found in services) but little is known concerning the real driving force for this phenomenon.

5. Increases in occupational knowledge intensity

It has been argued that, along with the increase in service sector employment, there is an increase in jobs that increasingly depend on higher levels of knowledge and skills. It is argued that jobs in the business (or producer) services and communications, in particular, increasingly require high level skills. This is part of the general shift in labour demand away from lower skilled to higher skilled employment, it is argued. One can see this shift in data on wages, hours of work and unemployment, as the relative position of the higher paid and higher skilled is increasing across all these dimensions. That is, the relative wages and hours of work among the higher paid and presumably higher skilled are rising relative to that of the lower paid, lower skilled, while the relative unemployment among the less educated is rising (relative to the more highly educated). This general pattern is observed in many developed western economies, although the way in which it manifests itself differs (in some countries there are relative shifts in employment and unemployment, in others there are larger shifts in relative wages).

The issue is how to deal with the declining relative position of the less skilled workers. One solution often proposed is to increase the training and education provided to such workers.

That is, make adjustments on the supply side of the labour market to match the shifts in demand, many of which are occurring in the services sector.

6. Job creation and the increased use of information technologies in the services sector

Over the past three decades or so, most of the increase in employment has been in the services sector. This has been attributed to a number of factors. Traditionally the explanation rested with the more rapidly rising productivity in the goods sector, and possibly a shift in consumer demand towards the services as income levels rise. Rising employment in the services sector may also reflect the trend towards contracting out to service sector firms activities that were previously performed in-house by manufacturing firms. More recently, one also hears the often stated argument that the less developed countries are expanding their manufacturing sector jobs at the expense of developed economies, while the comparative advantage of the developed economies increasingly rests in service sector "knowledge-based" jobs. This, too, would contribute to a rise in employment in the services sector in developed economies.

One often hears an argument that with the rapidly increasing investment in information technology, and presumably an associated increase in productivity, labour demand will not rise as it has in the past, and unemployment will increase significantly. Put another way, it is argued that just as employment expansion in the goods sector ceased with rapid rises in technology and productivity, so too will employment expansion in the services sector when the productivity impact of information technologies takes hold. The major difference between the past situation and the present, it is argued, is that when goods sector employment ceased to expand, the services sector was there ready to absorb the new workers. There is no other sector to which one can turn to find the new jobs when the services sector stops producing them, and hence unemployment will rise.

Traditionally, rising technology and productivity have meant more jobs and higher standards of living. There have been dramatic changes in the labour market in the past decade or so, however, many of them as yet unexplained. For example, the standard of living as measured by family income has not risen significantly in twenty years. Increases in information technology in the services sector are and will continue to have a substantial impact on labour demand and employment.

There are perhaps two issues here. The first is the impact on the number of jobs, and whether, as the use of technology in the services increases, employment will continue to expand as it has in the past. The second issue is the differential impact increases in technology will have on different types of jobs and workers. Jobs and wages for low skilled workers have clearly been negatively affected in the recent past, as noted above, and rising technology has been perhaps the dominant explanation for the increasing polarization in employment conditions. There is as yet no consensus that this is indeed the case.

However, one of the major employment issues in the services sector is likely to be the impact of changes in technology, particularly information technologies, on the number of

jobs, the types of jobs, and the wages of different groups of workers, training requirements, and organizational change in service sector companies.

7. Decreasing earnings and labour market conditions of the young

The decreasing earnings of younger workers (those under age 35) is another potentially troublesome labour market issue that one observes in many western countries, including Canada, the U.S., and many European countries. No satisfactory explanation of these real and relative declines in earnings has yet been put forth. The decline in real earnings is part of a larger concern about labour market conditions for younger workers.
It has been argued that among earlier cohorts of young people (in the 1950s, 60s and possibly 70s), many entered relatively well paying goods-sector jobs where they knew that there was some prospect of long-term employment. They could count on these middle income jobs over a long period of time. But when the goods sector provided fewer and fewer of these jobs, young people entered services sector jobs with lower pay, few training opportunities, and no long-term opportunity for advancement. This was particularly true, it was argued, when young people entered consumer services sector jobs.

Some research, however, suggests that young people who enter the consumer services sector often use it as an entry point only, and do not necessarily stay in such jobs. They often move on to better jobs in other sectors. Furthermore, the decline in real earnings of the young is observed in virtually all industries, including the goods sector industries, so it is certainly not just the shift to the services sector employment that would account for the deterioration in the labour market position of the young. Finally, the rising share of services sector jobs has been going on for decades, and the decline in earnings of the young dates from the late 1970s or early 1980s (particularly from the 1981-82 recession), so the timing is not right. Studies that compare the characteristics of employed and unemployed youths could shed light on these issues.

8. Mismatch between the supply and demand for labour:

An observation frequently made regarding the current state of the labour market is that there is a shortage of skilled workers in high tech sectors even while there is a surfeit of university graduates in the humanities with little or no job prospects. Do hard data bear out these perceptions? On the shortage issue, where is there unmet labour demand? Do jobs go unfilled for extended periods of time, affecting expansion plans or the ability of Canadian firms to compete internationally? If so, in what industries? What occupations are affected? Recent literature posits that employers have requirements that go beyond the traditional education and experience requirements. It seems that certain skills are in high demand: initiative, the ability to work in groups, flexibility. Are workers with these attributes in short supply? There are currently no data on job vacancies nor are any data directly collected from employers on the characteristics of labour demand. On the other side of the issue, there are stories of university graduates who cannot find work other than menial occupations for which they are vastly overqualified. Is this waste of human potential a widespread phenomenon? Does it affect graduates according to certain observed

regularities (age, sex, location, program of study)? A number of surveys have been conducted of graduates and school-leavers so that some light can be shed on these issues. There are also survey and administrative data sources that contain information on the characteristics of unemployed persons, including educational attainment. Answers to questions regarding a mismatch between labour supply and demand would be instrumental in the formulation of policy regarding the role and performance of the educational system, training and labour adjustment policies.

9. Investment by firms in the development of human capital

If job requirements are evolving towards more complexity and sophistication - a proposition that seems to hold for at least some part of the labour market - one of the actions that employers can take in the face of skills shortages is to provide training for existing personnel. Although there is some evidence of a link between training, higher productivity and innovation - essential ingredients of a growth strategy in the competitive world economy - little information exists on the incidence and characteristics of employer-provided training. Do firms that provide training differ from those that do not? Along what dimensions?

C. A Framework for Labour Statistics

To assist in disentangling the relationships between changes in the economy and in the labour markets, it is useful to refer to a classical model of the labour market, where employment outcomes are the result of the meeting of the supply of labour from the household sector and the demand for labour from employers. Possible outcomes include employment, unemployment, and job vacancies. Variables of interest are listed under each component of the mode.

Conceptual model for labour statistics on the labour market

Labour supply	Employment	Labour demand
Population	Characteristics of workers	Total jobs
Participation rate	Characteristics of jobs	Industry
Age	Salaries and benefits	Occupation
Sex		Status
Education	Unemployment	Duration
Training	Characteristics of unemployed	Education
Experience	Duration	Experience
Skills		Skills
	Vacancies	
	Characteristics of jobs	
	Duration	

The variables listed under labour supply are well known population and labour force

statistics that require no further elaboration. However, two variables have not been fully developed in these traditional sources: the training and skills variables. Under training, one would wish to capture all manner of knowledge and skills development acquired through means other than formal education. Under skills, the ideal would be some objective measure of skill levels according to an agreed upon typology of skills: for example, basic literacy and numeracy skills, computer skills, interpersonal skills, etc. Although listed in detail under the labour supply heading, these personal attributes (age, sex, etc.) are also found under the "Characteristics of workers" and "Characteristics of unemployed" headings in the "Employed" and "Unemployed" boxes.

The variables listed under labour demand are attributes of the "job" entity, a less well defined concept than the "person" concept underlying labour supply. Total jobs in the economy can be classified by industry and occupation according to traditional classification systems. Status refers to full or part-time status, while the duration variable captures the permanent or temporary nature of jobs, including seasonality. The education, experience and skills variables refer to the job requirements as perceived by employers and can be classified using the same schemes as for labour supply. These attributes of jobs can also be found under the "Characteristics of jobs" heading in the "Employed" and "Job vacancies" boxes. Finally, the "Salaries and benefits" heading in the "Employed" box can be described using International Labour Organization guidelines set out in An Integrated System of Wage Statistics (1979).

D. Data sources

The core statistical program provides relatively complete data on the labour supply component of the model and, to a certain extent, the Employed and Unemployed components. The Census of Population and the monthly Labour Force Survey, along with its supplements (the Labour Market Activity Survey, the Survey of Job Opportunities and the Survey of Consumer Finances), are the principal survey sources for these data. Data on the age, sex and education of the population, active labour force, employed labour force and the unemployed are available from these sources. Some characteristics of the jobs held by the employed are also covered: industry, occupation, status and wages. Additional information is provided for the employment component by the monthly Survey of Employment, Payrolls and Hours, which includes information on hours worked and earnings. A recent addition is the Survey of Labour and Income Dynamics. Its longitudinal design provides information on the duration and characteristics of the various transitions into and out of employment. It captures both worker and job characteristics in a single vehicle. An even newer development is the Workplace and Employee Survey, which is currently being piloted. It is designed to collect extensive information on both worker and job attributes, including many aspects of labour demand that are currently unknown.

The labour demand component of the model is the least well developed, with no regular survey programs on the subject except the monthly compilation of the "Help Wanted Index" from newspaper advertisements. Detailed information on labour demand is

therefore inferred from employment data. As a result, no regular information can be provided on job vacancies. In addition, using employment as "revealed" demand assumes that employers' requirements are met by the labour supply and dismisses the possibility that employers adjust their demand to available supply. A special survey was conducted on the characteristics of labour demand in Quebec in 1995 but there are currently no plans for other surveys on the subject.

There are other "one-off"or irregular surveys that address one or more elements of the model. These include the General Social Survey (GSS) on Time Use, the GSS on Work and Education, the Adult Education and Training Survey, the Survey of Work Arrangements, the Survey of Graduates, and the National Literacy Survey.

In addition to survey sources, there are administrative data sources for labour information. The raw materials include the personal income tax files (T1), the employer tax remittance accounts (T4 summary) and the unemployment insurance files. These are available for retrieval and analysis in their raw forms but are especially valuable in the processed and enhanced forms that have been developed over the years. The unemployment insurance data are published in a monthly release. The T4 accounts have been transformed into powerful longitudinal files (for example, the Longitudinal Employment Analysis file) which, when coupled with taxpayer information, allows one to track individuals into and out of employment over several decades.

These survey and administrative sources provide extensive data holdings for labour statistics, which, when combined with data on economic activity from the System of National Accounts, including input-output and balance of payments, and numerous business surveys conducted by Statistics Canada, permit us to address many of the questions discussed earlier. Nevertheless, some of these issues cannot be properly addressed, for lack of adequate data. New initiatives such as the Workplace and Employee Survey will provide much needed new data on aspects of labour demand. Other outstanding questions might best be addressed through specific, custom-designed statistical enquiries.

References

Albrecht and Vroman (1992), "Dual Labour Markets, Efficiency Wages and Search", Journal of Labour Economics, 10:4, 438-61.

Baldwin, J. (1994), Strategies for Success, Statistics Canada, Cat. 61-523E

Beck, N. (1991), Shifting Gears: Thriving in the New Economy, Harper-Collins.

Berger, M. (1985). "The Effect of Cohort Size on Earnings Growth: A Reexamination of the Evidence", Journal of Political Economy 93:561-73

Betcherman, G. and R. Morissette (1994), Recent Youth Market Experience in Canada, Statistics Canada, Cat. 11F-0019E, no.63.

Bloom, D. and R. Freeman (1986), The Youth Problem: Age or Generational Crowding?, NBER Working Paper #1829.

Bluestone, H. and B. Harrison (1988), The Great U-Turn: Corporate Restructuting and the Polarizing of America, New York, Basic Books.

Card, D. and R. Freeman, eds., Small Differences that Matter: Labour Markets and Income Maintenance in Canada and the United States, University of Chicago Press.

Cohen, S. and J. Zysman (1987), Manufacturing Matters, Basic Books.

Davis, S.J. (1992), "Cross-Country Patterns of Changes in Relative Wages", National Bureau of Economic Research Working Paper no.4085.

Dooley, M.D. (1986), "The Over-Educated Canadian? Changes in the Relationship Among Earnings, Education and Age for Canadian Men: 1971-1981", Canadian Journal of Economics, 19:1:142-159.

Drache, D. (1989), The De-industrialization of Canada and its Implications for Labour, Canadian Centre for Policy Alternatives.

Economic Council of Canada (1990), Good Jobs, Bad Jobs: Employment in the Service Economy. A Statement by the Economic Council of Canada, Minister of Supply and Services.

Esping-Andersen, G.(1990), The Three Worlds of Welfare Capitalism, Princeton University Press, Princeton.

Foot, D.K. and J.C. Li (1986), "Youth Unemployment in Canada: A Misplaced Priority?", Canadian Public Policy 12(3): 499-506.

Foot, D.K. and J.C. Li (1988), "Youth Unemployment: A Reply", Canadian Public Policy 14(1): 109-111.

Foster, J. and M.C. Wolfson (1992), "Polarization and the Decline of the Middle Class: Canada and the U.S.", Vanderbilt University and Statistics Canada, mimeo.

Hammermesh, D. (1993), Labour Demand, Princeton University Press, Princeton, New Jersey.

Harvey, D. (1989), The Condition of Post-Modernity, Basil Blackwell.

Helwege, A. (1992). "Sectoral Shifts and Inter-industry wage differentials", Journal of Labour Economics, 10(1):55-84.

Howell, D. R. and E.M. Wolff (1991), "Trends in the Growth and Distribution of Skills in the U.S. Workplace, 1960-1985", Industrial and Labour Relations Review, April 1991, 44(3):486-502.

Juhn, C., K. M. Murphy and B. Pierce (1993), "Wage Inequality and the Rise in Returns to Skills", Journal of Political Economy, 101(3):410-442.

Katz, L.F. and K.M. Murphy (1992), "Changes in Relative Wages, 1962-1987: Supply and Demand Factors", Quarterly Journal of Economics, 107(1):107-115.

Levy, F. and R.J. Murnane (1992), "U.S. Earnings Levels and Earnings Inequality: A Review of Recent Trends and Proposed Explanations", Journal of Economic Literature, Vol. XXX, September:1333-1381.

McLaughlin, M. (1992), "Employability Skills Profile: What Are Employers Looking For?", Conference Board in Canada, Ottawa.

Morissette, R. (1995), Why Has Inequality in Weekly Earnings Increased in Canada?, Statistics Canada, Cat. 11F0019E, no.80.

Morissette, R., J. Myles and G. Picot (1993), What is Happening to Earnings Inequality in Canada?, Statistics Canada, Cat. 11F0019E, no. 60.

Myles, J. (1989), The Expanding Middle: Some Canadian Evidence on the Deskilling Debate, Statistics Canada, Cat.11F0019E, no.9.

Myles, J., G. Picot and T. Wannell (1988), Wages and Jobs in the 1980s: Changing Youth Wages and the Declining Middle, Statistics Canada, Cat. 11F0019E, no.17.

Osberg, L., E.N. Wolff, and W.J. Baumol (1989), The Information Economy: The Implications of Unbalanced Growth, The Institute for Research in Public Policy, Halifax.

Piore M. J. and C. F. Sabel (1984), The Second Industrial Divide: Possibilities for Prosperity, Basic Books, New York.

Picot, G., J. Myles and T. Wannell (1990), Good Jobs/Bad Jobs and the Declining Middle 1967-1986, Statistics Canada, Cat. 11F0019E, no.28.

Reich, R. (1991), The Work of Nations, Simon and Schuster, New York.

Zuboff, S. (1988), In the Age of the Smart Machine, Basic Books Inc., New York.