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*An Experimental Canadian Survey That Links Workplace Practices and Employee Outcomes: Why it is Needed and How it Works*

by Garnett Picot and Ted Wannell

**No. 100**

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# **An Experimental Canadian Survey That Links Workplace Practices and Employee Outcomes: Why it is Needed and How it Works**

by Garnett Picot\* and Ted Wannell\*\*

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*Aussi disponible en français*

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## ***Abstract***

Fundamental changes have taken place in the labour market and among firms in the 1980s and 1990s. In some cases we understand what has occurred, but not why. In other cases the data do not exist to shed light on exactly what is happening, let alone why. Changes in the labour market are often related to changes in the way in which firms are engaging and paying labour, the adoption of new technologies, changes in the types of markets in which firms compete, and other events occurring in firms; i.e. changes on the demand side of the labour market. But data have never existed that allowed events occurring in firms to be related to the outcomes for the workers. This paper outlines why such data are necessary. The example of rising inequality is used to demonstrate the need for such a survey. Also presented is an outline of how the new data can be provided using a new approach to surveying. The proposed survey first surveys establishments, and then surveys workers within that establishment. In this way a direct link is made between the activities in the establishment and the outcomes for the workers. Conversely, a direct link is established between the events in the firm and the characteristics of the workers, another area of research that has suffered from a lack of data at the micro-level. This paper outlines why such a survey is needed, the possible content, and research topics that could be addressed with such data.

**Keywords:** labour demand, survey, technology, wages, data gaps

## ***I. Introduction***

Fundamental changes have taken place in the labour markets of most western nations since the recession of the early 1980s, and indications are that this is continuing. In the Canadian context, labour economists with a public policy orientation are puzzling over a number of significant changes (real or perceived) related to:

- the increasing duration of unemployment
- the stagnation of average wages and earnings
- the polarization of earnings
- the rapid decline in earnings among lower paid workers
- the decline in real and relative wages of workers under age 35
- the dramatic changes in the distribution of working time
- the apparent slowdown in full-time job creation
- fears that job insecurity and instability are on the increase
- the role of technological change in many of these events
- the role of increasing international competition.

At the same time, a common perception has developed that fundamental changes are occurring in the nature of work and employer-employee relationships in the workplace. As a consequence nearly all aspects of working life are now coming under scrutiny. This scrutiny has sown a bumper crop of buzzwords and phrases that evoke a whole range of images: the new competitive environment; the high performance workplace; the empowered worker; the disposable worker; core and periphery workers; the flexible firm; the adaptive firm; and so on.

The common thread through these images is that the workplace is a dynamic environment, and that more than ever changes are taking place in the workplace that are significantly influencing the outcome and trends observed in the labour market. When looking for answers as to why such fundamental change has occurred, analysts are focusing more than ever on the demand side...events occurring in firms and establishments.

Statistics Canada has responded to the need for new information to better understand, and as a result hopefully better deal with, the types of changes mentioned above. In particular, the need for data sources that focus on the dynamics of labour market change has been recognized and acted upon over the past decade. The agency has steadily increased its capacity to follow workers longitudinally using both survey and administrative data. Household longitudinal surveys, such as the Labour Market Activity Survey and the new Survey of Labour and Income Dynamics have job mobility, earnings and unemployment dynamics as primary concerns.

At the same time, Statistics Canada has been developing new information on firms and establishments. Longitudinal data sources for establishments and companies have been created by linking longitudinally both survey (e.g. the Census of manufacturers) and administrative (often taxation) data. These sources have allowed new insights on firm dynamics, job creation and destruction, productivity, and so on. Furthermore, clients interested in the competitive position of Canadian industry have sponsored surveys on technology use, innovation and the success of small and medium sized enterprises. These surveys are beginning to shed some light on how the adaptive and innovative capacities of firms contribute to their success.

Despite this recent activity, one very fundamental information gap persists. In none of these surveys or administrative data sources<sup>1</sup> is there a link at the micro-level between the activities in the firm and the outcomes for the workers. In other words, there is no direct link between the demand and supply sides of the labour market. In Canada, this gap has hampered analysis. Few countries have developed such micro-data sources to date, with at least one noticeable exception being France, where worker and firm data have been linked at INSEE and used in numerous research studies (see Abowd, Kramarz and Margolis, 1994; Enforf and Kramarz, 1994). There are numerous areas of research in which this link is essential if we wish to significantly advance our understanding of important labour market events. More is said about this later.

The Workplace and Employee Survey (WES) is a new Statistics Canada undertaking. It is sponsored by Human Resources Development Canada, and is designed to provide an integrated view of the activities of employers and their employees. This is an experimental survey for which a pilot is currently being tested. One topic for which such data would be very important is that of earnings and wages, issues of primary concern for this conference. In Canada, as in other industrialized countries, wage patterns have changed fundamentally, and for reasons not at all well understood.

The remainder of the paper is organized as follows: following the discussion of recent trends in earning polarization, we outline the approach and content of the survey, the development activities to date, issues that must be confronted when implementing such a survey, and topics one can address with the resultant data.

## ***II. Earnings Polarization in Canada and the Workplace-Employee Survey***

The work on earnings polarization in Statistics Canada led us, among others, to start seriously thinking about the WES. That is because changes in earnings inequality have been significant, and not well understood.

### ***II.i. Recent Trends***

As in the U.S., earnings inequality has increased significantly in Canada. Depending upon the measure of inequality used<sup>2</sup>, inequality in annual earnings increased between 12% and 28% between 1979 and 1989, two years that are roughly in the same position in the business cycle (Table 1, Morissette, Myles and Picot, 1994; Beach and Slotsve, 1994). This rise in inequality appears to have continued into the 1990s.<sup>3</sup>

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<sup>1</sup> Workers and firms have been linked on some administrative data sources, and this has allowed some very innovative analyses. These data sources have relatively few variables, however, and the number of questions they can address is limited.

<sup>2</sup> Four measures were used since different measures are sensitive to changes in different parts of the wage distribution. The measures were the coefficient of variation, the gini, the Theil entropy index, and the Theil-Bernoulli index.

<sup>3</sup> For example, the variance of the log of annual earnings for all employed men rose from .914 in 1988 to .986 in 1993.

**Table 1**  
**Trends in Four Measures of Income Inequality, Percent Change**  
**in Measure Between 1979 and 1989**

Inequality measure	Coefficient of variation	Gini coefficient	Theil-Entropy index	Theil-Bernoulli index
<b>Men</b>				
All earners	18	11	22	16
Full-time full-year workers	22	12	28	20
<b>Women</b>				
All earners	0	-1	-1	-4
Full-time full-year workers	12	12	22	21

Source: Authors' calculation using data from Survey of Consumer Finances.

In Canada, the rise in inequality has been associated with dramatic drops in real earnings of lower paid workers. Turning to men<sup>4</sup> aged 25 to 54, a population for which labour force and employment attachment is quite high, real annual earnings of workers in the bottom quintile of the earnings distribution have fallen by 40% between the peak in 1975 and 1993 (chart 1a). Workers in the middle and top quintiles saw their earnings remain stable over the same period. Restricting the analysis to those who worked full-time full-year reduces the magnitude of the changes, but not the trends. In this case, the decline in real earnings among workers in the bottom quintile was around 20% (chart 1b).

Two things are evident. First, the declines in earnings for lower paid workers are very large, even among males aged 25 to 54, a population among which one expects quite stable employment patterns. Second, it appears as though changes are taking place in the stability of employment over the year (a shift from full-year to part-year or full-time to part-time) that are significantly influencing annual earnings.

Further analysis indicates that there have indeed been large changes in the distribution of annual hours of work in the Canadian labour market, and that they have been associated with the increasing polarization of annual earnings. Annual earnings are, of course, the end result of hours worked and the hourly wage rate paid. A change in either can influence annual earnings.

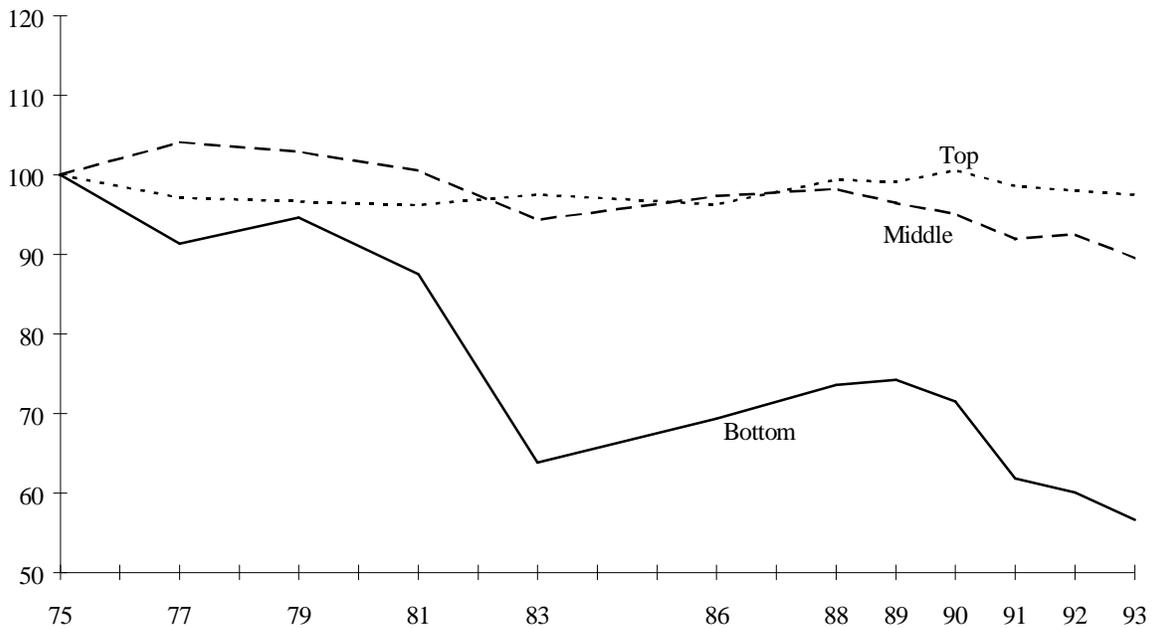
In Canada we have seen a significant polarization in hours worked...more people are working longer hours, more are working shorter hours, and fewer are working a regular work week (or work year). For example, among men, the proportion working a regular 35 to 40 hour week fell by 10 percentage points between 1981 and 1989 (from 76% to 66%). There were increases in the share working both fewer and longer hours, notably longer hours (chart 2). Among employed women the changes were similar; the proportion working a regular 35-40 hour week fell from 64% to 59%. But has this been associated with changes in the earnings distribution? It may be that the less paid were working longer hours, and the more highly paid shorter. But this was not the case. Those working longer hours tended to be professionals and managers, the more highly paid.

<sup>4</sup> Much of this description of changes in wage patterns and polarization will focus on men, simply because the patterns are less complex than among women. For women, while earnings inequality of full-time full-year workers has been rising, among all women it has not. This is largely because the number of hours worked by women working part-time or part-year has been increasing, thus increasing their annual hours of work, bringing their earnings closer to the average, and tending to reduce inequality.

Morissette, Myles and Picot (1994) conclude that the significant polarization in hours worked were indeed associated with the rising inequality in earnings during the 1980s. This can be observed using more recent data. The rise in inequality in annual earnings, as measured by the variance of the logarithm of earnings, can be decomposed into three components: that due to the rise in inequality in annual hours worked, that due to rising inequality in hourly wage rates, and that due to the interaction (covariance) of the two. Table 2 shows the results for men for the 1975 to 1993 period. Focusing on 1981 to 1988 (common years in the business cycle) or 1981 to 1993 (the latest data), we observe that of the overall increase in earnings inequality, from 56% to 68% was associated with the increase in inequality in hours worked, from 15% to 32% associated with rising inequality in hourly wages, and the remainder with the covariance term. This result is observed using data from two independent sources, and holds whether one is speaking of weekly or annual earnings and hours, although the magnitude differs (see Morissette, 1995).

**Chart 1a**  
**Average Real Wage Change for the Bottom, Middle and Top Quintiles, 1975 = 100**

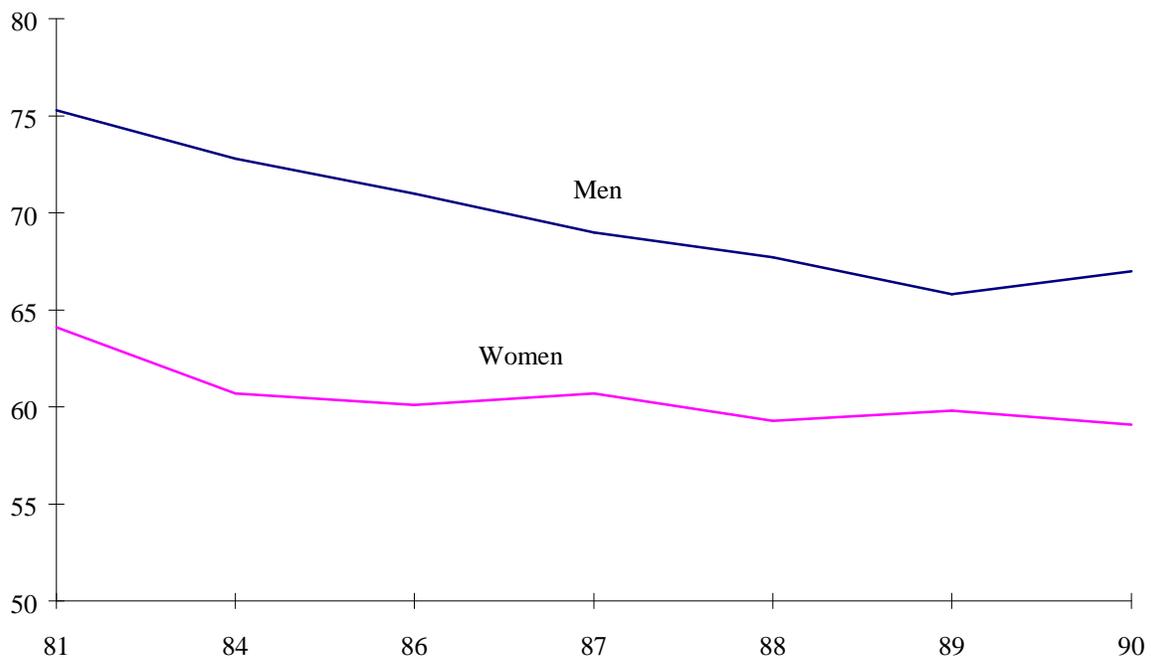
All Men Aged 25-54



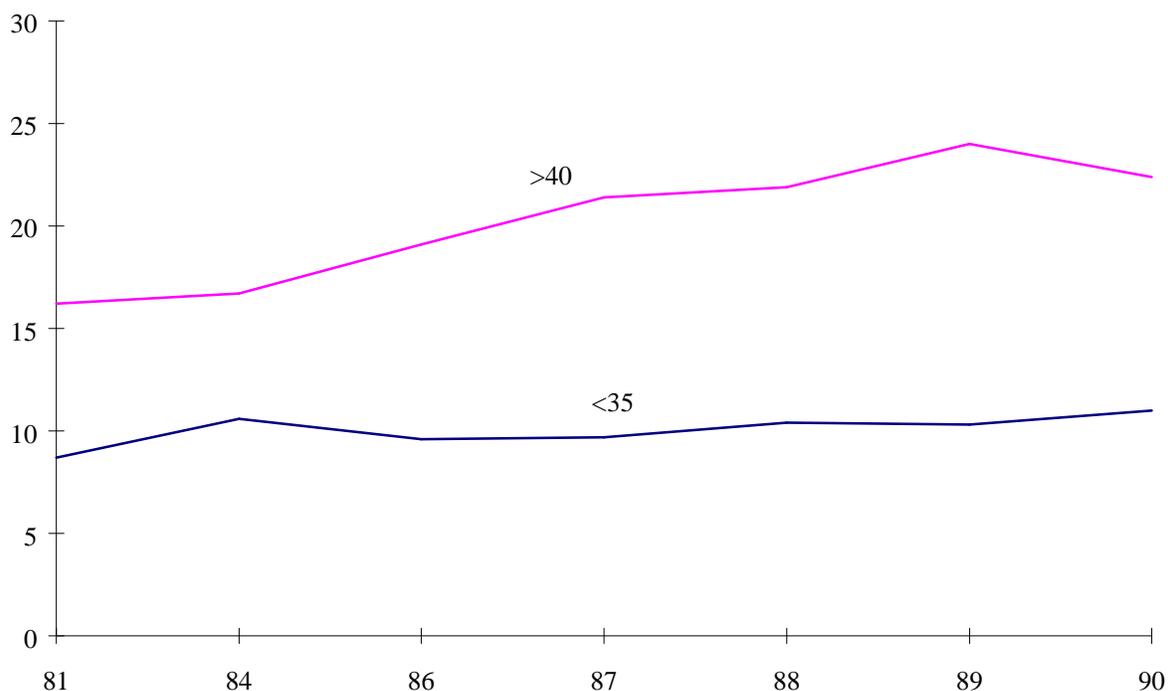
**Chart 1b**  
**Men Aged 25-54 Working Full-Time Full Year**



**Chart 2**  
**Proportion of all Paid Work done in 35-40 Hour Per Week Jobs**



## Proportion of all Work done in Jobs of <35 and >40 Hours Per Week, Men



**Table 2**  
**Variance of the Logarithm of Annual Earnings, Hours and Hourly Wage Rates**

Year	Annual earnings	Annual hours	Hourly wages	Covariance of wages and hours
1975	0.781	0.344	0.535	-0.098
1977	0.807	0.318	0.576	-0.087
1979	0.772	0.296	0.527	-0.051
1981	0.777	0.311	0.506	-0.040
1986	0.949	0.385	0.614	-0.050
1988	0.914	0.388	0.551	-0.025
1991	0.920	0.406	0.538	-0.024
1993	0.986	0.453	0.540	-0.007
Change in variance of logs, 1981-93	0.209	0.142	0.034	0.033
Share of total change	100%	68%	16%	16%
Change in variance of logs, 1981-88	0.137	0.077	0.045	0.015
Share of total change	100%	56%	33%	11%

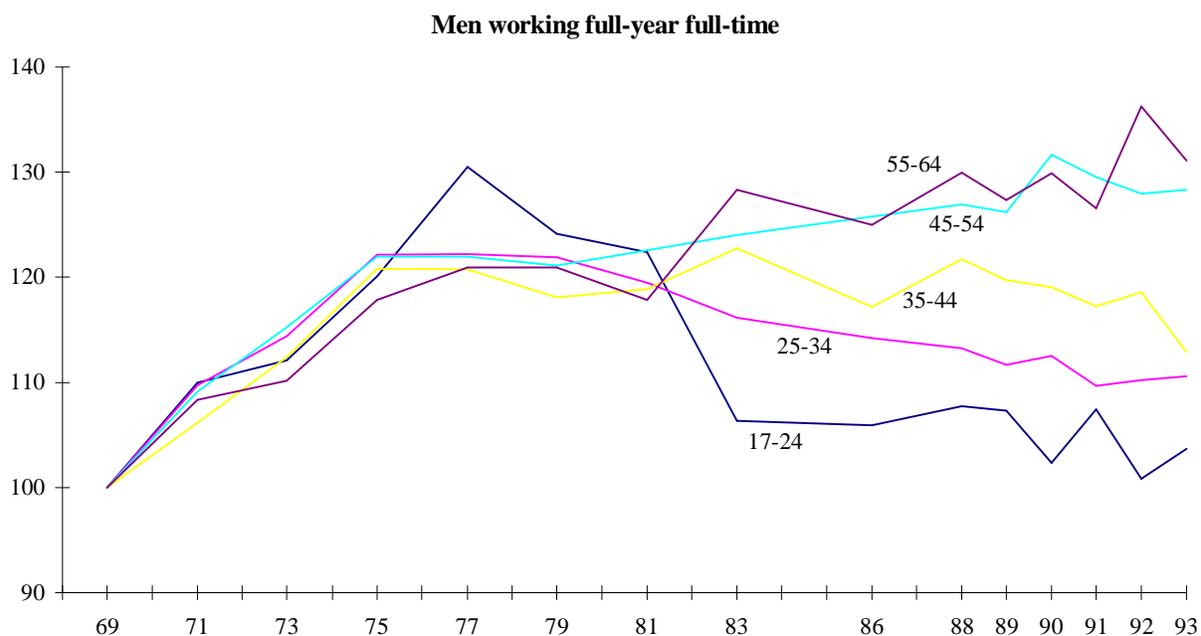
Data source: Survey of Consumer Finances.

Thus, a polarization in working time has taken place in Canada, and it is associated with the rise in earnings inequality.

Another feature of rising inequality in some countries is the increase in the wage premium paid to more highly educated workers. While this has been observed to some limited extent in Canada, it is not as prominent a feature of the story as in the U.S. (Myles, Picot and Wannell, 1988; Freeman and Needle, 1991; Bar-Or et al, 1993; Morissette, Myles and Picot, 1994). The relative wages of, say, college graduates to high school graduates has not changed significantly in Canada, at least to the end of the 1980s.

Another prominent aspect of changing wage patterns in Canada has been the widening gap in the earnings of younger and older workers. In particular, the declining real and relative wages of young people is of much concern. This is a feature that has been observed in many western countries (Davis, 1992). In Canada, real earnings of workers 18-24 working full-time all year have fallen by one quarter since 1977, and among 25 to 34 year olds by 10% (chart 3), while increasing slightly among some older workers.

**Chart 3**  
**Real Annual Earnings by Age Group, 1969-1992**



Finally, as in the U.S., controlling for supply side characteristics such as age and education explains little of the earnings inequality; inequality has been rising within age and education groups (Levy and Murnane, 1992; Morissette, Myles and Picot, 1994). As well, accounting for changes in the occupational or industrial structure of the economy explains little of the overall rise in inequality.

### ***II.ii. Implications for Data Development***

It is when attempting to determine the causes of these changes in earnings patterns that one is drawn to the need for data on both workers and events taking place in the workplaces. For example, the supply of youth labour has been declining in Canada since 1980, and their educational attainment has been, if anything, rising. It seems highly unlikely that supply side explanations are appropriate

when attempting to explain the drop in relative and real earnings of the young during the 1980s. One must turn to events influencing the demand for labour. This conclusion has been reached by others (e.g. see Katz and Murphy, 1992).

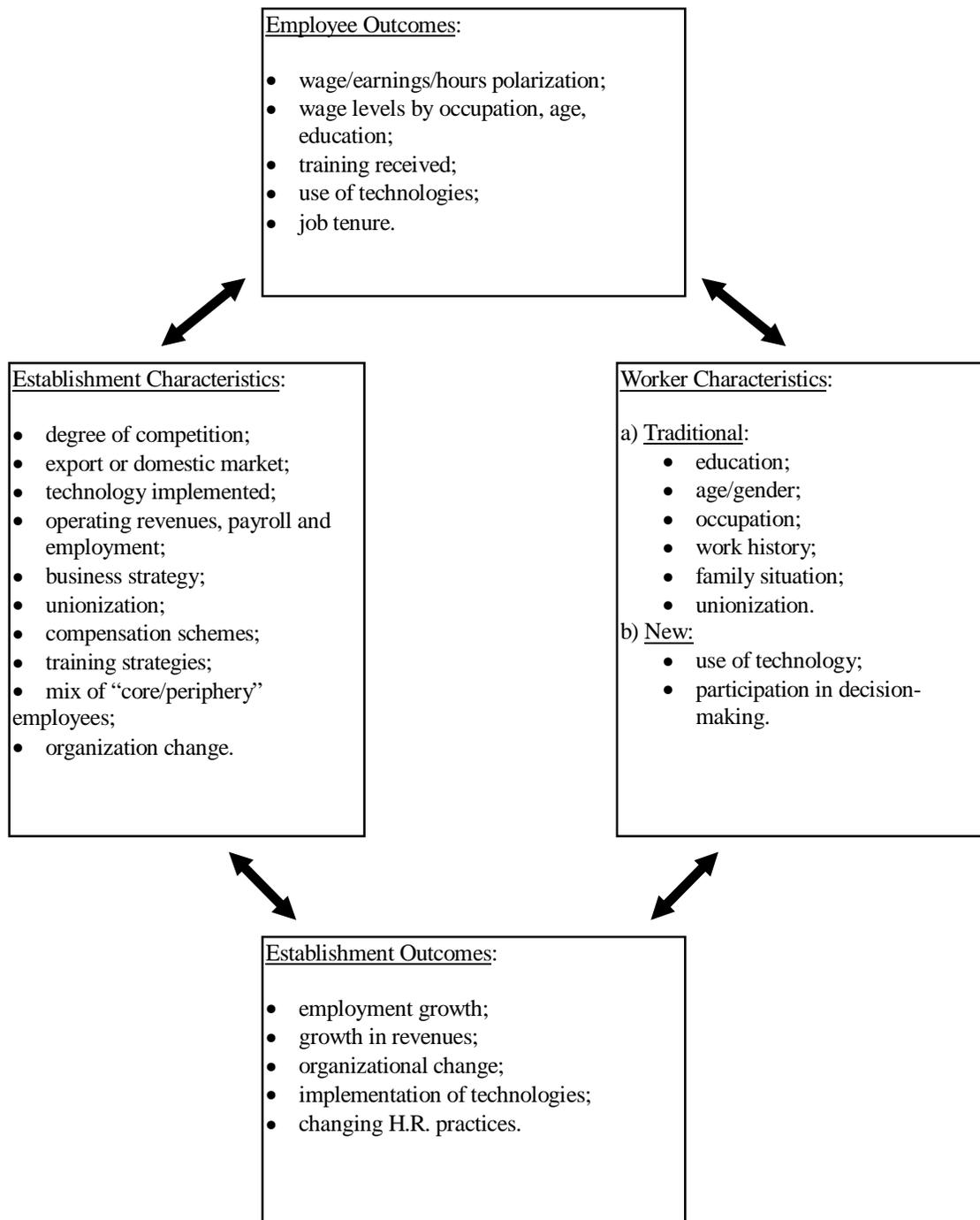
Davis (1992) suggests that technological change that favours more experienced (older) workers may be part of the cause. It may also be that as firms attempt to reduce costs in face of increasing international competition, older workers may be better protected from the growing wage competition than younger workers for a variety of reasons, including efficiency reasons, seniority rules, firm-specific training, or other “institutional” barriers that favour job incumbents over new employees. But in all these cases, changes in the adoption of technology, skill requirements or compensation patterns in firms are associated with the decline in youth wages. And this may only be occurring in some types of firms (e.g. new, those in competitive markets or exposed to international trade, those adopting new technologies, etc.). Data on events in these firms need to be linked to wage patterns among particular types of workers (e.g. younger, older, less skilled, more highly skilled) to better understand these processes.

Possible explanations of rising earnings inequality in general leads one in the same direction. Currently the most accepted explanation for the increasing polarization of wages in labour markets, at least in North America, is skill-biased technological change (e.g. Bound and Johnston, 1992, Freeman, 1995). Furthermore, it is more and more recognized that there may be other changes associated with the introduction of technologies, such as organizational change, changing relative demand for high and low skilled labour, and changes in training patterns that can significantly influence the wages and other aspects of workers lives. Once again, data on both events in firms, and wages and other supply-side characteristics of workers are needed to assess the impact of such changes.

Polarization of hours of work appears to be playing an important role in earnings inequality in Canada. While there is no convincing explanation of this trend at present, the results are consistent with the often discussed tendency of firms to move towards a “core” of full-time workers, many of whom may be working longer hours, supplemented by an increasing number of part-time, part-year, contract, or temporary workers, who may be working fewer hours per year. The duration of jobs held in Canada is also becoming polarized in a manner consistent with this explanation (Heisz, 1996). Such a staffing strategy would provide the firm with more flexibility and maneuverability when altering the size of their effective labour force in response to demand fluctuations. This would reduce their costs and increase their competitiveness. It may also increase wage polarization and lead to increasing segmentation in the labour market. But to be able to assess such a hypothesis one has to know something of the extent to which such staffing strategies are indeed being followed, and whether it is among firms that are following them that one observes change in the levels or distributions of earnings of workers. Again the need for demand side data to shed light on wage issues such as these.

Obviously both supply and demand side factors influence the level and distribution of wages. But in Canada, establishment or company data sources have very limited, if any information on the workers. The opposite is also true. And the prospects for linking existing worker and firm data sets is not good, because where such links are possible, the potential explanatory variables on one data set or the other are very limited. Thus, we have been unable to conduct micro-data analyses which consider supply and demand factors simultaneously. This initially led us to consider a survey such as the Workplace and Employee Survey.

**Chart 4**  
**Workplace Activities and Human Capital Characteristics**  
**Potentially Influencing Employee and Establishment Outcomes**



The possible advantages of a survey like the WES for the analysis of wage issues are depicted in chart 4. Employee outcomes, including wage levels and distributions, can be associated both with the traditional supply-side human capital characteristics of workers, as well as demand-side events occurring in establishments. The types of supply and demand side data that are being collected in the pilot are outlined. They include, on the demand side, the introduction of a new technology, the mix of full time and temporary/part time workers, business and training strategies, organizational changes, sales, payroll, the type of market in which the establishment functions, and other variables. On the supply side the usual human capital variables (age, education, work experience, occupation, training taken) are included, along with new variables, such as the use of technology.

But the use of these data need not be restricted to outcomes for workers. Outcomes for establishments, such as growth in employment or operating revenues, organizational change, the implementation of technology, etc. can also be linked both to other activities taking place in the establishment, and the characteristics of the workers. For example, the education or occupational distribution of the work force may be closely tied to the activities and outcomes of the establishment, as might the extent of unionization. These data can be used to analyze both worker and establishment outcomes. The availability at the micro-data level of such linked information will advance significantly the ability to understand the changes that we have observed in firms and the labour market in Canada. The possible research uses of such data are considerable, and are discussed later in the paper. Following is a description of the pilot survey that is underway.

### ***III. Approach and Content***

#### ***III.i. A Two-Stage Approach***

Respondents for the Workplace and Employee Survey will be selected in a two stage process. In the first stage, a sample of employers will be drawn from the statistical establishment level of the Central Frame Database. This database is a depository of basic information on all business entities in Canada. The establishment sample will be stratified by industry, region and employment. Using Frame and other information, interviewers will arrange face-to-face interviews with representatives of the employer -- usually the manager responsible for human resources. One of the primary objectives of the interview will be for the interviewer to select a random sample of employees from an employer-provided list. Employees will be interviewed by telephone, at a time and place they deem appropriate. This process thus results in a single-stage sample of establishments and a two-stage sample of employees.

It is intended that the production version of the survey track the same establishments over time with some form of replenishment to account for establishment deaths and other forms of sample attrition. Workers would be tracked over time for as long as they remain with the same firm and for one additional period after they leave. Exiting workers would be replaced in the sample by others from the same establishments, ideally by recent hires. Thus the sample of workers will not be a panel in the strictest sense, but will allow researchers to study all relevant period-to-period transitions. The pilot is currently underway as a cross-sectional test, however.

#### ***III.ii. Content***

To fulfill its objectives, the Workplace and Establishment Survey will be collecting a broad range of information -- particularly from employers. In many workplaces more than one respondent will be

required. In order to get the questions to the person best able to answer them, the survey is broken into a number of modules. The modular approach will also be useful in the longitudinal production survey, where modules will be cycled over longer periods to reduce the response burden in any single year.

### *III.ii.a. Employer Questionnaire*

The employer questionnaire is divided into 10 modules. A brief summary of each module follows. (Complete questionnaires are available upon request.)

#### *Workforce Characteristics and Job Organization*

Covers the work arrangements of employees (full-time/part-time, permanent, seasonal, on-site/off-site, etc.), recent hiring and separations, and the presence of unfilled vacancies. All questions in this section are broken down into five occupational groups.

#### *Compensation*

Covers variable pay plans, gross payroll, non-wage benefits and the distribution of earnings in the company. Most questions capture occupational detail.

#### *Training*

Covers the presence of formal training programs, which occupational groups received training in the past year, how training is funded and how much is spent on training.

#### *Human Resource Function*

Determines who has responsibility for human resources, the level of employee involvement in decision-making, and the incidence, type, extent and effects of recent organizational change.

#### *Collective Bargaining*

Asks about the presence and membership (by occupation) of collective bargaining groups, treatment of “flexibility” issues in contracts, work stoppages and grievances.

#### *Establishment Performance*

Covers operating revenues and expenditures, employment, change from the previous year, variability in revenues by quarter and foreign ownership.

#### *Business Strategy*

Asks respondent to rate the importance of elements of business strategy, estimate their distribution of sales by market area and specify the number of competitors in their market.

#### *Innovation*

Identifies major innovations introduced in the past three years.

#### *Technology Use*

Asks about overall computer usage in establishment, looks at specific major technology implementations in the past three years (hardware/software, computer-controlled technologies and other technologies) and the effects of the implementations.

### *Use of Government Programs*

Looks at establishment use of grants and loan, employee-related programs, tax provisions, information services and other ventures with government.

### ***III.ii.b. Employee Questionnaire***

The employee questionnaire is not as clearly blocked as the employer questionnaire, since it will only involve a single respondent. The questionnaire covers: job characteristics, requirements when hired, hours of work, pay and benefits, working off-site, leave, promotions, technology use, training, participation in decision-making, work stoppages, recent work history, education, family situation and membership in designated employment equity groups. While the questionnaire covers a fairly wide range of topics, pre-testing has shown it to be not overly burdensome for respondents.<sup>5</sup>

## ***IV. Operational Issues in the Development Of WES***

This is an experimental survey for which a pilot is being conducted. There are obviously numerous operational issues which arise when attempting to develop a new survey such as WES. It is important for providers and users of data alike to understand these issues, as they can influence the use to which the data are put. Briefly, some issues encountered in the pilot include:

- Obtaining a list of employees from the employer... As noted above, establishments are selected from the business register in Statistics Canada, and a random sample of workers within these establishments is chosen by the interviewer while conducting the establishment interview. Approximately six employees per establishment are selected, unless total employment is less than that, in which case all employees are selected. Obtaining the list has not presented serious difficulties to date in the pilot.
- Ensuring the list matches the establishment for which the demand side data are being collected...In some complex companies this becomes an issue, as an “establishment” may refer to many locations. Some “profiling” of the companies by the interviewers has been necessary to ensure that the entity for which both the demand side and worker data is being collected is well defined.
- Contacting Employees...Employers are generally not willing to have employees interviewed on company time if the interview is to be of any length. Thus, employers are asked to distribute “contact” forms to the employees, which the employees subsequently return. An interview is then held by phone with the employee. It is too early to assess the outcome of this procedure, but pre-tests suggested that if employers were reminded to distribute the forms, it can be effective.
- Eliciting Employee Responses...This was probably the area of greatest concern at the beginning of the exercise, given the contact procedure discussed above. Generally speaking, however, the anecdotal evidence available to date suggests that the vast majority of employees receiving the contact sheet do respond.

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<sup>5</sup> Typically interviews lasted about 25 minutes.

- Two-stage estimation procedures...First sampling establishments and then employees within establishments results in a two-stage sample of employees. New estimation procedures are being developed by methodologists in Statistics Canada to provide population estimates of employees, and to put employee weights on the sample.
- Establishment Response Burden...This has been another concern from the beginning. We have worked with employer groups and individual firms in a pre-test to ensure, to the extent possible, that the questionnaire made sense to the firms, and that it appears relevant for issues with which they are concerned. There will be some non-response, and every survey increases response burden. However, a very large share of the Human Resource managers contacted in the pre-test seemed to be quite accepting of the questionnaire, no doubt because it evidently addressed issues in which they were interested. The questionnaire has also been broken into modules so that responses can be provided by two or three different managers in an establishment if necessary. This reduces the response burden of any particular manager, and likely increases the quality of the data. If the pilot demonstrates that response burden is a particularly difficult issue, some of these modules may be eliminated from the first production survey, and included on the second.
- Handling Multi-Location Establishments... For the purposes of reporting to Statistics Canada, companies may identify establishments which are in fact multiple locations. This is particularly the case in the financial sector. If human resource practices, adoption of technology, compensation plans, etc. differ among the locations within such a large establishment, this can present problems in the analysis of the data. In such a case, it is not clear which employees sampled are exposed to which, say, new technology, thus, in a relatively few cases, these complex establishments selected in the sample needed to be “profiled” to determine a suitable level (perhaps somewhere between establishment and location) for the interview. The issue of coverage of both the establishment questionnaire and the employee list can, in these cases, become quite important. Interviewers were trained to pay particular attention to coverage issues, and ensure that the “establishment” being surveyed, and for which the employees list was provided, was well defined and appropriate.
- Developing a Longitudinal Survey... Ultimately WES is intended to be a longitudinal survey in the establishments. However, because of the novel nature of the survey, it was decided to test WES as a cross-sectional survey in the pilot. The focus of the project team’s efforts has been to develop a successful cross-sectional survey. Issues related to developing a longitudinal survey are just beginning to be considered now. Some of these include:
  - handling births and deaths of establishments, and replenishing the sample through time
  - handling exits of employees from the establishments
  - replenishing the employee sample in establishments due to new hires
  - minimizing non-response attrition in both the employer and employee sample
  - longitudinal weighting of the sample
  - strategies for dealing with changes in ownership and organization of establishments
  - dealing with turnover of primary contacts in establishments.

## ***V. Research Possibilities***

The Workplace and Employee Survey has been designed to inform research on a wide range of issues. We feel that there are three particular strengths that the survey program will offer to researchers: 1) new information on events occurring in workplaces; 2) the ability to correlate a broad range of establishment practices; and, 3) the ability to link employer and employee information. These strengths will advance research in a number of fields, some of which were outlined earlier. Others include:

### *Human Resource Practices*

- ⇒ There has been much speculation in recent years regarding the stability of today's jobs and the emergence of "core" and "periphery" workforces. The employer survey directly addresses the issue of non-standard employment arrangements, including seasonal, temporary, contract and home workers. The initial survey will look at changes in the ratio of core to periphery workers in the past year, while the longitudinal aspect of the survey will document changing employment arrangements into the future.
- ⇒ Little today is known about the incidence and efficacy of variable pay plans. The survey will provide specific information on plans that base pay on individual, group or company performance. These plans can then be related to both establishment and individual outcomes.
- ⇒ Empowerment is one of the buzzwords commonly seen in the business press. We have adapted several methods of measuring employee involvement in decision-making processes that will be interesting in terms of incidence and their correlation to other establishment practices and outcomes.

### *Establishment Performance*

- ⇒ Recent research is demonstrating the importance of integrating company policies in disparate areas to achieve long-range goals. The core hypothesis is that high technology, training and "high performance" human resource practices have a synergistic impact on firm performance. The WES will expand the number and depth of variables with which researchers can test this and similar hypotheses.
- ⇒ The question of how performance affects the demand for labour has previously been addressed mainly through case studies or the use of hypothetical questions on surveys. The longitudinal nature of the WES will enable the tracking of changes in employment and its relationship to changes in performance.

### *Industrial Relations*

- ⇒ There is a general sense that collective bargaining contracts are becoming less rigid as a result of an increasingly competitive environment. The WES will provide information on the incidence of "flexibility" provisions in current contracts and track changes in incidence over time. It is also possible to relate such provisions to the incidence of work stoppages or grievances using the WES.
- ⇒ While there is a mountain of research on the "union premium" enjoyed by organized workers, the WES can add a new dimension to these studies by allowing the researcher to control for workplace characteristics and policies.

### *Employee Outcomes*

- ⇒ Researchers are increasingly interested in the wage effect of computer and other technology use. Most studies in this area have only a simple indicator of computer use on the job. The WES is collecting new information on the type (in terms of applications) and intensity (time spent) of computer and other technology use.
- ⇒ Similarly there is interest in the relationship among training, technology use and job stability. That is to say, are employees who receive training and/or use technology intensely less likely to change jobs or experience unemployment? This type of study will require at least two periods of data to calculate transition rates.
- ⇒ The direct link to establishment characteristics will add a new dimension to many earnings and human capital models. Are firm policies or employee activities more important in the determination of wages? Does intensive technology investment in an establishment have a wage effect for employees who don't use the technology? Does earnings inequality vary across establishments classified by characteristics such as level of innovation, level of training, presence of "high performance" human resource policies and intensity of technology investment? When longitudinal data are available, they will allow researchers to directly assess the extent to which changes in technology or international trade influence earnings inequality. These and other avenues of research will be opened by the combination of employer and employee data.

### *Training*

- ⇒ How do employees most effectively learn to use computer applications and other technologies? The WES relates specific applications with the methods and intensity of training provided by the employer and/or undertaken by the employee.
- ⇒ Do worker characteristics -- such as gender, age, education and job tenure -- have an effect on the level of employer-sponsored training they receive? Similarly, do the demographic characteristics of an establishment's workforce have an effect on the amount of training or technology investment it undertakes?

### *Establishment Dynamics and Labour Demand*

- ⇒ How do business strategies with respect to technology use, innovation and market development affect job gains and losses at the establishment level? Some of these issues have been explored in the manufacturing and small firm sectors, but the WES would both broaden the scope and add depth to this type of analysis once longitudinal data become available.
- ⇒ The **types** of jobs lost or gained through establishment dynamics is also important. What firm characteristics and policies are associated with growth in high-paying, stable jobs? This is another type of information that can only be provided by longitudinal data on establishments and their workers.

### *Other Public Policy Issues*

- ⇒ Changes in the stability of jobs have obvious implications for labour adjustment and social policy. Higher turnover rates could put increased pressure on the unemployment insurance system. Intermittent employment histories, as well as an increasing level of contract work and self-employment, would have an impact on pension policy and the needs of future retirees. While the Survey of Labour and Income Dynamics -- a longitudinal survey of workers initiated in 1994 -- is the primary vehicle to examine such issues, the WES adds the dimension of job activities, terms of employment and

establishment characteristics to the study of job stability. Such information would benefit specific policies on hours of work, layoff notification and the administration of payroll taxes, as well as general social policy development related to the polarization of earnings and hours.

- ⇒ There is a long-standing hypothesis that firms provide a less than an optimal level of training since there is a risk of the investment being lost on employees who leave for other jobs -- particularly if the skills taught are readily transferable. Policy response to this hypothesized phenomenon ranges from changes to education curricula to tax measures (as have recently been implemented in Quebec). The WES provides new information on the intensity of training undertaken by various classes of employers, the types of training they invest in, the relationship between technology investment and training, and the relationship between training and turnover -- both from the employer's and employee's perspective.
- ⇒ The WES includes a specific module on the use of government programs. Although the sample will not be large enough to enable evaluation of many specific programs, it could be used to test whether types of programs have the intended effect -- say on firm performance, technology use, innovative activity or the level of training.

## ***VI. Current Status of the Workplace and Employee Survey***

A pilot of the WES is currently in the field, and will be until March 1996. The pilot involves a potential sample of about 1,000 establishments and 6,000 employees. The resulting sample may be somewhat smaller due to the drawing of inactive establishments and non-response.

The pilot is about one-fifth the size of the planned production version of the survey, which will have some 5,000 establishments and 30,000 employees. Funding for the production version of the survey has not yet been procured. The sample for the pilot is based on a stratification scheme designed for the production survey. We have selected entire strata for inclusion in the pilot, rather than trying to stretch a relatively small set of firms into a nationally representative sample. This will enable us to test the analytical and inferential potential of the production design by way of targeted industrial and regional studies based on the data from the pilot.

The ultimate goal is to implement a production survey in the fall of 1997, and to make the Workplace and Employee Survey a part of Statistics Canada's program of regular surveys.

## ***Bibliography***

- Abowd, J.M., Kramarz, F., Margolis, D.N., (1994), High-Wage Workers and High Wage Firms, INSEE, working paper.
- Bar-Or, Y., Burbulge, J., Magee, L. and Robb, L., (1993), Canadian Experience-Earnings Profiles and the Return to Education in Canada, 1971-1990; Working Paper # 93-04, Dept. of Economics, McMaster University (Hamilton).
- Beach, C.M. and Slotsve, G.A., (1994), Polarization of Earnings in the Canadian Labour Market, in Bell Canada Papers on Economics and Public Policy.
- Bound, J. and Johnson, G., (1992), "Changes in the Structure of Wages in the 1980s: An Evaluation of Alternative Explanations", American Economic Review 82: 371-392.
- Davis, S., (1992), Cross-Country Patterns of Changes in Relative Wages, NBER Working Paper # 4085.
- Enforf, H., Kramarz, F., (1994), The Input of New Technologies in Wages: Lessons from Matching Panels on Employees and on Their Firms, INSEE, working paper.
- Freeman, R.B., (1995), Are Your Wages Set in Beijing?, *Journal of Economic Perspectives*, Vol. 9 # 3, Summer.
- Freeman, R.B. and Needle, K., (1991), Skill Differentials in Canada in an Era of Rising Labour Market Inequality, NBER Research Working Paper # 3827.
- Heisz, Andrew, (1996), Changes in Job Tenure in Canada, *Canadian Economic Observer*, January, Statistics Canada.
- Katz, L.F. and Murphy, K.M., (1992), Changes in Relative Wages, 1963-1987: Supply and Demand Factors, *Quarterly Journal of Economics*, February.
- Levy, F. and Murnane, R., (1992), U.S. Earnings Levels and Earnings Inequality: A Review of Recent Trends and Prepared Explanation, *Journal of Economic Literature*, September.
- Morissette, R., Myles, J. and Picot, G., (1994), Earnings Inequality and the Distribution of Working Time in Canada, *Canadian Business Economics*, Spring.
- Morissette, R., (1995), Why has Inequality in Weekly Earnings Increased in Canada, *Analytical Studies Branch Research Paper # 80*, Statistics Canada.
- Myles, J., Picot, G. and Wannell, T., (1988), Wages and Jobs in the 1980s: Changing Youth Wages and the Declining Middle, *Analytical Studies Branch Research Paper # 17*, Statistics Canada.
- Osberg, Lars, (1995) The Missing Link...Data on the Demand Side of Labour Markets, *Research Paper # 77*, Analytical Studies Branch, Statistics Canada.