EMPLOYMENT: WHAT DO WE KNOW ABOUT IT AND WHAT DO WE WANT TO ACHIEVE?

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Introduction

The United States collects and analyzes a considerable amount of information on employment. Nonetheless, there are unmet needs and new issues are expected to arise in the future. Thus, the question of what we want to achieve in the area of employment data, which was posed for this session at the Tenth Meeting of the Voorburg Group, is an important one.

Major sources of employment information in the U.S. include both data collected from establishments or firms (usually establishments) and data collected from households or individuals.[1] In accord with the historical focus of the Voorburg group, this paper focuses on establishment data. However, there is some reference to household data because emerging policy concerns do not always call for only establishment data or only household data. Examples include issues relating to alternative employment arrangements and to employer-provided training.

Most users of employment data do not focus solely on services industries but want information that covers the economy and is comparable across industries. Therefore, the discussion in this paper is not limited to services. Each establishment data set discussed here excludes self-employment and unpaid family workers but covers all industries (except agriculture and government in some instances). Thus, all can be used to address a variety of issues regarding differences among industries.

Data Users in the U.S.

In the U.S., current data on major indicators of economic activity are much in demand by the policy and business communities. Monthly data on employment and wages, which are generally released the first Friday of the following month, are widely watched. Users of these and other series include: the Federal Reserve Board, for making monetary policy decisions; financial market analysts and business economists, for analyses of current economic conditions and for macroeconomic forecasting models; and government policy makers for monitoring the condition of the national economy. There is also demand by states for information at the state or local area level.

Government agencies running major programs desire other types of data. For instance, the Department of Labor's Employment and Training Administration (ETA), which is responsible for the major Federal government employment training programs, the Employment Service, and the Alien Labor Certification program, wants information on employment with extensive occupational detail for state and local areas.

Another use of Bureau of Labor Statistics (BLS) data is in automatic formulas for indexing and other purposes. The average hourly earnings series from the monthly payroll survey are used by firms for escalation of long-term purchase contracts because of the industry detail as well as the timeliness of the information. Local area unemployment statistics are used for allocating Federal funds to states for training programs.

The academic research community and many policy analysts want microdata and want

[1] These data are briefly described in Manser (1995), for instance.

additional variables to be collected. Here, timeliness of the data is less of an issue.

Finally, because of the decentralized nature of the U.S. statistical system, statistical agencies are themselves included among major users. For instance, BLS earnings data are used by the Bureau of Economic Analysis (BEA) in producing the National Accounts, and BEA output data, which are themselves based on BLS and Census Bureau data, are used by BLS in producing the official productivity series.

Finding Out About Emerging Needs

How do we determine needs for new or changed information? Ultimately, demands of economic policy makers and private sector users will influence what data are provided. New issues arise from a range of sources--policy concerns, studies based on very limited data, attention in the media--and statistical agency staffs readily become aware of perceived needs for data on these issues. Also, it has been argued by Triplett (1990, p. 343) that "today's research need becomes tomorrow's policy-analytic need" which suggests a role for economic researchers, both inside and outside of the agency, in helping to inform statistical agency concerns.

Once a need is identified and planning begins to address the need, obtaining input from users can benefit the effort. At BLS, we have obtained input by holding meetings with a sample of users, either individually or at a special conference, and through giving presentations at general research conferences. BLS meets twice a year with both its Business Research Advisory Committee and Labor Research Advisory Council. Together with other statistical agencies, staff participate in conferences sponsored by the Conference on Research in Income and Wealth, which focus on measurement issues.

Recently, there has been some emphasis on customer satisfaction surveys for various purposes, and these can be used to obtain information on emerging needs that are not being met. However, such surveys typically do not reach people whose needs are not currently being met at all by a program.

What Are Current Needs?

Often emerging issues can be addressed with existing data, although perhaps imperfectly. But data for analyzing some issues do not exist at all or are extremely limited. This section begins with a discussion of key emerging issues and what is being done. It then discusses needs in terms of types of data.

New Aspects of Employment and Compensation

In the 1980’s, the U.S. economy was generating many new jobs but concern arose about whether these were “good jobs” or “bad jobs.” The issues of trends in real wages and increasing wage dispersion have received a great deal of attention in the popular press, research studies, and political circles. Rather than being issues on which data are lacking, attention to these issues has perhaps been driven by findings from analyses of existing

data. One frequent explanation was that high paying jobs in manufacturing were being increasingly replaced by lower paying jobs in services. Analyses have shown some shift toward lower-paying industries in services but this is not responsible for the majority of the decline in wage growth; rather there has been a decline in wage growth within industries. Analyses of changes in wage dispersion have generally used the Current Population Survey (CPS), the monthly labor force survey. Here, research has shown that there was an increase in the return to education beginning in the late 1970s that has continued into the 1990s.[2] In the U.S. there has not been demand for more data to address these topics. It would seem that establishment data are not the best suited to address the wage dispersion issue, although matched establishment-worker data could be valuable (see below).

Since the mid- to late-1980's, there has been interest in the changing types of employment arrangements. These arrangements include contracting out, where employees work directly for a "contract" firm that provides the worker's services to a client firm at the client's work site, and "contingent" jobs, that is, jobs which are structured to last a limited amount of time. BLS's surveys measure employment as the number of employees on the establishment's payroll. Some users also desire information on the industry category of clients for employees, particularly for employees of the temporary help supply industry. Contracting out is of concern for comparing employment trends among goods-producing and service-producing industries to the extent that activities formerly carried out by employees within goods-producing companies, such as accounting and other professional activities, guard services, and so on, are contracted out to firms in business services or other services industries. Some information on contracting out was collected from establishments by BLS through very small special efforts in the context of ongoing programs, but this is not being collected on an ongoing basis.

Concern about the number of workers in contingent work arrangements arose in the context of the good jobs/bad jobs issue. People used existing information on part-time work and self-employment, temporary workers, and employment in business services to proxy the number of contingent workers. However, such uses suffered from double or even triple counting and included jobs that were certainly "good jobs." Thus, BLS felt it was extremely important to collect information on contingent workers and has done so in a supplement to the CPS in February 1995. BLS defined contingent workers as those who do not have an implicit or explicit contract for ongoing employment. The broadest definition is workers who do not expect their jobs to last.[3] Workers who do not expect to continue in their jobs for personal reasons but would have the option of continuing are not counted as contingent workers. This survey showed that contingent workers were 4.9 percent of total employment. There were notable differences in the industry distribution of these two types of workers. Only 10.8 percent of contingent workers were employed in manufacturing in contrast to 17.1 percent of noncontingent workers. The percentage of contingent workers employed in trade, communications, and public utilities; wholesale and retail trade; finance, insurance and real estate; and public administration was also lower than the percentage of noncontingent workers employed in these industries. The

[2] For additional discussion of research findings, see for instance U.S. Department of Labor (1994).

[3] Because of the way the data were collected, self-employed persons and independent contractors are included only if they expect their employment to last for one year or less and had been self-employed or independent contractors for one year or less.

percentage of contingent workers in (other) services, 54 percent, was much higher than for noncontingent workers (34.5 percent).

This 1995 CPS supplement also obtained information on the number of workers in indirect or alternative employment arrangements, namely: those in a job that was arranged by temporary help agency or through a contract company; independent contractors; and on-call workers and day laborers. The industry distribution of workers in these arrangements varied considerably by type of arrangement.

The question of how these employment arrangements are changing over time is of considerable interest. A repeat of the CPS supplement is scheduled for February 1997. Another area of possible interest, seasonal variation in these arrangements, will not be addressed by this supplement.

Cross-sectional surveys do not permit examining how people move in and out of various employment situations over time and what the impacts of those types of arrangements are. To permit analyses of these types of questions we have also included questions on contingent and alternative employment arrangements in the 1994 and 1996 rounds of the National Longitudinal Survey of Youth (NLSY79), which began in 1979 with interviews with a national sample of individuals who were 14-22 years of age that year.

Another area of interest has been changes facing youth in today's labor market and the school-to-work transition. To address these topics, BLS is beginning a new NLS of Youth who are 12-17 years of age. In general, the NLS surveys provide detailed longitudinal microdata on individuals which are used by researchers in economics, sociology, and demography to study a broad range of labor force and other topics.

In the U.S., early data collection focused on certain types of workers--"production" workers--and on certain industries--manufacturing. Perhaps this was true in most countries. The Current Employment Statistics (CES) program, the monthly payroll survey, has covered the service sector for many years, but publishable detail has been less for services industries, even though there was an expansion of service sector detail in the early 1990's. The CES provides employment data for all workers, but earnings and hours data are collected only for production workers in goods-producing industries and nonsupervisory workers in services-producing industries. Thus, what types of workers are included varies between goods and services, which will effect earnings comparisons between these sectors. In addition, given the change in relative earnings that has occurred, the CES average hourly earnings series has moved quite differently than wage series covering all workers. As part of an ongoing major revision of the CES, BLS is examining the possibility of obtaining information on earnings and hours for all workers.[4]

Non cash components of compensation, such as pension plans and other retirement savings mechanisms and private health insurance, are very important in the U.S. yet information on them as opposed to money wages has been limited. BLS produces the

[4] This revision will convert the CES to a probability sample basis beginning in 1997.

quarterly Employment Cost Index (ECI) which is an index of the employer's cost for cash compensation, employee benefits, and legally-required benefit payments such as employers' contributions to Social Security. Annual data on the level of compensation is produced from the ECI information. However, the CES and ES-202 data, which provide monthly data and much more industry and state detail exclude non cash compensation, as do household data which are generally used to examine the good jobs/bad jobs issue.

Even the definition of cash wages is problematic and differs across surveys. In the mid-1980's, there was attention at BLS to the increasing use of lump sum payments in lieu of wages and how they should be treated in various series. While it had appeared that this trend was stabilizing or declining, use of some type of bonuses or payments in lieu of wage increases may be re-emerging as a trend. The CES earnings data exclude all bonuses except production bonuses (bonuses which are earned and paid regularly each period). We are presently talking with users to determine their interest in a broader measure of wages in the CES and are planning research to determine establishments' ability to report this information in a monthly survey. Depending on the outcome, a broader measure of cash wages may be introduced as part of the revision to the CES program.

Labor Demand

Hamermesh (1990, 1993) and other researchers have called for improved data for studying labor demand issues. Hamermesh specifically recommended a relatively small but representative quarterly or monthly survey of establishments with extensive content: employment by major skill category, hours worked by each group of workers, payroll for each type of worker, other labor costs, and total sales and production.[5] This he suggested would be an extension or rationalization of existing information. Ideally, Hamermesh would also include some key information on worker characteristics through a linked survey.

A related point is the recognition by a variety of data users that there is no detailed U.S. establishment information on wages by occupation for all industries. Thus, analyses of wages by occupation and industry are typically carried out with the CPS, for which there is concern about coding of industry and occupation and which does not provide information on the establishment. BLS's Occupational Employment Statistics (OES) Survey has provided detailed information on the number of employees by occupation, but the data have been collected only on a three-year cycle which varies by major industry and occupational wage distributions have only recently been collected in 15 states. Beginning with the 1996-1997 collection cycle, plans are for the OES to expand to surveying each industry every year and to provide median and mean wage rates for detailed OES occupations. The sample is very large and supports detailed breakdowns for states and major metropolitan areas within states. It should be noted that some researchers who have pointed to lack of such information would want the microdata together with information on other costs incurred by establishments for which the Census Bureau collects annual data in their business censuses and surveys, but currently this is not possible in our decentralized system.
While occupation provides one way of classifying workers and proxying for skill, the alternative is to use measures of human capital, typically education and experience. In the

[5]In contrast, Rosen (1990) was not enthusiastic about Hamermesh's recommendation for additional high-frequency establishment data for the particular purpose of studying labor demand.

U.S., these measures, which are viewed as extremely important by economists, are only available from household surveys.

Another area in which there has been considerable interest is information on job vacancies and employee turnover. ETA has been interested in demand-side data for analyses of occupations experiencing labor shortages. In 1990-91, ETA funded a BLS pilot project, the Employee Turnover and Job Openings (ETJO) pilot, in response to direction in a Senate Appropriations Committee Report to ". . . develop a methodology to annually identify National labor shortages." The ETJO survey developed two direct measures of the difficulty employers found in hiring--the duration of existing job openings and the "vacancy fill rate." Economic theory suggests that shortages in competitive markets will be accompanied, at the margin, by rising wages. Therefore, data were collected in the survey on the wages of new hires. The project showed that such data are collectable at acceptable levels of quality. However, it also found that they were quite expensive. Ongoing data collection in this area has not been funded.

Workplace practices are also of interest. In addition to information on training, information needed includes measures of the amount of supervision and workers' control over the job, hiring and promotion practices, and various characteristics of the workplace, including the use of teams or quality circles.

Training

Training and its relation to wages and productivity are issues of considerable current policy concern. Training is often suggested as a solution to the declining earnings of less-skilled workers. Considerable information on receipt of employer-provided training together with information on characteristics of workers has become available from household surveys, notably the CPS and the NLS surveys which cover various cohorts of individuals. In contrast, establishment data had been lacking. To help fill in gaps in knowledge concerning the nature and extent of training provided by various types of businesses, ETA asked BLS to conduct two Surveys of Employer-Provided Training (SEPT) which provide a nationally-representative sample of establishments.[6] SEPT I, conducted in 1994, focused on the existence and types of formal training programs provided or financed by establishments during 1993; see Frazis, Herz, and Horrigan (1995). Among its findings were that larger establishments are far more likely than smaller ones to provide formal training, as are establishments that use certain types of workplace practices. The provision of formal training varied somewhat across industries, ranging from 59 percent in construction to 75 percent in finance, insurance, and real estate, with manufacturing at 69 percent. There was surprisingly little variation among the major service industries. However, there were differences in the types of training provided across industries.

SEPT II, collected in 1995, was designed to measure the intensity of training. It measures the number of participants in, and the amount of work time devoted to, formal training

[6] In addition, the Department of Education sponsored a survey of training in only manufacturing establishments which used the Census Bureau's Annual Surveys as a sampling frame.

activities. Establishments in transportation, communications, and public utilities, finance, insurance, and real estate, and mining were found to provide the most hours of formal training, while retail trade and construction provided the fewest hours. SEPT II also provides information on certain major components of training expenditures, namely the wages and salaries of in-house trainers and expenditures for outside trainers, tuition reimbursement, and outside training funds.

In addition, SEPT II provides measures of informal (e.g. on-the-job) training and of the wage and salary value of time for both formal and informal training. In order to obtain this data, field visits were conducted with a reduced sample of establishments and two representative employees from each establishment were interviewed. Data from the employee portion of the survey have not yet been released.

Probably because of the extent of information requested, the response rates on these surveys have not been as high as for many major ongoing establishment surveys, although they were roughly as good as or better than the few specialized surveys that had previously collected training information from firms. The response rate for measures of costs and establishment characteristics was 74.1 percent but usable data on hours spent in training, which was collected through employer logs, was obtained from 66.2 percent of eligible establishments.

In spite of the extensive amount of detail in SEPT II, there are some types of desired information that it does not provide. Total expenditures on training cannot be calculated because estimates are not provided for some other expenditure categories such as payments for training-related equipment, supplies, space, and travel. In terms of analytic uses, for some purposes one would like to have training information together with output and other input costs of the establishment.

New Uses

In the current budget environment, it is not likely that many major new efforts will be feasible. Therefore, improvements in use of existing data that can be achieved with modest cost are an important focus. In contrast to the large volume of research using household microdata, there has been relatively little research using establishment microdata. Use of establishment microdata, both cross-sectional and longitudinal, is essential in order to expand understanding of the economy. For instance, using the Census Bureau's Longitudinal Research Database (LRD), Davis and Haltiwanger (1990) found important results about annual job creation and destruction over the business cycle (although these data and results refer only to the manufacturing sector). Analyses using establishment microdata are needed also to address topics previously studied using aggregated data. Research using establishment microdata seems to have been relatively limited everywhere.

Because net job creation is so much greater for services than for manufacturing, it is essential to study gross employment flows for services industries as well as for manufacturing, and indeed many other OECD countries already provide such data. Work is underway at BLS to develop a longitudinal microdata file from the ES-202 program which will include quarterly data for all industries and be representative of small firms. The ES-202 data are administrative data on employment and wages (earnings) primarily from the Unemployment Insurance program. Both matching issues and conceptual issues of

how to treat establishment births and deaths had to be addressed. Publication of gross employment flows data is expected by September 1997.

A possible new effort is being discussed at BLS to create a wage record micro data base. This would include establishment microdata from UI administrative wage records linked to earnings data for individual workers.

Linked Establishment-Worker Surveys

Linked household and establishment surveys have been done rarely in the U.S., although there have been some specialized small surveys. Economic researchers frequently point to the need for such information, which would provide extremely rich information for labor market research. For instance, household surveys are generally used to estimate standard wage equations, which show a strong positive relationship of log wages to age (or labor market experience) and education, results consistent with human capital theory (although with other possible explanations as well). But a few studies using special linked establishment-worker datasets have found the inclusion of establishment-specific variables reduces, although does not eliminate, the effect of age and education.

Merged establishment-household data are desirable for reasons other than microdata research needs. As is widely recognized, some information can be collected more accurately from establishment surveys--for instance, the industry and occupation (type of work) of the job. But in the U.S., if we want to know anything about the human capital or the demographic characteristics of workers in an industry or occupation, we have almost always had to turn to household surveys. If some information is available only on household surveys and other information is available on establishment surveys, one can bring it together based on tabulations of data from the two sources--i.e. one can use data on earnings in an industry from an establishment survey and data on the educational attainment of workers in that industry from a household survey, but since the industry variables are measured differently such uses are less than ideal. Some kinds of information we may want for household-based analyses cannot be obtained directly from households. For instance, information on non cash compensation of individuals together with information on household demographics and income sources is not available in the U.S., and high-quality information of this type would only be possible with a linked household/establishment survey. Thus, whether beginning from the perspective of looking at establishments or households, there are many reasons why linked establishment/worker data are desirable.

It is possible to collect information from establishments on a limited set of demographic variables, as was done, for instance, in the special demographic supplement to BLS's White Collar Pay Survey used in Famulari and Bronars (1994).[7] But to collect detailed information on human capital, family characteristics, and non-earnings income it is

[7]That effort showed that some kinds of worker information are much easier to collect in establishment surveys than other kinds. Most notably, reporting of information on the starting wage was very low. In general, obtaining retrospective information of any type in establishment or household surveys is problematic, which is why longitudinal surveys are needed for many purposes.

necessary to interview workers. One question concerns the extent to which it is possible to obtain permission to interview workers within firms; SEPT II will provide information on this.

There are other ways of obtaining establishment information linked to some information on workers. For instance, establishment data sets that provide some information on persons are described by Orchard and Stibbard (1993) and Hostrup-Pedersen (1993), for the U.K. and Denmark, respectively. Hostrup-Pedersen describes the use by Danmarks Statistics of register-based data to produce employment data. Detailed tabulations by area are possible, and the distribution of employees within an industry by occupation, education, sex, and age is produced. Denmark's use of a register provides a straightforward method for obtaining linked employer/employee information with a frame that should be of extremely high quality. Most countries including the U.S. do not have such a register of persons that is used in this way. But as the Orchard-Stibbard paper shows, it is not necessary to have such an individual register to get this information--it can be obtained by beginning with any administrative data set or sample frame providing information on persons. For example, the U. K. New Earnings Survey contains information from employers' payroll records on earnings, sex, age, occupation, industry, and collective bargaining coverage; occasionally, special questions have been included.

Microdata Availability

Many economic researchers have asked for increased availability of microdata from establishment surveys. This seems to me to be an important need in order to ensure that the information in existing data sources is fully exploited.

At BLS, establishment microdata have not always been kept in the appropriate form for ready use within the agency. Microdata from some surveys have not been saved at all in some instances. In other instances, not all data elements collected have been saved when they are no longer needed for program purposes. As noted above, BLS is currently developing longitudinal microdata from the ES-202 program.

Maintaining confidentiality of survey responses is essential, and the issue of how to make microdata more accessible to users who are not statistical agency employees while preserving confidentiality is a difficult one. For the past ten years or so, outside researchers have been able to access confidential microdata while serving as an ASA/NSF Research Fellow at either the Census Bureau or BLS. Some other researchers have also been able to access the LRD data at Census, and a few outside researchers have used confidential microdata at BLS. The Census Bureau has established a regional data center in Boston where researchers can access the LRD microdata. Recently, BLS has arranged with the Federal Reserve Board to allow its researchers to use the ES-202 microdata, when they become available, at FRB locations under suitable security arrangements. BLS uses special agreements to make confidential information from the NLS Youth survey available to researchers.[8] An alternative approach, masking data, has been discussed in

[8] In the case of household surveys, there is considerable demand for small area data and for matched administrative records data. Both are problematic for statistical agencies because of concerns about privacy. Releasing data with information for very small geographic areas greatly increases the probability that a respondent could be identified. Matching to administrative records can be particularly problematic. Information from the NLS Youth survey which contains identifiers for county of residence and selected information for the county is provided on the "Geocode" file under special agreements with institutions

various contexts for a long time but has not been used.

To my knowledge, not a great deal of economic research has been conducted using establishment microdata from other countries either. Among microdata that have been used for research are French data used to study investment and labor demand (Mairesse and Dormont, 1985) and compensation (Abowd, 1994). In Great Britain, there has been a major establishment survey for which microdata are publicly available for research, the Workplace Industrial Relations Survey (WIRS), begun in 1980; see, e.g., Millward (1993) for a discussion. According to Hamermesh (1993, p. 398), the WIRS, which focuses on the practices of management-employee relations at the workplace, provides ". . . most of the variables one might want for studying labor demand." It has been collected and processed by a private research organization rather than a government agency, although three government agencies including the Department of Employment have been sponsors. Research topics studied using this survey have included the impact of unions of various types on wages and the effects of profit-related pay. Similar surveys have recently begun in Australia and France.

Linking across surveys conducted by an agency can expand the types of analyses that are possible. But such efforts have been difficult for a single researcher and many possibilities have been prevented or made extremely costly by data not being stored and maintained in a suitable way.

In the decentralized U.S. statistical system, matching confidential data collected by different agencies is not possible at present. This would necessitate data sharing legislation or some other mechanism.

How Can We Respond?

Needs of various users differ, so tradeoffs must always be made. Tradeoffs clearly exist between features of programs that serve needs for timely macro data or indexing or allocating funds and features of programs that serve research and other policy needs. Tradeoffs exist between accuracy, frequency, and detail of information provided.

It is very difficult to cut information that is currently being collected. Thus, for instance, detailed information has been provided for manufacturing while much less information has been provided for services industries.

Obviously, once a compelling major need has been identified, budget increments are typically necessary. Even prior to the current situation of extremely tight budgets in the U.S., this was difficult and involved considerable delays. Recently, there were two instances in which the President's budget request included proposals that would have provided BLS with the means of responding rapidly to changing needs, but neither was actually funded. In particular, the Fiscal Year (FY) 1994 budget included a proposal to fund two additional special supplements per year to the CPS that would have been used to

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for research purposes. Certain security procedures are required. The Geocode file also contains confidential information from high school transcripts.

collect information on special topics. The FY 1996 budget included a proposal for a special program of establishment surveys to collect information in areas of emerging data needs (such as workplace practices).

Overall, it appears to me that identifying what is needed is not particularly difficult but making tradeoffs among competing needs is extremely difficult. In the U. S., the Department of Labor, the President, and the Congress must all approve proposals for BLS budget expansions. Some BLS data collection efforts have been funded by non-statistical government agencies to meet their specific needs; recent examples are given above. For more modest changes that can be made in the context of ongoing programs, the agency can of course make decisions.

This paper has presented information on important new needs for employment data that have been identified for the U.S. and how, if at all, they have been met. I expect that the situation in various countries concerning how new needs can be addressed differs considerably. Perhaps a study by a Voorburg group member comparing new and expanded data collection efforts by member countries could help aid in identifying emerging issues--given our global economy, needs recognized one place are likely to appear elsewhere--and how they are being handled.

Of issues and data needs discussed in this paper, the following topics might be discussed by the Voorburg group.

There have been special data collections in the U.S. on contracting out and contingent and alternative work arrangements, job vacancies and turnover, and training. Are these important topics in other countries and are data being collected? Are these labor market situations similar enough to compare across countries and if so how do definitions compare to those that have been applied in the U.S.?

What information is being collected on workplace practices?

How important are components of compensation other than regular cash wages, are these elements measured in ongoing surveys, and if so, how?

Do other countries make available establishment microdata for research purposes to users who are not employed by the statistical agency and, if so, under what arrangements?

References

Abowd, John. "Internal and External Labor Markets." Paper prepared for the NBER/CRIW Conference on Labor Statistics Measurement Issues, 1994.

Davis, Steven and John Haltiwanger. "Gross Job Creation and Destruction: Microeconomic Evidence and Macroeconomic Implications." In O. J. Blanchard and S. Fischer, eds., *NBER Macroeconomics Annual 1990*, Cambridge, MA: MIT Press, 1990, pp. 123-86.

Famulari, Melissa and Stephen Bronars. "Training, Wages, and Capital." Paper prepared for the NBER/CRIW Conference on Labor Statistics Measurement Issues, 1994.

Frazis, Harley J., Diane E. Herz, and Michael W. Horrigan, "Employer-provided training: results from a new survey." *Monthly Labor Review*, May 1995, pp. 3-17.

Hamermesh, Daniel S. "Data Difficulties in Labor Economics." In E. R. Berndt and J. E. Triplett, Eds., *Fifty Years of Economic Measurement*." NBER Studies in Income and Wealth, Volume 54, Chicago: The University of Chicago Press, 1990, pp. 273-295.

Hamermesh, Daniel S. *Labor Demand.* Princeton, NJ: Princeton University Press, 1993.

Hostrup-Pederson, Soren. "Statistics of Employment in Businesses--Denmark." *Proceedings* of the International Conference on Establishment Surveys, American Statistical Association, 1993, pp. 309-315.

Mairesse, Jacques and Brigitte Dormont. "Labor and Investment Demand at the Firm Level: A Comparison of French, German and U.S. Manufacturing, 1970-79." *European Economic Review*, Vol. 28, pp. 201-31.

Manser, Marilyn E. "U.S. Labor Market Data and Issues in Comparing Goods and Services", Paper prepared for the 10th meeting of the Voorburg Group on Service Statistics, 1995.

Millward, Neil. "Establishment Surveys in Britain: A Boon to Labour Economists." *Proceedings* of the International Conference on Establishment Surveys, American Statistical Association, 1993, pp. 266-274.

Orchard, Terry and Peter Stibbard. "Labour Income Surveys in the United Kingdom." *Proceedings* of the International Conference on Establishment Surveys, American Statistical Association, 1993, pp. 316-322.

Rosen, Sherwin. "Comment" (on Hamermesh). In E. R. Berndt and J. E. Triplett, Eds., *Fifty Years of Economic Measurement*." NBER Studies in Income and Wealth, Volume 54, Chicago: University of Chicago Press, 1990, pp. 295-298.

Triplett, Jack E. "Reviving the Federal Statistical System: A View from Within." *American Economic Review*, May, 1990, pp. 341-344.

U. S. Department of Labor, Bureau of Labor Statistics. *BLS Handbook of Methods*. Bulletin 2414, September 1992.

U. S. Department of Labor, Bureau of Labor Statistics. *Report on the American Workforce*, 1994.