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Analysis of Labor Cost: Data Concepts and Sources

Joseph R. Antos

Economists face an all too familiar dilemma in carrying out conceptual and empirical work on labor cost: Data capable of supporting tests of sophisticated theoretical propositions are often inaccessible or nonexistent. Data development cannot proceed, however, without guidance from economic theory on the types of variables to be collected and the method of collection. It is thus important that researchers devise projects that illuminate the conceptual basis for the measurement of labor cost and find ways to test competing theories on currently available data sources.

In this paper I discuss a variety of data sources from the Bureau of Labor Statistics (BLS) which have considerable potential for the study of labor cost. A number of these series have been used in previous labor market research, most often in studies of employee compensation, but some are new and have yet to be fully exploited. The discussion of available data series is general, intended to give a flavor for the research potential that exists. Emphasis is placed on the prospects for analytically integrating BLS data for a more complete view of labor market activity.

Both the economic researcher and the economic statistician are faced with a host of analytical and conceptual problems which should be resolved—at least tentatively—before proceeding to statistical problems. It seems appropriate, then, to introduce the discussion of specific data

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sources by considering briefly what is meant by labor cost and what is needed to develop a measurable labor cost concept. Since the conceptual issues are far from settled, the discussion is confined to three themes on which some speculation seems warranted and which are central to the task of measurement. These themes are:

1. What should be included in labor cost measures, and what is the relationship between labor cost and traditional measures of employee compensation?
2. What is the appropriate unit of observation (e.g., the worker, the job, the firm, the collective bargaining contract, or the industry) and the appropriate time dimension (e.g., hourly, weekly, or some longer time period) for measuring labor cost?
3. What additional variables are necessary to explain observed variations in labor cost?

In discussing some of the factors which should influence the design of either a data collection or a data analysis project on labor cost, examples of the treatment of these issues in BLS statistical series are provided as a guide to the analytical potential (and pitfalls) of currently available data.

4.1 Measurement Issues

A distinction is maintained here between labor cost and employee compensation. Labor cost is viewed as the full cost to the firm of employing labor as a factor of production. Employee compensation, on the other hand, represents the stream of income (broadly defined to include nonwage forms of income) that accrues to an individual in payment for labor services. The two concepts are closely related, and parallel analytical problems are encountered in developing measures of labor cost and employee compensation. I turn first to a brief discussion of some of those problems related to compensation measures.

In its simplest form, the behavioral model that underlies most of the literature on compensation is that of a utility-maximizing individual who determines his level of labor supply, and, consequently, the amount of total income he has available to spend on consumption goods. Since consumption is time-consuming¹ and leisure is valued in its own right, there is a trade-off between hours of work (or its complement, leisure) and income (or, equivalently, goods consumption). More sophisticated models may incorporate decisions on occupational choice and other utility-relevant variables, and they may widen the focus from individual to family decision making. In any event, the representative individual (or family) of this model is assumed to have “nicely shaped” indifference curves which represent preferences stable over time. Factors other than the ones of most direct concern to the labor market problem at hand are

also considered stable or fixed, such as the relative prices of consumption goods or nonlabor sources of income.

The resulting analysis of compensation is frequently, and often implicitly, a comparison of market alternatives assuming a fixed level of utility. For example, the goal of much of the voluminous literature on union pay impacts is to estimate pure wage differentials purged of other factors which imply a compensating payment (such as differences in individual productivity characteristics or working conditions). Of course, compensation analysis is conducted at various levels of aggregation, but a model of individual behavior provides the necessary theoretical underpinnings of even the most aggregative study. The assumptions outlined here provide a common basis for reducing the scope of the analytical problem, but a variety of issues remain to be settled in developing an adequate data base for empirical work which flows from the model.

The measurement of even the most commonly studied component of compensation, wages, can be troublesome. Variation in payment patterns across workers impedes wage comparisons, so a standardized wage measure in terms of both the time period of observation and the kinds of wage payments included in that measure is often desirable. Most economists compute an average hourly or weekly pay rate to impose some comparability on diverse samples. This procedure risks introducing systematic errors into the data, especially when the content of the underlying wage information is not fully specified. For example, the Current Population Survey (CPS), which has been widely used in studies of labor compensation, provides wage information on the basis of three questions:

- i. How many hours per week does . . . [employed household member] USUALLY work at this job?
- ii. (For those paid by the hour) How much does . . . earn per hour?
- iii. (For all respondents) How much does . . . USUALLY earn per week at this job BEFORE deductions? Include any overtime pay, commissions, or tips usually received.²

There is a potential for error in combining the reported hourly rate for workers paid by the hour (question ii) with a computed hourly rate (using questions i and iii) for other workers. The reported rate probably represents the gross straight-time wage rate and excludes adjustments for overtime, commissions, and tips. The CPS interviewer's manual (U.S. Bureau of Census 1980) indicates that the intended response to question ii should exclude overtime, commissions, and tips. There is no attempt to clarify this point for the respondent, however.³ Consequently, the result obtained depends on how the respondent himself interprets the question. The computed hourly rate, on the other hand, probably includes the adjustments to pay listed in question iii.

In actual practice, there does not seem to be much difference in reported and computed hourly earnings rates for respondents paid by the hour who answer all three questions. The reported rate appears to run about .5 to .75 percent below the computed rate for these workers, and the discrepancy does not greatly affect the estimated coefficients in common wage equation specifications. This somewhat surprising result seems to reflect conflicting errors in the measures. Although the weekly earnings figure is intended to include payroll deductions, some respondents (especially proxy respondents who respond for someone else in the household) may report by mistake net earnings. There is also probably some underreporting of overtime pay, commissions, and tips, which brings the computed and reported rates closer together. In addition, usual hours worked are subject to reporting error. A forty-hour week may be reported even when typical weekly workhours are less than forty. Many workers are paid on a forty-hour basis but regularly work less than forty hours. Some workers on rotating shifts work fewer hours on the night shift, but are paid at a constant nominal hourly wage rate for a constant nominal workweek.

Whichever hourly earnings measure is used, reporting errors aside, a comparability problem remains because there is no direct adjustment in the CPS for paid hours not worked. While some respondents may estimate average hours worked per week over the past year with a rough adjustment for the average accrual of paid leave hours, most probably report average hours worked during recent weeks without such an adjustment.⁴ It is again impossible to know exactly how respondents answered the hours question. Since no further information is available from CPS to control for variations in paid leave, computed wage rates are thus not fully comparable across workers. Such data problems related to variations in survey or questionnaire design are not unique to the CPS, of course. This particular problem does not obviate the usefulness of CPS data for many empirical applications, but it does call for caution in the interpretation of resulting estimates and in comparisons with results from alternative data sources.

Even when there is less ambiguity in the underlying data, an hourly or weekly pay rate based on observations covering short time periods—as is usually the case—is not always the appropriate measure. This wage measure ignores the impact on earnings and worker behavior of unemployment patterns that are typical of particular occupations and industries. As part of an implicit labor contract, workers expect a certain level of job stability and plan their labor market and consumption activities accordingly. An annual earnings measure, corrected for employment duration and intensity, provides a better indicator of relative incomes for workers in diverse occupational and industrial settings. Such data are,

however, probably subject to greater measurement error than weekly or hourly wage rates because of the greater reliance on the long-term memory of respondents and because of the complexity of the annual measure, which incorporates both price and quantity considerations.

Employee compensation includes nonmonetary forms of income as well as wages. Fringe benefits (such as pension and health insurance coverage) have become such a significant proportion of compensation that it is probably a misnomer to refer to them as "fringes."⁵ Variations in working conditions and other conditions of employment must also be accounted for in explaining worker behavior. Such factors as the tediousness of the job, the risk of bodily injury, and, as just mentioned, the stability of employment (and of the income stream) all directly influence the wage level necessary to clear the market for particular jobs and ought to be included in measures of employee compensation.

Measuring nonpecuniary forms of compensation is difficult and evidently requires either direct quantity measurement of working conditions or benefits, or measures of their value to workers. Direct measurement is often not possible, but analytical means have been explored (in the hedonic labor market literature)⁶ to infer the value of nonpecuniary job characteristics. A major limiting factor has been the paucity of information on fringe benefits and employment characteristics. Surveys of individuals have begun to provide such job-specific data, but they are generally limited to measures of the incidence (rather than the value or quantity) of fringe benefits and to a few largely impressionistic measures of conditions on the job. The CPS, for example, now provides information on pension and health insurance coverage (but not the value of that coverage) in its regular March supplement. A number of establishment surveys provide detailed measures of benefit incidence or cost, but are limited in their coverage of worker characteristics. One of the most comprehensive surveys providing fringe benefit costs is the Employer Expenditure for Employee Compensation Survey (EEEC), which has been successfully used in conjunction with the CPS and other data sources to explore compensation issues.⁷

When fringe benefit costs are available, their interpretation as compensation to workers is not always clear. Smeeding (this volume), for example, observes that scale economies may account for differences in the cost of firm-provided insurance plans and privately purchased plans. If costs for a given benefit plan vary across firms, say according to firm size, measures of the per worker cost of such plans may not accurately reflect the true level of benefits provided. Similarly, Schiller and Weiss (1980) have found evidence that the cost of pension plans may not be borne equally by all plan participants in a firm. Wage rigidities, especially in collective bargaining situations, may result in a shifting of the cost of

plan improvements toward younger (low-tenure) workers. Firm-specific measures of fringe benefit costs may thus be incorrect indicators of their net value to individual workers within the firm.

The measurement problems associated with employee compensation are compounded when the relevant concept shifts to labor cost. The appropriate model for labor cost issues is firm cost minimization, subject to a production constraint. Analogous to the compensation model, a representative firm is posited which faces a stable production technology. It is usually necessary to assume that labor input is a separable factor or that the levels of other inputs are fixed. Empirical analysis involves the measurement of unit labor costs which standardize for qualitative and quantitative differences in labor inputs, assuming a fixed level of production.

Corresponding to the individual worker as decision maker in the compensation model, the decision making unit for the analysis of labor cost is the firm. Unlike the former analysis, however, there are practical difficulties in identifying the appropriate firm decision making level for measurement purposes. The modern firm is characterized by a complex organizational structure, and interrelated economic decisions are made at various levels within the firm. Moreover, a given decision may not be made at identical organizational levels across firms. For example, while some hiring decisions may be made at the plant or establishment level, decisions on wage rates and benefit levels may be determined at a company-wide level. Similarly, although short-run hiring may be determined at the plant level, long-run decisions about the general expansion of production (which affects long-run hiring plans) are made higher in the corporate structure. Complication is added by the existence of different sizes of firms with different types of organization structures.

For some research purposes, it may be valid to abstract from the specific firm decision making level and focus on individual jobs. This allows the use of survey data on individuals, but forces the analyst to ignore how individual workers are combined into effective labor input by the firm. Since a firm's labor cost depends on the composition of its work force and the joint productivity of a number of workers, data from a random cross section of individuals may not adequately represent the actual pattern of labor cost. Data from firms that include detail on the pay and productive characteristics of their employees are not generally available. Surveys of individuals rarely provide information that allows grouping by employer. Surveys of establishments occasionally provide some detail on individual workers or groups of workers, but the range of variables collected is always small. For example, the Area Wage Surveys (AWS) provide detailed wage information for individuals in selected occupations, by establishment, as well as information on fringe benefit incidence and a variety of data on establishment characteristics. The only

demographic variable that can be obtained is sex. Other surveys, including EEEEC, report wage or benefit data by occupation but are silent on worker characteristics.

Research with an institutional bent may call for other types of observational units. Studies of collective bargaining costs, for example, focus on the span of contract coverage, rather than the worker or the firm, as the appropriate unit of observation. This span may include part or all of a firm's (or several firms') employment and is not uniform from contract to contract. Since most collective bargaining contracts are multiyear agreements, account should be taken of any adjustments in the work force or employment conditions that may gradually occur in reaction to negotiated contract changes. Comparisons of the cost of collective bargaining settlements are also complicated by differences in the timing of settlements and the possibility of discontinuous jumps in costs from one contract to the next.

The existence of fixed labor costs places another burden on data collection. As Oi (1962) points out, hiring and training costs are likely to be significant, especially for highly skilled workers. In a steady state world, fixed labor costs would be approximately proportional to the rate of labor turnover measured over a relatively short time interval. Labor cost measured over a short time span is adequate under these circumstances. In a world characterized by business cycles, such a short-term measurement would be misleading for some purposes. During business downturns, firms tend to retain highly skilled (and highly paid) workers and labor productivity tends to drop, indicating a reduction in work intensity. Any labor cost indicator measured over a short time interval could thus under- or overstate the firm's average labor cost over the cycle. Moreover, comparisons of short-run labor costs over the cycle should also take account of the cyclical pattern of productivity. Intertemporal comparisons are facilitated by surveys like the Employment Cost Index (ECI), a Laspeyres index of labor costs. By standardizing for variations in the occupational mix and costing out a fixed set of labor inputs, the ECI attempts to distinguish price changes from labor force quantity changes.⁸

Whatever unit of observation and time dimension are deemed appropriate, labor cost measures should expand beyond the usual measures of compensation more commonly investigated in the literature. Everyone acknowledges that a comprehensive measure of labor cost would include wages and the cost of fringe benefits. However, a number of other direct costs, relating to hiring and training activities and labor negotiations, should also enter the calculation. Data on hiring and training costs are rarely available, but a proxy such as turnover rates can be included in the analysis. Similarly, direct collective bargaining costs are rarely reported. Indicators of strike activity can be developed, and are especially useful in analyzing labor cost across strike-prone and strike-

free firms or industries. For most applications it is also desirable to control analytically for variations in working conditions and other job characteristics which influence wage demands. Finally, since the labor cost measure should represent the cost of producing a given level of output and labor manhours are not homogeneous, analytical control is necessary for the level of work intensity and variations in the quality of labor input. Given the assumptions of the behavioral model underlying the labor cost concept, human capital measures and hours worked (measured either for individuals or at a more aggregated level) may be useful in controlling for such variations.

The data requirements for analyzing labor cost are obviously high. The BLS offers a number of data sources on which empirical work in this area may be usefully based. I turn next to a brief discussion of those series.

4.2 Synopsis of BLS Data Sources

This section provides a description of selected BLS data sources appropriate for the analysis of various aspects of labor cost and labor compensation. Roughly similar types of surveys are grouped together. Unless specifically mentioned, the statistical programs have been in place (and data are available) for an extended period of time. The lowest level of aggregation available in each survey (e.g., the individual worker, the firm, or the collective bargaining contract) is emphasized, but each statistical program also provides data products at higher levels of aggregation. Because of confidentiality restrictions, not all programs release public use microdata files. Those that do release those files are specifically mentioned. Some censoring is customarily necessary to insure confidentiality, and special arrangements are necessary to develop microdata files for particular research uses.

The discussion is intended to give a sense of the research potential of these data series without being an exhaustive description. Additional information is available in selected publications from the U.S. Bureau of Labor Statistics (1976, 1977, 1980*b*, 1981) and the U.S. Bureau of Census (1977).

4.2.1 Current Population Survey (CPS)

The CPS is a monthly survey of about 60,000 households which obtains the labor force status, usual weekly hours and earnings, and demographic information for individuals. These data have been widely used for research and policy purposes and are the basis for national labor force and unemployment rate estimates. CPS microdata are available in addition to more aggregated data tabulations.

In addition to the regular survey questions, supplementary questions on numerous topics are included in the survey. Three supplements rel-

evant to labor cost of compensation studies are included on an annual basis:

1. The work experience and income supplement, conducted every March, provides data on the extent of employment and unemployment in the population, and data on work experience, earnings, and household income during the previous year. Other data are collected on family characteristics, household composition, and population migration.

2. The multiple jobholding and premium pay supplement, conducted every May through 1981, provides data on the characteristics of multiple jobholders, the receipt of premium pay for overtime, scheduled work-hours, and union membership status. Current plans are to discontinue this supplement.

3. The school enrollment supplement, conducted every October, provides more information than the regular survey on educational attainment and labor force status, and it occasionally covers future educational plans.

Other supplements on a variety of topics are included on an irregular basis. Three of these special supplements are especially noteworthy:

1. The job search supplement, conducted in May 1976, provides information on the methods and intensity of job search and the reasons for that search activity. A short follow-up questionnaire on job search was conducted in May 1977.

2. The pension supplement, conducted in May 1979 for the Labor Management Services Administration and the Social Security Administration, provides information on employee participation in private pension and health insurance plans, as well as firm employment size data.

3. The job tenure supplement, conducted in January 1981, provides information on occupational mobility and length of employment at the current job. A more modest version of this supplement was conducted in January 1978.

The CPS has a rotating sample design, with households (addresses, strictly speaking) in the survey four months, out eight, and back in for four more months. Prior to 1979, the usual weekly hours and earnings questions (discussed in detail earlier) were asked of all respondents as part of the May supplement. Since then, the questions have been asked each month, but only of the two outgoing rotation groups (that is, respondents in their fourth or their eighth, and final, month in the sample). Consequently, a sample of over ten thousand employed persons reporting hours and earnings information is available each month from the CPS. These data are aggregated and reported on a quarterly basis.

The sample design allows observations to be linked in a longitudinal fashion over time spans as long as sixteen months. CPS matched files, which are available from the BLS, permit a greater range of empirical investigation than possible with a series of independent cross sections.

Mellow (1981), for example, uses year-to-year matched data to investigate the wage change of workers changing union status. Matched data also allow more intensive use of the supplements by increasing the size of the sample for which a full range of information is available. Matching individuals participating in both the May and June 1979 surveys, for example, roughly doubles the sample of observations that report both earnings and fringe benefit data.

A test of the accuracy of CPS earnings data was conducted as part of the January 1977 survey.⁹ In this test, individuals in their final month of the survey (that is, one-eighth of the CPS sample) were asked a series of questions on the frequency of payment and amounts. The employers of those individuals were then asked the same questions, and the results were compared. The earnings validation study contains 4,166 cases with complete data from the individual respondent and his employer, about 60 percent of the eligible responses. Statistically significant differences were found between the individual and employer responses. Compared to the employers' responses, individuals overstated their workhours by an average of 3.6 percent and understated both their hourly rate of pay (by 5.2 percent) and their usual weekly earnings (by 11.7 percent). There is some evidence, however, that confusion on the part of some respondents inflated the discrepancy noted in usual weekly earnings. Moreover, the comparison of individual with employer responses is not an unambiguous test of the accuracy of individual responses, since the employer data are also subject to error.¹⁰ The test results do indicate the need for caution in analyzing CPS earnings data, but do not invalidate their use.

The CPS is unquestionably the richest source of data relevant to labor compensation research available from BLS. Since it is a household survey, it is limited in what can be provided on employer characteristics and fringe benefits. The May 1979 pension supplement demonstrates that some of this information is collectible in household surveys, however, and the March demographic supplement now includes questions on pension and health insurance plan coverage.

4.2.2 Employer Expenditures for Employee Compensation (EEEC)

The EEEC was a biennial establishment survey conducted between 1959 and 1977. Between 1959 and 1966 the survey was restricted to manufacturing production workers; subsequently, production and office workers in all industries were covered. The most recent EEEC survey, conducted in 1977, provides information from 3,223 nonfarm establishments on their expenditures for wages and fringe benefits, total hours worked, and total hours paid for over the year. The 1977 survey is the largest nationwide survey of recent vintage providing detailed information on employers' outlays by fringe benefit category. The costs of nineteen separate benefit items are reported, including overtime and shift

pay, paid leave, insurance benefits, retirement and savings benefits, and legally required benefits (principally social security and unemployment insurance). The data are reported separately for production workers and for office workers, and microdata are available.

EEEEC, like the other establishment surveys discussed here, is incomplete in its data coverage for many research purposes. Consequently, it has been augmented in most studies with auxiliary information on worker characteristics, often from the CPS. In spite of this deficiency, the EEEEC survey is extremely valuable because fringe benefit cost data are rarely available from other sources.

4.2.3 Employment Cost Index (ECI)

The ECI is a quarterly measure of the change in the rate of employee compensation, based on a sample of about two thousand establishments. About five occupations are sampled in each establishment, and data are collected on straight-time average hourly earnings and the cost of fringe benefits for those workers. Data are collected on about twenty specific occupations, each with about one hundred observations. Data collection was initiated in 1975, but benefit data have been collected only since 1980. The benefit types covered are essentially those mentioned in the discussion of EEEEC, section 4.2.2.

The index derived from the ECI survey is a Laspeyres index using occupation weights from the 1970 census to standardize for employment patterns. By pricing out a fixed set of labor inputs, the index attempts to measure the pure change in the cost of employment over time, free from shifts in the composition of employment. Data on quarterly changes in compensation are limited to six broad occupation and industry categories. Corresponding data on wage changes are available for a variety of occupations, industries, regions, union/nonunion, and metropolitan/nonmetropolitan breakdowns.

4.2.4 Area and Industry Wage Surveys (AWS and IWS)

AWS surveys over twelve thousand establishments in seventy labor market areas on an annual basis, collecting information on the wage rates paid to workers in occupations common to a variety of industries. Every third year, on a staggered basis, additional information is collected on work schedules, paid vacation and holiday practices, fringe benefit coverage, and union status, reported separately for office and production workers. Many responding establishments provide a detailed listing of the wages paid to individual workers in the sampled occupations.

IWS surveys establishments in fifty manufacturing and twenty non-manufacturing industries on a three- or five-year cycle. Data are collected on the methods and rates of wage payment for occupations considered peculiar to a particular industry. Like AWS, additional information is

available on a variety of pay and benefit practices and union status, for broad occupational groups.

Microdata files are available for both AWS and IWS.

4.2.5 National Survey of Professional, Administrative, Technical, and Clerical Pay (PATC) and Level of Benefits Survey (LOB)

The PATC and LOB surveys are designed to provide a basis for federal white-collar pay setting. The pay-setting process attempts to establish comparable pay levels between employees in the federal and private sectors. Consequently, the surveys are directed toward selected occupations and industries which correspond to federal white-collar employment, and the samples are not nationally representative of white-collar employment.

PATC samples four thousand establishments annually to determine the salary rates for about ninety work-level categories in approximately twenty white-collar occupations. The work levels correspond roughly to particular pay grades within the federal white-collar pay system. This survey has been conducted since 1961.

LOB is a companion survey to PATC designed to provide a basis for adding federal-private sector differences in fringe benefits into the pay comparability process. The first LOB survey was conducted in 1979 on a sample of five hundred establishments drawn as a subsample of firms covered by PATC. Extraordinarily detailed data on the provisions of various benefit plans and their distribution across occupational groups were collected through a complex process of personal interviews and careful analysis of company provided brochures. Benefits covered include: paid lunch and rest periods; paid leave; life, accident, sickness, health, and long-term disability insurance; and private pension plans. For the purpose of pay comparability, the costs of these benefits are imputed by the Office of Personnel Management using an actuarial model. In this way estimates are made of the hypothetical private sector cost of providing benefits to a labor force with the characteristics of the federal labor force, rather than the actual cost of private sector benefits.

Microdata are available for both surveys. In the case of LOB, data are provided by benefit type and cannot be matched across types to create a profile of benefits provided by each establishment. While this is limiting for some purposes, the data still provide a uniquely detailed view of the structure of particular fringe benefits.

4.2.6 Wage Distribution Survey (WDS)

WDS is an establishment survey conducted between 1978 and 1980 for the Minimum Wage Study Commission and the Employment Standards Administration by the BLS. Observations on the pay and employment characteristics of individual nonsupervisory workers are available, in-

cluding the straight-time hourly pay rate, paid weekly hours, bonus and commission pay, tips status, age, and sex. This basic survey was collected in all three years, with nearly 8,500 establishment responses in 1978 and 1980. In 1979 the basic survey had 4,500 responses, but was supplemented by a one-year panel survey covering 2,100 establishments which had participated in the 1978 survey. The panel survey includes additional establishment-level information on total employment and payroll, establishment receipts, collective bargaining coverage, overtime pay practices, and the incidence of twenty-one fringe benefits. The benefit information is particularly interesting because the survey indicates what benefits were added or deleted from 1978 to 1979, and because it picks up a number of infrequently measured benefits (including paid rest periods, subsidized meals, clothing allowance, laundering of uniforms, merchandise discounts, and educational benefits). A microdata file is available and has been used in the analysis conducted by the Minimum Wage Study Commission (1981).

4.2.7 Collective Bargaining Data

Three major BLS programs focus specifically on collective bargaining: Current Wage Developments (CWD), Work Stoppages (WS), and the Collective Bargaining File (CBF).

CWD is, in essence, two data programs. The first provides monthly information on general changes in newly negotiated wage and benefit contract provisions for specific bargaining situations, covering both private and public sector contract settlements. The universe for this program consists of 2,200 major collective bargaining units. Of course, in any given month a small fraction of those agreements are subject to negotiation and thus eligible for reporting in CWD. The general information provided on a monthly basis is derived primarily from secondary sources, such as newspapers and trade publications.

The second program under CWD analyzes on a quarterly basis the cost of wage and benefit changes under bargaining agreements. Wage information is collected for all agreements covering one thousand or more employees, about 1,900 agreements in all. Wage and benefit information is restricted to agreements covering five thousand or more employees, about 350 agreements. CWD is not a sample survey, so data are collected on all agreements affecting the stated number of workers.

This second data base is unique in that contract provisions affecting base wage rates, cost-of-living escalators, and numerous types of benefits are cost out on a consistent basis for the agreements covered by the survey. The estimation procedure attempts to measure the costs associated with the actual characteristics of the work force affected by the settlements, not the costs for a hypothetical employee group. Actual pricing procedures are complex, but changes in the cost of contract

provisions are associated with specific average hourly earnings rates in as much detail as possible. Detailed occupational employment weights are used to compute average cost figures for each contract, which are reported as changes over the quarter. The weights are held constant (at the levels observed at the time of settlement) over the time period the contract is in force.

Because of the small number of observations in the universe, and because of the sensitive nature of the cost data, average percentage changes in wages and benefits are reported only in highly aggregated form. Wage change data are available for three industry breaks (manufacturing, nonmanufacturing, and construction), but wage and benefit change data are available only at national levels.

The other BLS collective bargaining programs can be described briefly. The work stoppages program covers all strikes and lockouts continuing for at least one full day (or shift) involving six or more workers. Information is collected on indicators of the magnitude of the stoppage, including the percentage of available work time lost, and on the issues in dispute and the methods for resolving the dispute. Data are tabulated for the nation and by selected industries. The BLS also maintains a public file of current bargaining agreements and issues reports on various features of those agreements. The file includes all private sector contracts affecting one thousand or more employees, as well as many public sector contracts.

4.2.8 Establishment Employment and Payroll (790 Survey) and Employment and Wages Covered by Unemployment Insurance Laws (ES-202 Program)

The 790 survey is the largest establishment survey conducted by the BLS, covering 160,000 establishments every month. Over 135,000 of those establishments, constituting 450 industries, provide data on the payroll, total employment, and hours of production or nonsupervisory workers. Data on overtime hours are also collected in 320 manufacturing industries. The 790 survey is the basis for BLS industry estimates of employment and earnings and is used to construct the BLS Hourly Earnings Index. Data are also available in the form of detailed industry tabulations.

The ES-202 program is an administrative data base, consisting of quarterly tax reports submitted to state unemployment security agencies by employers subject to unemployment insurance (UI) programs. About 4.6 million reporting units provide information on their monthly employment and quarterly payrolls and employer contributions to UI. The ES-202 is used by BLS as the sampling universe for its establishment data collection programs, and it also serves as the annual benchmark for the 790 survey's employment estimates. Data from this program are available in the form of tabulations by industry and state.

The strengths and weaknesses of both the 790 survey and the ES-202 program for research are similar. Both have untapped longitudinal capabilities. The 790 survey uses a link relative estimator which requires month-to-month observations on establishments. The ES-202 program is a virtual census of establishments every quarter. The sample sizes available in each case are extremely generous. On the other hand, the range of data collected is very limited in each case. Even if BLS could find the financial resources to resolve the technical problems which impede the longitudinal use of this data, the potential usefulness for most research on labor cost would be low. The 790 survey's research potential could improve, however, if extensive changes are made to that program during the multiyear revision that has recently been initiated.

4.2.9 Average Hourly Compensation (AHC)

The AHC program measures total compensation per hour with some industry detail on an annual basis, and by major sector on a quarterly basis. AHC includes as compensation: wages and salaries, other forms of direct payment (commissions, tips, bonuses, and some payments in kind), and supplements (employer expenditures on social insurance, private pension and health plans, workmen's compensation, doctor's fees, and pay for military leave). The AHC is estimated by combining data from numerous surveys and applying various definitional adjustments and imputations. Data for detailed industries are derived primarily from the Economic Census and Annual Surveys of Manufactures. Compensation data for major sectors are developed from Bureau of Economic Analysis data, supplemented by estimates of the labor share of proprietors' income, as part of the National Income Accounts. Other data sources for AHC include the ES-202 (wage information), the 790 survey (hours adjustment for nonfarm production workers), and the CPS (hours adjustment for other workers).

4.3 Integrating BLS Data

Although BLS and other data sources provide a basis for empirical investigation of labor cost, no single data source provides the range of information needed for thorough analysis of a broad range of issues. Just as the long run never arrives, however, the ideal data set will never be available because the target keeps advancing. As data are developed to meet one set of analytical needs, conceptual work continues, resulting in a new set of data requirements. The best that we can hope for is that data development does not lag too far behind theoretical development.

Deficiencies in existing data sources can be surmounted through a judicious focusing of empirical work and the development of statistical methodologies to accommodate certain of those deficiencies. Another

approach is to integrate data sources with complementary strengths and weaknesses, and thus open the range of empirical issues that can be analyzed. Data integration is a particularly promising way of more fully exploiting already existing data sources at relatively low cost.

Most attempts to integrate data involve a statistical matching procedure of some sort, and that statistical process can introduce error into the resulting analysis. We are rarely lucky enough to find information sufficient to exactly identify respondents between surveys. CPS month-to-month matched files, for example, are often treated by researchers as exact matches. While the matching procedure used here is quite accurate, there is still a potential for error because the CPS is essentially a survey of street addresses rather than specific individuals. Consequently, demographic characteristics (rather than the names or social security numbers of individuals) must be used to match individuals observed at a given address in different months, and there is no guarantee that all matches are accurate. In other cases, especially when matching is attempted across dissimilar surveys, the probability of introducing error increases. Especially in these cases, it is important to examine the statistical properties of the resulting integrated data base. Sims's (1972) comments on the assumptions implicitly made concerning the joint distributions of variables in matched samples are especially helpful in this regard.

A variety of specific analytical problems are encountered during the course of most data integration projects. Often the units of observation across data sources are inconsistent. For labor cost problems we are often in the position of attempting to match individual or household data with establishment or firm data. The appropriate unit of observation must then be selected on the basis of the primary topic of research. Freeman (1981), for example, adds industry aggregates of CPS-measured demographic information to establishment-level data from EEEEC in his study of union effects on fringe benefits. Smeeding (this volume), on the other hand, assigns EEEEC and ECI compensation data computed as industry averages to data on individuals from the CPS because his focus is on the economic welfare of individual workers.

Problems associated with the unit of observation are also encountered when matching across surveys of the same generic type. Establishment surveys do not always adhere to identical definitions for what entity constitutes an establishment. In some surveys a very tight definition is enforced, while in other surveys responses from a variety of organizational levels are acceptable. AWS, for example, requires that respondents report only for a single physical location, even when the firm has a number of separate establishments. EEEEC data refer to a broader range of possible observational units, with responses covering a single establishment or a number of establishments (in the AWS sense of the term).

Simply combining several years of data from a single survey can lead to

problems, depending on the design of the survey. The CPS rotational pattern implies, for example, that a substantial number of individuals are included more than once in a data set constructed by amalgamating successive months or years of the survey. Even without a rotating sample design, this problem of double counting is likely in amalgamating establishment survey data, especially for large firms. It is necessary to ascertain in the context of a given analysis whether such double counting is harmless, or whether it introduces significant sample selectivity problems or spurious levels of estimated precision.

Survey definitions and reporting patterns also change over time, and care must be taken to insure consistency. Establishments may report sudden shifts in employment, for example, because of a corporate realignment which has no economic significance for the workers at a given location. Survey statisticians frequently try to improve the survey instrument by changing the placement or wording of questions, and those changes often affect the proper interpretation of the data. Even when the questionnaire is not changed, revisions in instructions to the data collector in the field may influence the nature of the information collected.

It is often difficult to determine the integration potential of various data series because there is rarely an easy way to determine overlaps in series coverage. Two of my former colleagues in the Office of Research and Evaluation, Joe Stone and Ollie Ballard, have constructed the first comprehensive guide to major statistical series which can be used to identify such overlapping coverage. This guide (which is reproduced as Appendix A in this volume) describes BLS establishment data collection programs for wage, price, and productivity statistics. Prepared in matrix form, it provides for each major statistical program information on industry coverage (at the three-digit level), publication status and frequency of data availability, and historical availability over the past thirty years. The matrix refers to the availability of data *tabulated* by three-digit industries. It is possible to find observations for additional industries for some series when using the microdata files, but the coverage is generally inadequate for tabulation purposes.

Scanning the wage-price-productivity matrix reveals a considerable stock of information collected from establishments in the goods-producing sector. The service sector, which has a higher proportion of small establishments, is less adequately represented. Although the general pattern is not surprising, it is useful to know specifically where coverage is available. For industry-level studies, the matrix is an invaluable guide to data resources.

The prospects for developing an integrated data base at finer levels of aggregation are less certain, although the matrix does provide some general guidance. There is unfortunately little chance that these data series will be integrated at the establishment level. Not only are all the

technical problems related to survey comparability in force, but confidentiality requirements restrict the range of information that can be provided at the establishment level. Consequently, the public use micro-data files for individual establishment surveys do not permit cross-survey matching. If the BLS were to develop an establishment matching capability, only selected data from such matches would be provided publicly. This problem is inherent in the use of firm-side information and is less of a difficulty for household data, as the ongoing CPS matching program attests.

4.4 Conclusion

A wealth of statistical information is collected every year by and for government agencies, and it is often difficult to get a sense of which data series are suitable for particular research purposes. This paper provides an overview of BLS data resources applicable to the analysis of labor cost and labor compensation and does not cover surveys available elsewhere. Nonetheless, the array of statistical series discussed here is impressive.

The distinction between labor cost and labor compensation concepts implies important differences in the corresponding statistical measures and the data requirements for their analysis. The measurement problems discussed in this paper are encountered to some degree in BLS and other data series, and that discussion should serve as a general admonition on the use of survey data. It should be remembered that academic research uses of the data are frequently a secondary goal of survey programs. From a research point of view, it sometimes seems that measurement problems have been designed into the surveys. In many cases, those problems are the result of the technical requirements of the survey's principal programmatic or policy functions. In other cases, the expense of resolving a particular measurement problem cannot be met within budget restrictions. For example, the Level of Benefits survey could be redirected to collect the costs of benefits as well as their incidence, but this is not the function of the survey as prescribed by its sponsor, the President's Pay Agent.¹¹ Fortunately, many of the data quality problems (such as sample selectivity, nonresponse, and measurement error) and the data coverage problems (lack of measurement rather than mismeasurement) are amenable to econometric analysis. Some problems are clearly intractable, however, short of developing the financial support for new and better surveys.

In spite of inevitable measurement problems and data gaps, a statistical foundation exists for empirical research on labor cost. That body of statistical information in its present form could be better utilized, and it can be improved in the future. Continued interchange between the

research community and the statistical community can help insure progress on both fronts.

Notes

1. See Becker (1965).
2. Prior to October 1978, the prompting in question iii on what to include in usual weekly earnings was excluded and the order of questioning was changed so that the hourly rate question (ii) was asked last.
3. Except in the rare instance when the respondent indicates his uncertainty about the question.
4. "Usual" is defined in the CPS interviewer's manual (U.S. Bureau of Census 1980) as the most frequent schedule during the past four or five months. This definition is not provided to the respondent unless he insists on a specific explanation of the question.
5. In 1977 money wages accounted for 76.7 percent and benefits for 23.3 percent of total compensation in the private nonfarm economy. See U.S. Bureau of Labor Statistics (1980a), table 1.
6. Rosen (1974) provides a theoretical basis for most subsequent applications of hedonic theory to labor market analysis. Brown (1980) reviews much of the relevant empirical literature.
7. See, for example, Freeman (1981) and Antos (1981). EEEEC is no longer an active survey; see section 4.2.2.
8. As with all base-weighted indexes, comparisons over long periods of time may be inappropriate. Substitution occurs between labor inputs as relative prices change over time. Moreover, the assumption of a constant technology may also become less valid. Thus the ECI may overstate labor costs over the long run.
9. See Carstensen and Woltman (1979) for a more complete description of the CPS earnings validation study.
10. One possible indication of establishment reporting error is the proportion of employers reporting hourly wage rates *below* the minimum wage—4.4 percent, for the full sample. It is unlikely that such a high proportion of hourly workers in the sample were not covered by the minimum wage, or that enforcement was loose enough in 1977 to detect such a proportion in a voluntary government survey.
11. The President's Pay Agent includes the Director, Office of Management and Budget, the Director, Office of Personnel Management, and the Secretary of Labor. Stelluto (1979) describes the decision-making process involved in setting federal white-collar pay levels.

References

- Antos, Joseph R. 1981. Wages and compensation of white-collar workers. BLS Working Paper 123. Washington, D.C.: U.S. Bureau of Labor Statistics.
- Becker, Gary S. 1965. A theory of the allocation of time. *Economic Journal* 75: 493–517.
- Brown, Charles. 1980. Equalizing differences in the labor market. *Quarterly Journal of Economics* 94: 113–34.

- Carstensen, Larry, and Henry Woltman. 1979. Comparing earnings data from the CPS and employers records. *Proceedings of the Social Statistics Section of the American Statistical Association*, pp. 168–73.
- Freeman, Richard B. 1981. The effect of unionism on fringe benefits. *Industrial and Labor Relations Review* 34: 489–509.
- Mellow, Wesley. 1981. Unionism and wages: A longitudinal analysis. *Review of Economics and Statistics* 63: 43–52.
- Minimum Wage Study Commission. 1981. *Report of the Minimum Wage Study Commission*. Washington, D.C.: Government Printing Office.
- Oi, Walter Y. 1962. Labor as a quasi-fixed factor. *Journal of Political Economy* 70: 538–55.
- Rosen, Sherwin. 1974. Hedonic prices and implicit markets: Product differentiation in pure competition. *Journal of Political Economy* 82: 34–55.
- Schiller, Bradley R., and Randall D. Weiss. 1980. Pensions and wages: A test for equalizing differences. *Review of Economics and Statistics* 62: 529–38.
- Sims, Christopher A. 1972. Comment. *Annals of Economic and Social Measurement* 1: 343–46.
- Stelluto, George L. 1979. Federal pay comparability: Facts to temper the debate. *Monthly Labor Review* 102, no. 6: 18–28.
- U.S. Bureau of Census. 1977. *The Current Population Survey: Design and methodology*. Census Technical Paper 40. Washington, D.C.: Government Printing Office.
- . 1980. *Current Population Survey: Interviewers reference manual*. CPS-250. Washington, D.C.: Government Printing Office.
- U.S. Bureau of Labor Statistics. 1976. *BLS handbook of methods for surveys and studies*. Bulletin 1910. Washington, D.C.: Government Printing Office.
- . 1977. *BLS measures of compensation*. Bulletin 1941. Washington, D.C.: Government Printing Office.
- . 1980a. *Employee compensation in the private nonfarm economy, 1977*. Summary 80-5. Washington, D.C.: Government Printing Office.
- . 1980b. *Major programs: Bureau of Labor Statistics*. Report 552. Washington, D.C.: Government Printing Office.
- . 1981. *BLS machine-readable data and tabulating routines*. Report 620. Washington, D.C.: Government Printing Office.

Comment F. Thomas Juster

The Antos paper has three principal parts:

1. What can we learn from theory about the kind of measurements that need to be included in labor cost?
2. What are the principal series now produced by the Bureau of Labor Statistics that can be used to analyze labor cost?
3. How can researchers make more effective use of existing BLS data?

Labor Cost Theory and Measurements

Three general questions are posed in the theory section of the paper. First, what elements should be included in labor cost, and what is the relation between labor cost and labor compensation? Second, what is the appropriate unit of observation for the measurement of labor cost (the worker, the job, the firm, etc.) and what is the appropriate time dimension for the measurement of labor cost (hourly, weekly, annually, business cycle units, etc.)? Finally, what factors ought to be included in data sets relating to labor cost because they can be used to explain variation in costs?

The first part of the initial section is concerned with an analysis of the elements that ought to go into measures of labor compensation. Antos argues that analysis of labor compensation ought to focus on the value of various wage elements to workers, while the analysis of labor cost, in contrast, should focus on elements that represent costs to the firm regardless of their value to workers.

Before examining the elements that Antos argues should be included in compensation, and the degree to which existing BLS data satisfies appropriate analytical requirements, it may be useful to register a basic disagreement with part of the underlying framework which underpins most analyses of labor supply. Almost all such analyses start with what is clearly an article of faith among economists—as Antos expresses it, “consumption is time-consuming and leisure is valued in its own right.” There is therefore a trade-off between the benefits of work (consumption goods or services) and the benefits of leisure.

The presumption that leisure is valued in its own right while work is not is basic to conventional notions about how to analyze well-being. For example, the Nordhaus-Tobin economic welfare measure would be negatively affected by the combination of a decline in housework hours and a rise in workhours, total market output held constant. The analysis below calls that proposition into question. I believe there is a basic flaw in the conventional welfare function, which causes difficulties for the labor supply models displayed at this conference and elsewhere.

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The problem is that, while leisure is clearly valued in its own right (intrinsic benefits), there is significant evidence that work is valued in its own right as well, quite apart from the consumption power produced by earnings from labor.¹ Economists have always recognized that jobs have intrinsic nonmonetary benefits, and there is an extensive literature in the labor supply area which examines the degree to which different kinds of jobs are thought to have greater or lesser amounts of nonpecuniary benefits, and therefore lower or higher wage rates as workers maximize both pecuniary and nonpecuniary benefits at the margin. Thus, jobs like collecting garbage are thought to be highly paid because they are distasteful, while jobs like arranging flowers are thought to be paid poorly because they are pleasant.

While the nonpecuniary aspects of jobs have been recognized in much analysis of job choice and compensation level, that has not been true for analysis of work/leisure choices. There, the conventional analysis sounds as if people believe that work is distasteful and leisure "tasteful," and that consumers therefore trade off positively valued leisure for negatively valued work.

It is possible to subject that presumption to empirical testing. In 1975–76, in the context of conducting a study of time-use focused on nonmarket activities, we obtained a series of what we call "process benefits"—the subjectively assessed intrinsic rewards from a comprehensive set of activities—working for pay, working in the home, going to plays or movies, taking care of children, and so forth. Conventional labor supply theory generally predicts that leisure would have higher intrinsic rewards than work. At the margin, conventional theory is a bit fuzzy—it surely must say that the combination of extrinsic and intrinsic rewards from work are equal to the combination of extrinsic and intrinsic rewards from leisure. If one assumes that leisure has no *extrinsic* rewards, then theory says that at the margin the intrinsic rewards from leisure must be higher than those from work (since work provides both extrinsic as well as intrinsic rewards). If leisure carries extrinsic rewards, it is not clear what theory would predict about process benefits at the margin.

While the data we obtained in 1975–76 do not contain marginal intrinsic rewards, they do reflect what we judge to be average intrinsic rewards. Unless the functions are very differently shaped,² labor economists would expect the average intrinsic rewards from work to be lower than the intrinsic rewards from leisure. The data say that is not true. Of some twenty-two activities ranked according to intrinsic rewards on a ten through one scale, work ranked just about fifth—below a set of child care activities, below social entertainment at home, but above every other activity, including almost all leisure activities.

Moreover, these results are quite general across almost all kinds of jobs. If one classifies jobs into a simple eleven-category occupational

code (professional, managerial, etc.), it turns out that the intrinsic rewards from work in each occupation are higher than the intrinsic rewards from most leisure activities: The sole exception is the female laborer group, where intrinsic rewards from work are lower than most leisure activities.

All this is more suggestive than definitive. But I suspect that analyses of labor supply, especially of decisions to participate in the labor market, will fail to meet the test of predicting behavioral responses if they ignore the fact that work seems to be a very highly valued activity by most people who participate in it. In particular, I expect that the intrinsic rewards from work explain a good bit of the rise in female labor force participation, and that the real cause of that rise is not, as many labor economists have argued, differentially changing productivity in the market and the home. Needless to say, failure to take account of this kind of analysis is hardly Antos's fault—the relevant data and analyses have just begun to get into the public domain, and he can hardly be faulted for ignoring it.

The Antos paper discusses the role of fringe benefits in compensation calculations and focuses mainly on fringe benefits that have a well-defined monetary value—health insurance, pension plans, and so forth. That is, of course, an area where the data are more readily available, but there is a wide range of fringe benefits—job flexibility, health and safety in the workplace—which are more difficult to value but which may be just as important. Most of these qualitative measures are not available from conventional BLS sources, but tend to be available in private sources of data dealing with labor supply, such as the Michigan Panel Study of Income Dynamics, the Quality of Working Life surveys, and the Michigan Time-Use studies referred to earlier.

The question of what time unit to use to measure labor compensation is an interesting one. Antos talks about the differences between hourly, weekly or some longer time span with which to measure wage rates, and pays little attention to what seems to me a serious source of difference between conventional and actual measures of labor compensation per hour. The source of the problem is that most measures of hours, including those obtained by BLS from the Current Population Survey, estimate hours with a set of questions that clearly overstate actual hours spent at the workplace. Again, I will call on the Michigan Time-Use studies for documentation.

In the 1975–76 study, we found that a comparison of diary estimates of time of arrival at work and time leaving the workplace produce an estimate of actual elapsed hours at the workplace that was some 15 percent lower than estimates of workhours obtained from CPS-type measures included in the same survey.³ That is, not only is there doubt about what people actually do while at work, but there is clear evidence that people spend less time at the workplace than they report on survey-

type measures of the sort used in the CPS. And the differential between actual elapsed hours and conventionally reported hours has been growing between the mid-1960s and the mid-1970s, judging from comparisons using the Time-Use studies.

The same set of data suggests that even elapsed hours are not necessarily a good measure of labor compensation—at least not of compensation for current productive effort. People spend time at the workplace in learning and training activities, as well as in leisure activities, neither of which are an input into current production. And for analysis of labor supply, it turns out to be quite important to distinguish between productive time (time spent at the workplace less training and leisure) and elapsed time: for example, the age pattern of time spent at the workplace does not conform well to predictions from theory, if one uses total elapsed time to measure time input, but it conforms substantially better if one uses actual productive time.

The last issue in this area relates to how one actually measures the compensation available to workers in fringe benefit areas, like pensions. The problem is that most calculations distribute a pension entitlement equally across all eligible workers employed by the firm, while the likelihood (and perhaps the expected value) of pension rights may vary quite a lot depending on characteristics of both the pension plan and the worker.

Finally, Antos notes the way in which the Current Population Survey measures wage rates—there is a fairly simple set of questions which do not make any explicit distinction between regular hours or overtime hours. Independent evidence suggests that there are measurement errors in these wage rate estimates, although the errors seem not to be very serious.

Labor Costs

Antos asks whether it is more sensible to focus on the labor costs associated with individuals, jobs, or the firm as a whole when it comes to the measurement of labor cost. Those are interesting and important issues, and he is quite right to focus on those distinctions. One question which may be of analytic interest is whether there are subunits within a firm where the relevant variable is the labor cost associated with some particular function—the payroll department, for example—and whether labor cost measures for those kinds of working group subunits may be more relevant for analysis of costs than either individual, job, or firm estimates.

The paper also notes that estimates of labor cost clearly have to take account of factors like training and hiring costs, the seasonal pattern of employment, the average work pace, and so forth. In short, the calculation of labor cost is far from a simple exercise of adding up a set of wage and fringe benefit payments to either individual workers, particular jobs,

or collections of workers. Rather, it is a subtle calculation in which turnover, cyclical phase, and work pace have an important role to play.

BLS Data Series

The second part of the paper summarizes the kind of information provided by the Bureau of Labor Statistics in its current reporting program. I will touch only briefly on some of the elements that seem to me to warrant discussion in Antos's extensive and useful description of BLS data sources.

CPS. The Current Population Survey provides what can be described as extremely useful but not highly reliable estimates of hours and wage rates, along with a set of personal characteristics associated with those labor market variables. CPS is thought of as a household survey, in that labor force participation data and characteristics are obtained for each member of the household over the age of 14. However, it is really a survey of individuals, in that all the data for the household are typically obtained from a single reporter for the household. There is a good bit of experience suggesting that proxy reporters are not very accurate, especially for population subgroups like teenagers and women, and for work circumstances which are erratic and part-time rather than conventional and full-time. Whether it is worth the cost of fixing proxy reports is a difficult question to answer—the data would clearly be better, and models that are heavily dependent on the reliability of the data are likely to be in some difficulty if they use CPS-type estimates for modeling household labor supply. The CPS also has a variety of useful supplements that are obtained on an annual basis (e.g., income) and others that are obtained less frequently (e.g., pension coverage).

ECI. The Employment Cost Index focuses on a set of occupations, in contrast to a set of people with some set of skills, experience, and job responsibility. That is, ECI costs out jobs rather than people. The potential problem with that measure may relate more to slippage of occupational definitions and to changes in the mix of skill levels of the people who are categorized as being in a particular occupation.

AWS, IWS, PATC and WDS surveys. These are all a collection of special purpose wage surveys—Area Wage Surveys, Industry Wage Surveys, Professional, Administrative, Technical, and Clerical Wage Surveys, and Wage Distribution Surveys. It is clear enough from the description that they were all originally designed to answer particular policy needs as seen by either the Congress or the Administration—people want to know what the wage rates are in Cleveland, not in the United States, they want to know whether public and private employment have different wages for

the same function, and they are concerned with the nature and characteristics of jobs close to the minimum wage.

Although these surveys presumably came into being as a consequence of clearly perceived policy needs, it is important to ask whether they continue to provide those needs, and whether the same objectives could be served, perhaps somewhat less well, at substantially lesser costs. The issues that these special purpose surveys were designed to illuminate are ones that could of course be handled by a lower cost and more general purpose survey of wage rates from a representative sample of establishments, including public ones. Such a survey would necessarily be less efficient for the particular purposes underlying these special surveys. The question then becomes: is the increased variance that users have to live with too great a price to pay? My general inclination as an academic user rather than a public policy user, would be to go with general purpose wage surveys rather than special purpose ones, living with somewhat greater variance for any particular purpose.

Collective bargaining data. BLS collects comprehensive data on a variety of collective bargaining agreements, including universe data for major agreements. Moreover, BLS practice is to do a careful job of costing out various collective bargaining contracts. Antos notes that the data thus collected are published only in rather broad industry groups (manufacturing, for example), since more refined disaggregation would violate the confidentiality of the information that had been collected. The reason appears to be that, although these collective bargaining agreements are in the public domain, BLS collects some information from contractees on a confidential basis, and these data are used to provide estimates of the cost of some contractual provisions. The experience of other researchers with attempts to produce comparable estimates without the detailed and confidential contractee data (relayed in a private communication from Jack Triplett of the BLS) suggests that it is extremely difficult for outsiders to replicate the BLS procedures for disaggregated industry groups.

The 790 survey and the ES-202 survey program. These two surveys are, respectively, the largest establishment survey conducted by the BLS (790) and an administrative data base consisting of quarterly reports submitted to state unemployment security agencies by employers subject to UI programs (ES-202). As Antos notes, these are enormously large data bases and have the deficiency often found in such data bases—they have very large numbers of observations but very few useful variables that can be used for analysis. The logical question is, of course, would not both BLS and the general user community be better served by a more parsimonious sample and a somewhat richer collection of analytic variables attached to that smaller sample? As an academic user, my answer of

course would be yes, but then I am not responsible for having to provide states with estimates of the level of unemployment, nor having to provide other users in the government with estimates of hourly earnings by industry to go into various statistical estimates. I would still argue that it may be better to live with more variance and more analytical potential.

Reflections on the BLS Program Generally

Antos's paper provides a very useful and detailed summary of BLS procedures in collecting the information that provides for analysis of labor cost and compensation issues. In addition, he provides a very useful appendix which organizes these data resources so that the user can see what is available for what time period. The paper is understandably short on asking: What *should* the BLS do, if it didn't have any constraints other than those imposed by a budget and a mandate to provide data of maximal usefulness both for the policy community and to the research community?

Let me note some general principles that seem to me to be relevant to the question: What should the BLS do? First, my judgment is that the most useful data on earnings come from households rather than from establishments. The basic reason is that collecting such data from households permits, at modest cost, the addition of a whole set of demographic and worker characteristics from which a number of interesting and useful analyses can be done, while establishment data will inevitably suffer from the defect of lacking many of the relevant analytic variables. Moreover, labor supply characteristics like the training and leisure components of work can be obtained at least as reliably from household surveys as from establishment surveys. Finally, the most important advantage of establishment surveys—the presumed greater reliability of the financial data—may be much less of an advantage now than it used to be. Households will often tend to have records in the form of payroll forms or check stubs, and those records contain quite accurate information on hours actually worked, gross pay, and various other relevant labor supply variables.

Second, for a program designed to analyze the behavior of labor compensation and costs, the relevant data should be based on households rather than individuals. While it is true that the CPS data do relate to households, it is also true that proxy reporting may be a serious problem with the CPS data on the hours and earnings of household members other than the person doing the reporting.

Finally, if one asks what are the most important types of data that need to be obtained from establishments, it seems to me that the answer is data relating to the demand for labor, not data relating to the supply. What BLS does in its largest establishment surveys (the 790 and 202) is to collect data on workers and jobs which could in principle be obtained from households but which are obtained either from much larger samples

or with greater presumed accuracy from establishments. In short, BLS is collecting labor supply-type data from the demanders of labor rather than from the suppliers because in many cases it is convenient to do so.

But there is an important set of questions dealing with labor market problems that relate to the demand side of the market for labor for which there is no other possible source but the establishment or the firm. Here, the current BLS program, as I understand it, seems to be totally lacking. For example, it would be nice to know something about hiring policies—where do firms look for new employees? It would be nice to know how firms evaluate worker productivity and decide on promotions, raises, firings, and so forth. It would be nice to know how firms behave with respect to training on the job and so on. None of these data can be obtained from households, and all seem to be needed to permit a better understanding of the way in which labor markets function.

I would make the judgment that the BLS program would be better if it collected data from fewer units of observation generally, but measured more variables for those same units. The basic reason is that I would be prepared to live with somewhat more sampling variance, if the benefits were a substantially enhanced analytic potential. And I would tend to worry more about designing a smaller number of efficient general purpose surveys of both households and establishments and not worry so much about the details of industry, area, and occupation. With an efficient national sample design one can always extract those details, although at the cost of a greater degree of variance than if one designs special purpose surveys with particular coefficients of variation for specific industries, areas, or occupations.

Finally, a discussion of data sources for the analysis of labor problems would be seriously incomplete without noting the existence of a set of nonfederal sources of data on these issues. The ones I know best are ones available at the Institute for Social Research at Michigan, although there are widely used and well-known data resources produced by other organizations such as the National Opinion Research Center at Chicago. At ISR, the most useful series relating to labor problems are clearly the Panel Study of Income Dynamics, a fifteen-year longitudinal panel of households and individuals within households which tracks movements in income, hours, and earnings for identical people; the Quality of Working Life surveys conducted in 1969, 1973, and 1977, which focus more on the conditions of work for a sample of employed adults than on hours and wage rates; and the Time-Use studies—a new and relatively small sample study which has produced some interesting results on labor supply issues, as I noted in the first part of this discussion. At NORC, the principal sources of information on labor supply are the National Longitudinal Surveys, begun quite a number of years ago with a set of panels of people

of various age groups and recently augmented by the addition of two panels of younger workers.

These nonfederal data sources all have a set of common characteristics which make them highly complementary to the data resources described in the Antos paper. In principle, they provide enormous richness in variables relevant for the explanation of labor market behavior, while generally being substantially thinner than the BLS sources on sample size. They cannot generally be used for anything other than the grossest regional analyses, mainly because the samples are too small. But they provide a rich variety of data for a number of analytic purposes, and they probably tend to be underexploited just as the Antos paper suggests is true of the BLS data.

Notes

1. The argument is spelled out in F. Thomas Juster, Paul Courant, and Greg Dow. 1981. A framework for the measurement and analysis of well-being. In *Social accounting systems: Essays on the state of the art*, ed. F. T. Juster and K. Land. New York: Academic Press.

2. One could make a reasonable case that the functions are differently shaped—marginal intrinsic rewards for work might decline rather rapidly for hours in excess of a normal workweek. The occupational evidence is consistent with the view that people are not necessarily excited by what they do on the job but more by the generalized work environment. A full-time or even part-time job would fulfill this requirement. In contrast, excess work might be valued primarily because the work itself was interesting.

3. See Greg Duncan and Frank Stafford. 1980. The use of time and technology by households in the United States. In *Research in labor economics*, vol. 3, ed. R. G. Ehrenberg. Greenwich, Conn.: JAI Press.

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