

LABOR MARKET DATA

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Aggregate data on jobs, unemployment and earnings are closely watched by millions of Americans. The unemployment rate may be the single economic indicator most closely followed by journalists and the general population. Among financial market participants, the number of people employed receives particular scrutiny. These and other selected labor market indicators are described in this article.

HISTORICAL DEVELOPMENT

Statistics describing the labor market were estimated as early as 1820, based on questions from the decennial Population Census. In the last decade of the nineteenth century, the newly formed Bureau of Labor—the predecessor of the Bureau of Labor Statistics (BLS)—began to collect detailed data on wages and earnings. In 1915, the Bureau began a monthly survey of employers to produce data on wages and employment. This survey is still conducted, and data from it are reported on a monthly basis; it is often referred to as the *establishment survey*, or the *payroll survey*.

After a century of collecting data on labor markets, there was surprisingly little systematic information on the extent of unemployment. When national attention focused on unemployment during the Great Depression, it was not immediately obvious how to define or to gather relevant information. In 1940 a monthly survey was designed, which is now known as the *Current Population Survey*. Information from the survey allowed an unemployment rate to be calculated. By 1945 the questions were developed that form the basis of the Survey used today, which is usually referred to as the *household survey*.

MAJOR DATA SERIES

Data from the Household Survey

Each month 60,000 households are interviewed by the Census Bureau as part of the household survey. The survey covers economic activity of respondents during the calendar week that includes the twelfth day of the month. The BLS then analyzes the survey results and reports its findings near the beginning of the next month, usually on the first Friday. Many statistics from this survey could be

discussed; the key concepts in this section are the unemployment rate, the number of people employed, and the labor force participation rate.

Unemployment rates are calculated for the entire nation and also for more narrowly defined demographic groups and geographic areas. An unemployment rate is defined as the number of people unemployed as a percentage of the *labor force*. The size of the labor force, in turn, is defined as the number of people *employed* plus those *unemployed*, that is, people without jobs who are willing and able to work.

All three terms, employed, unemployed, and labor force, have very specific definitions. A person is counted as unemployed if he or she did not work during the survey week and:

- (a) took a specific action to contact a potential employer within the previous four weeks, and was available for work during the survey week; or
- (b) was waiting to be called back, within six months, to a job after being laid off.

A person is defined to have been employed if he or she:

- (a) did any work at all as a paid employee, as a proprietor or farmer, or worked at least 15 hours as an unpaid worker in a family business; or
- (b) had a job but did not work during the survey week due to a temporary absence such as illness, bad weather, a vacation, labor-management disputes, or other personal reasons.

Finally, the labor force is simply the sum of persons who are employed plus those who are unemployed. The overall *participation rate* is defined as the labor force as a percentage of the population at least 16 years of age. Participation rates are also calculated for smaller segments of the population, again defined as the labor force as a percentage of the relevant population segment.

There are many reasons why a person may not be in the labor force, such as age, health, home responsibilities, being in school, not wanting to be employed, or not believing that job search would be fruitful. The latter category is referred to as discouraged workers; they are counted as those who would like to work, have looked for work in the past year, but are not now actively looking for work for a reason such as:

- thought no jobs were available in their line of work or area;
- previously tried unsuccessfully to find work;
- lacked the necessary schooling, training, experience, or skills;
- felt employers considered the person too young or too old;
- had some other personal handicap in finding work.

More detail is also provided about persons in the labor force. The number of part-time employees is given, as is the reason for part-time work. The major division is involuntary versus voluntary part-time workers. Unemployed persons are asked how long they have been unemployed and why they became unemployed; the latter category includes those who quit their last job, those on temporary layoff, permanent job losers, those who completed temporary jobs, and those who were not in the labor force.

One's intuitive definitions of employment or unemployment may be somewhat different from the specific definitions given above. In particular, people who are not working vary tremendously in the amount of thought and effort spent on finding work; it is inherently arbitrary to divide people without jobs into only two categories, unemployed or not in the labor force. Some analysts would add discouraged workers to the unemployed, thereby boosting the reported unemployment rate. Others would lower the unemployment rate by defining those who did not actually contact potential employers in the survey week as being out of the labor force.

Behavior over time Chart 1 shows the unemployment rate over the post-World War II period. One notable feature is that sharp swings are associated with the business cycle, the alternating periods of expansion and recession in the whole economy.

Another feature is the general upward drift for much of the chart after abstracting from business cycles.

Chart 2 shows the participation rate. Especially notable is the substantial increase over time. The major factor behind that increase can be seen in the table, which contains the current demographic composition of the labor force and contrasts it with the labor force in 1948 and 1969. The rapidly growing fraction of adult women in the labor force more than offset a decline in the fraction of men in the labor force, resulting in a growing participation rate for the whole population. The table also reveals relatively high unemployment rates for blacks and teenagers.

DATA FROM THE ESTABLISHMENT SURVEY

The establishment survey covers the industry, hours, and earnings of most employed members of the labor force. State agencies collect data from more than 390,000 establishments employing over 49 million workers. Most of the data comes from employers who extract the requested information from their payroll records and mail the forms to the state agencies for processing. The state agencies then forward the tabulated information to the BLS. The forms are then sent back and forth between the collecting agencies and participating establishments; a written record of the numbers can therefore be reviewed by both the providers and collector of the information.

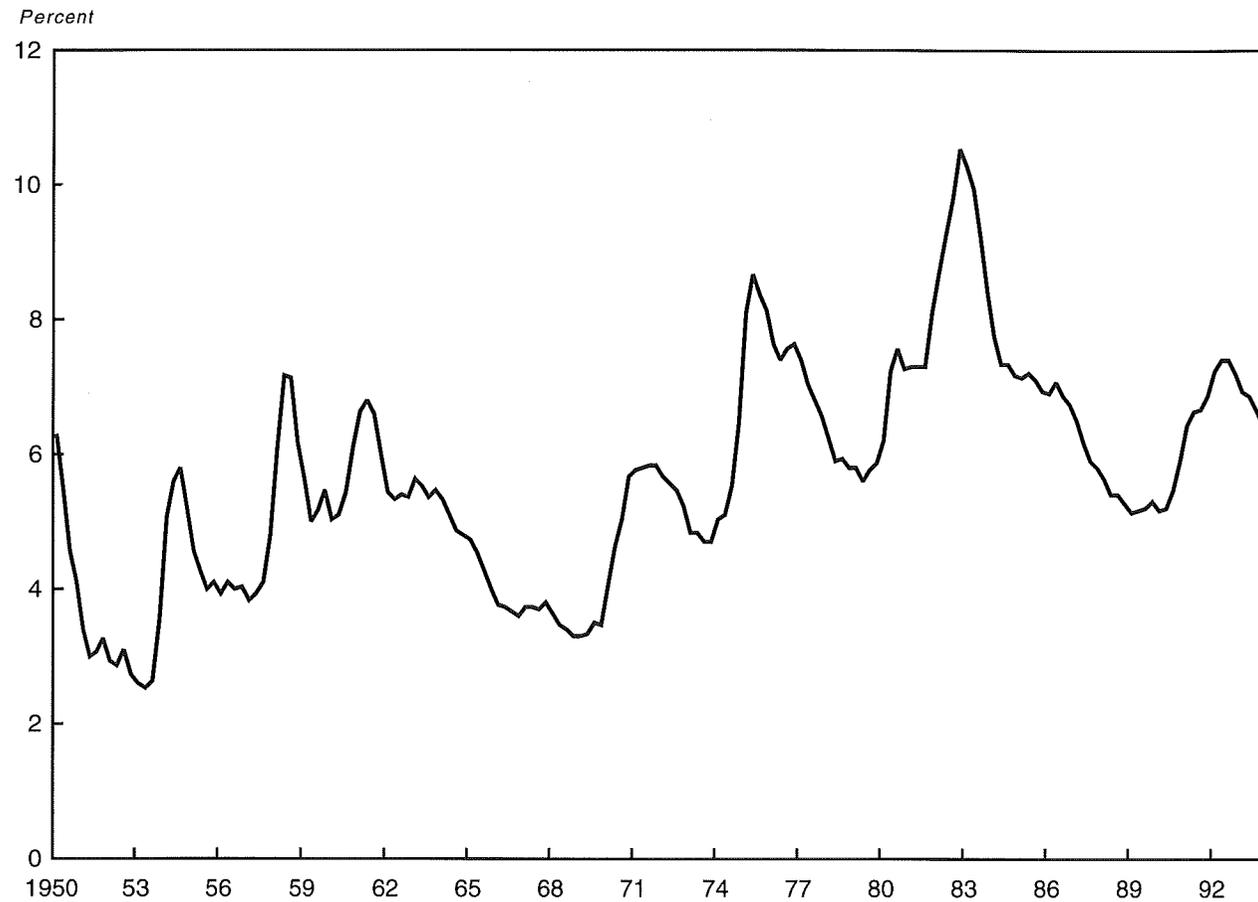
Employment and earnings figures are classified by each worker's characteristics, such as sex, industry, and job category. A person is counted as employed if he or she is on the payroll of an establishment for the pay period which includes the twelfth of the month.¹ This measurement excludes proprietors, unpaid volunteers, family workers, farmers and farm workers, and domestic household workers. Salaried officers of corporations, civilian government employees, and part-time workers are included, however.²

Industry *hours and earnings* figures also originate in the establishment survey. Figures are presented in detail for production and related workers in manufacturing and mining, construction workers, and nonsupervisory employees in service industries. The *hours* statistic reports the number of hours paid for by the employer in the current reporting period, not

¹ Employees of the federal government are counted if they occupy a position on the last day of the month.

² Employees of the Central Intelligence Agency and the National Security Agency are excluded from the survey.

Chart 1
Unemployment Rate
 January 1950 - December 1993



the number of hours actually worked. This figure therefore includes items like holidays, vacations, and sick leave. Overtime hours include that time for which a premium is paid. Weekend and holiday hours are included separately only if overtime premiums are paid. Hours which have only incentive premiums attached, such as shift differential and hazard premiums, are excluded from the overtime hours measurement.

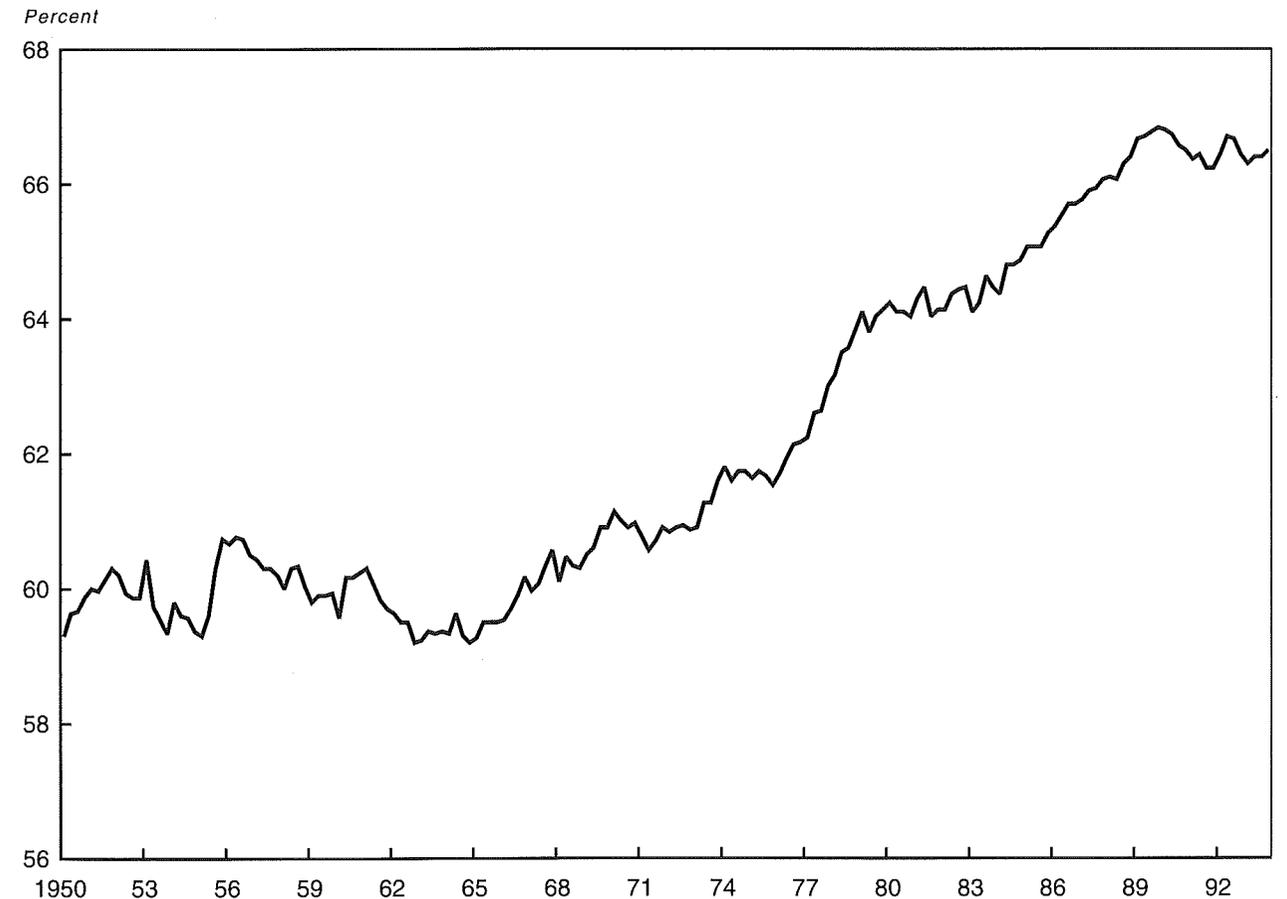
Average hourly and weekly earnings for nonsupervisory workers are estimated from data reported in the establishment survey. Three features have led some observers to question the relevance of that concept for studying certain problems. First, the data do not include fringe benefits, which play a major role in the compensation of most workers. Second, the data do not cover executive, administrative, and managerial workers in private industry, nor do they cover state and local government workers. They

do not include bonuses, profit-sharing, and other contingent payments. And finally, the data are affected by changes in the composition of employment.

To address those problems, the BLS also publishes a quarterly *employment cost index* (ECI), which is based on a special survey of employers.³ It is designed to cover all workers in private industry plus state and local government. The ECI adds contingent payments and the cost of providing a wide range of fringe benefits to basic wage and salary payments. Some of the most expensive benefits are social security and unemployment insurance taxes, paid vacation, sick leave, health and disability insurance, and retirement plans. The ECI is also based on a fixed industry and occupational structure. Shifts

³ A more accurate title might be employee compensation index, however, since it excludes important labor costs such as training and hiring expenses.

Chart 2
Participation Rate
 January 1950 - December 1993



between industries or occupations do not directly affect the index.

Chart 3 compares the ECI and average hourly earnings statistics. Both show a substantial decline in the growth rate of compensation since the early 1980s, as general price inflation also declined substantially. The ECI has grown faster than average hourly earnings for much of the period, however, reflecting the growing relative importance of fringe benefits.

CAUTIONS

The data series described above provide a wealth of timely, relevant information. The data can be misinterpreted, however. The following cautions are designed to help place data series in perspective. The first two concern the exact meaning of widely used terms.

Meaning of Terms

Unemployment Some observers tend to equate the level of unemployment with an unambiguous measure of economic hardship. The unemployment rate, however, is a much more complex statistic. It does not refer to an unchanging group totally composed of desperate individuals. It instead is a snapshot—a view at an instant of time—of people who are starting and ending particular jobs. Some unemployed persons find jobs quickly, others more slowly, and some people move directly from outside the labor force to employment. Some job changes are voluntary, others are involuntary.⁴

⁴ In July 1994, for example, 49 percent of the unemployed had lost their last job, 9 percent had quit their last job, and 42 percent were reentrants or new entrants into the labor force. Of the unemployed, 36 percent had been unemployed less than 5 weeks while 20 percent had been unemployed 27 weeks or longer.

Demographic Composition of the Labor Force in the United States

(Thousands of persons unless otherwise indicated)

	1948	1969	1993
TOTAL			
Civilian labor force	60,621	80,733	128,040
Percent of total population	58.8	60.1	66.2
Employed	58,344	77,902	119,306
Unemployed	2,276	2,831	8,734
Unemployment rate	3.8	3.5	6.8
MEN, AGE 20 & OVER			
Civilian labor force	40,687	46,351	66,069
Percent of adult male population	86.6 ^a	83.0	76.9
Employed	39,382	45,398	61,865
Unemployed	1,305	963	4,204
Unemployment rate	3.2	2.1	6.4
WOMEN, AGE 20 & OVER			
Civilian labor force	15,500	27,413	55,146
Percent of adult female population	31.3 ^a	41.5	58.4
Employed	14,936	26,397	51,912
Unemployed	564	1,016	3,234
Unemployment rate	3.6	3.7	5.9
TEENAGERS (16-19)			
Civilian labor force	4,435	6,969	6,826
Percent of teenage population	52.5	49.4	51.5
Employed	4,026	6,117	5,530
Unemployed	409	852	1,296
Unemployment rate	9.2	12.2	19.0
WHITE			
Civilian labor force		71,778	109,359
Percent of white population	58.2 ^b	59.9	66.7
Employed		69,518	102,812
Unemployed		2,260	6,547
Unemployment rate	3.5	3.1	6.0
BLACK^c			
Civilian labor force		8,959	13,943
Percent of black population	64.0 ^b	62.1	62.4
Employed		8,384	12,146
Unemployed		570	1,796
Unemployment rate	5.9	6.4	12.9

^a Age 14 and over.

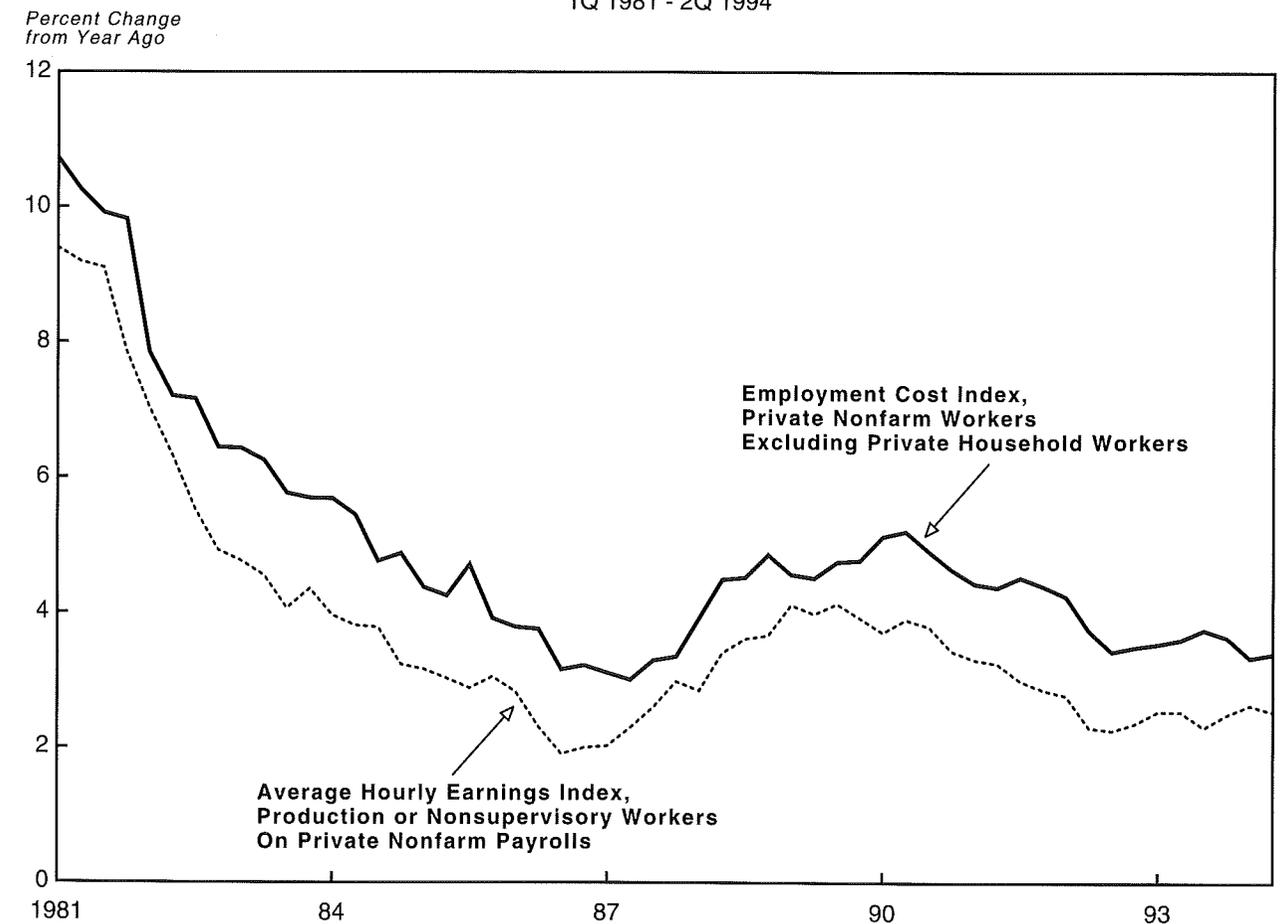
^b Data are for 1954, not 1948.

^c Nonwhite before 1972.

Note: Data represent full years and are taken from the *Monthly Labor Review* and the *Economic Report of the President*, various issues. Population figures exclude military and institutionalized personnel, and young persons less than 16 years old unless otherwise indicated.

Chart 3

Changes in Employment Costs 1Q 1981 - 2Q 1994



To help put unemployment rates in perspective, note that it is often not in the best interest of an unemployed person to take the first available job. It may take time to achieve a good match between a person's interests, skills, and abilities on the one hand, and a job's skill requirements, working conditions, and promotion possibilities on the other. Recognizing the inevitability of such *search unemployment* implies a positive unemployment rate.

A normally functioning economy will therefore have some unemployment, and unemployment may or may not imply personal hardship. To provide a perspective for business cycle analysis, some economists refer to a *natural rate of unemployment*, defined in one textbook⁵ as "that rate of unemployment at which flows in and out of unemployment

just balance, and at which expectations of firms and workers as to the behavior of prices and wages are correct." The natural rate is neither constant nor precisely known; at the present time many economists believe that it is between 5.5 and 7 percent in the United States. If actual unemployment were much higher, that would be evidence of cyclical slack in the economy; and if the actual rate were much lower, that would signal an overheated economy.

The term "natural" is widely used but may be misinterpreted; there should be no presumption that the current natural rate is either optimal or immutable. The natural rate is affected by the incentives and constraints facing persons and firms; anything that affects the average frequency or duration of unemployment will therefore affect the natural rate. Some important factors affecting the natural rate are the unemployment insurance system, family

⁵ Rudiger Dornbusch and Stanley Fischer, *Macroeconomics*, 3rd ed. (New York: McGraw-Hill, 1984), p. 466.

structure, household wealth, minimum wage legislation, the demographic composition of the labor force, the mobility of labor, and the dispersion of skill levels in the labor force.

Compensation of employees Many forms of compensation are ignored in the average wage figures reported each month, including some that are growing especially rapidly. Fringe benefits such as health insurance are excluded, as are contingent payments such as lump sum payments in lieu of wage increases, bonuses, profit-sharing payments, and stock options. While the ECI includes these additional forms of compensation, there are two drawbacks to its use. It is only available quarterly, and the data for important parts of compensation are derived from a relatively small survey, rather than the larger payroll survey.

Two Definitions of Employment

The next caution involves one concept, employment, that is estimated from both the household and establishment surveys. The two should move together closely in the long run; however, in any month they can diverge substantially.

To see why employment totals can differ, note the slightly different definitions of employment for each survey. The establishment survey counts jobs, not people; dual job holders are therefore double-counted. The household survey only covers the number of people employed, so that a person is never double-counted. The household survey also counts self-employed persons, agricultural workers, and household workers, all of whom are omitted from the establishment survey.

Many observers may prefer to ignore monthly changes and focus on the longer run; for them it probably does not matter which series they focus on. But those with a short-run perspective often have to choose one or the other when the two series give conflicting signals. Many choose the establishment series, since the number of firms surveyed is much larger than the number of households surveyed and thus could be expected to have more precise estimates. Also, some analysts question the accuracy of survey responses from households.

The main drawback to using the payroll employment estimate as an indicator of recent employment activity is that it is often revised substantially after its initial release. For example, from 1970 to 1991 the average first revision was 86,000 workers; after

four months the average revision was 148,000 workers. One reason for such large revisions is that many firms respond slowly to the survey, and the process for tabulating the late reports can be time consuming. The initial sample is thus smaller than subsequent samples.

Even after the survey is complete, the 390,000 establishments account for less than half of total employment; new businesses and very small firms are most likely to be missed by the survey. To estimate the rest, unemployment insurance tax records that cover almost all private workers are used to compute an annual benchmark adjustment. (Other changes are also made in the benchmark adjustments.) There is, however, a lag in receiving this information. If the BLS waited for unemployment insurance data before releasing employment figures, the data would be over a year old. To estimate employment without having current unemployment insurance data, the BLS uses a *bias adjustment* to account for employment in establishments that are not surveyed. The bias adjustment is based on the difference between payroll employment from the monthly sample and the virtually complete account from tax records for the last few years.

The bias adjustment can make monthly employment changes difficult to interpret in the neighborhood of turning points of the business cycle. Consider reported employment growth in 1992. A recession had begun in 1990 and ended in 1991, and real growth was slow immediately before and after the recession. Since the bias adjustment is based on recent experience, in 1992 it was based on a period when net job formation by new and small firms was unusually low; it could therefore be expected to understate employment growth. In January 1993 the BLS reported that payroll employment grew by 557,000 persons in 1992. After the benchmark revision, that figure changed to 962,000. Similarly, the bias adjustment procedure can overstate employment growth near cyclical peaks.

If one suspects faulty bias adjustment then one can usually check household employment figures. For example, a newspaper column suggested that the bias adjustment overstated employment growth in June 1993.⁶ If the bias adjustment had been systematically overstating monthly employment growth in the

⁶ Gene Epstein, "Economic Beat," *Barrons*, July 5, 1993, pp. 53-54.

payroll survey, then growth reported by the household survey should have been lower. However, from June 1992 to June 1993 household employment grew by 1.709 million persons while payroll employment grew by 1.645 million persons. That difference suggests that the bias adjustment may have been too small, and in 1994 the BLS revised payroll employment growth in June 1993 from 13,000 to 87,000.

In 1994, however, that check is not available. The questions asked in the household survey were changed in January 1994 to reduce possible ambiguity to some respondents, and new survey procedures were also introduced. While results from the revised survey should be more accurate, they are also not directly comparable to earlier figures. The BLS also adjusted its population estimates to incorporate 1990 census data, beginning in 1994, which also created a discontinuity with earlier data. Finally, the BLS is currently using seasonal adjustment factors, based on data from the old survey, that may be inappropriate. Monthly reports of employment change or labor force growth from the household survey are thus especially hard to interpret. Expressing the frustration of many, "I'm confused and embarrassed by these numbers," adds John Bregger, assistant commissioner for current employment analysis at the BLS. "It doesn't make any sense. The numbers are in fact illogical."⁷ The situation will improve as more data become available. In January 1995 one can look at 12-month changes in not seasonally adjusted data, and after several years there will be enough data to calculate new seasonal adjustment factors.

Volatile Monthly Observations

Sampling error A final set of cautions warns a user not to overemphasize a single month's data. A basic reason is sampling error—that is, statisticians are attempting to estimate a statistic for a large population from a relatively small survey. It is especially important as smaller segments of the labor force or smaller geographic areas are studied. As Geoffrey Moore put it:

A rise, say, from 5.0 to 5.3 percent in the unemployment rate is statistically significant, whereas a rise from 9.7 to 10.4 percent in the unemployment rate for blacks is not. The reason is that the population of whites is about ten times that of blacks, so that the sample of whites is also about ten times as large. Coupled with the fact that the

⁷ Amanda Bennett, "Numbers Game: Half-Million People Are 'Lost' from Work Force in Jobs Survey," *The Wall Street Journal*, August 8, 1994, p. A14.

unemployment rate for blacks is about twice that for whites, this means that the sampling error of the unemployment rate for blacks is about four times as large as for whites.⁸

The key concept is that of *statistical significance*, that is, whether a result is likely to have occurred simply from chance; a statistically significant result is not likely to be due to sampling error. Moore uses a 0.2 percent change for the total unemployment rate and a 0.8 percent change for the black unemployment rate as thresholds for statistical significance.

One should therefore be cautious in attaching much importance to a single month's changes without having some idea of how large a change must be to be statistically significant. This caution applies more forcefully as the size of the relevant population becomes smaller. On the other hand, consistent movements for several months considerably reduce the likelihood of the fluctuations being due to chance. Also, one's confidence in a single month's change can be bolstered or reduced by movements in related statistics. For example, suppose that a month's employment growth was reported to have been relatively strong, but that average weekly hours were relatively soft. In that case one could reasonably question the economic importance of either figure since the overall report gave mixed signals on the strength of labor demand.

Responses to survey data Individuals responding to the household survey may respond for themselves and any other adults in the household without checking written records. Some observers have questioned the reliability of that information. It is, of course, difficult to know the exact relevance of answers to questions from any survey. One piece of evidence is a test in 1977 that compared individual responses with employer records. Relative to employers' records, household respondents overstated the number of hours worked and understated both average hourly and weekly earnings.⁹

Irregular events All the monthly data series described in this article are adjusted to remove predictable seasonal fluctuations such as the swell in Christmas employment or the effects of summer vacations for students. Events that occur on an

⁸ Geoffrey H. Moore, *Business Cycles, Inflation, and Forecasting* (Cambridge: Ballinger Publishing Company for the National Bureau of Economic Research, 1980), p. 111.

⁹ Accounts of this test are taken from Joseph R. Antos, "Analysis of Labor Cost," in Jack E. Triplett ed., *The Measurement of Labor Cost* (University of Chicago Press for the National Bureau of Economic Research, 1983), p. 162.

irregular basis can be more difficult to take into account. Strikes, for example, lower employment estimates from the establishment survey but do not directly lower employment (or raise unemployment) estimates from the household survey. And while the BLS may note an estimate for the direct effect of a strike, the indirect effects may be substantial but not estimated; an example of an indirect effect would be layoffs of railway and port workers after a coal strike reduced coal shipments. Extreme weather conditions can also affect the data, even after routine seasonal adjustment.

SUGGESTIONS FOR FURTHER READING

Many books, professional journals and government reports have been written about labor market data. For an overview of labor markets and how they fit into the larger economy, readers may wish to look at a macroeconomics textbook, or for a more detailed analysis of labor supply and demand and market institutions, a text on labor economics. A good discussion of problems in the data can be found in the report

of the *1979 National Commission on Employment and Unemployment Statistics*. The report contains a number of background papers in addition to the summary of recommendations.

The data series described in this article only hint at the large quantity of statistics that describe the labor market; many more series can be found in two monthly publications of the BLS. *Employment and Earnings* summarizes current and historical statistics collected from both the household and establishment surveys. The *Monthly Labor Review* also summarizes labor market statistics, and contains articles that discuss many aspects of labor markets, data concepts, data collection procedures, and the series themselves. Several of the articles were helpful in preparing this paper, such as an article contrasting the payroll and household estimates of employment in the August 1989 issue. Finally, the *BLS Handbook of Methods*, revised and published periodically, presents a discussion of the technical aspects of how the BLS collects, transforms, estimates, and presents labor market data. The September 1992 edition was used in revising this article.