LABOR MARKET DATA

Roy H. Webb and William Whitely

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 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 formed 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 be 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. 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 very tremendously in the amount of thought and effort spent on finding work 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.

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 the women in the labor force could 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 federal and state agencies to ensure that all reported data is consistent. 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 status. 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. Employment includes 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.

Industry hours and earnings figures also originate in the establishment survey. Figures are presented in detail for production and related workers in manufacturing jobs, mining jobs, construction workers, and nonsalaried 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.
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. 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 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 unchanged group totally composed of desperate individuals. Instead it 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)

<table>
<thead>
<tr>
<th>Year</th>
<th>1948</th>
<th>1969</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilian labor force</td>
<td>60,621</td>
<td>80,733</td>
<td>128,040</td>
</tr>
<tr>
<td>Percent of total population</td>
<td>58.8</td>
<td>60.1</td>
<td>66.2</td>
</tr>
<tr>
<td>Employed</td>
<td>58,344</td>
<td>77,902</td>
<td>119,306</td>
</tr>
<tr>
<td>Unemployed</td>
<td>2,276</td>
<td>2,831</td>
<td>8,734</td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>3.8</td>
<td>3.5</td>
<td>6.8</td>
</tr>
<tr>
<td>MEN, AGE 20 &amp; OVER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilian labor force</td>
<td>40,687</td>
<td>46,351</td>
<td>66,069</td>
</tr>
<tr>
<td>Percent of adult male population</td>
<td>86.6(^a)</td>
<td>83.0</td>
<td>76.9</td>
</tr>
<tr>
<td>Employed</td>
<td>39,382</td>
<td>45,998</td>
<td>61,865</td>
</tr>
<tr>
<td>Unemployed</td>
<td>1,305</td>
<td>963</td>
<td>4,204</td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>3.2</td>
<td>2.1</td>
<td>6.4</td>
</tr>
<tr>
<td>WOMEN, AGE 20 &amp; OVER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilian labor force</td>
<td>15,500</td>
<td>27,413</td>
<td>55,146</td>
</tr>
<tr>
<td>Percent of adult female population</td>
<td>31.3(^a)</td>
<td>41.5</td>
<td>58.4</td>
</tr>
<tr>
<td>Employed</td>
<td>14,936</td>
<td>26,397</td>
<td>51,912</td>
</tr>
<tr>
<td>Unemployed</td>
<td>564</td>
<td>1,016</td>
<td>3,234</td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>3.6</td>
<td>3.7</td>
<td>5.9</td>
</tr>
<tr>
<td>TEENAGERS (16-19)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilian labor force</td>
<td>4,435</td>
<td>6,969</td>
<td>6,826</td>
</tr>
<tr>
<td>Percent of teenage population</td>
<td>52.5</td>
<td>69.4</td>
<td>51.5</td>
</tr>
<tr>
<td>Employed</td>
<td>4,026</td>
<td>6,117</td>
<td>5,530</td>
</tr>
<tr>
<td>Unemployed</td>
<td>409</td>
<td>852</td>
<td>1,296</td>
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<tr>
<td>Unemployment rate</td>
<td>9.2</td>
<td>12.2</td>
<td>19.0</td>
</tr>
<tr>
<td>WHITE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilian labor force</td>
<td>58,200</td>
<td>71,778</td>
<td>109,359</td>
</tr>
<tr>
<td>Percent of white population</td>
<td>58.2(^a)</td>
<td>59.9</td>
<td>66.7</td>
</tr>
<tr>
<td>Employed</td>
<td>69,518</td>
<td>102,812</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>2,260</td>
<td>6,547</td>
<td></td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>3.5</td>
<td>3.1</td>
<td>6.0</td>
</tr>
<tr>
<td>BLACK(^b)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilian labor force</td>
<td>64,484</td>
<td>8,995</td>
<td>13,943</td>
</tr>
<tr>
<td>Percent of black population</td>
<td>64.0(^b)</td>
<td>62.1</td>
<td>52.4</td>
</tr>
<tr>
<td>Employed</td>
<td>8,394</td>
<td>12,146</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>570</td>
<td>1,796</td>
<td></td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>5.9</td>
<td>6.4</td>
<td>12.9</td>
</tr>
</tbody>
</table>

\(^a\) Age 14 and over.

\(^b\) Data are for 1954, not 1948.

\(^c\) Monthly labor force.

### Chart 3

**Changes in Employment Costs**

1Q 1981 - 4Q 1994

**Average Hourly Earnings Index, Production or Nonsupervisory Workers On Private Nonfarm Payrolls**

![Chart showing changes in employment costs and average hourly earnings](chart.png)

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 textbook 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...
structure, household wealth, minimum wage legisla-
tion, 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 com-
ensation are ignored in the average wage figures reported each month, including those 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 is 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, employ-
ment, 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 a 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 a series or another 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 esti-
mates. Also, some analysts question the accuracy of survey responses from households.

The main drawback to using the payroll employ-
ment 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 miss out on 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 unemploy-
ment 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 base adjustment to account for employment in establish-
ments that are not surveyed. The bias adjustment is based on the difference between payroll employ-
ment from the monthly sample and the virtually complete account from tax records for the last years.

The bias adjustment can make monthly employ-
ment 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 recovery was under way a few months 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 ex-
pected 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 employ-
ment 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. If the bias adjustment had been systemati-
cally overstating monthly employment growth in the

unemployment rate for blacks is about twice that for whites. This means that the sampling error of the unemployment rate for blacks is about twice as large as for whites.6

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 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 overlap might have 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 ques-
tions about 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 respondents with employer records. Relative to em-
ployees' records, household respondents overstated the numbers of hours worked and understated both average hourly and weekly earnings.8

Irregular events All the monthly data series de-
scribed in this article are adjusted to remove pre-
dicatable seasonal fluctuations as well as the swell in Christmas employment or the effects of summer vacation for students. Events that occur on an

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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.

This article explains the origin and evolution of the monetary aggregates and discusses how they are prepared and released, how they are used, and when and why they are revised. Information on the monetary base is also included.

HOW THE MONETARY AGGREGATES EVOLVED

Over the years economists have proposed many different groupings of financial assets into something called "money." No single definition of money has been universally acceptable. Two approaches have been used to define money. The first is to identify what financial assets are commonly used for certain purposes. Analysts using this approach generally include as money financial assets serving (1) as a medium of exchange, i.e., assets widely acceptable in payment for goods, services, and debts, and (2) as a store of value. A second approach to defining money is to find the groupings of financial assets the movements of which are most closely correlated with the movements of certain macroeconomic variables such as national income, employment, and prices. Both approaches have contributed to the development of the monetary aggregates constructed by the Federal Reserve. A brief chronology of the evolution of these measures is given below.

MONETARY AGGREGATES

John R. Walter

In 1944 the Board of Governors of the Federal Reserve System began reporting monthly data on two types of exchange media, (1) currency outside of banks, and (2) demand deposits at banks, i.e., non-interest-bearing deposits transferable by check or convertible into cash "on demand." It also reported the sum of the two. The Board's expressed intent in reporting the data was "to increase the information available to the public on current changes ... in the nation's money supply." In time the sum of currency outside banks and demand deposits came to be called M1, the narrowest of the Fed's monetary aggregates.

Until 1971 M1 was the only monetary aggregate for which estimates were published by the Board of Governors. In that year, however, the Board began reporting data for two additional aggregates, M2 and M3. Use of these latter variables reflected the growing interest in viewing the monetary aggregates as indicators of the thrust of monetary policy. It also reflected the view among some economists that the appropriate definition of money should include assets capable of providing a temporary store of value. Accordingly, M2 was defined to include M1 plus savings deposits at commercial banks and time deposits at commercial banks except large negotiable certificates of deposit. Similarly M3 was defined as the sum of M2 and deposits at mutual savings banks and savings and loan associations.

In 1975, the Board began publishing data for even broader collections of financial assets, namely M4 and M5. M4 included M2 plus large negotiable certificates of deposit. M5 was the sum of M3 and large negotiable certificates of deposit.

The decade of the 1970s witnessed the development of many financial instruments. Some of the new assets were close substitutes for demand deposits, namely negotiable order of withdrawal (NOW) accounts which are interest-bearing checkable accounts, savings accounts featuring automatic transfer to checking accounts (ATS accounts), credit union share draft accounts, and money market mutual funds with checking privileges. These new accounts began to be used as exchange media but were not counted in M1 until 1980.