

International comparisons

Providing comparable international labor statistics

BLS adjusts foreign data to a common conceptual framework, thereby aiding users in making meaningful international comparisons

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The Bureau of Labor Statistics (BLS) produces many statistical series for the United States which describe important aspects of U.S. economic performance. For example, data show that over the last 40 years the number of employed persons has doubled. Hourly compensation costs for production workers in the manufacturing sector have grown from a little more than \$6 per hour in 1975 to almost \$20 per hour in 2000. Over the last 50 years, labor productivity in the manufacturing sector has increased about 3 percent per year, resulting in more than a quadrupling of the output produced per hour of labor input.¹

But, how does this compare with the rest of the world? A comparison of U.S. performance with that of other countries is of interest to many data users from the academic, government, business, and labor sectors.

Several difficulties arise in making these comparisons, however. Foreign labor statistics are not always easily accessible, and publications containing the data may not be in English. The foreign statistics may not be comparable to U.S. data because of differences in concepts and definitions, classification systems, and survey methodology, and may be of uneven quality among countries.

The BLS Division of Foreign Labor Statistics provides a set of easily accessible labor statistics

adjusted for comparability to aid users in making meaningful international comparisons. BLS selects a conceptual framework for comparative purposes; obtains foreign data and documentation from many sources and translates the material into English when necessary; analyzes sources and methods to assess quality and comparability; and adjusts statistical series where necessary and feasible for greater comparability.

BLS publishes statistics adjusted for comparability on labor force, employment and unemployment; productivity and unit labor cost trends in the manufacturing sector; and hourly compensation costs for production workers in all manufacturing and in component manufacturing industries. In addition, statistics are published on gross domestic product (GDP) per capita and per employed person and on consumer price indexes (CPIs), although these latter two series are not adjusted for comparability. The measures produced relate primarily, but not entirely, to the major developed countries which are the most similar to the United States.

The BLS program of international comparisons is unique. Other national statistical agencies publish some international comparisons, and international statistical agencies publish statistics collected within a common set of guidelines from a large number of countries. With

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few exceptions, however, data are not adjusted for comparability by these other agencies.

A summary listing of the major international statistical agencies and their work is contained in an appendix to this article. The BLS Web site provides links to these agencies to enable users to find data that are complementary to the BLS series. Links are also provided to sources of international data for topics not covered by BLS.²

This article presents a historical perspective on BLS international comparisons and provides a brief overview of the current program. It also examines the reasons why foreign data must be adjusted for comparability and the procedures used by BLS to adjust the data. Some examples of differences between adjusted and unadjusted data series are presented.

Background and current measures

As early as the turn of the last century, Carroll Wright, the first Commissioner of what would become the Bureau of Labor Statistics, sent staff to Europe and obtained the services of experts to collect information for studies of labor developments abroad.³

Two reports, *Sixth Annual Report of the Commissioner of Labor, 1890, Cost of Production: Iron, Steel, Coal, etc.* and *Seventh Annual Report, 1891, Cost of Production: The Textiles and Glass* [sic] were concerned chiefly with aggregate and unit costs of production, employee earnings, “efficiency” of labor, and cost of living in the United States. The reports included similar data from England and Continental Europe, many of which were compiled in detail directly from plant records.⁴

Several early bulletins were published with an international comparison content, including a 1898 bulletin entitled *Wages in the United States and Europe, 1870–1898*, and a 1902 bulletin on labor conditions in Mexico, a subject of considerable current interest. The first volume of the *Monthly Labor Review* in 1915 contained articles on employment in various countries, the increase in wages in Great Britain during 1915, and strikes and lockouts in various countries.

The current BLS international comparisons program came into being in the early 1960’s. Early work focused on statistics adjusted for comparability on labor force, productivity and unit labor costs, and hourly compensation costs, and also on consumer price trends. Over time, other statistics were published also, some of which are no longer produced.⁵ Special studies have been produced as well on labor force and productivity research topics.

All the foreign country data now used by BLS are obtained from secondary sources—national statistical agencies, supranational and international organizations, and private

agencies such as research institutes. BLS does not initiate surveys or data collection abroad.

Labor force. A major project to evaluate foreign unemployment statistics and prepare data adjusted for comparability was undertaken in response to a 1961 request by the Committee to Appraise Employment and Unemployment Statistics (sometimes referred to as the Gordon Committee). They were concerned that the reason for apparent differences in unemployment rates among countries was due to national differences in definitions and methodologies. The initial study covered the United States, Canada, Japan, France, Germany, Italy, Sweden, and Great Britain and was published in the Gordon Committee report in 1962.⁶ The results were also summarized in two *Monthly Labor Review* articles.⁷

Over time, the number of countries covered has increased to 10 and the number of variables produced has increased also.⁸ The labor force statistics adjusted for comparability now include working-age population, labor force, employment, unemployment, employment-population ratios, labor force participation rates, unemployment rates, and employment by economic sector. Some data are available by sex and age. These statistics are updated and published semi-annually. The series extends back to 1959 or 1960.

Monthly unemployment rates adjusted for comparability are published each month for nine of the countries. These data are supplemented with a compilation of unemployment rates for additional European countries as published by Eurostat, the Statistical Office of the European Communities.

Data from the program have been used to produce studies on youth unemployment; labor force participation rates; and employment by sector.⁹ Over the years, special studies were prepared on additional topics in the labor force field. These topics include unemployment compensation; the family; various measures of underutilization; and explanations for the reported relatively low unemployment in Mexico and Japan.¹⁰

Research continues on issues of comparability. In 2000, an in-depth study of the comparability of various available series pertaining to unemployment rates was published and served as the foundation for recent refinements made to the BLS comparative series on unemployment rates.¹¹

Productivity and unit labor costs. One of the first projects undertaken in the productivity and unit labor costs area was the development of international comparisons of levels of labor productivity (output per hour) and unit labor costs in the steel industry. The steel industry was selected because of its rank among basic industries in terms of size, public interest, and availability and comparability of data. Because of the record levels of imports of steel products and the volume of international trade in steel products, there was

considerable interest in the findings of such a study.

The first statistics produced were comparative trends only, while work proceeded on comparative level data. Statistics on comparative levels of labor productivity and unit labor costs in the steel industry were published in 1968.¹² The study covered the United States, France, Germany, and the United Kingdom. Japan was added shortly thereafter. The level estimates were updated with trend indicators through the early 1980's, but discontinued thereafter.

The comparison of productivity levels for the steel industry was possible because the output data were available in quantity terms, that is, tons of different steel products. In most cases, when the output of each country's sector of interest is expressed in national currency units, estimating comparative levels of productivity is not feasible because of the problem of expressing the output of several countries in a common currency.

Purchasing power parities (PPPs), which are the number of foreign currency units required to buy goods and services in a foreign country equivalent to what can be bought with one dollar in the United States are available to convert aggregate GDPs of foreign countries into U.S. dollars. (See also the section on measures of GDP per capita and per employed person.) PPPs are not available at an industry level.

Because of the problems associated with developing comparative levels of productivity,¹³ the BLS program for the manufacturing sector has focused on comparative *trends* in productivity and unit labor costs. Trends may be calculated without converting data for all countries to a common currency.

The current series on comparative trends in labor productivity and unit labor costs in manufacturing has its roots in two 1963 *Monthly Labor Review* articles on the role of labor costs in foreign trade and on concepts and methods for international comparisons of unit labor costs.¹⁴ A 1964 article presented measures of unit labor cost trends for the United States and seven foreign countries.¹⁵ Labor productivity measures were included for four countries.

Indexes of manufacturing productivity and unit labor costs now cover 14 countries or areas and are updated and published annually.¹⁶ Indexes for component variables, including output, employment, hours worked, and compensation, as well as various supplementary measures, also are published. The series extends back to 1950 for most countries.

Over time, special studies were prepared to provide other comparative productivity measures. Two studies were produced on multifactor productivity, which includes capital services as well as labor hours as inputs. A 1990 study evaluated alternative measures of capital in Japanese manufacturing.¹⁷ A study of multifactor productivity trends in France, Germany, and the United States was published in 1995.¹⁸

Studies also were produced on labor productivity trends for industries within the manufacturing sector at approximately the U.S. two-digit standard industrial classification (SIC) level. They were released as three conference papers.¹⁹

GDP per capita and per employed person. A series on *levels* of GDP per capita (a measure of standard of living) and GDP per employed person (a measure of productivity levels for the total economy) were initiated in the mid-1970s.²⁰ BLS was one of the first organizations to construct these series using Purchasing Power Parities (PPPs).²¹ This series covers 14 countries and provides annual measures back to 1960. It is updated and published periodically. The underlying data on GDP and population are not adjusted for comparability; labor force data used are adjusted.

The BLS method of converting GDP to a common currency by means of PPPs was introduced as an alternative to a flawed method often used, converting foreign data into U.S. dollars with market exchange rates.

Comparisons based upon exchange rates do not necessarily reflect the relative purchasing power of different currencies. At best, market exchange rates represent only the relative prices of goods and services that are traded internationally, not the relative value of total domestic output which includes goods and services not traded internationally. Exchange rates are also affected by influences unrelated to the relative values of goods and services, such as currency traders' views of the stability of foreign governments, relative interest rates in different countries, and incentives for holding assets in one currency versus another.

Hourly compensation costs for production workers in manufacturing. The need for comparable measures of wages and employer labor costs was the impetus for the development of the BLS hourly compensation costs series. The more readily available average earnings statistics published by many countries can be very misleading. National definitions of earnings differ considerably, earnings do not include all items of labor compensation, and the omitted items of compensation frequently represent a large proportion of total compensation.

The problems in making meaningful comparisons of wages among countries were noted in two studies published in the 1960s pertaining to U.S.-Japan wage comparisons. A joint report of the Japanese Ministries of Labor and of International Trade and Industry and the U.S. Department of Labor was prepared in 1966.²² The report was intended to provide both countries with better information about labor standards, employment conditions, wages, and other aspects of labor policy in order to avoid misconceptions affecting trade relations. In 1967, two *Monthly Labor Review* articles used data from this report to discuss the similarities and contrasts

Exhibit 1. Current program of international comparisons of labor statistics			
Series	Variables included	Number of countries covered	Time frame
Labor force	Labor force, employment, unemployment and various analytical measures	10	Annual since 1960
	Unemployment rates	9	Monthly and quarterly for recent periods
Manufacturing productivity and unit labor costs	Output per hour, unit labor costs, output, hours worked, compensation, and several related variables	14	Annual since 1950
Hourly compensation costs for production workers in manufacturing and 40 component industries	Hourly compensation, components of compensation	29	Annual since 1975
Consumer Price Indexes	“All items” index	16	Annual since 1950
	Changes from same period in prior year for “all items” index	9	Monthly and quarterly for recent periods
GDP per capita and per employed person	Two primary series plus underlying series	14	Annual since 1960

between the two countries’ wage systems.²³ The articles noted that both countries have well-developed statistical systems and publish data regularly, but the data are not comparable and careful attention must be given to the differences when making international comparisons.

BLS computed measures of hourly compensation costs covering production workers in manufacturing by adjusting published earnings data for items of compensation not included in earnings. Hourly compensation costs are defined by BLS to include pay for time worked, other direct pay (including such items as seasonal bonuses and pay for holidays and vacations) and employer social insurance expenditures and other labor taxes (including such items as retirement and disability, health insurance, pensions, and unemployment insurance).

BLS initially released data on an ad hoc basis in response to requests for comparative compensation costs. By 1980, the series had been formalized and made available, on an

unpublished basis, for 32 countries or areas and 34 manufacturing industries. Coverage now includes 29 countries or areas and 40 manufacturing industry groups.²⁴

For total manufacturing, comparable data were developed for two major subcomponents of hourly compensation—pay for time worked and total direct pay—and for the structure of compensation. Also, hourly compensation costs were developed for selected groups of countries or areas by aggregating costs with weights representing importance to the United States in world trade.

Hourly compensation costs for total manufacturing, and supplementary tables covering the components of compensation, are updated and published annually. Data for component manufacturing industry groups are updated and published periodically. The series extends back to 1975.

Consumer price indexes (CPIs). Data were first published in two 1960s articles which presented comparative consumer

price trends, including trends for major component expenditure groups; summaries of factors affecting price movements; and descriptions of countries' index coverage and methodologies.²⁵ In addition, the consumer price indexes were used to compute real wage trends as part of a program examining comparative standards of living.²⁶

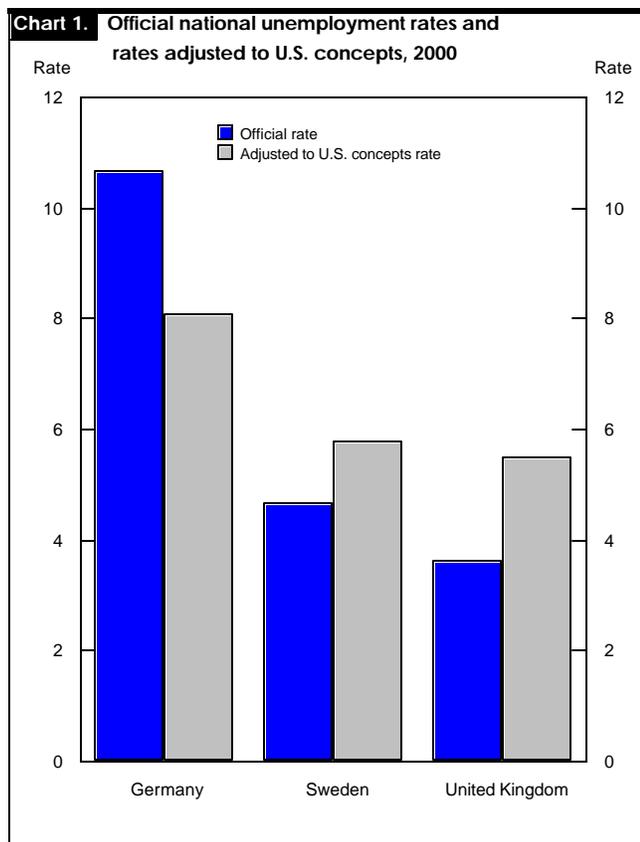
BLS now compiles and publishes annual consumer price indexes for 16 countries. In addition, monthly and quarterly percent changes from the same period of the previous year are published each month for nine countries.

The CPI series are not adjusted for comparability. Rather, the data are national indexes as published by the foreign countries. National differences exist, for example, with respect to population coverage, frequency of market basket changes, and treatment of homeowner costs.

The current program of international comparisons of labor statistics is summarized in exhibit 1. Details about the current program may be found on the BLS Web site.

Adjusting data for comparability

Following is a description of the types of adjustments BLS makes in producing comparable statistics with some examples of the impact of these adjustments.



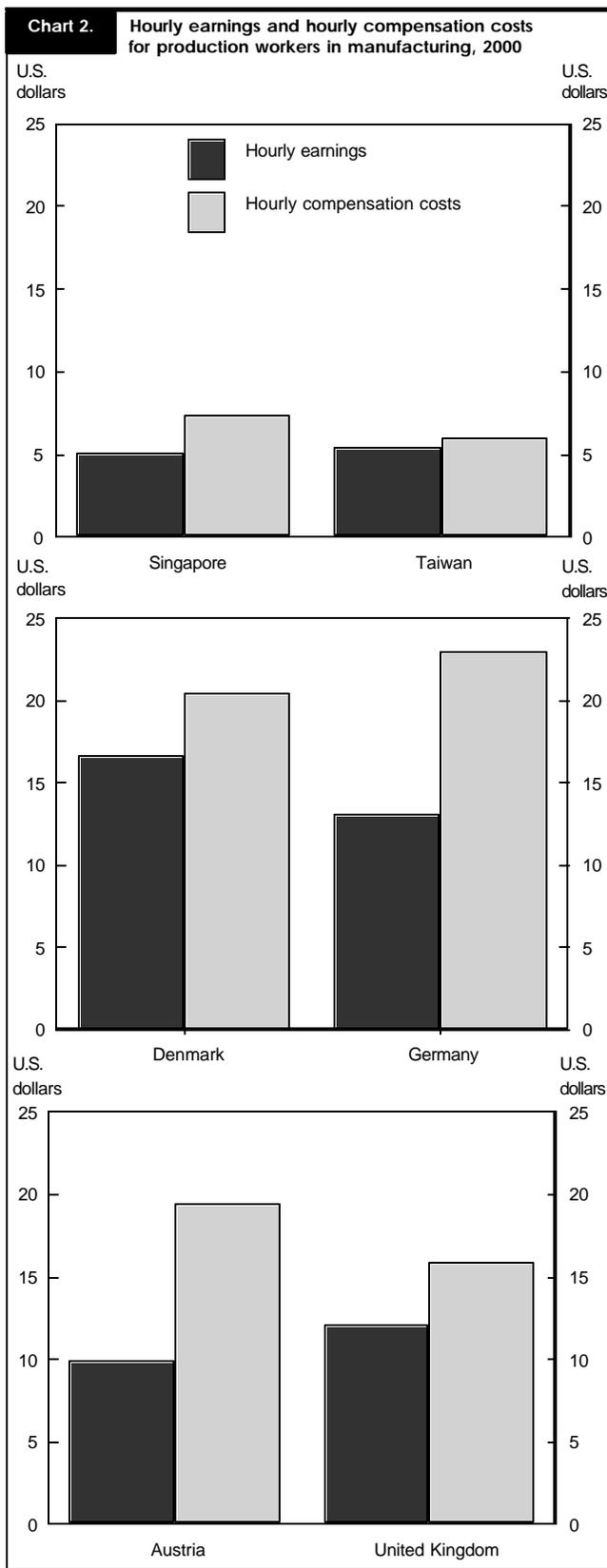
Unemployment rates. The labor force is the sum of the employed plus the unemployed; and the unemployment rate is the ratio of the unemployed to the labor force. In the United States, the unemployed are those who were without work and available for work in the reference week, and actively seeking work in the past 4 weeks. Those persons waiting to be recalled from layoff need not be seeking work to be classified as unemployed. The employed are those persons who during the reference week did work for at least 1 hour as paid employees, worked in their own business, profession, or on their own farm, or worked 15 hours or more as unpaid workers in an enterprise operated by a family member. Those temporarily absent from work but who had jobs or businesses to return to are also counted as employed. In the United States, data to measure the employed and the unemployed are obtained from the Current Population Survey, a survey of households selected to be representative of the civilian noninstitutional population.

Some of the countries included in the BLS comparative unemployment rate series differ from the United States in terms of the definitions of the employed and unemployed, as well as in terms of the sources of data used to measure these variables. BLS employs data from several sources, including data obtained by special request from the central statistical offices of the foreign countries, to adjust the official unemployment rates for approximate comparability with U.S. concepts.

Although the United States and the foreign countries covered follow the International Labour Organization's (ILO) guidelines on measuring employment and unemployment, there is sufficient latitude in the guidelines to allow for differences in the measurement of unemployment rates among countries. The ILO guidelines define the unemployed as persons over a certain age who are without work, available for work, and actively seeking work. Although adhering to this broad standard, countries vary in interpretation of "available for work," "actively seeking work," and "over a certain age." Further, the ILO offers some more specific guidelines regarding the treatment of students, persons on layoff, persons waiting to start a new job, unpaid family workers, and the armed forces. Some countries deviate from these specific guidelines.

The European Union (EU) and the United States diverge while adhering to the ILO guidelines:

- unlike the United States, the European labor force includes unpaid family workers working less than 15 hours per week, the career military, and 15-year-olds;
- unlike the United States, European unemployed includes passive jobseekers, person waiting to start a new job who did not seek work in the previous 4 weeks, those unavailable for work in the reference week, and 15-year-olds;
- unlike the United States, European unemployed excludes persons on layoff; and



- even within Europe, EU member countries can vary from the interpretation of the ILO standard adopted by the EU when producing their own official unemployment rates.

An important example of the need for adjustment occurs for Sweden, which deviates from the ILO guideline that considers full-time students to be unemployed if they are seeking work and available for work. In Sweden, such students are excluded from the unemployed in the calculation of the official unemployment rate.

Statistics Sweden regularly enumerates and publishes statistics on full-time students seeking work and available for work. These data are derived from its labor force survey. Using the published estimates for those students, BLS adds them to the Swedish unemployed and adds the adjusted unemployed to the employed to derive the labor force. An adjusted unemployment rate is then calculated as the adjusted unemployed divided by the adjusted labor force.²⁷

It is also necessary to adjust data when statistical agencies derive official statistics from different types of data sources. While most countries that BLS covers derive their official unemployment rates from household surveys, the United Kingdom and Germany derive them from administrative records of the registered unemployed obtained from their employment offices. For the United Kingdom, the official data are restricted to “claimant counts” that understate the country’s unemployment relative to household survey definitions. On the other hand, the German administrative data overstate unemployment rates relative to household surveys, because the administrative data include persons who are looking for a better job but who would be considered employed in a household survey.

The British Office of National Statistics supplies BLS with unemployment and labor force data on ILO concepts derived from the national continuous labor force survey, and BLS uses these data instead of the official series based on registration data. BLS subtracts the career military from the labor force and then calculates the unemployment rate. For Germany, BLS uses labor force survey data instead of the official registration-based data. BLS excludes the career military from the labor force; no adjustments are made to the unemployed.

Unemployment rates based on U.S. concepts contrasted with the official unemployment rates illustrate the distorted picture one can get from comparing official statistics. (See chart 1.) Adjusted unemployment rates are about 1 and 2 percentage points higher than the official rates for Sweden and the United Kingdom, respectively, and about 2-1/2 percentage points lower for Germany.

Early in the BLS program of labor force comparisons, more adjustments were required than now. Over time, there has been a convergence of methods among countries leading to more comparability among the official measures. In several

cases, the differences that remain are small; particularly, those due to variations in the interpretations of the ILO guidelines by the United States and the European Union.

Differences still exist, however, and require both adjustment by BLS and continuous research to assess the importance of any remaining noncomparability due to differences in concepts and methods. A study summarized in a 2000 *Monthly Labor Review* article resulted in the recent introduction of a new adjustment into the Canadian data in the BLS comparative series.²⁸

Hourly compensation costs for production workers in manufacturing. This series on comparative hourly compensation costs was developed by BLS as a substitute for the more readily available average earnings series published by many countries. National definitions of earnings differ considerably and average earnings do not include all items of labor compensation. National data may also differ in terms of worker coverage, industrial classification, survey coverage, and sample benchmarks. BLS computes hourly compensation costs by adjusting published earnings for the items of compensation not included in earnings.²⁹ The statistics are also adjusted, where necessary and feasible, for other differences in the national data sources.

The adjustments made to derive hourly compensation costs can be illustrated with a summary of the method used for Austria. Average hourly earnings are obtained for the “total industry” sector; these earnings are adjusted by BLS to remove the earnings of the heat and gas, construction, and mining industries in order to yield an estimate for the manufacturing sector.

Next, data from a survey of employers regarding expenditures on wages, salaries, employee benefits, and other labor costs are used to derive ratios of components of additional compensation to earnings. The additional compensation includes pay for time not worked (for example, vacations), bonuses, legally required and contractual and private social insurance (for example, pensions and health insurance) and other labor taxes. These ratios are estimated for other years using a variety of indicators and are applied to average hourly earnings to compute hourly compensation costs.

A comparison of the BLS hourly compensation costs with earnings statistics for selected countries illustrates the importance of adjusting the data for comparability. (See chart 2.) Here, the rankings within three pairs of countries or areas (Singapore and Taiwan; Denmark and Germany; Austria and the United Kingdom) are reversed depending upon whether the measure is of average hourly earnings or of hourly compensation costs.

Output per hour and unit labor costs in manufacturing. For this comparative series, BLS does not adjust countries’

published productivity and unit labor costs. Rather, BLS constructs measures with data obtained from countries’ national accounts and other sources. BLS chooses output on as similar a conceptual basis as possible, adjusts countries’ output and labor input data to a similar industrial classification, adjusts compensation to an employer-cost basis by adding other taxes, and develops a comparable hours-worked series. Hours-worked data are constructed rather than using more readily available labor input series based upon the concept of number of employees or employed persons. Hours worked is the concept of labor input employed for all domestic measures of productivity produced by BLS.

BLS cannot adjust for all differences which may occur in national accounts data, for example the use of different deflation procedures for the output of high-tech industries or the scheme used to aggregate outputs from various industries. The impact on comparability from these remaining differences likely has increased with the explosion of growth of the outputs of the high-tech sector, as well as the adoption by many countries of new weighting schemes for aggregating output. Because it is not feasible to adjust for all of these differences, BLS has undertaken an assessment of the possible impact on its comparative productivity series from these differences in methodology.

Recently, a detailed examination was carried out of the differences in the underlying series used by BLS to construct comparative measures of productivity growth in the United States and Canada.³⁰ The productivity gap that existed between the two countries between 1988 and 1996 was examined to determine if the gap might be due in large part to different measurement procedures used by the two countries. Differences due to industrial classification, concepts and estimation of real value added output (including valuation of prices, index aggregation formula, treatment of software, and information technology deflation), and the estimation of hours worked were explored.

The methods used by the two countries were found to be quite similar. Although differences exist, some are offsetting and overall they do not appear to substantially affect measured productivity growth.

Among other countries in the BLS series, there are substantive variations in methods of measuring output and labor input, including the methods used to deflate the output of high-tech industries. BLS is currently conducting a review of sources and methods used in other countries.

Other contributions

BLS contributes to improving the comparability of labor statistics in other important ways. Experts from various BLS programs participate in forums sponsored by various international agencies, the purpose of which is to enhance

comparability of statistics among countries.³¹ BLS also provides technical assistance and training to foreign statisticians to aid in developing their statistical systems. These efforts help to achieve greater comparability of data and to reduce the need for adjusting data for the purpose of international comparisons. □

NOTES

¹ See *Comparative Civilian Labor Force Statistics, Ten Countries, 1959–2001*, Mar. 25, 2002, table 2. Also, see Chris Sparks, Theo Bikoi, and Lisa Moglia, “A perspective on U.S. and foreign compensation costs in manufacturing,” this issue, pp. 36–50, table 1; and Aaron E. Cobet and Gregory A. Wilson, “Comparing 50 years of labor productivity in U.S. and foreign manufacturing,” this issue, pp. 51–65, table 1. Available on the Internet at: <http://www.bls.gov/fls/home.htm>

² The Web site is: <http://stats.bls.gov/fls/home.htm>

³ Joseph P. Goldberg and William T. Moye, *The First Hundred Years of the Bureau of Labor Statistics*, Bulletin 2235 (U.S. Department of Labor, September 1985), p. 39.

⁴ See William C. Shelton and John H. Chandler, “The role of labor costs in foreign trade,” *Monthly Labor Review*, May 1963, pp. 485–90 (footnote 1).

⁵ Series which are no longer published include: union membership and industrial disputes; average hours worked and paid; average earnings and real earnings indexes (now incorporated into the program of labor productivity and unit labor costs); consumer price indexes for component expenditure groups; wholesale or producer price indexes; and U.S. Department of State indexes of living cost abroad and living quarters allowances.

⁶ *Measuring Employment and Unemployment*, Report of the President’s Committee to Appraise Employment and Unemployment Statistics (U.S. Government Printing Office, Washington, DC, September 1962).

⁷ See the following *Monthly Labor Review* articles: Robert J. Meyers and John H. Chandler, “International comparisons of unemployment,” August 1962, pp. 857–64; and Robert J. Meyers and John H. Chandler, “Toward explaining international unemployment rates,” September 1962, pp. 969–74.

⁸ The expansion of this series has been directed by Constance Sorrentino of the BLS Division of Foreign Labor Statistics.

⁹ See these articles in the *Monthly Labor Review*: Constance Sorrentino, “Youth unemployment: an international perspective,” July 1981, pp. 3–15; Constance Sorrentino, “International comparisons of labor force participation, 1960–81,” February 1983, pp. 23–36; and Todd M. Godbout, “Employment change and sectoral distribution in 10 countries, 1970–90,” October 1993, pp. 3–20.

¹⁰ See the following *Monthly Labor Review* articles: Constance Sorrentino, “Unemployment compensation in eight industrial nations,” July 1976, pp. 18–24; Constance Sorrentino, “The changing family in international perspective,” March 1990, pp. 41–58; Constance Sorrentino, “International unemployment indicators, 1983–93,” August 1995, pp. 31–50; Susan Fleck and Constance

Sorrentino, “Employment and unemployment in Mexico’s labor force,” November 1994, pp. 3–31; Gary Martin, “Employment and unemployment in Mexico in the 1990s,” November 2000, pp. 3–18; and Sara Elder and Constance Sorrentino, “Japan’s low unemployment: a BLS update and revision,” October 1993, pp. 56–63.

¹¹ Constance Sorrentino, “International unemployment rates: how comparable are they?” *Monthly Labor Review*, June 2000, pp. 3–20.

¹² *International comparison of unit labor cost in the iron and steel industry, 1964: United States, France, Germany, United Kingdom*, Bulletin 1580 (Bureau of Labor Statistics, 1968).

¹³ An approach to calculating levels of productivity has been used by researchers at the International Comparisons of Output and Productivity project at the University of Groningen in the Netherlands. They develop unit values for matched products by dividing producers’ sales denominated in a country’s currency with available data on quantities shipped. Ratios of the unit values from two different countries are then used to convert to a common currency. For an article based on this approach, see Bart van Ark, “Manufacturing prices, productivity, and labor costs in five economies,” *Monthly Labor Review*, July 1995, pp. 56–72.

¹⁴ See these articles in the May 1963 *Monthly Labor Review*: William C. Shelton and John H. Chandler, “The role of labor costs in foreign trade,” pp. 485–90; and “International comparisons of unit labor costs: concepts and methods,” pp. 538–47.

¹⁵ John H. Chandler and Patrick C. Jackman, “Unit labor costs in eight countries since 1950,” *Monthly Labor Review*, April 1964, pp. 377–84.

¹⁶ The expansion of this program was carried out under the direction of Arthur Neef, former Chief of the BLS Division of Foreign Labor Statistics.

¹⁷ Edwin Dean, Masako Darrough, and Arthur Neef, “Alternative Measures of Capital Inputs in Japanese Manufacturing,” in Charles R. Hulten, ed., *Productivity Growth in Japan and the United States*, National Bureau of Economic Research (Chicago, University of Chicago Press), 1990.

¹⁸ Wolodar Lysko, “Manufacturing multifactor productivity in three countries,” *Monthly Labor Review*, July 1995, pp. 39–55.

¹⁹ Arthur Neef and Edwin Dean, “Comparative Changes in Labor Productivity and Unit Labor Costs by Manufacturing Industry: United States and Western Europe,” paper presented at the American Enterprise Institute Conference on Interindustry Differences in Productivity Growth, Washington, D.C., October 11–12, 1984; Arthur Neef, “An International Comparison of Manufacturing Productivity and Unit Labor Cost Trends,” paper presented at the Social Science Research Council Conference on International Productivity and Competitiveness, Palo Alto, California, October 28–30, 1988; and Arthur Neef, “Comparative Changes in Labor Productivity: United States and Western Europe,” paper presented at the Atlantic Economic Conference, session on Recent Productivity Developments in Major Nations, Williamsburg, Virginia, October 13, 1990.

²⁰ This series was developed by Arthur Neef, former Chief of the BLS Division of Foreign Labor Statistics.

²¹ For a discussion of PPPs, see, for example, Michelle A. Vachris and James Thomas, “International price comparisons based on purchasing power parity,” *Monthly Labor Review*, October 1999, pp. 3–12.

²² *Wages in Japan and the United States: Report of the Joint United States-Japan Study* (U.S. Department of Labor and Japan Ministry of Labor and Ministry of International Trade and Industry), 1966.

²³ Janet L. Norwood, "Wages in Japan and the United States," *Monthly Labor Review*, April 1967, pp. 25–28; and Janet L. Norwood, "Composition of wages and supplements: U.S.-Japan comparisons," *Monthly Labor Review*, May 1967, pp. 30–34.

²⁴ The development of this series from the ad-hoc request stage through the major expansion to 30 countries was directed by Patricia Capdevielle of the BLS Division of Foreign Labor Statistics.

²⁵ Patricia Capdevielle, "Consumer Price Trends in 14 Industrially Advanced Countries, 1958–67," *Labor Developments Abroad*, August 1968, pp. 15–28; and Patricia Capdevielle "Consumer Price Trends in 14 industrialized Countries, 1958 to June 1969," *Labor Developments Abroad*, December 1969, pp. 12–27.

²⁶ Articles were published on consumer expenditures and levels of living from household expenditure surveys in nine countries from 1960 to 1965. Data were adjusted as much as possible to identical household type and classification of consumer expenditures. See, for example, Patricia Capdevielle, "Consumer Expenditures and Levels of Consumption of Low Income and of High Income Wage and Salary Workers Households in Nine Industrially Advanced Countries," *Labor*

Developments Abroad, September 1969, pp. 23–34. Two other articles relevant to standards of living were John H. Chandler, "Perspectives on poverty 5: an international comparison," *Monthly Labor Review*, February 1969, pp. 55–62; and "Trends in Average Hourly and Real Earnings of Wage Workers in Manufacturing, 10 Countries, 1958–66," *Labor Developments Abroad*, February 1968, pp. 10–17.

²⁷ BLS also makes small adjustments to the Swedish statistics to add persons age 65 and older into both the official measures of the employed and the unemployed and to subtract career military from the employed.

²⁸ Constance Sorrentino, "International unemployment rates: how comparable are they?" *Monthly Labor Review*, June 2000, pp. 3–20.

²⁹ The concept used in the BLS comparative series on hourly compensation costs differs from the ILO concept of labor costs. The cost of recruitment, employee training, and plant facilities and services, such as cafeterias and medical clinics, are included in the ILO concept of labor costs, but not in the BLS comparisons of hourly compensation costs. These items are excluded by BLS because data are not available for many countries.

³⁰ Lucy P. Eldridge and Mark K. Sherwood, "A perspective on the U.S.-Canada manufacturing productivity gap," *Monthly Labor Review*, February 2001, pp. 31–48.

³¹ The appendix provides a listing of major international agencies.

APPENDIX: Labor statistics available from international organizations

The primary focus at BLS is to publish important labor statistics, adjusted for comparability to U.S. concepts, for major developed and developing countries, particularly if adjusted statistics are not available elsewhere. BLS does not cover all labor statistics series, nor does it attempt to cover all the countries in the world.

On the other hand, the primary focus of international statistical agencies is to publish statistics for as many countries as possible, collected from national statistical offices within a common set of guidelines. These agencies provide detailed documentation of national sources and methods. But with few exceptions, the statistics are not adjusted for comparability.

The international statistical agencies promote the international comparability of labor statistics by means of international recommendations on concepts and methods and standard international classification systems. They also publish technical manuals on measurement issues and provide technical assistance and training.

The international (and supranational) agencies with labor statistics programs are:

- International Labour Office (ILO)
- Organisation for Economic Co-operation and Development (OECD)
- Statistical Office of the European Communities (Eurostat)

Other international agencies which publish major labor statistics series include:

- United Nations (UN)
- World Bank
- International Monetary Fund (IMF)

On the BLS foreign labor statistics Web site, links are provided to these agencies for data complementary to the labor statistics which BLS produce:

<http://www.bls.gov/fls/availability.htm>

Their publications include data for countries not covered by BLS and additional data which supplement the BLS series.

Links are also provided to sources of international data for topics not covered by BLS in a section entitled "People are asking...":

<http://www.bls.gov/fls/peoplebox.htm>

This section will be expanded on an ongoing basis.

International Labour Office (ILO)

Bureau of Statistics and Key Indicators of the Labour Market (KILM) Team

<http://www.ilo.org/public/english/bureau/stat/intro/>
<http://www.ilo.org/public/english/employment/strat/kilm/>

The International Labor Office was founded in 1919 and became the first specialized agency of the United Nations in 1946. The ILO's mission is the promotion of social justice and internationally recognized human and labor rights. Almost every country in the world is a member. Among other activities, the ILO supports a comprehensive labor statistics program. The ILO collects labor statistics and publishes them in seven major publications and databases:

Yearbook of Labour Statistics. The *Yearbook* includes 31 tables covering economically active population, employment, unemployment, hours of work, wages, labor cost, consumer prices, occupational injuries, and strikes and lockouts for more than 190 countries, areas, or territories.

The statistics are collected from member countries by means of standardized questionnaires. Data published are carefully documented regarding source, coverage, definitions, and adherence to international standard classifications.

Bulletin of Labour Statistics. The *Bulletin* includes series available monthly and quarterly on employment, unemployment, hours of work, wages, and consumer prices.

Sources and Methods: Labour Statistics. This series of annual *Yearbook* supplements provide the detailed documentation of sources and methods for data published in the *Yearbook* and *Bulletin*.

Statistics on occupational wages and hours of work and on food prices, October Inquiry results. This publication presents statistics for wages and hours of work for 159 occupations in 49 industry groups and prices for 93 food items common throughout the world. Data are collected from national statistical offices by means of a standardized questionnaire.

Key Indicators of the Labour Market. This annual publication presents 20 labor market indicators covering employment and unemployment, wages and labor costs, labor productivity and unit labor costs, educational attainment, and poverty and income distribution. The indicators are carefully documented regarding definitions, sources, and coverage.

Data for the indicators are obtained from existing compilations of other international or national statistical agencies. The statistics are published in a variety of traditional and electronic media, including the annual publication, KILM on CD-ROM, and KILMnet on the Internet.

Economically Active Population 1950–2010. This is the latest publication of periodic projections of the world labor force. It is part of a United Nation interagency project to provide demographic data coordinated and comparable in terms of dates,

data sources, and estimation and projection methods. Data are presented for all member countries by age and gender.

Household Income and Expenditure Statistics. This publication is a periodic compendium of statistics from household income and expenditure surveys. Data are published in standardized tables, along with documentation of coverage and data sources for each country.

ILO-Comparable Annual Estimates of Employment and Unemployment. While most labor statistics published by the ILO are presented in a common framework and carefully documented, they are not adjusted for comparability. The exception is a relatively new program of ILO-comparable annual employment and unemployment estimates, which presently covers 26 countries. The following series are adjusted for conformity with ILO statistical guidelines: working-age population, total and civilian labor force, labor force participation rates, total and civilian employment and employment by age and by economic sector, unemployment by age, and unemployment rates, with selected data also published by sex. Latest data were published in the second quarter 2001 *Bulletin of Labour Statistics*.

LABORSTA. This online database contains the statistics published in the *Yearbook*, *Bulletin*, *October Inquiry*, and *Economically Active Population* publications. It is being expanded to include population census data and the ILO-Comparable Annual Estimates of Employment and Unemployment.

Organisation for Economic Co-operation and Development (OECD)

Statistics and program directorates
<http://www.oecd.org/std/>

The OECD was first established to administer the Marshall Plan for Europe after World War II. Later, the organization's mission was changed to coordinate economic policy among industrial countries, and the United States and Canada became members. OECD now has 30 member countries, including North American countries, most European countries, Australia, New Zealand, Japan, and Korea. The following are the OECD publications which provide labor statistics:

Labour Force Statistics. This publication provides comprehensive labor force statistics for the 30 member countries: population, components of change in population, by sex and age; total and civilian labor force, employment and part-time employment, unemployment, unemployment rate, and duration of unemployment by sex; and civilian

employment, employees, and professional status by economic activity.

Statistics are presented in a common framework, and national data sources and definitions summarized. Except for standardized unemployment rates, data are not adjusted for comparability.

Quarterly Labour Force Statistics. Quarterly statistics covered are: total labor force, employment, unemployment, unemployment rate, and employment by economic activity for 22 member countries. The publication also includes data on standardized unemployment rates for 25 member countries. (See below.)

Main Economic Indicators. This monthly statistical publication provides a wide range of economic indicators for the 30 member countries and about 10 nonmember countries. Labor indicators included are employment, unemployment, labor compensation, hours of work, job vacancies, and time lost to labor disputes. Historical statistics and additional indicators are available on CD-ROM and online.

Main Economic Indicators: Sources and Definitions. This series of publications contains summary descriptions of sources, concepts and definitions, and methodologies for series published in *Main Economic Indicators*. OECD also publishes specialized methodological publications. Many of these publications are available on the Internet.

OECD Employment Outlook. This annual report provides an assessment of the latest labor market trends and short-term forecasts, and examines in more depth selected labor market developments or issues. It includes labor statistics to support topics for analysis plus a regular statistical annex showing key labor market data.

Education in Focus: OECD Indicators. This report includes statistics on labor force participation, unemployment, and earnings by level of educational attainment.

Taxing Wages. This annual report presents estimates of net earnings, after income taxes, social security contributions, and cash benefits for manufacturing production workers by income level and family composition.

Standardized Unemployment Rates. Unemployment rates are computed for 25 countries according to standard ILO-OECD guidelines and published in *Labor Force Statistics*. Underlying unemployment and civilian labor force data are not published, and no other labor force data are adjusted for comparability.

European Union (EU)

Statistical Office of the European Communities (Eurostat)

<http://www.europa.eu.int/comm/eurostat/>

The European Union evolved from the initial establishment of the Council of Europe and the European Coal and Steel Community with six member countries after World War II. Today, it has 15 member states and is preparing for the accession of 13 eastern and southern European countries. The EU is a “supranational organization” to which member states delegate sovereignty to common institutions representing the interests of the EU as a whole on questions of joint interest.

Eurostat is responsible for collecting and publishing statistics to meet the needs of the Commission of the European Union and the European Central Bank. Data are collected by national statistical offices and transmitted to Eurostat. Concepts and data collection methods are sometimes dictated by the Commission; other times, determined by consensus in series of Expert Working Groups. Statistical series vary in their degree of comparability and countries’ adherence to Eurostat guidelines. Statistics are published in a series of general and detailed publications—in collections called *News Releases*, *Statistics in Focus*, *Panorama of the European Union*, and *Detailed Tables*—and maintained on an extensive database (New Cronos). Many publications are available in electronic format.

Labor statistics collected include: harmonized labor force survey, wage structure survey, labor cost survey, employee earnings statistics, labor productivity indexes, and harmonized consumer price indexes. Publications of labor statistics in the *Detailed Tables* collection include the following: *Labor force survey results*, *Labour costs*, *Earnings in industry and services—hours of work in industry*, *Minimum wages—a comparative study*, and *Net earnings of employees in manufacturing industry in the European Union*.

United Nations (UN)

Statistics Division

<http://www.un.org/Depts/unsd>

The United Nations was established in 1945 with the purpose of maintaining international peace and security, cooperating in solving international economic, social, cultural, and humanitarian problems and promoting human rights and fundamental freedoms. Almost every country in the world is a member. The United Nations and its specialized agencies have several programs for the collection and publication of statistics. The following publications include labor statistics:

Statistical Yearbook. The *Yearbook* includes 85 tables covering population and social statistics, economic activity,

and international economic relations for more than 235 countries, areas, or territories. Data are official statistics of member countries, presented in a common framework, with notes concerning differences from international norms. The labor statistics included are employment by industry, unemployment, wages in manufacturing, and consumer price indexes, provided by the ILO.

Monthly Bulletin of Statistics. The *Bulletin* includes international economic indicators which are available monthly or quarterly, including employment, unemployment, wages, hours of work, and consumer price indexes provided by the ILO.

World Bank

Development Data Group

<http://www.worldbank.org/data/>

The World Bank is a lending institution whose aim is to help integrate developing and transition countries with the global economy, and to reduce poverty by promoting economic growth. It has 181 member countries.

World Development Indicators. This annual report includes 85 sets of development indicators covering social progress and quality of life, along with economic development, physical infrastructure, government policy and performance, and the condition of the environment. Indicators are based on statistics provided by the ILO, the United Nations Educational, Scientific, and Cultural Organization (UNESCO), World Health Organization (WHO), and the World Bank's Development Research Group. Time series are available on CD-ROM.

Labor market indicators include labor force structure, employment by economic activity, unemployment, wages, hours

and productivity. Related social indicators cover population dynamics, poverty and income or consumption distribution, education, and health. The report includes summary analysis and information about the data, along with the statistics.

International Monetary Fund (IMF)

Statistics Department

<http://www.imf.org>

<http://dsbb.imf.org>

The International Monetary Fund is an international organization of 183 member countries. It was established to promote international monetary cooperation, exchange stability, and orderly exchange agreements; to foster economic growth and high levels of employment; and to provide temporary financial assistance to countries to help ease balance of payments adjustments.

International Financial Statistics. Major financial and economic statistics are released in a monthly publication, a yearbook, and time series on CD-ROM. Labor statistics included are: labor force, employment, unemployment, and wages.

Dissemination Standards Bulletin Board. The *Bulletin Board* includes the following: information about economic and financial data series, concepts and definitions, coverage, data collection methods, their quality and timelines; information about data dissemination practices; information on data standards; and articles and other contributions related to data quality issues. It was established to guide countries in improving the quality of their economic, financial, and socio-demographic statistics. The *Bulletin Board* is posted on the IMF Web site.