

## International comparisons of hours worked: an assessment of the statistics

*A study of 13 countries reveals that measures of hours worked based on administrative sources are relatively low while measures based on establishment and labor force surveys are relatively high; thus, although ever improving, these measures cannot yet be taken at face value and are useful only for broad comparisons*

Susan E. Fleck

Public commentators, the press, and governments are interested in the hours people work. Work hours underpin productivity measures. The number of hours individuals work stimulates debate on the quality of life in an international context: do some societies live to work while others work to live? The differences in hours worked between countries fuels discussion of economic growth, employment, and unemployment. Any comparative measure between countries, however, depends on a standardization of concepts, sources, and methods. Measuring and comparing how many hours people spend at work across countries is not an exact science, despite recent improvements in methodology and data coverage.

The recommendation from the International Labor Organization (ILO) is to use actual hours worked, including annual hours actually worked, as the basis for international comparisons. The recommendation to include annual hours actually worked was part of an updated ILO resolution regarding the measurement of working time that was adopted at the International Conference of Labor Statisticians held in the fall of 2008. Background research on working time and hours worked carried out by international statistical organizations

and national statistical agencies to prepare for the conference has contributed to a rich debate on hours worked.

This article benefits from the recent exchange of ideas leading up to the 2008 Conference and looks at two data sets on hours worked. The better known of the two is the Organization for Economic Cooperation and Development (OECD) data set on average annual hours actually worked, for all employed persons, for 30 countries, published in the annual OECD *Employment Outlook*.<sup>1</sup> The second data set is the Bureau of Labor Statistics (BLS) underlying hours and employment data in the annual report, "Gross Domestic Product per Employed Person," which presents an international comparison of gross domestic product (GDP) per hour worked for 13 countries. The OECD data set provides an explicit measure of average annual hours worked, while the BLS data set publishes total employment and hours, from which a series for average annual hours worked can be derived. Both hours-worked data series complement output and productivity data published by the respective organizations.

Whereas data users tend to look at the number of average hours worked per year when making comparisons between countries, both BLS and OECD caution that such comparisons are prone to error and that the data series best describe changes over time. This

Susan E. Fleck is Chief, Division of Major Sector Productivity, Office of Productivity and Technology, Bureau of Labor Statistics. This article was prepared when she was a supervisor in the Division of International Labor Comparisons. E-mail: fleck.susan@bls.gov

article provides some context and explanations for the data user on why these comparisons are fraught with difficulty. It considers how concepts, sources, and methods used to construct hours-worked data series affect analyses of data levels and trends. The differences between the BLS and OECD data sets discussed here highlight a major theme of the article, namely, that the estimate of average annual hours actually worked per employed person is just that—an estimate—and it may vary with the sources and methods used. Nonetheless, trends are similar. Finally, the article explains why small differences in hours worked between countries have little meaning, whereas large differences are more likely to be meaningful.

The countries studied are the United States, Canada, Japan, South Korea, and nine European countries: Belgium, Denmark, France, Germany, the Netherlands, Norway, Spain, Sweden, and the United Kingdom. Both BLS and OECD data sets depend on a variety of data sources and concepts used to measure and estimate hours worked. The 13 countries considered here represent a wide variety of developed economies. Additional data used in this article come from special studies by the OECD and the ILO, as well as from studies by researchers and national statistical agencies. When time series are used, data begin with 1980 where available. For both data sets, pre-1991 data for Germany are estimated.

The analysis begins with an explanation of various concepts and sources underpinning hours worked and of their uses and limitations in preparing data series on average annual hours actually worked. This explanation establishes the framework for discussing methods of estimation of average annual hours actually worked and for describing the BLS and OECD data sets, including breaks in series. The levels and trends for each country are compared with the use of a rank von Neumann test, to show how trends can be similar, although levels differ. With this background, the historic trends in the two data series are compared over a quarter-century whenever data are available. Furthermore, changes in the labor market that influence hours worked, such as an expansion of part-time and women's employment, also will be examined. A short overview of changes in laws and norms helps put the trends in context. Comparisons are made between sources for the same country and between countries using similar methodologies. Comparisons between Japan and the United States and between Norway and Sweden highlight discrepancies in levels due to differences in sources and methods. The comparisons are intended to provide the data user with a better understanding of the interplay among concepts, sources, and methods and how they affect the comparisons.

There are a number of explanatory factors underlying the differences in hours worked across countries, such as institutional, legal, and policy differences. Only institutional and legal factors specific to the regulation of normal hours of work will be addressed in this article; the other factors are beyond the scope of the analysis. Furthermore, with the recent passage of the revised ILO resolution on working time, the concepts underlying hours worked have expanded to provide more detail. This study was prepared before the 2008 ILO resolution on working time was finalized and took effect; thus, the concepts presented are based on the original ILO resolution.

### Hours of work: concepts and sources

*Concepts.* Resolutions passed by the tripartite meeting of the International Conference of Labor Statisticians establish recommendations for countries to develop data with enough similarities to be suitable for international comparisons. The October 1962 ILO “Resolution concerning statistics of hours of work” provides guidance on concepts and measurement relating to hours of work and on a basic framework for collecting and analyzing data on hours. The resolution establishes three concepts of hours of work: “normal hours of work,” “hours actually worked,” and “hours paid.”<sup>2</sup> Another concept often used in data collection is “usual hours of work.” Note that “hours worked” refers to *measured*, or actual, hours, whereas “hours of work” refers to *scheduled*, or planned, hours.

The box on page 5 lists the components of working time, based on the 1962 resolution. Items 1 through 6 comprise one or more of the hours concepts mentioned in this article. Items 7 and 8 are generally accepted as hours not at work.

*Normal hours of work* are the maximum number of hours worked beyond which an employer must pay an overtime premium. This concept is partially addressed in item 1 in the box. Normal hours may be fixed by legislation or established by collective-bargaining agreements, depending on the country, industry, and occupation. The vast majority of countries in the world have a normal workweek of 40 or more hours. In the United States, the normal workweek is 40 hours. In Europe, the normal workweek is usually less than 40 hours and ranges widely by industry or occupation both within and between countries. For example, earlier this decade, the normal workweek was 29 hours for Volkswagen production workers in Germany, but now it is 33 hours; in France, the normal workweek has been 35 hours for almost all employees for the past 10 years; and in the Netherlands, the normal workweek can be as

### Components of working time

1. Hours actually worked during normal periods of work.
2. Time worked in addition to hours worked during normal periods of work and generally paid at higher rates than normal rates (overtime).
3. Time spent at the workplace on work such as preparation of the workplace, repairs and maintenance, preparation and cleaning of tools, and preparation of receipts, timesheets, and reports.
4. Time spent at the workplace waiting or standing by for such reasons as lack of work, breakdown of machinery, and accidents, or time spent at the workplace during which no work is done, but for which payment is made under a guaranteed employment contract.
5. Time corresponding to short rest periods at the workplace, including tea and coffee breaks.
6. Hours paid for, but not worked, such as paid annual leave, paid public holidays, and paid sick leave.
7. Meal breaks.
8. Time spent on travel from home to work and from work to home.

many as 60 hours for some workers for short periods.<sup>3</sup> Some people call normal hours of work “hypothetical,” in that they measure the *ideal* work schedule, not the observable work schedule. On a practical level, employers often arrange work schedules to keep employees’ hours at or below the normal-hour threshold, in order to avoid paying overtime wage rates. Data sources for normal hours of work are derived from the aforementioned legislation and collective-bargaining agreements and cover predominantly employees.

The concept of *hours actually worked* encompasses all hours spent working, including overtime hours and excluding absences; these are items 1 through 5 in the box.<sup>4</sup> The concept excludes items 6 through 8—that is, hours paid but not worked, such as paid leave, paid public holidays, and paid sick leave, as well as meal breaks and commuting time. As part-time work has become more prevalent, workers’ hours are less than the normal workweek, but are still counted in item 1. Although not explicitly stated in the resolution, hours actually worked are commonly counted as both paid and unpaid hours at work. Data on hours actually worked are collected from household-based surveys, such as labor force surveys and time-use surveys; establishment surveys report data using other hours concepts, which can be adjusted to an actual-hours concept. Hours actually worked usually are reported on a person basis (but can be adjusted to a jobs basis), account for the total hours individuals work on all jobs in a given reference period, and generally include both persons working

part time and persons working full time. Yearly estimates usually are calculated to reflect a full-year worker (that is, someone who works throughout the year).

The *hours paid* concept is described in the 1962 resolution, but is not identified as a concept amenable to international comparison. Hours paid generally include items 1 through 5 in the accompanying box and exclude unpaid overtime. Hours paid also include item 6: holidays, vacation, and sick leave. Depending on the terms of the employment contract, items 7 and 8—meal breaks and commuting time—also may be included in the hours-paid concept. Wide variations across countries persist regarding how workers are paid for holidays and nonwork time, particularly sick leave. These differences are the primary reason that international comparisons of hours paid are not made.

*Usual hours of work* are not addressed in the 1962 ILO resolution on hours, but are included in the 2008 resolution. Usual hours of work are hours that are typical of a certain length of time, such as a day, a week, or a month.<sup>5</sup> The concept encompasses the same components as hours actually worked, but refers only to regularly scheduled hours. Data on usual hours of work commonly refer to the usual work schedule during a week or month and are most commonly collected from household surveys. Some establishment surveys collect data on contractual hours, which are usual hours of work expected to be fulfilled under individual employment agreements. These contractual hours are analogous to normal hours under collective-bargaining agreements.<sup>6</sup>

*Sources of hours data.* A number of sources are used to capture the hours concepts described in the previous section. For each hours concept, certain sources of data are preferred over others because they provide a better measure of the concept. In the context of creating a comparable international measure of average annual hours worked, each source has its benefits and drawbacks. The chief issues to address in determining the best concept and source of hours to use in estimating average annual hours worked are (1) how well the data collected capture the concept of hours actually worked and (2) what additional data sources have to be used to create the annual estimate, because of either measurement issues or coverage issues. The main concern is whether the source covers detailed industries, all types of workers, and the total economy.

*1. Administrative data sources.* Data on normal hours of work are available through administrative data sources. The primary purpose of such data often is to manage programs, not to collect statistics. Administrative data are collected by social programs, ministries, or local, regional, and national governments. In addition to covering legislation or collective-bargaining agreements on normal hours, administrative data may cover the use of public services (such as registering in employment offices or being paid sick leave), labor code enforcement, or tax collection. Administrative data also provide information on hours *not* worked, particularly in countries where paid leave is centrally administered, such as Sweden and Norway.

The advantage of an administrative source for data on normal hours is its potentially wide population coverage in those countries with large numbers of employees working under collective-bargaining agreements. European countries have high rates of union coverage and, in some cases, have passed legislation that extends the benefits agreed upon in collective-bargaining contracts to workers who are not union members.<sup>7</sup> These countries collect large amounts of data in administrative databases because they have active social programs and wide-ranging labor regulations. Still, administrative data from collective-bargaining agreements, though a common source of data on normal hours for different occupations, industries, and regions, are not the only source: establishment surveys, such as those conducted in France, also may provide information on normal hours of work.

Of course, there are limitations on administrative data as a source of information on hours. First, the wide range of administrative data on job or labor conditions that provides information on normal hours may exclude some workers, such as part-time workers, workers not covered

by collective-bargaining agreements, and the self-employed. For example, in France, small and medium-sized businesses together account for one-fourth of employees, but those employees are not subject to the general limitation of a normal 1,600-hour work year. Thus, if normal hours were to be the basis of an annual measure of hours actually worked for all employed, the additional hours worked by employees in small and medium-sized businesses would be excluded.<sup>8</sup> Also, administrative data are collected by job and not by person, so additional information would be required to account for multiple jobholders if hours worked were to be estimated by person.

Because of limitations on concepts and data sources of normal hours, estimates of annual hours worked based on these sources are likely to be undercounted. Normal hours do not provide a total-economy measure of hours worked without adjustments that expand coverage to all employed persons and all industries. The nature of the data sources—collective-bargaining agreements and other sources of regulated normal hours—guarantees that overtime hours worked are not counted. Thus, estimates of hours actually worked will be biased downwards. As an example, some countries covered in the BLS and OECD data sets base their measure of average annual hours worked on normal hours and deduct all paid annual leave and allowable sick leave. This estimation technique undercounts hours.

*2. Survey-based data.* Survey-based data have an advantage over administrative data covering normal hours of work, in that surveys provide reports of hours actually worked by individuals and count persons employed or jobs. Data are reported from either individuals or businesses on their actual labor market behavior, not on their expected behavior. Labor force surveys collect data on weekly or daily actual or usual hours worked (or both). Establishment surveys generally collect either weekly or monthly hours data on an hours-paid concept. Advantages and limitations exist with the data provided by each of these types of surveys.

*a. Household surveys.* Data on actual or usual hours worked are collected from household surveys such as labor force surveys and time-use surveys, the latter being more irregular and with a smaller sample size. Data on hours actually worked and usual hours of work are reported on an employed-person basis and account for the total hours individuals, including both full- and part-time workers, work on all jobs in the reference period.

The two major advantages of labor force survey data

are the ability to report hours actually worked, including paid and unpaid overtime, and the broad coverage of the employed. The concept of hours actually worked captures the variability and irregularity of the number of hours a person works and does not work in a given week or other period, and it can account for shortened workweeks, overtime hours, holidays, sick leave, and vacation. Of course, the concept of usual hours of work also captures paid and unpaid overtime, as long as the overtime hours are a regular part of the work schedule. The problem is that usual hours of work do not fluctuate as much as hours actually worked and do not capture that variability, because they exclude irregular hours not worked, irregular overtime, and short-time work (temporary reductions in the regular workweek). Regarding coverage of the employed, the nature of a labor force survey is to reach into all households with all types of workers. Thus, labor force surveys provide coverage of the self-employed and unpaid family workers, both of whom are excluded in data on normal hours of work.

There are a couple of limitations, however, to using labor force survey data for comparisons of hours worked. First, data collection that is not ongoing (that is, discontinuous data collection) can affect the accuracy of data on both hours actually worked and hours not worked. Because of this problem, European Union member countries recently have moved toward ongoing data collection; hence, their estimates of average annual hours actually worked are based on 52 weeks of the year. But most other developed countries collect data on a discontinuous, albeit regular, basis. By its nature, discontinuous data collection, such as one week a month or one week a quarter, does not account for unexpected irregularities in hours worked and hours not worked—for example, hours not worked on holidays, in bad weather, or because of school closings. Adjustments are made to account for hours not worked, but these adjustments themselves are variable across countries, within a country, and across years, as well as by region or even occupation and industry. It is likely that, as labor force surveys in the European Union and elsewhere expand coverage to all months of the year and all weeks of a month, and as questions and data collection on hours actually worked and hours not worked become more precise, some of these inconsistencies will diminish.

A second common concern regarding labor force surveys is the issue of reliability. Labor force surveys depend on respondent recall and proxy responses; accordingly, survey respondents often do not reliably report their own hours worked and hours not worked, because they are relying on faulty memory, and neither do proxy respondents report

such hours reliably, because they lack information about the intended respondent. In essence, in a labor force survey hours actually worked are not observed, but are *reported*, and people can forget the hours they actually worked.

Nonetheless, past concerns over respondent error in labor force surveys seem to be less of a problem than previously thought.<sup>9</sup> The advent of time-use surveys has led to research that sheds light on comparisons between short-term recall of hours worked and longer term recall used in household surveys. For example, comparisons between the 1998 Canadian Labor Force Survey and Time Use Survey found that, overall, average numbers of hours worked are similar between the two surveys.<sup>10</sup> One U.S. study showed that time-use survey responses accurately reflect hours worked when the data are collected in or near the reference period, but that hours are reported at a level 5 percent lower when data are collected during later weeks.<sup>11</sup> Concerns remain over proxy responses.

Finally, a more theoretical concern regarding the use of hours data from labor force surveys in productivity comparisons is the need to convert the data from a national economy concept to a domestic economy concept consistent with national accounts measures.<sup>12</sup> In small countries, such as Belgium, where residents cross national borders to work, employment data from the household, or labor force, survey may not be a corresponding measure of those employed in a country's production of output, thus affecting the corresponding hours measure.

*b. Establishment surveys.* Data on hours paid are collected from establishment surveys. The purpose of such surveys is to collect data on hours, earnings, number of employees, compensation, and other labor characteristics of firms and their workers. Establishment surveys have at least three advantages. First, the data are deemed reliable, because they are extracted from payroll information and are considered more precise than data based on individual recall.<sup>13</sup> Second, industry coverage and classification also are deemed reliable. This is because establishment survey data often are collected at a detailed industry level, generally complement national accounts output data, and thus also complement industry productivity analysis. Finally, in some countries, such as the United States, establishment survey sample frames are much larger and cover far more workers than labor force surveys can cover.

The limitations on establishment survey data for hours measures are at least fourfold. First, the concept of hours paid typically does not report hours actually worked. Rather, it includes hours paid and worked, such as the regular workweek and paid overtime; and hours paid, but

not worked, such as paid vacation, sick leave, and maternity leave. Second, both the practice and reporting of the collection of data on hours paid differ widely across countries, making comparisons difficult. In some countries, such as Norway, benefits for sick leave or maternity leave are paid by a government or a union, so the hours-paid data from establishment survey sources exclude these benefits; in other countries, such as the United States, paid sick leave is a benefit offered by many employers, so it is counted as hours paid. It is difficult to account for these differences in creating comparative measures of hours paid between countries. Third, survey coverage is limited to employees, and only to certain types of employees. Historically, establishment survey data have been collected on production workers and have excluded supervisory, temporary, or part-time employees. Only in the recent past have establishment surveys expanded their coverage to include supervisory employees. Needless to say, data on self-employed and unpaid family workers must be found to complement establishment survey data on employees. Fourth, in establishment surveys, industry coverage, although complementary to data found in national accounts, may not be representative of all industries. The focus of data collection by establishment surveys always has been the manufacturing sector, although countries have been expanding coverage to include the service sector.

Without adjustment, hours-paid data from establishment surveys do not provide a total-economy measure of hours actually worked that covers all employed persons in all industries. Depending on the adjustment, the estimate may over- or underestimate hours actually worked: on the one hand, hours-paid data that are not adjusted for paid leave will overstate the estimate of hours actually worked; on the other hand, hours-paid data that are adjusted to the hours-worked concept by means of administrative or legislative leave data may understate hours worked if the adjustment assumes that employees take all leave that is offered them.

These concepts and sources of hours worked are the building blocks for the analysis in the next section, which addresses issues related to constructing a series of average annual hours actually worked and examines two data sets from the BLS and the OECD.

### Estimating and comparing hours actually worked

In recent years, statistical reporting and measurement have focused on how to create comparable series of average annual hours actually worked. The reasons are twofold. First, if hours worked are to be used as a compar-

tive quality-of-life indicator, they are best measured over a year, to reflect vacation time and other absences from work. Second, demand has grown for measures of annual hours in order to estimate an economy's total productivity. Average annual hours actually worked per capita provides a broad measure of labor utilization, broken down into three components in a recent OECD study: the "intensive," or individual, component of average annual hours actually worked per employed person, the "extensive," or economywide, component of the employment-population ratio, and a demographic factor.<sup>14</sup> Unless otherwise stated, the rest of this article considers instead the narrower, "intensive," measure of *average annual hours actually worked per employed person*—that is, the hours of labor that workers actually put in on the job.

In 2003, the 17th general report by the International Conference of Labor Statisticians highlighted the need to revise existing international recommendations on "*hours actually worked* during short as well as longer reference periods" and suggested that such measures "be broadened to cover all persons in employment, including the self-employed, by extending the content of each of the defining categories of working time to include all work situations, such as irregular, seasonal, work at home, and unpaid work."<sup>15</sup> Furthermore, the report suggests "the development of an international definition of *annual hours of work* that allows for alternative estimation procedures that take into account variations in the type and range of national statistics of working time."<sup>16</sup>

This section looks at the methodologies used to prepare measures of average annual hours actually worked per employed person and the data sets underlying the published measures. The analysis begins with an overview of the concepts and sources used in the BLS and OECD data sets, followed by a comparison of differences in the estimates of average annual hours actually worked per employed person in each data set, for each of the 13 countries examined. A statistical test comparing trends between the two data sets shows that the trends diverge for only 3 of the 13 countries examined: the United States, France, and the Netherlands. The analysis undertaken supports the perspective of the statistical organizations that hours data are best analyzed as trends and not as levels.

*Data sources and country methodology.* As countries move toward adopting a national accounts framework to measure labor input, or hours worked, concepts across countries are becoming more consistent. It is the source of data and the methodology used, rather than the concepts employed, that are at the heart of the comparability issue.

As Gerard Ypma and Bart van Ark attest in their 2006 analysis of the OECD/Eurostat country survey on employment and hours for national accounts, a country's data sources and data priorities determine the methodology that the country uses to prepare an estimate of hours, employment, and, eventually, average annual hours actually worked per employed person. The direct method of estimation is based on sources that capture hours actually worked, whereas the component method is used to convert normal, paid, or usual hours worked to an hours-actually-worked concept.<sup>17</sup>

Exhibits 1 and 2 together provide a snapshot of the BLS and OECD data sets through 2006, the concept of hours, the sources of hours and employment, and—where information was available—the adjustments to concepts made for each data set.<sup>18</sup> Ypma and van Ark's analysis gives detail where information is lacking. The general term “national accounts concept of hours worked” refers to the 1993 System of National Accounts measure of labor inputs, which in turn refers to the ILO resolution on hours actually worked.<sup>19</sup> Individual countries may adopt measures that include any number of original sources and related concepts of hours and employment, and, as necessary, may subsequently adjust them to expand coverage to all employed persons, to convert measures of paid, normal, or usual hours to hours actually worked, or to include industrial sectors that are otherwise excluded from a survey.<sup>20</sup>

An important detail of the two tables is the unit of measure of hours. Whether that unit of measure—that is, the average annual hours actually worked—is applied per employed person, per job, or on the basis of full-time equivalents—creates differences between levels of data. Because one person can hold more than one job, the average hours worked per employed person will be greater than the average hours worked per job. The concept of full-time equivalent workers consolidates hours worked by part-time workers into a measure of hours that approximates the hours worked by a full-time employed person working a normal workweek. Average annual hours actually worked per full-time equivalent worker will be greater than average annual hours actually worked per employed person. Average annual hours actually worked per employee are estimated when data for the self-employed are not available or are difficult to integrate into the calculations. Average annual hours actually worked per employee are generally lower than those per employed person, because the self-employed work longer hours than employees. This comparison of two data sets highlights how results differ, even for the same country, if a different source of data or unit of measure is used. Eight of the 13 countries have major differences in their data sources or methods.

*BLS data set.* In the face of continued interest in broad measures of productivity based on hours worked, a 2007 BLS report began to publish international comparisons of GDP per hour worked, as well as GDP per employed person.<sup>21</sup> The underlying data on total hours and total employment are collected from national sources, where available. The report covers 16 countries, but data on hours worked cover only 13 of the 16, all 13 of which are discussed in this article. Efforts are being made to extend coverage to Australia as well. Data for Germany have a break in 1991; data for earlier years are estimates based on the former West Germany's hours and employment. Other breaks in series include a 1997 break for Canada due to changes in classification. The years covered for Japan and the Netherlands begin at 1996 and 1995, respectively.

Sources and concepts of data on hours are available in detail only for some countries. The BLS report publishes an aggregate, rather than average, measure of annual hours worked. The underlying source data used to calculate average annual hours actually worked in the BLS data set are most commonly total-hours-worked measures, available from national accounts, and total employment measures, usually estimated from national labor force surveys or available from national accounts. Data series for three countries—Japan, South Korea, and Belgium—are published as average hours worked. Japan and Belgium publish average annual hours worked in the national accounts and OECD productivity database, respectively.<sup>22</sup> South Korea's average annual hours worked are calculated from average weekly hours worked, based on the labor force survey. Four other countries' hours-worked data are derived partially from labor force surveys. For the United Kingdom, total hours are based on labor force survey data whereas total employment comes from national accounts. For the United States, Canada, and the Netherlands, labor force surveys are the source of total employment data, adjusted, where necessary, to account for the Armed Forces. Total hours data for the United States and Canada are based on establishment and labor force surveys. The source of data for the remaining countries is total hours worked and employment based on national accounts.

Of the countries included in the BLS series, the average hours worked are on an employed-person basis for all but Japan, Norway, Spain, and the United Kingdom. Data on hours worked for Japan refer to employees and exclude the self-employed. Data for Norway are on a full-time equivalent basis, and data for Spain and the United Kingdom are on a jobs basis.

*OECD data set.* Once a year, the *OECD Employment Outlook* publishes data on average annual hours actually worked per

**Exhibit 1. BLS concepts, sources, and methods, 13 countries**

Country	Beginning year	Breaks in series	Primary source of data on total hours worked	Other sources of data on total hours worked	Hours concept used in source data <sup>1</sup>	Primary source of data on total employment	Other sources of data on total employment	Methodology used to create average annual hours actually worked	Unit of measure
United States	1950	None	Establishment survey	Labor force survey	Hours paid, with adjustment to hours worked	Labor force survey	Data on Armed Forces	Divide total hours by total employment	Per employed person
Canada	1961	1997, NAICS	Labor force survey	Establishment survey	National accounts	Labor force survey	No more known sources	Divide total hours by total employment	Per employed person
Japan	1996	None	National accounts	No more known sources	National accounts	No information available	No information available	No information available	Per employee
South Korea	1980	None	Labor force survey	No more known sources	Average hours worked, by week	No information available	No information available	Average weekly hours × 52	Per employed person
Belgium	1970	None	Administrative data	No more known sources	National accounts	No information available	No information available	No information available	Per employed person
Denmark	1966	None	National accounts	Administrative data	National accounts, based on normal hours	National accounts	No more known sources	Divide total hours by total employment	Per employed person
France	1970	None	National accounts	No more known sources	National accounts	National accounts	No more known sources	Divide total hours by total employment	Per employed person
Germany	1960	1991	National accounts	No more known sources	National accounts	National accounts	No more known sources	Divide total hours by total employment	Per employed person
Netherlands	1995	None	National accounts	No more known sources	Volume of person-hours worked	Labor force survey	Data on Armed Forces	Divide total hours by total employment	Per employed person
Norway	1970	None	National accounts	No more known sources	Man-hours	National accounts	No more known sources	Divide total man-hours worked by total employment	Full-time equivalent
Spain	1979	None	National accounts	No more known sources	No information available	National accounts	No more known sources	Divide total hours by total jobs	Per job
Sweden	1980	None	National accounts	No more known sources	No information available	National accounts	No more known sources	Divide total hours by total employment	Per employed person
United Kingdom	1971	None	Labor force survey	No more known sources	No information available	National accounts	No more known sources	Divide total hours by total jobs	Per job

<sup>1</sup> The national accounts concept of hours worked is hours actually worked, unless otherwise noted.

**Exhibit 2. OECD concepts, sources, and methods, 13 countries**

Country	Beginning year	Breaks in series	Primary source of data on total hours worked	Other sources of data on total hours worked	Hours concept used in source data <sup>1</sup>	Primary source of data on total employment	Other sources of data on total employment	Methodology used to create average annual hours actually worked	Unit of measure
United States	1950	None	Establishment survey	Labor force survey	Hours paid, with adjustment to hours worked	Establishment survey	Labor force survey	(Total hours/total employment) × multiple-jobholder rate	Per employed person
Canada	1961	1997, NAICS	Labor force survey	Establishment survey	National accounts	No information available	No information available	Direct measure of average actual hours worked, with adjustments for weeks not covered and holidays	Per job
Japan	1970	None	Establishment survey	Labor force survey	Hours worked	Establishment survey	Labor force survey	OECD estimates	Per job
South Korea	1980	None	National accounts based on labor force survey	No other known sources	National accounts	National accounts, based on labor force survey	No more known sources	OECD estimates	Per employed person
Belgium	1983	None	Labor force survey	Administrative data	Usual hours worked	No information available	No information available	OECD estimate, accounting for underreporting of time not worked and public holidays	Per employed person
Denmark	1970	None	National accounts	Administrative data	National accounts	National accounts	No more known sources	OECD estimates	Per employed person
France	1970	None	Administrative data	Establishment and labor force surveys	National accounts, based on hours offered	No information available	No information available	French national accounts	Per employed person
Germany	1991	1991 data series begin	Administrative data	Labor force survey	National accounts, based on normal hours	No information available	No information available	German national accounts	Per employed person
Netherlands	1987	2002, 2003, OECD estimates	Labor force survey	Administrative data	Usual hours worked	No information available	No information available	OECD estimate, accounting for underreporting of time not worked and public holidays	Per employed person

**Exhibit 2. Continued—OECD concepts, sources, and methods, 13 countries**

Country	Beginning year	Breaks in series	Primary source of data on total hours worked	Other sources of data on total hours worked	Hours concept used in source data <sup>1</sup>	Primary source of data on total employment	Other sources of data on total employment	Methodology used to create average annual hours actually worked	Unit of measure
Norway	1962	None	Establishment survey	Labor force survey and administrative data	National accounts	No information available	No information available	Norwegian national accounts	Full-time equivalents
Spain	1977	1987, change in survey	Labor force survey	Establishment survey	Actual and usual hours worked	No information available	No information available	Spanish statistical institute	Full-time equivalents
Sweden	1950	1996, change in data source	Labor force survey	Establishment survey	National accounts	No information available	No information available	Swedish national accounts	Per employed person
United Kingdom	1970	1984, 1992, change in data source; 1994, include Northern Ireland; 1995, change in method	Labor force survey	No more known sources	Actual hours worked	Labor force survey	No more known sources	Average hours actually worked × 52	Per employed person

<sup>1</sup> The national accounts concept of hours worked is hours actually worked, unless otherwise noted.

employed person. The data are based on the OECD productivity database. Data on hours worked are converted, where necessary and possible, to employed persons from jobs. Some data for the *Employment Outlook* hours series are based on sources that differ from the productivity database. The OECD data set covers 30 countries and provides estimates of average annual hours actually worked per employed person (that is, all those employed, including the self-employed and unpaid family workers) and per employee (that is, excluding the self-employed and unpaid family workers).<sup>23</sup> The years covered for Belgium and the Netherlands begin at 1983 and 1987, respectively.

Compared with the BLS data set, the OECD data set provides slightly more metadata, because the organization collects and processes a questionnaire on national accounts from national statistical agencies of member countries. The hours concept used with the OECD data set is consistent with national accounts for 7 of the 13 countries in the data set. (See exhibit 2.) The countries for which data sources are derived not solely from national accounts include the

United States, Japan, Belgium, the Netherlands, Spain, and the United Kingdom. For the United States, both hours and employment are taken from the BLS major sector productivity measures. Data for Japan are measured primarily by an establishment survey and are OECD estimates. Estimates of average annual hours actually worked for Belgium and the Netherlands are developed from the European Union labor force survey, using usual hours of work and adjusting for hours not worked. Data for Spain are based on hours actually worked, as well as usual hours of work for those deemed not at work in the labor force survey. The data for the United Kingdom are based completely on the labor force survey, but are compatible with national accounts concepts.

More information on the OECD data set is available from Ypma and van Ark's analysis of 2004 hours-worked data based on the OECD/European Union national accounts questionnaire.<sup>24</sup> South Korea and the United Kingdom are the only two countries for which the data source is solely the labor force survey. The United States, Canada, and Japan are categorized as using primarily survey (both

labor force and establishment) data and not administrative data. The third category is split between the countries that use survey data more than administrative data—such as Norway, Spain, and Sweden—and those which use primarily administrative data, supplemented by labor force and establishment survey data—such as Denmark, France, and Germany. For Belgium and the Netherlands, OECD prepares an estimate of average hours actually worked based on the labor force survey.

*Comparison across BLS and OECD data sets.* The next section compares the data on average annual hours actually worked per employed person between the BLS and OECD data sets.<sup>25</sup> In preparation for that analysis, note that differences in data arise because of differences in sources, concepts, coverage, and units of measure. For Denmark, France for 1990–2002, Germany for 1991 onward, Norway, and Sweden, data sources in each data set are the same. For Canada, Japan, South Korea, Denmark, and the Netherlands, average hours are higher in the BLS data set than in the OECD data set. For France in earlier years, and for Belgium and Spain, the OECD estimates are higher than the BLS estimates. For the United States, Germany in earlier years, and the United Kingdom, average annual hours worked are not consistently higher or lower in either data set.

The differences between the data sets for the United States and Japan are difficult to pinpoint, given that coverage, sources, and methodology differ between data sets for both countries. Differences in units of measure affect the different levels among the data sets for Canada, Spain, and the United Kingdom. For Belgium, South Korea, and the Netherlands, the contrast between the BLS and OECD data sets for each country is due to the source of the data: administrative or survey based; the administrative-data adjustment for time not worked affects comparisons for two of the three countries, and the use of normal hours affects the third.

The country-by-country comparison to be presented highlights how data sources, measurement methods, and units of measure matter. The differences can be categorized as follows:

- Administrative sources reporting normal hours of work result in lower estimates of average annual hours actually worked than do data from surveys.
- Among surveys, data that are primarily from establishment surveys using usual hours or paid hours worked produce lower estimates than do data that are primarily from labor force surveys; data from labor force surveys may overstate hours reported, due to proxy reporting.
- Adjustments to exclude hours not worked may over-

estimate time not worked and lower estimates of hours worked.

- Units of measurement can affect the levels of hours worked that are reported.

*1. More similar than different: Denmark, France, Germany, Norway, and Sweden.* The Nordic countries covered, as well as Germany, and France for some years, use the same data source in both the BLS and OECD data sets and differ only slightly or not at all across years. For Denmark, average annual hours actually worked for both data sets are from the country's national accounts and run parallel to each other. In 1980, average annual hours per employed person were about 1,650 for both data sets; by 2006, they had fallen to 1,577 (OECD) and 1,608 (BLS). (See chart 1, top panel.) The 30-hour difference between data sources is likely due to differences in rounding or method of calculation.

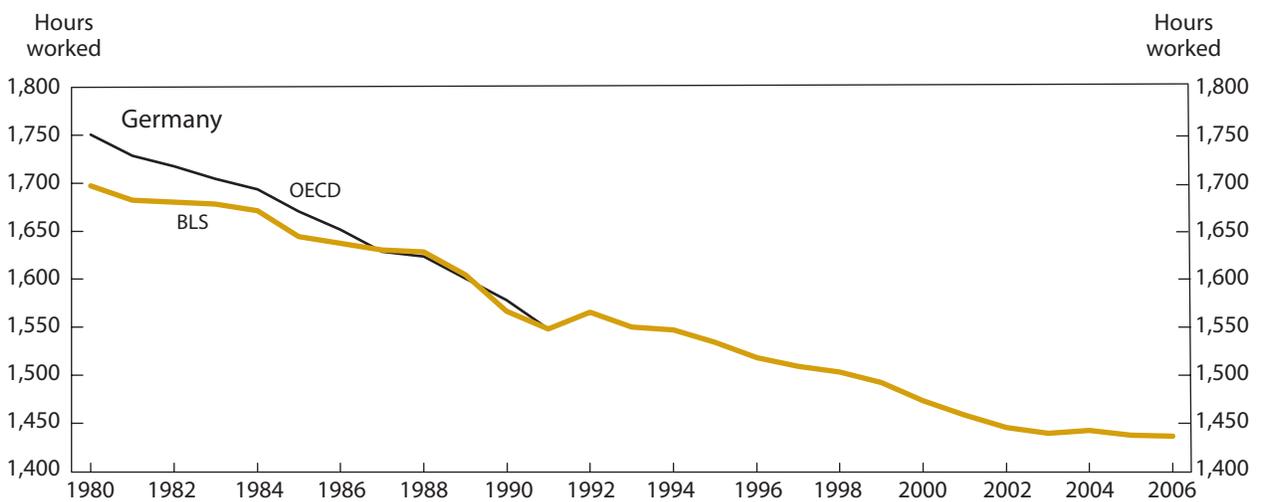
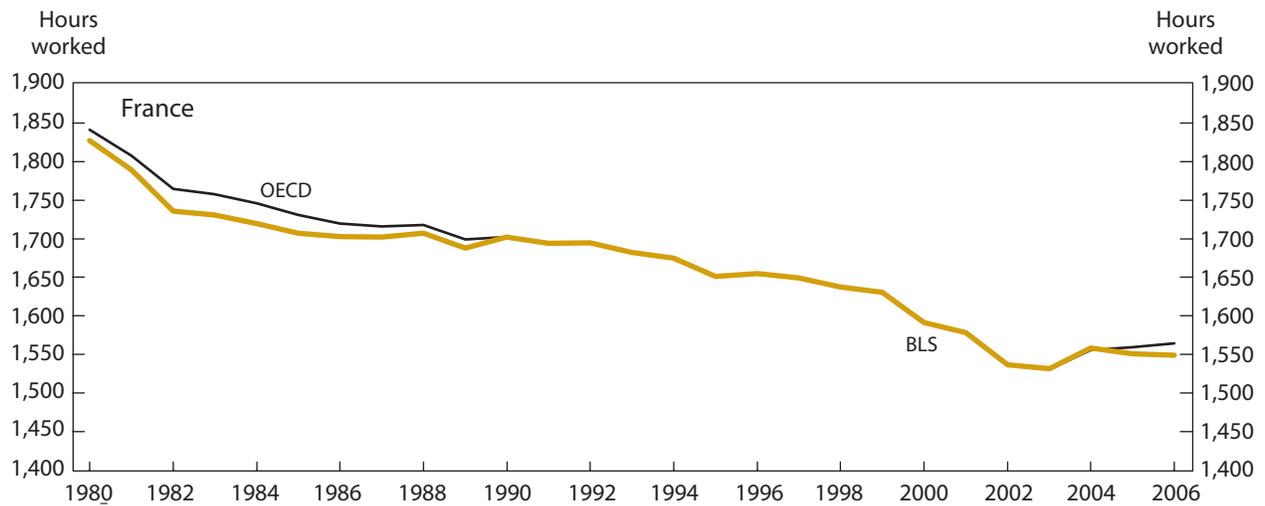
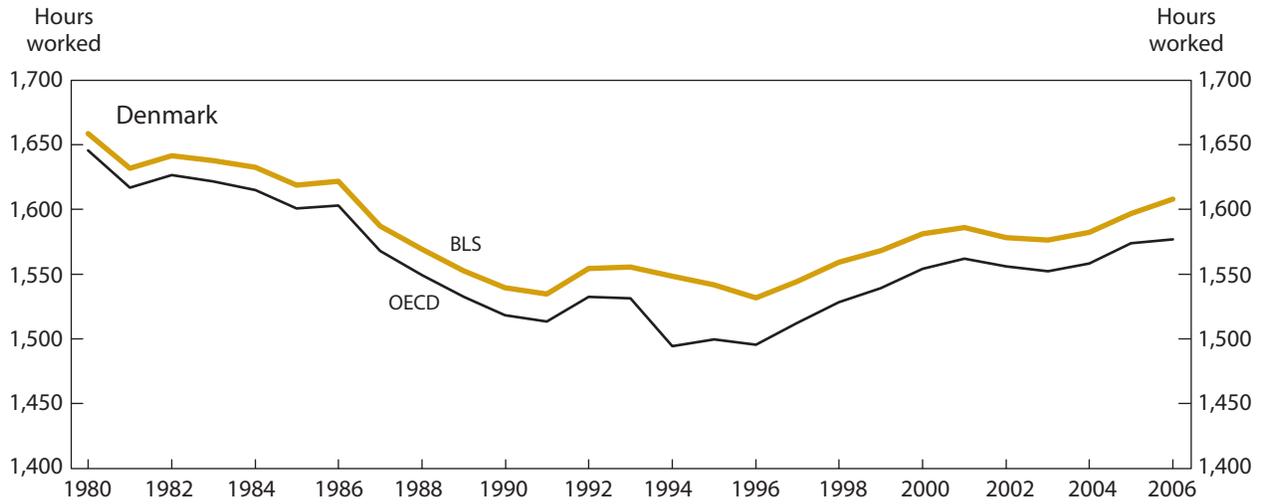
For France, the source for both data sets is the French national accounts. From 1980 to 1989, differences are not large, averaging about 2 to 4 days a year for any given year. (See chart 1, middle panel.) The two data sets yield identical results for 1990–2002 and diverge only minimally for 2003–06. The BLS methodology of linking data from different sources with similar concepts for the period before 1990 creates slight differences between the two data sets.

For Germany, both data sets use that country's national accounts from 1991 forward. The data sources are identical, and so are the series on average annual hours actually worked. Hours worked in 2006 were among the lowest that year of all the countries studied. The 1,436 average annual hours worked is the equivalent of working 36-hour weeks only 9 months of the year. (See chart 1, bottom panel.)

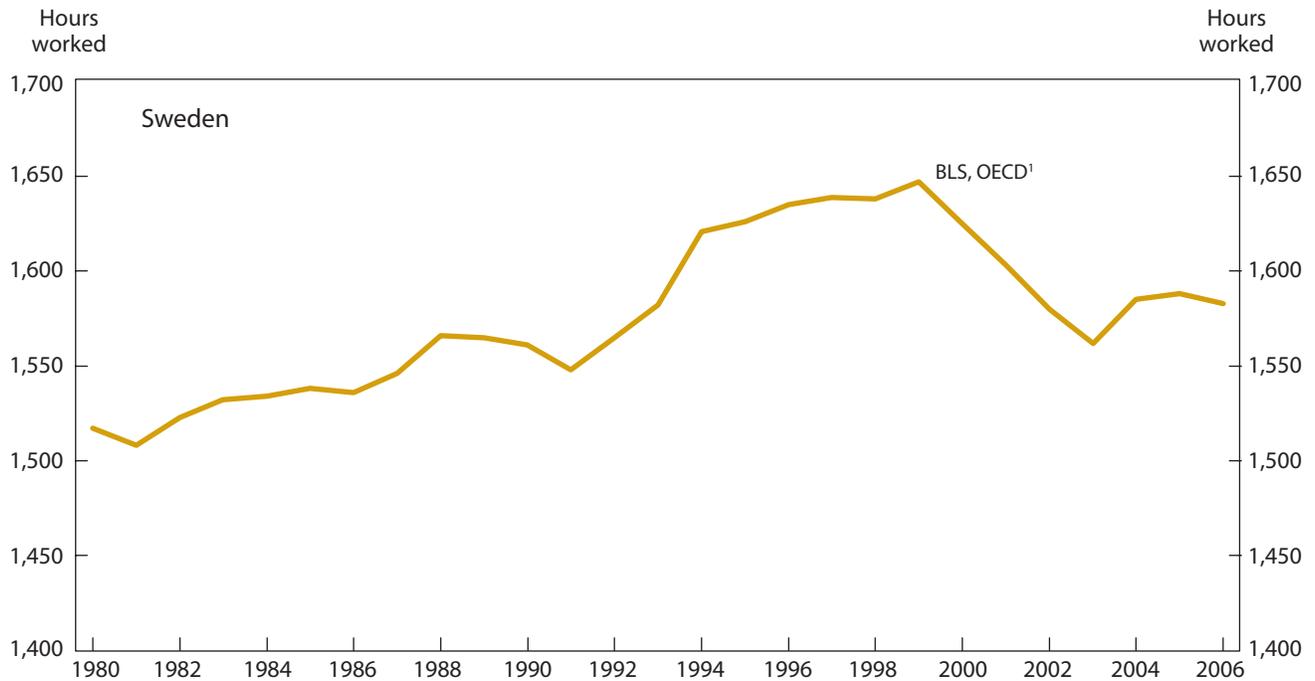
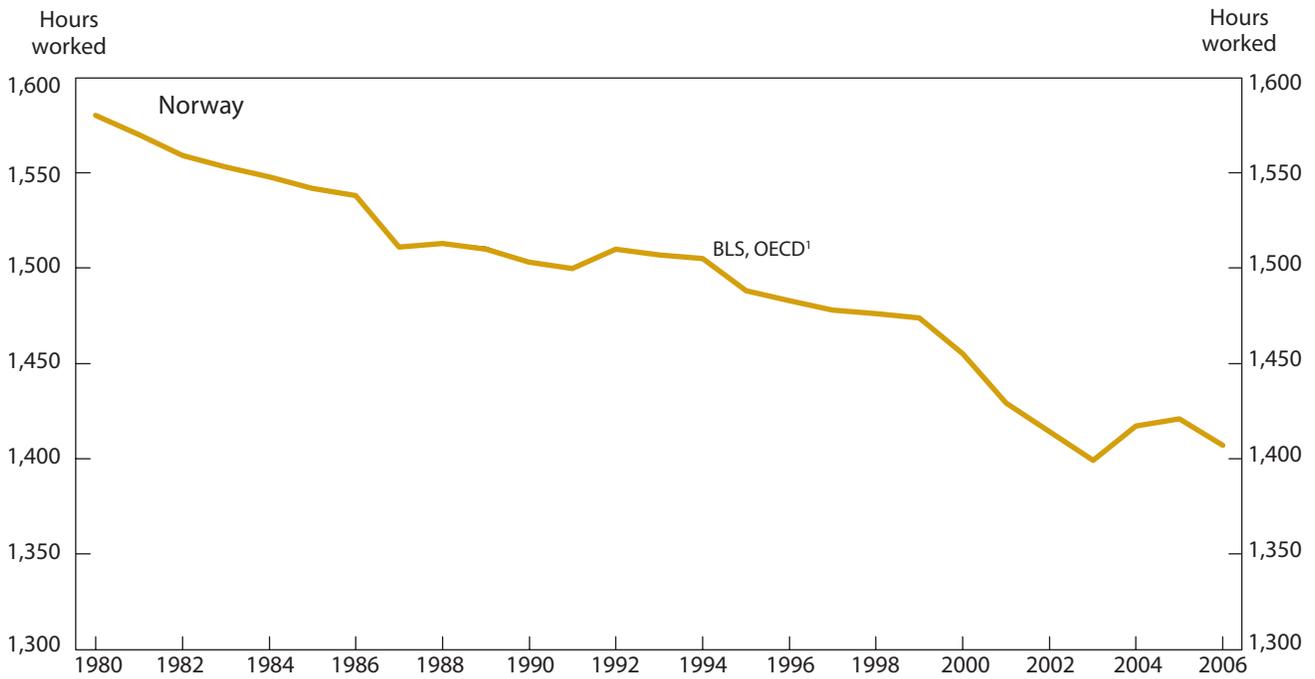
For both Norway and Sweden, national accounts data were used to prepare estimates of hours worked for both data sets. Nonetheless, the sources of the two countries' data—administrative sources and the labor force survey—create the appearance that there are large differences in the Norwegian and Swedish labor markets when hours measures are compared. In Norway, hours worked were listed as 1,580 in 1980 and had fallen to 1,400 by 2006. (See chart 2, top panel.) In Sweden, hours worked were near 1,500 in 1980 and 1981; peaked in 1999; returned to 1,580, an increase equivalent to 2 weeks of work, by 2002; and mostly held steady since then, coming in at 1,583 in 2006. (See chart 2, bottom panel.) This difference between Sweden and Norway will be examined more carefully in the next section.

*2. United States and Japan: countervailing differences.* The data sets differ for the United States and Japan. The differences, however, are so varied that it is difficult to pin-

**Chart 1. Average annual hours actually worked, all employed persons, Denmark, France, and Germany, 1980-2006**



**Chart 2. Average annual hours actually worked, all employed persons, Norway and Sweden, 1980–2006**



<sup>1</sup> For Norway, BLS and OECD data are identical for every year except 1989 and 1999, for which they differ by 1 hour. For Sweden, BLS and OECD data are identical.

point how they might produce differences in time trends. U.S. estimates of hours are produced by the BLS Division of Major Sector Productivity and are based on hours-paid data from an establishment survey on production workers, adjusted to an hours-worked measure by means of the labor cost index and further adjusted to account for industries and categories of workers not otherwise included, as well as self-employed and unpaid family workers, based on the U.S. Current Population Survey.<sup>26</sup> The estimates cover the total economy. The OECD uses aggregate employment data based on the same methodology to create a data series of average annual hours actually worked and then adjusts from a jobs to an employed-person basis. The BLS, by contrast, uses employment data from the national labor force survey, adjusted to include military employment. The differences between the levels of hours published in the OECD and BLS data sets reflect the historically different trends in U.S. employment as measured by establishment and labor force surveys. The overall difference between the two data sets lies in the source of employment data and the underlying differences between the two surveys.<sup>27</sup>

In the case of Japan, the OECD series on average hours actually worked is estimated from Japan's establishment survey for employees and includes labor force survey data on the self-employed. The BLS data set is based on the national accounts data for employees from 1997 onward. Using the categories of differences outlined earlier, labor force survey data are expected to produce higher rates than national accounts data based on administrative or establishment survey data. But for Japan, the OECD hours series based on the labor force survey is lower, on average, than the BLS hours series based on national accounts. Further complicating matters is the fact that hours for all the employed would be expected to be lower than hours for employees, given the nature of self-employment. However, that expectation is not borne out in the case of the two data sets on Japan: the employee data from the national accounts trend *higher* than the OECD data on all employed persons from the labor force. Only in the case of units of measure does the direction of the difference hold. Data on hours worked are on a per-job basis for the OECD and a per-person basis for BLS. This is the only one of three differences that explains why hours-worked data are higher for the BLS data set. Chart 3 shows the average annual hours actually worked by all employed persons, for the United States and Japan.

*3. Canada, Spain, and the United Kingdom: units of measure matter.* In these three countries, the unit of measure,

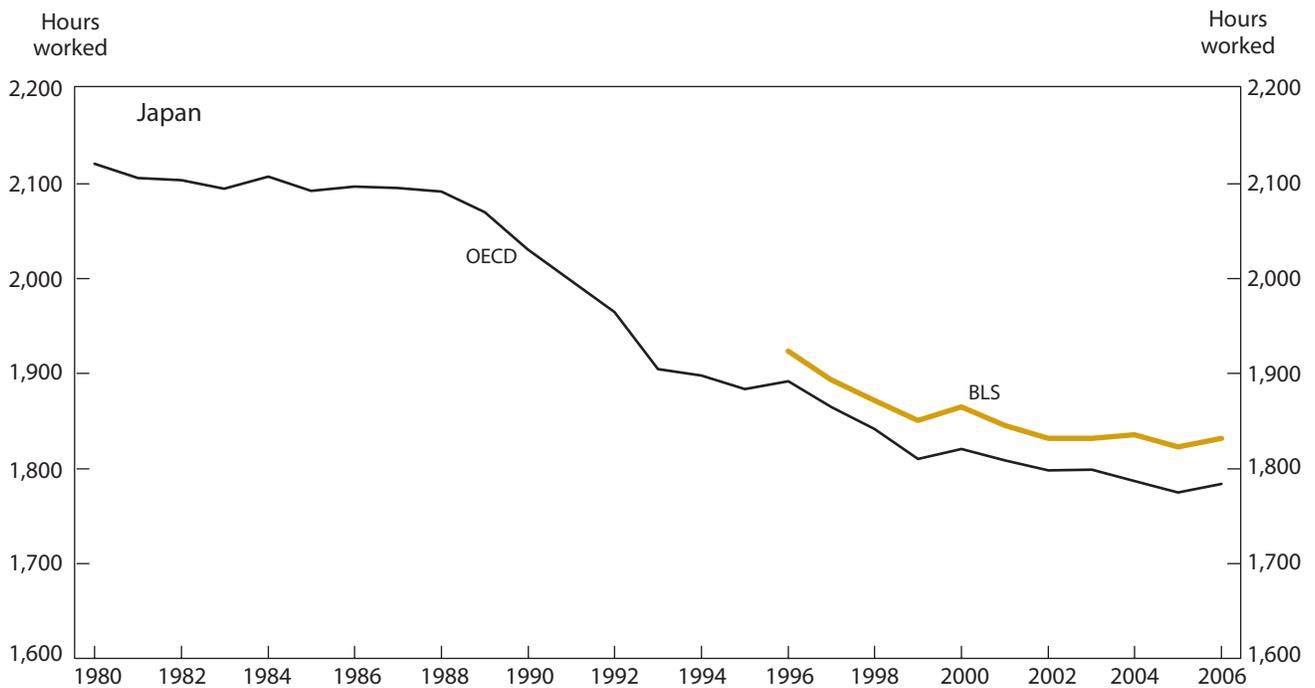
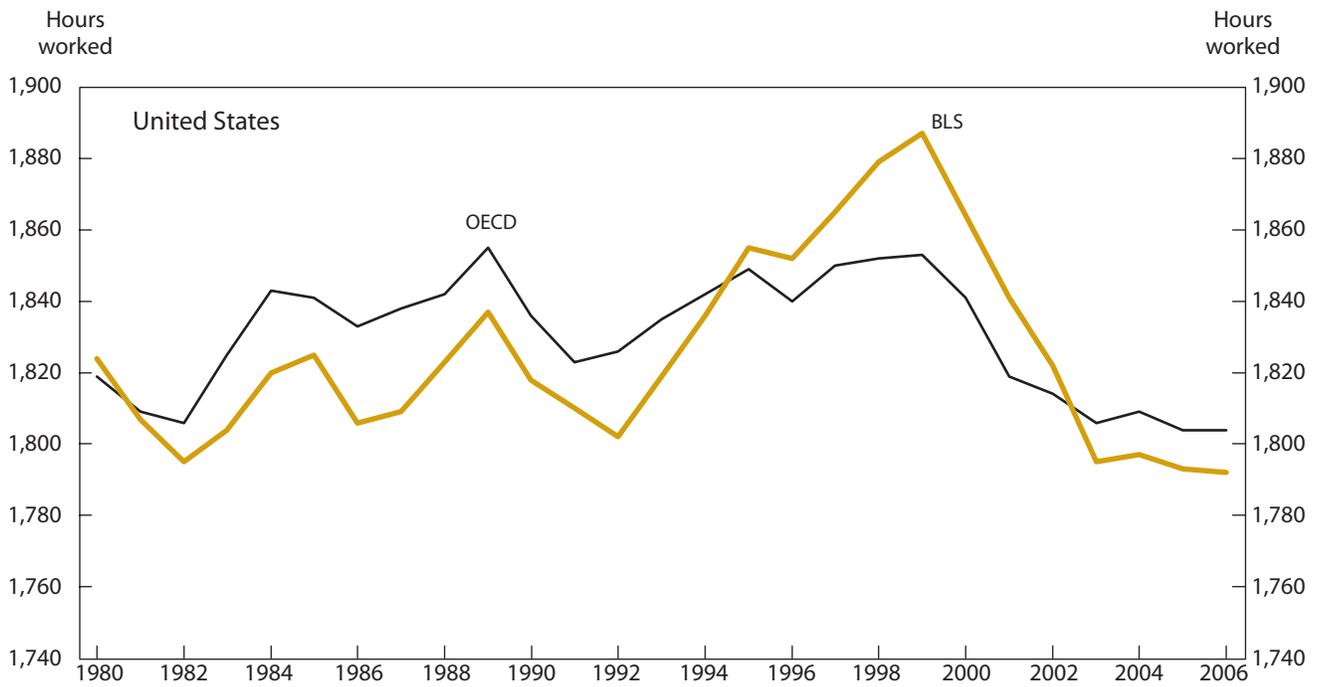
among other things, drives the differences between the data sets. For Canada, the BLS data series is based on a measure of hours per employed person, whereas the OECD data series is based on a measure of hours per job. All other things being equal, average hours actually worked per employed person are higher than average hours actually worked per job. Also for Canada, the two data sets use the same source for hours-worked data, but different sources for employment data. The source of OECD data is the Canadian national accounts, which combine establishment and labor force survey data; by contrast, the source of BLS data is an employment series for employed persons from the labor force survey. The BLS figure is higher for all years, partly because of the difference in sources and partly because the unit of measurement is employed persons rather than jobs.

For Spain, the BLS hours series draws from national accounts data based partially on the country's labor force survey and reported on a per-job basis. The OECD data set uses a data series estimated by the national statistical institute, is based on actual and usual hours from the labor force survey, and adopts a full-time-equivalent unit of measure. These differences create two nearly parallel data series, with the BLS series, on the per-job basis, at a lower level than the OECD series. Together, the source and the unit of measure for Spain explain why the BLS data set shows lower levels than the OECD data set.

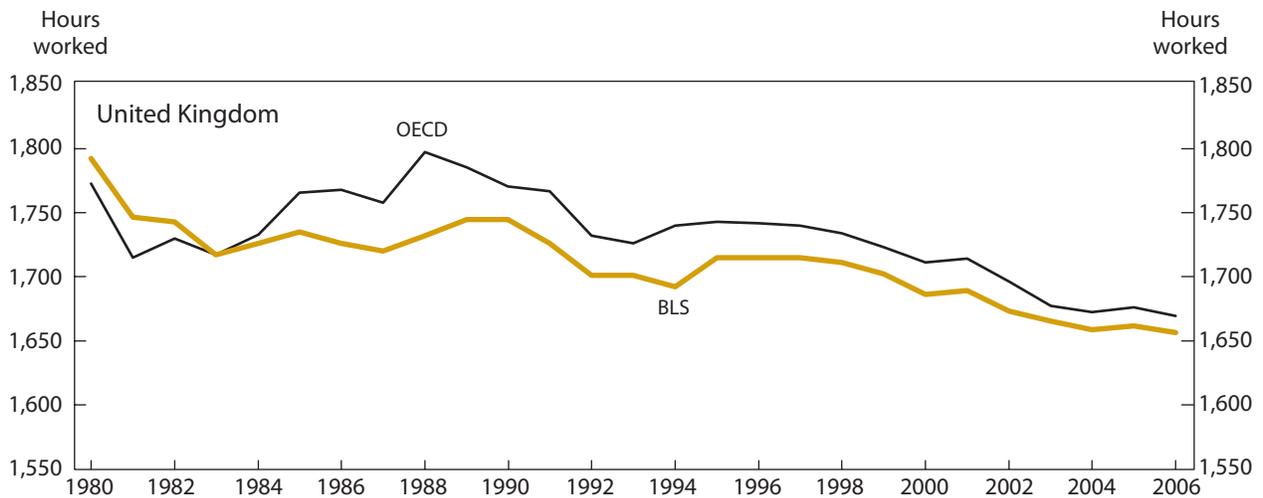
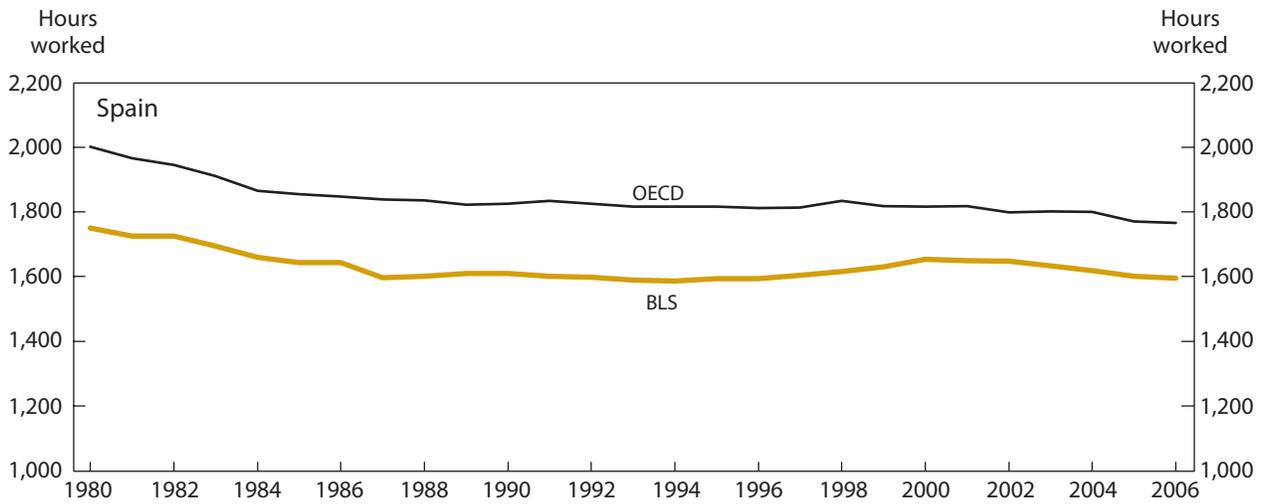
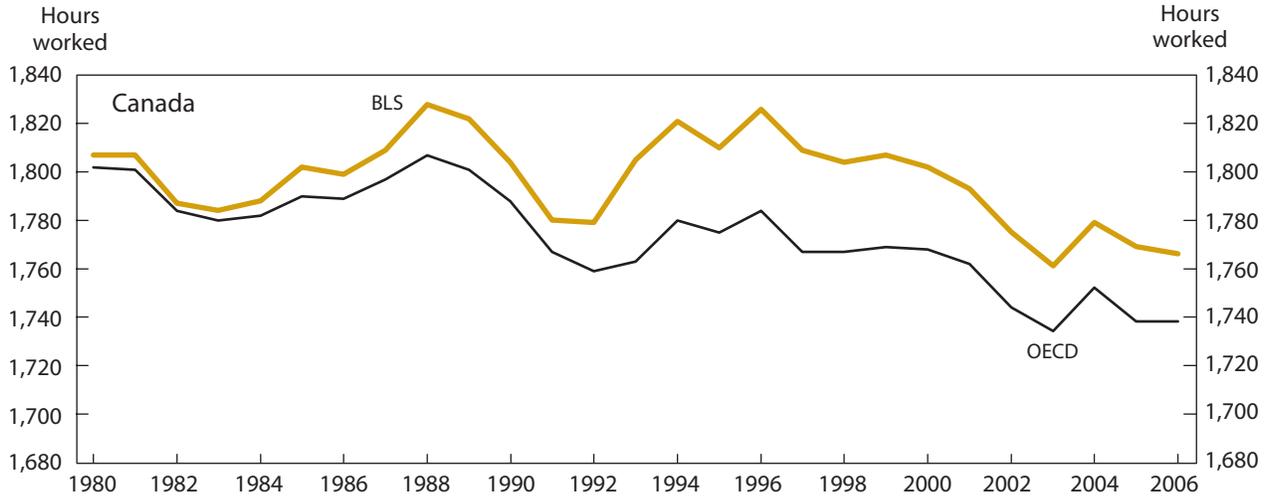
For the United Kingdom, the BLS and OECD data sets each use that country's labor force survey data on hours actually worked. The source of data on average hours worked per person is the same, but the source of data on employment differs. The BLS data source for employment is a national accounts data series of aggregate jobs that combines data from both establishment and labor force surveys. The employment source for the OECD data series is solely the labor force survey, measured on an employed-person basis. Without more detailed information on the national accounts methodology, it is difficult to determine the extent to which the establishment survey data may affect the hours-worked measure. The unit of measure does explain the difference in the two trends: the trend is lower for the BLS series, which is based on jobs, than it is for the OECD series, which is based on employed persons. Chart 4 shows the average annual hours actually worked by all employed persons, for Canada, Spain, and the United Kingdom.

*4. Belgium, South Korea, and the Netherlands: normal hours and time not worked.* The inclusion of normal hours based on administrative data to estimate time worked and to adjust for time not worked also drives differences between

**Chart 3. Average annual hours actually worked, all employed persons, United States and Japan, 1980–2006**



**Chart 4. Average annual hours actually worked, all employed persons, Canada, Spain, and United Kingdom, 1980–2006**



data sets. The BLS and OECD data sets show different time trends for Belgium, South Korea, and the Netherlands. Upon analysis, the BLS data series based on normal hours present a lower trend in hours worked, as in the case of Belgium. For South Korea and the Netherlands, the OECD adjustments to time not worked, using normal or administrative data, create an hours-worked series that averages 1½ to 3 weeks less than the BLS series for both countries (except South Korea in earlier years).

For Belgium, BLS uses the average-hours-worked series from the OECD productivity database, which differs from the OECD data set based on the *Employment Outlook*. These data for Belgium are based on administrative data, according to Ypma and van Ark.<sup>28</sup> The OECD data set, by contrast, uses the labor force survey to create an estimate of hours worked. The tendency of administrative data to produce lower estimates, by undercounting overtime and overestimating leave time taken, explains the lower numbers in the BLS data set for Belgium's hours relative to the numbers in the OECD data.

In the case of South Korea, the OECD and BLS data series both use the labor force survey as their primary source of data. On the one hand, the OECD estimates for South Korea are based on that nation's labor force survey and include an adjustment downward to aggregate hours worked in the year, in order to account for time not worked, before dividing by employment. On the other hand, the BLS estimates for South Korea are based on published data on average weekly hours worked for persons at work. The average is multiplied by 52 to create a yearly average, and no adjustments are made for time not worked. The OECD's additional adjustment for time not worked contributes to a lower estimate of average annual hours actually worked compared with the BLS estimate, even though the OECD unit of measure takes account of all those who are employed, as opposed to the BLS employee measure.

For the Netherlands, aggregate hours data for the BLS data set are based on the Dutch national accounts hours-worked data series and employment is from the labor force survey, adjusted to include the Armed Forces. The OECD data set's estimate of average annual hours actually worked is based on the labor force survey's figure for usual hours of work and includes adjustments to time not worked. The different sources provide different data series. For 2006, OECD reports 1,391 average annual hours actually worked—about 2½ person-weeks less than the BLS series figure. One would expect that labor force survey data would produce a higher average-hours-worked series. However, if OECD's adjustments to time not worked overestimate the hours not worked, then the number of

hours worked will be underestimated. This would explain the fact that data from the BLS hours-worked series yield higher numbers than do data from the OECD series based on the labor force survey. Chart 5 shows the average annual hours actually worked by all employed persons, for Belgium, South Korea, and the Netherlands.

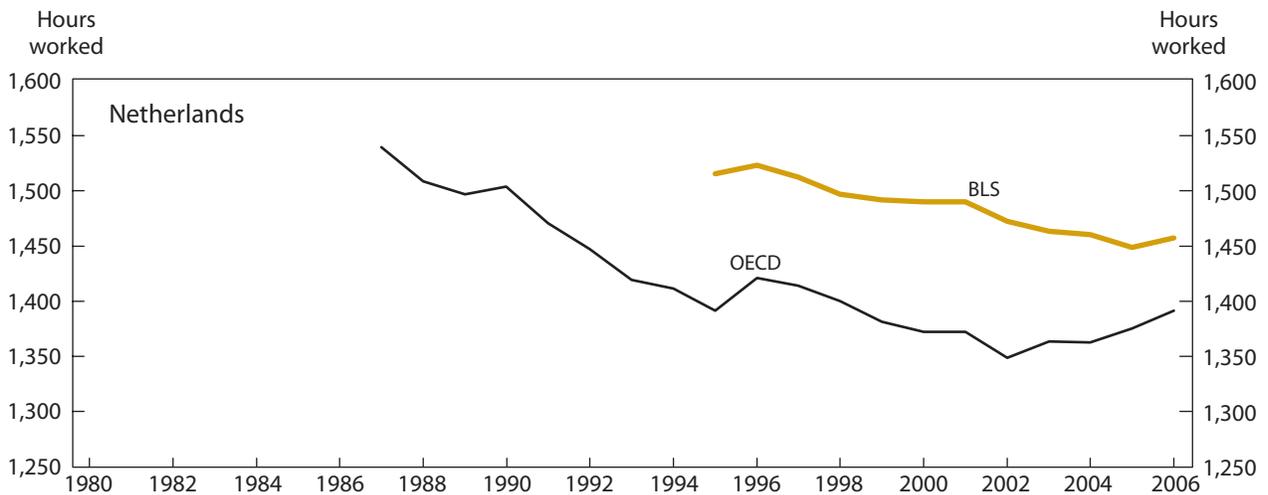
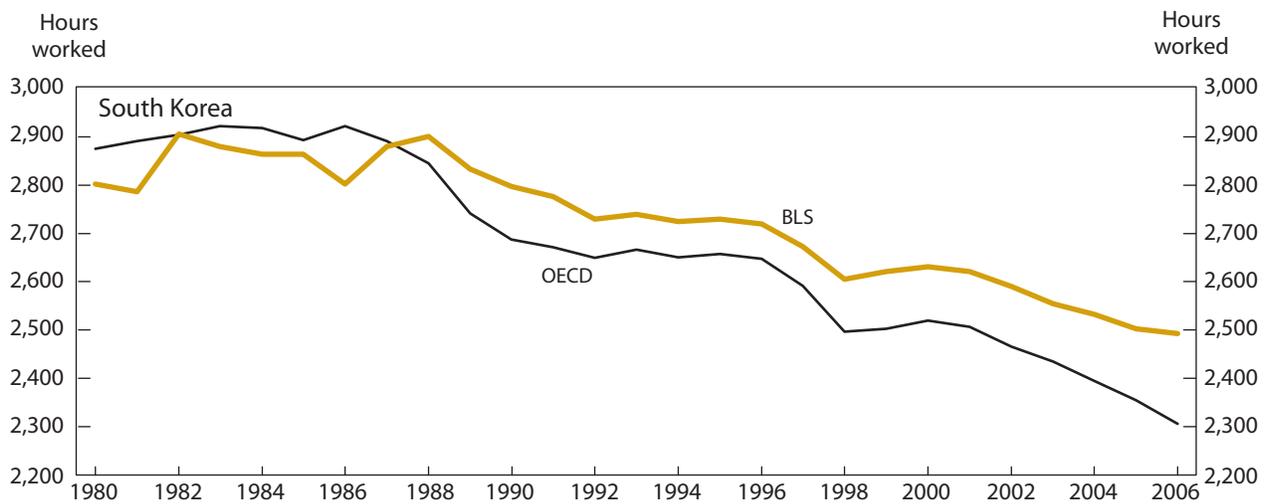
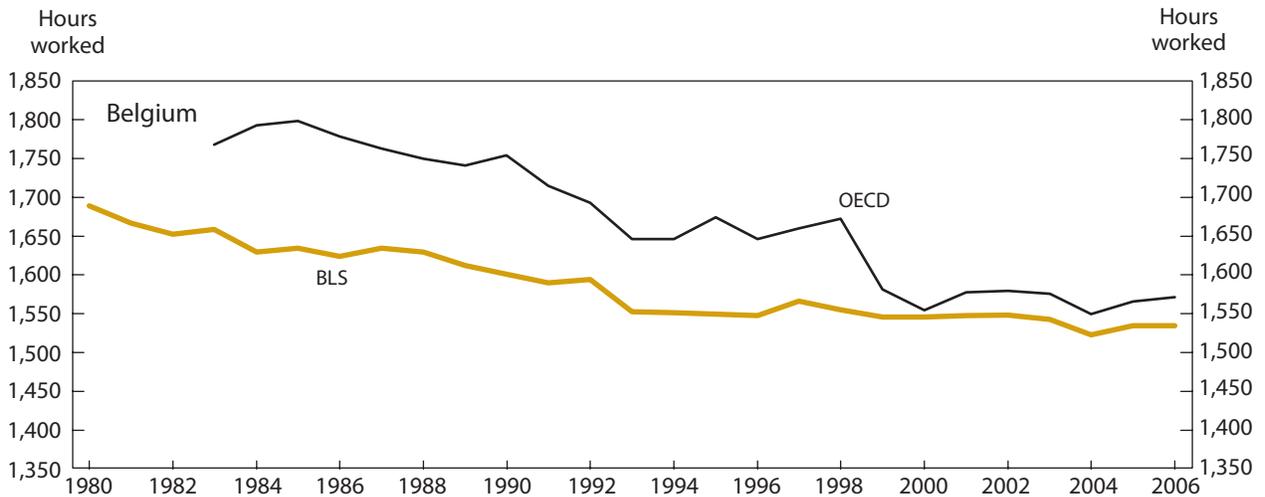
Both the BLS and the OECD suggest that the data user compare the trends over time between countries. A rank von Neumann test comparing the differences in level data between the BLS and OECD data sets for each country determined that the trends are similar for 10 of the 13 countries examined in this article. That is, the only 3 countries that show a significant probability of having experienced a random degree of change between data sets over time were the United States, France, and the Netherlands. Thus, for these 3 countries, there is a variability in the rankings which implies that the two sets of data are not drawn from the same population, which in this case would be represented by the data source. The test results for the other countries show that the rankings of the differences between the levels are not different from each other, indicating that the associated data sets exhibit "trendlike" features. This statistical test provides evidence that, for the majority of the countries examined, the comparison made of trends over time is consistent and useful, even when different sources or methods are used.

## Comparison of hours worked and working time

The concept of hours worked, as addressed in this article, is a purely quantitative measure of the number of hours an individual spends at work. Working time, by contrast, is a broader concept that encompasses quality-of-worklife issues, including the scheduling of hours of work, such as overtime, split-shifts, and "just-in-time" flexible work schedules; night work and weekend work; and part-time work.

A cross-country comparison of hours worked for the 13 countries examined in this article, using the OECD data set, reflects a number of institutional changes in both working time and hours worked. Historically, the United States pioneered reductions in working time well in advance of other industrial nations, although Western Europe caught up by the 1980s.<sup>29</sup> Since then, a number of changes in the structure of the labor market have contributed further to a reduction in working time. First, normal hours of work have declined in many developed countries because of changes in laws and collective-bargaining agreements. Second, women have increasingly joined the labor force and work, on average, fewer hours than men.

**Chart 5. Average annual hours actually worked, all employed persons, Belgium, South Korea, and the Netherlands, 1980–2006**



Finally, part-time hours worked in the growing service sector mitigate the overtime work pattern in the relatively smaller manufacturing sector. Each of these labor market conditions merits discussion.

A 2004 OECD report on working time analyzes the broader measure of labor utilization—average annual hours actually worked *per capita*—showing that these hours have barely declined over the past three decades, even as average annual hours actually worked *per employed person* fell significantly.<sup>30</sup> The large decline in average annual hours worked per worker was offset by increases in both the employment rate (or employment-population ratio) and the share of the population that is of working age. The employment rate has risen as more women join the workforce and as older workers stay in their jobs rather than retire. Both women and older workers are more likely to work fewer hours in a full-time job or become part of the growing ranks of part-time workers.

A 10-year snapshot with available data of the employment-population ratio, part-time employment rate, and women's labor force participation rate reflects, to a lesser degree, the 30-year trend just described. (See table 1.) In 9 of the 13 countries examined, there were small increases in the employment-population ratio. (Japan and South Korea saw a small decline and Spain experienced a large increase.) The part-time employment rate grew from a low point in South Korea and Spain; it fell in the United States and Sweden, and it remained steady in Canada, Japan, France, Norway, and the United Kingdom. The part-time employment rate rose in the remaining countries. Dutch policy and legislation provide strong incentives for part-time em-

ployment, which are reflected in the fact that more than a third of workers are employed part time in the Netherlands. The women's labor force participation rate inched up in all of the countries studied, except for Japan, where it fell, and the Netherlands and Spain, where it rose dramatically. Nearly a tenth of women in the latter two countries joined the labor force over the 10 years examined.

In both the OECD and BLS data series, 1980–2006 trends in average annual hours actually worked per employed person broadly reflect the institutional norms and laws relating to working time in each of the 13 countries discussed. This section next addresses some of the significant institutional and legislative changes that have occurred in the past 26 years in these countries.<sup>31</sup>

*Countries with high working time.* Of the countries examined, the United States, Canada, Japan, South Korea—and the United Kingdom and Italy until recently—share some or all of the following characteristics in their labor market institutions and laws:

- a normal workweek of 40 hours or more
- no limit on maximum hours of work allowed per week
- vacation time subject to tenure in job
- wage or leave penalties for absence from work
- limited or no legal entitlement to vacation time.

The United States and Japan impose no legal limit on the maximum number of hours worked per week. Regarding paid time off, business practice in the United States varies

**Table 1. Three important international labor market indicators, 1996 and 2006**

Country	Employment-population ratio		Part-time employment rate		Women's labor force participation rate	
	1996	2006	1996	2006	1996	2006
United States.....	63.2	63.1	14.7	13.3	59.3	59.4
Canada.....	59.1	63.6	19.4	18.5	57.3	62.1
Japan.....	60.9	57.5	21.8	24.5	49.3	47.9
South Korea.....	59.4	58.9	4.7	9.7	48.9	50.6
Belgium.....	45.1	48.8	14.9	19.3	44.0	45.9
Denmark.....	60.3	62.8	16.9	18.1	58.4	60.8
France.....	49.1	51.2	14.2	13.3	48.6	51.1
Germany.....	52.0	52.2	15.2	21.9	47.4	51.2
Netherlands.....	56.2	62.5	29.7	35.5	49.5	57.8
Norway.....	60.2	62.6	21.2	21.1	57.2	60.3
Spain.....	38.9	52.3	7.6	11.1	37.2	47.0
Sweden.....	57.6	60.4	14.8	13.4	59.4	60.8
United Kingdom.....	57.3	60.1	23.6	23.4	53.8	56.7

### South Korea's long hours worked

South Koreans work longer hours per week than workers in many other OECD countries, despite national legislation that phased in the 40-hour workweek by 2004. The 2007 South Korean labor force survey reports that nearly 60 percent of all employed persons who were at work when the survey was taken actually worked 45 hours or more a week, whereas less than 30 percent worked a 36- to 44-hour workweek. Less than 15 percent of part-time employed persons who were at work when the survey was taken worked 35 or fewer hours a week.

widely, with some businesses granting leave only after a year's tenure, others increasing the number of leave days with job tenure, and about a fourth providing no paid leave at all. Japanese and South Korean labor laws differ from business practice. Businesses are supposed to pay for overtime and to promote leave for employees. In practice, however, workers usually take vacation hours when sick, because sick leave is often unpaid. In some cases, employers penalize workers' absences by deducting or not providing bonus pay or vacation time.<sup>32</sup> Canada, the United Kingdom, South Korea, and Japan require statutory paid vacation time for full-time employees, while there is no requirement in U.S. law to provide vacation time, either paid or unpaid. Of the six countries with high working time, only the United Kingdom and Italy require employers to pay part-time or temporary employees for their annual leave. The European countries are set apart by the fact that they recently adopted the European Union's mandates on working-time restrictions.<sup>33</sup>

Between 1988 and 1997, Japanese laws reduced normal hours of work from 48 to 40 hours per week; between 1997 and 2004, South Korea followed suit. (See box, this page.) There have been few changes in labor laws in the remaining four countries during the past 25 years. In the 1990s, the United Kingdom and Italy complied with the European Union regulations to limit working hours in 2002 and 2003, respectively.

*Countries with low working time.* Conditions in Belgium, Denmark, France, Germany, the Netherlands, Norway, and Sweden differ from those of the high-working-time countries just described. The aforementioned recent changes to labor laws in the United Kingdom and Italy now place

these two countries in the low-working-time category. These countries share some or all of the following characteristics in their labor market institutions and laws:

- a legal or collectively bargained workweek of less than 40 hours
- a limit on the maximum number of hours worked during the week and a limit on the maximum number of overtime hours worked during the year
- statutory paid vacation time of a minimum of 4 weeks per year for full-time workers and prorated for part-time employees
- near-universal entitlement to statutory vacation time
- broad coverage of collective-bargaining agreements that provide even more generous leave entitlements than those written into law.

Revised laws regarding normal hours of work have been implemented throughout Europe as a result of the European Union Directive on Working Time, which was first introduced in 1993 and most recently revised in 2003.<sup>34</sup> These laws (1) limit the hours that employees can work overtime throughout the year and (2) establish vacation rights of 4 weeks per year for full-time employees, with prorated vacations for part-time employees.

Germany, the Netherlands, Norway, and Sweden have a high share of workers covered by collective-bargaining agreements; these countries saw reductions in the workweek as a result of changes in those agreements in the late 1980s. The Netherlands passed national legislation in 2000 that allowed employees to choose the number of hours they want to work. The legislation led to a further growth in part-time employment, which had begun to grow in the 1980s.<sup>35</sup> The trend toward reductions in working time was complemented by the implementation of the European Union Working Time Directive in member countries. The last two of the major European countries to ratify changes in labor laws to comply with the directive were the United Kingdom in 2002 and Italy in 2003.

The case of France is unique, because the reduction in the normal workweek was initiated by laws, not collective-bargaining agreements. A series of laws was passed beginning in the 1990s to reduce the number of hours in the normal workweek, with the primary purpose of decreasing high unemployment. The changes began with the Robien law in 1996, followed by the Aubry laws in 1998 and 2002, effectively reducing the normal workweek from 39 hours to 35 hours.

The trend toward reductions in hours shows signs of

### Germany's "minijobs"

Germany's "minijobs" escape measurement. A growing number of people work in such jobs, also called "one-euro jobs"—positions that have a limit on the hours that can be worked and that offer wages on which earnings are not subject to income taxes and employer taxes are reduced. The program was intended to create jobs for the unemployed, but employed workers have taken on minijobs as second jobs because of the tax advantage. In 2004, minijobs accounted for about 12 percent of employment, and 37 percent of minijobs went to people who had another job. Minijobs are excluded from the administrative framework of tax collection, so data on the hours worked at them and the number of jobs they generate are excluded from hours-worked statistics (personal communication, Dr. Ulrich Walwei, Bundesagentur für Arbeit/Institute for Employment Research, Germany, April 2006).

reversing in some countries. French legislation in 2003—specifically, the Fillon law—excluded small businesses from the normal maximum workweek limit of 35 hours, and further revisions in 2007 were intended to provide greater flexibility in scheduling hours for businesses. In Germany, since 2003 a number of collective-bargaining agreements, among them the trend-setting Volkswagen and IGMetall agreements, have seen an increase in the length of the regular workweek (which remains under 40 hours) in exchange for job security. The trend of raising the ceiling on normal hours continues today in contract bargaining, especially in Germany. However, hours-worked statistics do not necessarily reflect this or any other trend. (See box, this page.)

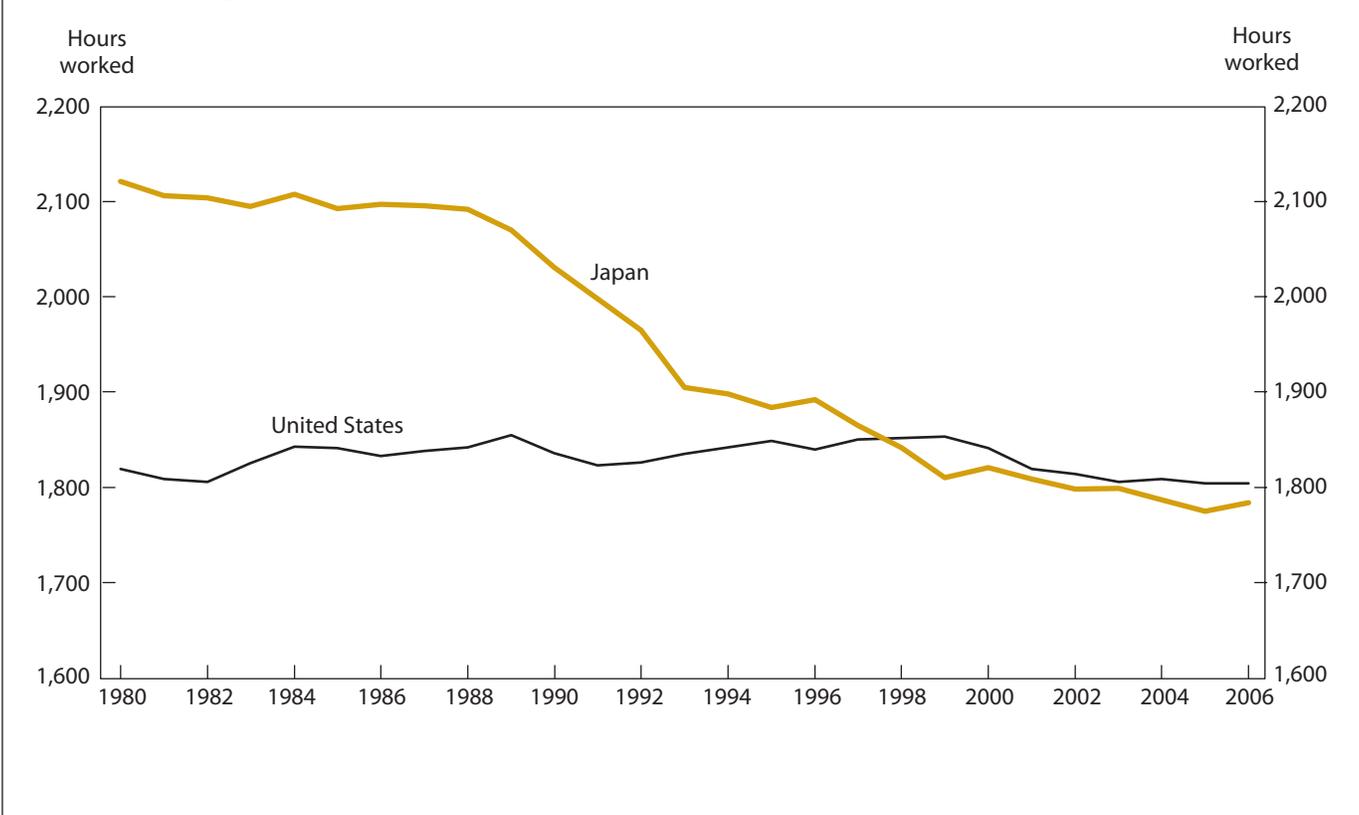
Numerous studies of industrial relations in both the countries with high working time and those with low working time provide detailed information on the institutions, labor markets, and demographics that reinforce the quarter-century trends seen in the OECD and BLS data series on average annual hours actually worked per employed person. Among the findings are high, but declining, hours worked in Asian countries; little change in hours worked in Anglophone countries, where a large share of workers continues to work more than normal hours; and falling hours worked in European countries, because of a reduction in normal and contractual hours and rising part-time employment.<sup>36</sup>

### Comparison of Japanese and U.S. hours worked

Pinpointing whether one country's average hours actually worked are more or less than another's for a given year or period is not a precise science. The next two sections look at the data series for two countries whose labor market conditions do not seem to be reflected in their data: Japan and Sweden. Japan's hours-worked series in both the BLS and OECD data sets show that the average hours actually worked by Japanese workers are on a par with those worked by U.S. workers, defying the many references to that country's "long-hours culture" that have become commonplace. On the other end of the spectrum, Sweden's hours worked trended upward during the 25-year period studied, quite unlike the trend in the other 12 countries and, in particular, quite unlike its neighbor Norway, which has similar labor practices. An analysis of the data sources used to construct the various time series, together with a look at alternative sources, provides a further window of understanding into the challenges of international comparisons of data on hours worked. The estimates for Japan and Sweden are compared with those for the United States and Norway, respectively, and with alternative data sources.

The OECD data series for Japan shows that, for 2006, annual average hours actually worked were 1,784, a figure that is 35 hours less than the U.S. estimate of 1,804. (See chart 6; data before 1996 are not available for the BLS data set.) Over a quarter century, Japan's annual average hours actually worked declined by 42 eight-hour workdays and the U.S. average fell by less than 2 eight-hour workdays. Is it possible that U.S. workers now work longer hours than their Japanese counterparts? Further, how does one explain the common practice of employees working unpaid overtime in Japan despite recent regulations restricting overtime hours?<sup>37</sup> Finally, what about the culture of long work hours as exemplified by official recognition of the occupational hazard of death from overwork, a phenomenon the Japanese call *karoshi*?<sup>38</sup>

Some researchers think that the data for Japan undercount unpaid overtime and long hours of work. Evidence on the incidence of overtime work in Japan, shown repeatedly in many special surveys on labor conditions, together with a historical comparison help interpret Japan's data series. The incidence and degree of usual overtime in Japan from 1997 through 2007 are given in table 2, which compares ranges of hours worked by persons who worked at least two-thirds of the year; these workers represent approximately 80 percent of employed persons.<sup>39</sup> In all 3 years shown, 87 percent or more of these year-round employed persons worked at least a 35-hour week. However, from 1997, the year in

**Chart 6. Average annual hours actually worked, all employed persons, the United States and Japan, 1980–2006**

which legislation was passed to reduce the normal workweek from 44 to 40 hours, the share of persons who usually worked 43 or more hours per week shifted slightly upward, from 57 percent in 1997 to 61 percent in 2002. The percentage fell to 59 percent in 2007. Over the year, a number of employees do not take vacation time, even though they are entitled to it. According to one 2005 study, workers take less than half their vacation for the year, accumulating an average of 18 untaken vacation days.<sup>40</sup>

Further evidence of the undercount of hours in the OECD data set is found in Takeshi Mizunoya's research. Mizunoya uses both labor force and establishment surveys to determine the degree to which different survey sources for Japanese data matter. His critique of the OECD annual-hours-worked data series for underreporting hours worked in Japan stems from the type of survey that the OECD uses. Rather than using the establishment survey, as the OECD does, Mizunoya uses the labor force survey for 3 years during the 1990s to account for unpaid overtime, developing an estimate of employees' average annual hours actually worked.<sup>41</sup> Chart 7 compares Mizunoya's estimates with the OECD annual-hours-worked data series. The Mizunoya estimates are greater than the OECD data for each of the

years studied—1990, 1995, and 1999—increasing from a 240-hour to a 270-hour difference over the decade, or the equivalent of at least 6 weeks more a year. Because, on average, the self-employed work more hours than employees, the Mizunoya estimate, based on employees, does not fully compensate for the greater number of hours worked by the self-employed.

This example from Japan leaves the lesson that understanding labor markets is key to deciphering the differences in data sources and explaining how those differences affect comparisons.

### Swedish and Norwegian hours worked

The BLS and OECD data sets for Sweden and Norway are identical, each using the data prepared by that country's national accounts. However, the data series for Sweden shows that average annual hours actually worked in 2006 were the highest among countries with low working time and were about 175 hours more than those of Sweden's Nordic neighbor Norway. Twenty-five years ago, Sweden's hours were lower than Norway's, but average annual hours actually worked in 2006 were reported to be 1,583 for

**Table 2. Percent distribution of weekly hours worked by year-round employed persons, Japan, 1997, 2002, and 2007**

Weekly hours worked	1997	2002	2007
All year-round employed persons.....	53,873,000	50,576,100	51,715,100
Less than 15.....	.9	1.0	1.2
15-21.....	1.9	2.4	2.9
22-34.....	6.0	7.1	8.1
35-42.....	34.1	29.0	29.0
43-45.....	15.0	12.5	12.2
46-48.....	15.4	14.5	13.1
49-59.....	15.9	19.5	18.9
60 or more.....	10.6	14.1	14.6

NOTE: Year-round employed persons are those who work more than 200 days per year.

SOURCE: Employment Status Survey, Statistics Bureau, Management and Coordination Agency, Government of Japan.

Sweden and 1,407 for Norway. (See chart 8.) Until the 1990s, hours fell in both countries, but Sweden's hours worked rose throughout the decade and remain the highest among countries with low hours worked. By contrast, Norway's hours worked show a continuously declining trend. Is it possible that Swedes work 5 weeks more per year, on average, than Norwegians? This seems unlikely, for a number of reasons. First, both countries have labor laws that provide generous statutory paid leave of 5 weeks a year—1 more week than that mandated by the European Union Working Time Directive—and full- and part-time workers are eligible for this leave. Second, Sweden has 11 national holidays compared with Norway's 9. Finally, many employees in both countries are covered by collective-bargaining agreements and work less than a 40-hour workweek.

The similarities in labor conditions belie the fact that the two countries' economies experienced different levels of prosperity in the 1990s. Norway's oil wealth cushioned it from the austerity that the Swedish economy had to turn to in the 1990s. Sweden experienced a strong economic downturn and increasing unemployment, and saw its generous social policies curbed throughout the decade.<sup>42</sup> The increase in the country's hours worked in the 1990s is counterintuitive: a weak economy generally contributes to a decline in hours worked, both individually and across the economy. The decline in hours worked as of 2000 can be explained by a number of changes, including continued reductions in normal hours of work through collective-bargaining agreements in the private sector<sup>43</sup> and adverse effects of the expansion of an already generous sick leave policy, leading to a daily rate of absence from work of 20 percent.<sup>44</sup> In light of these developments, Sweden's average annual hours actually worked appear suspiciously high.

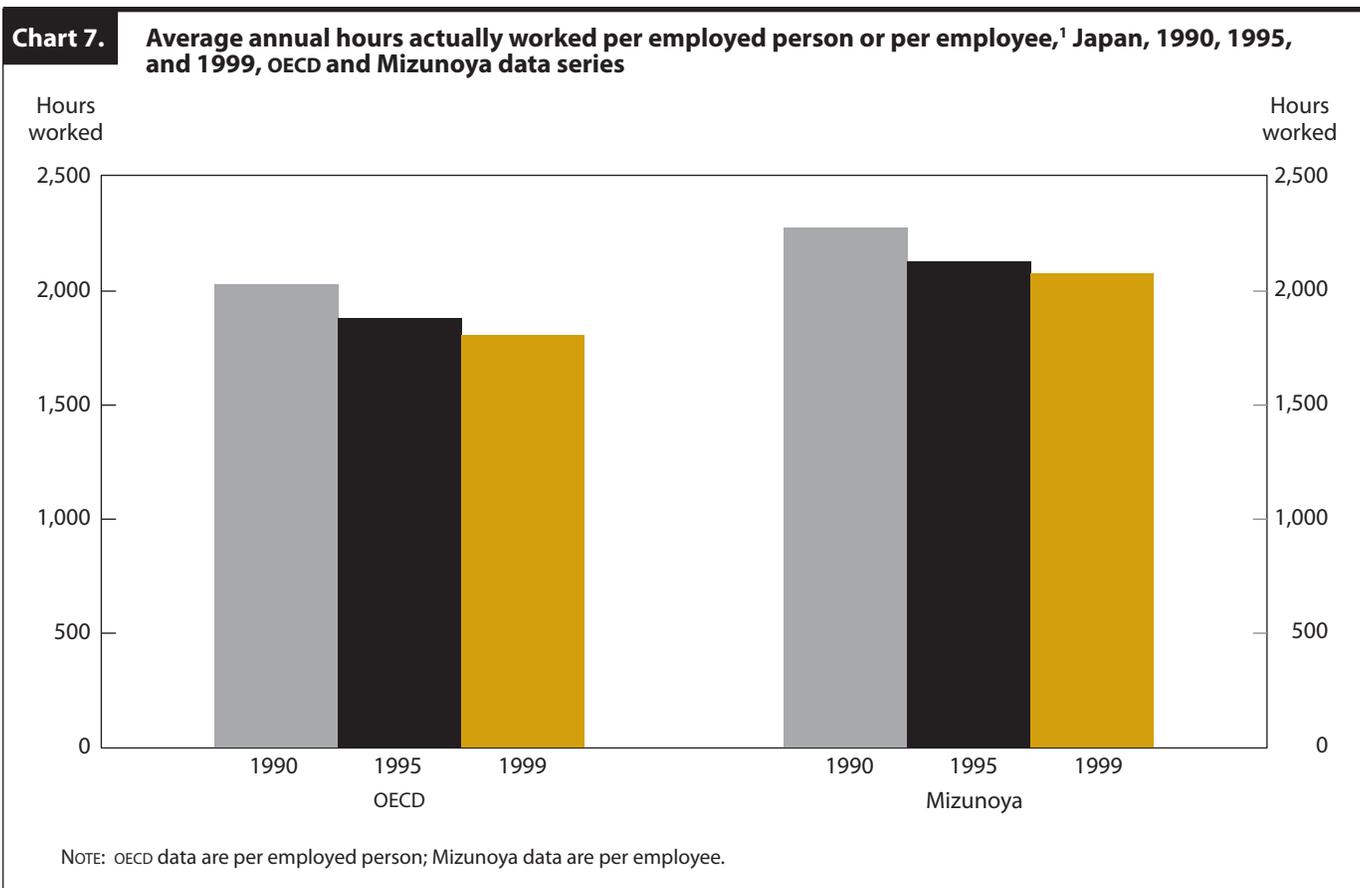
The Swedish national accounts' primary source of data on employment and hours worked is the country's labor force

survey. The Norwegian national accounts data, by contrast, are based on normal hours of work reported by administrative data sources. Administrative data used by Norway lead to the lowest estimates of hours actually worked, whereas labor force surveys, such as those used by Sweden's national accounts, produce the highest estimates. These differences in underlying data sources make it difficult to compare the two countries' data series. It is probable that hours actually worked in each country lie somewhere in between the two series' values, but it is highly unlikely that Swedish people work 4 to 5 more weeks a year than Norwegians do.

Using data from similar sources and creating a simple methodology of comparison shrinks the differences between the two countries' hours-worked figures considerably, and increases their levels as well. Harmonized labor force survey data on hours actually worked per week for Norway and Sweden are available for 2006. Because the two countries' labor force surveys are continuous, one can estimate average annual hours actually worked by multiplying the average of hours actually worked per week by 52. The labor force survey reports higher hours overall for both countries and diminishes the difference between them. As the following tabulation shows, the difference between Norway's and Sweden's average annual hours actually worked declines from 4½ weeks to 1½ weeks when comparable data sources and methodologies are used:

Country	Average annual hours actually worked per employed person, 2006	
	National accounts	European Union labor force survey
Norway.....	1,407	1,817
Sweden.....	1,583	1,872

These examples highlight how differences in concepts and



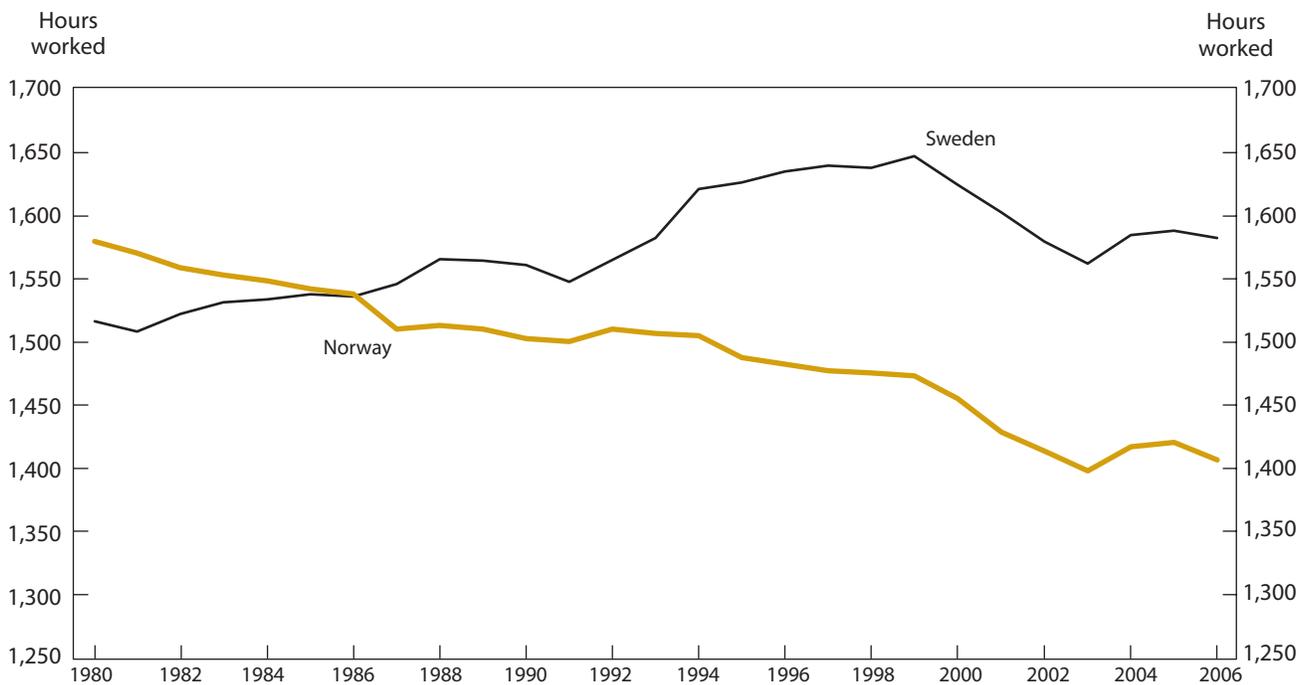
sources can affect estimates of average annual hours actually worked. Despite the problems that are inherent in making comparisons of levels of annual hours worked per person, broad trends are often reliable, reflecting real labor conditions in a country.

**Data sources matter**

The preceding comparisons between Japan and the United States, on the one hand, and Sweden and Norway, on the other, are complemented by two studies: one by the French researchers Mireille Bruyère and Odile Chagny, and the other by the OECD. Both analyses used usual-hours-worked data from labor force surveys to create estimates of average annual hours actually worked and made adjustments with other data sources to account for hours not worked. Both analyses found that, in general, labor force surveys produce usual-hours-worked estimates that are greater than those based on normal hours worked, but lower than estimates based on hours actual worked.

Bruyère and Chagny’s labor force survey estimates from the 1990s showed higher average hours worked for the same year, compared with the OECD estimates described in earlier sections, which are based on hours paid and normal hours for the United States, Japan, France, Germany, and the Netherlands.<sup>45</sup> However, the authors’ estimate of average hours worked for the United Kingdom was lower than that prepared for the OECD database, which is based on hours actually worked from the labor force survey. An OECD special study that used data for 2002 and a decomposition method produced results similar to those of Bruyère and Chagny.<sup>46</sup> Using usual hours worked and adjusting for hours not worked, the OECD special study produced estimates for France and Germany that were higher, compared with values from the normal-hours-of-work source of the regular OECD data set. The Dutch data for both OECD publications should be the same as well, but differed inexplicably. The U.K. estimate based on the decomposition method and using normal hours as well as survey sources was lower than the estimate based on the actual-hours-worked estimate.

**Chart 8. Average annual hours actually worked, all employed persons, Sweden and Norway, 1980–2006**



THE EVIDENCE PRESENTED IN THIS ARTICLE confirms that biases are inherent in data sources used to measure hours worked. Data series of average annual hours actually worked based on normal and contractual hours concepts from administrative sources yield low measures of hours worked, whereas series based on establishment and labor force surveys provide relatively higher measures. The highest levels of hours worked are estimated directly from labor force surveys.

The OECD and BLS data series on average annual hours actually worked per employed person reflect broad trends in labor markets. The likelihood that hours worked in Japan are higher than reported, but still falling, is a reasonable conclusion, based on the differences in data sources and changes in legislation in that country. The OECD data series showing that U.S. workers work more hours per year, on average, than their European counterparts appears to be slightly inflated because of differences in sources and methods, but the difference is nonetheless real. Flat trends in hours worked in Anglophone countries reflect those countries' work regulations.

The cases of Japan and Sweden highlight how meas-

ures of hours worked cannot be taken at face value. It is unlikely that Japanese workers work fewer hours per year than their U.S. counterparts when a majority of them have a longer workweek and take fewer days of vacation. That Swedish workers work considerably more hours than Norway's workers also seems doubtful.

The cross-country comparisons of hours worked for both employees and those who are employed, using the same method for different countries and different methods for the same country, also provide a valuable lesson. These comparisons show that concepts, sources, and methods matter in building comparable hours-worked data series across countries. Because both survey-based data on hours actually worked and direct estimation produce high hours-worked estimates, and normal and contractual hours worked from administrative data produce low hours-worked estimates, it is important that any data series be transparent in describing sources and methods used in preparing estimates.

The international comparison of hours-worked data, like most international comparisons, is subject to the constraint that national statistics are developed primarily to serve a national purpose. Thus, the best source of hours

available for one country may not be for another. The English-speaking and Asian OECD countries selected for study here recently have made improvements in survey-based data to measure overtime and long work hours more accurately. For example, in 1997, the redesigned Canadian labor force survey expanded and revised its questions on hours worked.<sup>47</sup> Also, some European countries recently revised their labor force surveys to get improved coverage of hours *not* worked. For example, Sweden introduced questions to expand information on absences from work in its 2005 labor force survey,<sup>48</sup> and in March 2002 France revised its labor force questionnaire for the European Union, adding and clarifying questions on average and contractual hours, reasons for days off, and the reference period for usual hours worked.<sup>49</sup>

Improvements in data collection lead to revisions in estimation methods. Statistics Norway is studying the use of the now-continuous labor force survey for actual hours, rather than normal hours, of work—partly because annual average hours based on labor force survey data are nearly 12 percent higher than hours-worked figures based on administrative data using the normal-hours-of-work concept.<sup>50</sup> Improvements in the collection and measurement of data on hours in a number of the OECD countries should lead to improved harmonization of data among these countries in the future. In the meantime, data on average annual hours actually worked remain useful for broad comparisons, but consumers of these data should take heed: small differences between countries may tell a misleading story. □

## Notes

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<sup>1</sup> Available on the Internet at [www.oecd.org/statistics](http://www.oecd.org/statistics) (visited May 22, 2009).

<sup>2</sup> See “Resolution concerning statistics of hours of work, adopted by the Tenth International Conference of Labor Statisticians (October 1962),” on the Internet at [www.ilo.org/public/english/bureau/stat/download/res/hours.pdf](http://www.ilo.org/public/english/bureau/stat/download/res/hours.pdf) (visited May 22, 2009).

<sup>3</sup> See [www.redorbit.com/news/business/675442/vw\\_workers\\_agree\\_to\\_33hour\\_workweek/index.html](http://www.redorbit.com/news/business/675442/vw_workers_agree_to_33hour_workweek/index.html) (visited May 15, 2009); [www.iht.com/articles/2006/09/29/business/vw.php](http://www.iht.com/articles/2006/09/29/business/vw.php) (visited May 22, 2009); [www.justlanded.com/english/Netherlands/Tools/Just-Landed-Guide/Jobs/Working-the-Netherlands](http://www.justlanded.com/english/Netherlands/Tools/Just-Landed-Guide/Jobs/Working-the-Netherlands) (visited May 22, 2009); and [docs.minszw.nl/pdf/135/2007/135\\_2007\\_1\\_18401.pdf](http://docs.minszw.nl/pdf/135/2007/135_2007_1_18401.pdf) (visited May 22, 2009).

<sup>4</sup> The U.S. Current Population Survey calls this concept *hours at work*.

<sup>5</sup> Ralf Hussmanns, Farhad Mehran, and Vijay Verma, *Surveys of economically active population, employment, unemployment and underemployment: An ILO manual on concepts and methods* (Geneva, International Labor Office, 1990), p. 84.

<sup>6</sup> Normal hours are agreed-upon hours based on collective-bargaining agreements and legislation, whereas contractual hours constitute a fixed schedule established by individual agreement. Contractual hours are not covered in this article, given that the concept is not used in the United States and that data on contractual hours have only recently been considered as a possible source of data on hours.

<sup>7</sup> Jelle Visser, “Union membership statistics in 24 countries,” *Monthly Labor Review*, January 2006, pp. 38–49; on the Internet at [www.bls.gov/opub/](http://www.bls.gov/opub/)

[mlr/2006/01/art3full.pdf](http://mlr/2006/01/art3full.pdf) (visited May 15, 2009).

<sup>8</sup> The text of the 2003 Fillon Law that documents this exception is at [www.legifrance.gouv.fr/affichTexte.do?cidTexte=LEGITEXT000005635050&dateTexte=20090515](http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=LEGITEXT000005635050&dateTexte=20090515) (visited May 15, 2009).

<sup>9</sup> Still, concern over proxy and nonresponse error remains. Statistical methods are used to test and correct for these errors.

<sup>10</sup> Jean-Pierre Maynard, Lucy Chung, and Deborah Sunter (Statistics Canada), “Measuring hours actually worked,” paper presented at meeting of Paris Group on Labor Compensation, Lisbon, Portugal, Sept. 29–Oct. 1, 2004.

<sup>11</sup> Harley Frazis and Jay Stewart, “What can time-use data tell us about hours of work?” *Monthly Labor Review*, December 2004, pp. 3–9.

<sup>12</sup> See Gerard Ypma and Bart van Ark, “Employment and Hours Worked in National Accounts: A Producer’s View on Methods and a User’s View on Applicability,” EU KLEMS working paper no. 10, 2006, on the Internet at [www.euklems.net/pub/no10\(online\).pdf](http://www.euklems.net/pub/no10(online).pdf) (visited May 22, 2009). The national economy of a given country has to do with the production of individuals and national businesses, no matter where they are located, within or outside of that country. The domestic economy takes into account only production within the borders of the country.

<sup>13</sup> Adriana Mata Greenwood, “The hours that we work: the data we need, the data we get,” *ILO Bulletin of Labor Statistics, 2001–1*, on the Internet at [www.ilo.org/public/english/bureau/stat/download/articles/2001-1.pdf](http://www.ilo.org/public/english/bureau/stat/download/articles/2001-1.pdf) (visited May 15, 2009).

<sup>14</sup> *OECD Employment Outlook, 2004* (Paris, OECD, 2004), pp. 24–34.

<sup>15</sup> General report, Seventeenth International Conference of Labor Statisticians, November 24–December 3, 2003 (Geneva, International Labor Organization, 2003), p. 59, on the Internet at [www.ilo.org/wcmsp5/groups/public/---dgreports/---integration/---stat/documents/meetingdocument/wcms\\_087585.pdf](http://www.ilo.org/wcmsp5/groups/public/---dgreports/---integration/---stat/documents/meetingdocument/wcms_087585.pdf) (visited May 15, 2009).

<sup>16</sup> *Ibid.*, p. 60. The Paris Group on Labor and Compensation contributed in great part to the report of the 17th International Conference of Labor Statisticians. The Paris Group on Labor and Compensation was established in 1997 in response to an April 1996 recommendation by the U.N. Statistical Commission’s working party on international statistical programs, with the aim of examining, assessing, and reconciling sources of information used to measure the labor market and of contributing to improving concepts and their implementation. In the past 10 years, meetings of this U.N. “City Group” have addressed topics dealing with measurements of working time and hours worked. Information on the Paris Group is at the French Statistical Institute (Institut National des Statistiques et Etudes Économiques, or INSEE) Web site, [www.ilo.org/wcmsp5/groups/public/---dgreports/---integration/---stat/documents/meetingdocument/wcms\\_087585.pdf](http://www.ilo.org/wcmsp5/groups/public/---dgreports/---integration/---stat/documents/meetingdocument/wcms_087585.pdf)

[insee.fr/en/nom\\_def\\_met/colloques/citygroup/citygroup.htm](http://insee.fr/en/nom_def_met/colloques/citygroup/citygroup.htm) (visited May 22, 2009), and the U.N. Web site, [unstats.un.org/unsd/methods/citygroup/paris.htm](http://unstats.un.org/unsd/methods/citygroup/paris.htm) (visited May 22, 2009).

<sup>17</sup> Ypma and van Ark, “Employment and Hours Worked in National Accounts.”

<sup>18</sup> The data sets use the data sources and adjustments based, respectively, on the GDP report of June 2007 (on the Internet at [www.bls.gov/ilc](http://www.bls.gov/ilc); visited May 22, 2009) and on the data prepared for the statistical annex of *OECD Employment Outlook, 2007* (Paris, OECD, 2007), on the Internet at [www.oecd.org/dataoecd/29/27/38749309.pdf](http://www.oecd.org/dataoecd/29/27/38749309.pdf) (visited May 15, 2009). Further details on the national accounts methodology for some of the countries in the OECD data set also are found in Ypma and van Ark, “Employment and Hours Worked in National Accounts.”

<sup>19</sup> See United Nations Statistics Division, System of National Accounts, 1993, chapter 17, on the Internet at [unstats.un.org/unsd/sna1993/tocLev8.asp?L1=17&L2=2](http://unstats.un.org/unsd/sna1993/tocLev8.asp?L1=17&L2=2) (visited May 22, 2009).

<sup>20</sup> For more details on methods of compiling annual estimates, see Adriana Mata Greenwood, “The hours that we work: the data we need, the data we get,” *ILO Bulletin of Labor Statistics, 2001-1* (Geneva, International Labor Office, 2001), on the Internet at [www.ilo.org/global/What\\_we\\_do/Statistics/lang--en/docName--WCMS\\_087906/index.htm](http://www.ilo.org/global/What_we_do/Statistics/lang--en/docName--WCMS_087906/index.htm) (visited May 22, 2009); and “Review of the experimental status of international comparisons of productivity—GDP per hour worked” (United Kingdom, National Statistics Office, Oct. 9, 2002), on the Internet at [www.statistics.gov.uk/downloads/theme\\_economy/review\\_of\\_hourly\\_ICP.pdf](http://www.statistics.gov.uk/downloads/theme_economy/review_of_hourly_ICP.pdf) (visited May 22, 2009).

<sup>21</sup> *Comparative real gross domestic product per capita and per employed person: 16 countries, 1960–2007* (Bureau of Labor Statistics, Office of Productivity and Technology, July 7, 2008), on the Internet at [www.bls.gov/fls/flsgdp.pdf](http://www.bls.gov/fls/flsgdp.pdf) (visited May 22, 2009).

<sup>22</sup> The OECD productivity database provides data on average annual hours actually worked. For Belgium, as well as some other countries, data sources in that database differ from those in the *OECD Employment Outlook* database. The BLS measure for Belgium from the OECD productivity database is based on administrative data.

<sup>23</sup> See Table F in the Statistical Annex of *OECD Employment Outlook, 2007*, p. 263. Data also are updated annually online at [OECD.stat](http://OECD.stat) (visited May 22, 2009).

<sup>24</sup> Ypma and van Ark, “Employment and Hours Worked in National Accounts,” pp. 15–16.

<sup>25</sup> See table A–1 for the underlying data used in the comparison. Data for this article were the most current at that time, but have since been updated.

<sup>26</sup> See “Supplementary Information Used to Calculate Hours Data for Major Sector Productivity and Costs Series” (Bureau of Labor Statistics, Jan. 17, 2007), on the Internet at [www.bls.gov/lpc/hoursdatainfo.htm](http://www.bls.gov/lpc/hoursdatainfo.htm) (visited May 22, 2009).

<sup>27</sup> Mary Bowler and Teresa Morisi, “Understanding the employment measures from the CPS and CES survey,” *Monthly Labor Review*, February 2006, pp. 23–38; on the Internet at [www.bls.gov/opub/mlr/2006/02/art2full.pdf](http://www.bls.gov/opub/mlr/2006/02/art2full.pdf) (visited May 22, 2009).

<sup>28</sup> Ypma and van Ark, “Employment and Hours Worked in National Accounts.”

<sup>29</sup> John Owen, “Work-time reduction in the U.S. and Western Europe,” *Monthly Labor Review*, December 1988, pp. 41–45, on the Internet at [www.bls.gov/opub/mlr/1988/12/rpt3full.pdf](http://www.bls.gov/opub/mlr/1988/12/rpt3full.pdf) (visited May 22, 2009).

<sup>30</sup> *OECD Employment Outlook 2004*, pp. 24–34.

<sup>31</sup> For a more complete review of industrial relations in the countries covered, see William K. Roche, Brian Fynes, and Terri Morrissey, “Working time and employment: A review of international evidence,” *International Labor Review*, vol. 135, no. 2 (1996), pp. 129–57; Gerhard Bosch, Peter Dawkins, and François Michon, *Times are changing: working time in 14 industrialised countries* (Geneva, International Institute for Labor Studies, 1994); Jon C. Messenger (ed.), *Working Time and Workers' Preferences in Industrialized Countries, Finding the Balance* (New York, Routledge, 2004); Sangheon Lee, “Working-hour gaps: trends and issues,” in Messenger, *Working Time and Workers' Preferences*, pp. 29–59; and Greg Bamber and Russell Lansbury (eds.), *International and Comparative Employment Relations: A study of industrialised market economies*, 3d

ed. (St. Leonards, U.K., Allen & Unwin, 1998).

<sup>32</sup> See “Restriction on Dismissal, Holidays & Leave” (South Korean Ministry of Labor, Apr. 29, 2009), on the Internet at [english.molab.go.kr/english/Working/Standard\\_Restriction.jsp](http://english.molab.go.kr/english/Working/Standard_Restriction.jsp) (visited May 22, 2009); and Kazuya Ogura, “Annual paid leave in Japan,” *Japan Labor Review*, Spring 2004, pp. 100–08, on the Internet at [www.jil.go.jp/english/documents/JLR02\\_ogura.pdf](http://www.jil.go.jp/english/documents/JLR02_ogura.pdf) (visited May 22, 2009).

<sup>33</sup> Prior to 1998, when the United Kingdom began complying with the European Union’s Working Time Directive (discussed in detail shortly), U.K. labor laws had a higher ceiling on maximum weekly hours. The United Kingdom consistently has had higher average actual and usual weekly hours worked, compared with its other European neighbors. Despite the legislative changes wrought by the European Union’s directive, many companies in the United Kingdom use the “individual opt-out” clause of the directive to loosen restrictions placed on maximum work hours. The limit was 60 hours a week before the country revised the labor law in 1998; it has since been reduced to 48. (See Catherine Barnard, Simon Deakin, and Richard Hobbs, “Opting out of the 48-hour week: employer necessity or individual choice? An empirical study of the operation of article 18(1)(b) of the Working Time Directive in the UK,” *Industrial Law Journal*, December 2003, pp. 223–52.)

<sup>34</sup> “Directive 2003/88/EC of the European Parliament and of the Council of 4 November 2003 concerning certain aspects of the organisation of working time” (European Union, Nov. 18, 2003), on the Internet at [www.lex.unict.it/eurolabor/en/documentation/dirapprove/dir\(03\)-88en.pdf](http://www.lex.unict.it/eurolabor/en/documentation/dirapprove/dir(03)-88en.pdf) (visited May 15, 2009). Recent information on efforts to revise the 2003 directive are in Stefan Lücking, “Political agreement reached on working time and temporary work directives” (Munich, European Industrial Relations Observatory On-line, Oct. 15, 2008), on the Internet at [www.eurofound.europa.eu/eiro/2008/07/articles/eu0807049i.htm](http://www.eurofound.europa.eu/eiro/2008/07/articles/eu0807049i.htm) (visited May 15, 2009).

<sup>35</sup> See *Working Hours (Adjustment) Act—Netherlands* (Geneva, International Labor Organization, June 20, 2002), on the Internet at [www.ilo.org/public/english/employment/gems/eo/law/nether/1\\_wa.htm](http://www.ilo.org/public/english/employment/gems/eo/law/nether/1_wa.htm) (visited May 15, 2009); and Sheri Todd, *Improving work-life balance—what are other countries doing? The Netherlands* (Ottawa, Labor Program, Human Resources and Skills Development Canada, 2004), on the Internet at [www.hrsdc.gc.ca/eng/lp/spila/wlb/pdf/improving-work-life-balance.pdf](http://www.hrsdc.gc.ca/eng/lp/spila/wlb/pdf/improving-work-life-balance.pdf) (visited May 15, 2009).

<sup>36</sup> For a more complete review of trends in industrial relations and hours in the countries covered herein, see Bamber and Lansbury, *International and Comparative Employment Relations*; Gerhard Bosch, “Working time tendencies and emerging issues,” *International Labor Review*, vol. 138, no. 2 (1999), pp. 131–49; Bosch, Dawkins, and Michon, *Times are changing*; Messenger, *Working Time and Workers' Preferences*; Lee, “Working-hour gaps”; Roche, Fynes, and Morrissey, “Working time and employment”; “Australian social trends, 1999” (Canberra, Australian Bureau of Statistics, June 24, 1999), and “Australian social trends, 2002” (Canberra, Australian Bureau of Statistics, June 4, 2002), special sections on employment arrangements, document 4102.0, on the Internet at [www.abs.gov.au/AUSTATS/abs@.nsf/mf/4102.0?opendocument&utm\\_id=LN](http://www.abs.gov.au/AUSTATS/abs@.nsf/mf/4102.0?opendocument&utm_id=LN) (go to “Past and Future Releases”) (visited May 15, 2009); “Working hours: latest trends and policy initiatives,” in *OECD Employment Outlook, 1998* (Paris, OECD, 1998), pp. 153–88; “Recent labor market developments and prospects,” in *OECD Employment Outlook, 1994* (Paris, OECD, 2004), pp. 17–60; and Sheri Todd, “Improving Work-Life Balance—What Are Other Countries Doing?” (Ottawa, Human Resources and Skills Development Canada, 2004), on the Internet at [www.hrsdc.gc.ca/eng/lp/spila/wlb/pdf/improving-work-life-balance.pdf](http://www.hrsdc.gc.ca/eng/lp/spila/wlb/pdf/improving-work-life-balance.pdf) (visited May 15, 2009).

<sup>37</sup> See Yoichi Shimada, “Future of the system of regulations on working hours for white-collar workers in Japan,” *Japanese Journal of Labor Studies*, October 2003, abstract on the Internet at [www.jil.go.jp/english/ejournal/2003.html](http://www.jil.go.jp/english/ejournal/2003.html) (visited May 15, 2009); Lee, “Working-hour gaps”; and Kazuya Ogura and Takashi Fujimoto, *Empirical Study on Long Working Hours and Unpaid Working Time in Japan* (Tokyo, Japan Institute for Labor Policy and Training, research report no. 22, March 2005), on the Internet at [www.jil.go.jp/english/reports/jilpt\\_01.html](http://www.jil.go.jp/english/reports/jilpt_01.html).

<sup>38</sup> Death from overwork is an occupational hazard when one dies after having worked more than 24 continuous hours or 16 hours daily for 7 consecutive days. (See Takeshi Mizunoya, “An International Comparison of Unpaid Overtime Work Among Industrialized Countries,” originally published in Japanese in *Journal of the Society of Economic Statistics*, no. 81, 2001, on the Internet in English at [www.ilo.org/public/english/bureau/stat/download/articles/2002-3.pdf](http://www.ilo.org/public/english/bureau/stat/download/articles/2002-3.pdf) (visited May 22, 2009).)

## Comparisons of Hours Worked

<sup>39</sup> Data are from the Employment Status Survey, a representative household survey that collects information on type and hours of work.

<sup>40</sup> Susumu Noda, "Legal Issues on Long-Term Leave: Conflicting Structure of Leave Benefits," *Japan Labor Review*, summer 2006, pp. 55–73, on the Internet at [www.jil.go.jp/english/documents/JLR11\\_noda.pdf](http://www.jil.go.jp/english/documents/JLR11_noda.pdf) (click on "English" to view the English-language document) (visited May 22, 2009).

<sup>41</sup> Mizunoya, "International Comparison of Unpaid Overtime Work."

<sup>42</sup> One such policy was the special part-time pension scheme that allowed people to work and, at the same time, draw a pension. The plan was phased out beginning in 1994 and was eliminated in 2001 (only to be replaced in 2003 by a similar scheme among state employers). (See Eskil Wadensjö, "Part-time pensions and part-time work in Sweden," Institute for the Study of Labor Discussion Paper No. 2273 (Bonn, IZA, August 2006), on the Internet at [ftp://repec.iza.org/RePEc/Discussionpaper/dp2273.pdf](http://repec.iza.org/RePEc/Discussionpaper/dp2273.pdf) (visited May 22, 2009).)

<sup>43</sup> European industrial relations observatory on-line, "2004 Annual Review for Sweden," on the Internet at [eurofound.europa.eu/eiro/2005/01/feature/se0501102f.htm](http://eurofound.europa.eu/eiro/2005/01/feature/se0501102f.htm) (visited May 22, 2009).

<sup>44</sup> David Rae, "How to Reduce Sickness Absences in Sweden: Lessons from International Experience," OECD Economics Department Working Paper No. 442, in *Economic Survey of Sweden 2005* (Paris, OECD, 2005).

<sup>45</sup> Mireille Bruyère and Odile Chagny, "Comparaisons internationales des durées du travail."

<sup>46</sup> *OECD Employment Outlook, 2004*.

<sup>47</sup> Statistics Canada, "Labour Force Survey, Detailed Information for April 2006," on the Internet at [www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SurvId=3701&SurvVer=0&InstalId=13986&InstaVer=67&DispYear=2006&SDDS=3701&lang=en&db=imdb&adm=8&dis=2](http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SurvId=3701&SurvVer=0&InstalId=13986&InstaVer=67&DispYear=2006&SDDS=3701&lang=en&db=imdb&adm=8&dis=2) (visited May 22, 2009).

<sup>48</sup> Simon Bolling, "Hours of absence, overtime and hours actually worked," paper prepared for the Paris group meeting, Lisbon, September 2004 (Statistics Sweden, 20044), on the Internet at [www.insee.fr/en/insee-statistique-publique/colloques/citygroup/pdf/S-2-Paper\\_Statistics-Sweden\\_040916.pdf](http://www.insee.fr/en/insee-statistique-publique/colloques/citygroup/pdf/S-2-Paper_Statistics-Sweden_040916.pdf) (visited May 22, 2009).

<sup>49</sup> Stephane Lhermitte, "Measurement of working time: comparison between the new and the former labour force surveys in France," paper prepared for the Paris Group Meeting, London, September 2003, on the Internet at [www.insee.fr/en/insee-statistique-publique/colloques/citygroup/pdf/France-comparison-ALFS-CLFS.pdf](http://www.insee.fr/en/insee-statistique-publique/colloques/citygroup/pdf/France-comparison-ALFS-CLFS.pdf) (visited May 22, 2009).

<sup>50</sup> See Helge Naesheim, "Statistics on working time, report from Norway," paper prepared for the Paris Group meeting, London, September 4–5, 2003 (Statistics Norway, July 2, 2003), on the Internet at [www.insee.fr/en/insee-statistique-publique/colloques/citygroup/pdf/Norway-general.pdf](http://www.insee.fr/en/insee-statistique-publique/colloques/citygroup/pdf/Norway-general.pdf); and "Definition and measurement of annual hours," paper prepared for the Paris group meeting, Lisbon, September 2004 (Statistics Norway, Aug. 28, 2004), on the Internet at [www.insee.fr/en/insee-statistique-publique/colloques/citygroup/pdf/Norway-3-country-paper.pdf](http://www.insee.fr/en/insee-statistique-publique/colloques/citygroup/pdf/Norway-3-country-paper.pdf) (visited May 22, 2009).

**Table A-1. Average annual hours actually worked, all employed persons, 13 countries, 1980–2006**

Year	United States		Canada		Japan		South Korea		Belgium		Denmark		France	
	OECD	BLS	OECD	BLS	OECD	BLS	OECD	BLS	OECD	BLS	OECD	BLS	OECD	BLS
1980.....	1,819	1,824	1,802	1,807	2,121	–	2,876	2,803	–	1,690	1,646	1,659	1,842	1,828
1981.....	1,809	1,807	1,801	1,807	2,106	–	2,892	2,787	–	1,667	1,617	1,632	1,808	1,790
1982.....	1,806	1,795	1,784	1,787	2,104	–	2,905	2,907	–	1,653	1,627	1,642	1,765	1,736
1983.....	1,825	1,804	1,780	1,784	2,095	–	2,923	2,881	1,768	1,659	1,622	1,638	1,758	1,731
1984.....	1,843	1,820	1,782	1,788	2,108	–	2,919	2,865	1,793	1,630	1,615	1,633	1,746	1,720
1985.....	1,841	1,825	1,790	1,802	2,093	–	2,894	2,865	1,799	1,635	1,601	1,619	1,731	1,707
1986.....	1,833	1,806	1,789	1,799	2,097	–	2,923	2,803	1,779	1,624	1,603	1,622	1,720	1,703
1987.....	1,838	1,809	1,797	1,809	2,096	–	2,892	2,881	1,763	1,635	1,568	1,587	1,716	1,702
1988.....	1,842	1,823	1,807	1,828	2,092	–	2,846	2,902	1,750	1,630	1,549	1,569	1,718	1,707
1989.....	1,855	1,837	1,801	1,822	2,070	–	2,742	2,834	1,741	1,612	1,532	1,552	1,699	1,688
1990.....	1,836	1,818	1,788	1,804	2,031	–	2,688	2,798	1,754	1,601	1,518	1,539	1,702	1,702
1991.....	1,823	1,810	1,767	1,780	1,998	–	2,672	2,777	1,715	1,590	1,513	1,534	1,694	1,694
1992.....	1,826	1,802	1,759	1,779	1,965	–	2,650	2,730	1,693	1,594	1,532	1,554	1,695	1,695
1993.....	1,835	1,819	1,763	1,805	1,905	–	2,667	2,740	1,646	1,552	1,531	1,555	1,682	1,682
1994.....	1,842	1,836	1,780	1,821	1,898	–	2,651	2,725	1,646	1,551	1,494	1,548	1,675	1,675
1995.....	1,849	1,855	1,775	1,810	1,884	–	2,658	2,730	1,674	1,549	1,499	1,541	1,651	1,651
1996.....	1,840	1,852	1,784	1,826	1,892	1,924	2,648	2,720	1,646	1,547	1,495	1,531	1,655	1,655
1997.....	1,850	1,865	1,767	1,809	1,865	1,894	2,592	2,673	1,660	1,566	1,512	1,544	1,649	1,649
1998.....	1,852	1,879	1,767	1,804	1,842	1,872	2,496	2,605	1,672	1,555	1,528	1,559	1,637	1,637
1999.....	1,853	1,887	1,769	1,807	1,810	1,851	2,502	2,621	1,581	1,545	1,539	1,568	1,630	1,630
2000.....	1,841	1,864	1,768	1,802	1,821	1,865	2,520	2,631	1,554	1,545	1,554	1,581	1,591	1,591
2001.....	1,819	1,841	1,762	1,793	1,809	1,846	2,506	2,621	1,577	1,547	1,562	1,586	1,578	1,578
2002.....	1,814	1,822	1,744	1,775	1,798	1,832	2,465	2,590	1,579	1,548	1,556	1,578	1,536	1,536
2003.....	1,806	1,795	1,734	1,761	1,799	1,832	2,434	2,553	1,575	1,542	1,552	1,576	1,530	1,531
2004.....	1,809	1,797	1,752	1,779	1,787	1,836	2,394	2,532	1,549	1,522	1,558	1,582	1,555	1,558
2005.....	1,804	1,793	1,738	1,769	1,775	1,823	2,354	2,501	1,565	1,534	1,574	1,597	1,559	1,550
2006.....	1,804	1,792	1,738	1,766	1,784	1,832	2,305	2,491	1,571	1,534	1,577	1,608	1,564	1,548
			Germany <sup>1</sup>		Netherlands		Norway		Spain		Sweden		United Kingdom	
			OECD	BLS	OECD	BLS	OECD	BLS	OECD	BLS	OECD	BLS	OECD	BLS
1980.....			1,751	1,698	–	–	1,580	1,580	2,003	1,753	1,517	1,517	1,773	1,793
1981.....			1,729	1,683	–	–	1,570	1,570	1,968	1,727	1,508	1,508	1,715	1,747
1982.....			1,718	1,681	–	–	1,559	1,559	1,946	1,727	1,523	1,523	1,730	1,743
1983.....			1,705	1,679	–	–	1,553	1,553	1,912	1,696	1,532	1,532	1,717	1,717
1984.....			1,694	1,672	–	–	1,548	1,548	1,865	1,660	1,534	1,534	1,733	1,726
1985.....			1,671	1,645	–	–	1,542	1,542	1,855	1,643	1,538	1,538	1,766	1,735
1986.....			1,652	1,638	–	–	1,538	1,538	1,847	1,643	1,536	1,536	1,768	1,726
1987.....			1,629	1,631	1,540	–	1,511	1,511	1,838	1,595	1,546	1,546	1,758	1,720
1988.....			1,624	1,629	1,509	–	1,513	1,513	1,835	1,600	1,566	1,566	1,798	1,732
1989.....			1,601	1,605	1,497	–	1,511	1,510	1,822	1,608	1,565	1,565	1,786	1,745
1990.....			1,578	1,567	1,504	–	1,503	1,503	1,824	1,608	1,561	1,561	1,771	1,745
1991.....			1,548	1,548	1,471	–	1,500	1,500	1,833	1,600	1,548	1,548	1,767	1,726
1992.....			1,566	1,566	1,447	–	1,510	1,510	1,825	1,596	1,565	1,565	1,732	1,701
1993.....			1,550	1,550	1,419	–	1,507	1,507	1,816	1,587	1,582	1,582	1,726	1,701
1994.....			1,547	1,547	1,411	–	1,505	1,505	1,816	1,584	1,621	1,621	1,740	1,692
1995.....			1,534	1,534	1,391	1,516	1,488	1,488	1,815	1,592	1,626	1,626	1,743	1,715
1996.....			1,518	1,518	1,421	1,524	1,483	1,483	1,811	1,592	1,635	1,635	1,742	1,715
1997.....			1,509	1,509	1,414	1,513	1,478	1,478	1,813	1,602	1,639	1,639	1,740	1,715
1998.....			1,503	1,503	1,400	1,497	1,476	1,476	1,834	1,614	1,638	1,638	1,734	1,711
1999.....			1,492	1,492	1,381	1,492	1,473	1,474	1,817	1,629	1,647	1,647	1,723	1,702
2000.....			1,473	1,473	1,372	1,490	1,455	1,455	1,815	1,653	1,625	1,625	1,711	1,686
2001.....			1,458	1,458	1,372	1,490	1,429	1,429	1,817	1,649	1,603	1,603	1,714	1,689
2002.....			1,445	1,445	1,348	1,472	1,414	1,414	1,798	1,647	1,580	1,580	1,696	1,673
2003.....			1,439	1,439	1,363	1,463	1,399	1,399	1,800	1,632	1,562	1,562	1,677	1,665
2004.....			1,442	1,442	1,362	1,460	1,417	1,417	1,799	1,618	1,585	1,585	1,672	1,658
2005.....			1,437	1,437	1,375	1,448	1,421	1,421	1,769	1,599	1,588	1,588	1,676	1,661
2006.....			1,436	1,436	1,391	1,457	1,407	1,407	1,764	1,594	1,583	1,583	1,669	1,656

<sup>1</sup> Data prior to 1991 are for West Germany.