

# Business employment dynamics: annual tabulations

*The Business Employment Dynamics program releases quarterly gross job gain and gross job loss statistics, and this year it is releasing annual statistics for the first time; the annual data show over-the-year growth and decline of employment at the establishment level*

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**B**usiness Employment Dynamics (BED) data from the U.S. Bureau of Labor Statistics are quarterly statistics that quantify levels of gross job gains and gross job losses in the United States. Gross job gains are defined as the sum of all employment gains at expanding and opening establishments. Gross job losses are defined as the sum of all employment losses at contracting and closing establishments. In the second quarter of 2008, on a seasonally adjusted basis, 1.8 million establishments expanded or opened, creating 7.3 million jobs, and 2.0 million establishments contracted or closed, eliminating 7.8 million jobs. The difference between the 7.3 million gross job gains and the 7.8 million gross job losses is a net employment loss of 0.5 million jobs (seasonally adjusted). The gross job gain and gross job loss statistics, which are substantially larger numbers than the net employment change, illustrate how dynamic the U.S. labor market is from quarter to quarter.

Since their initial release in 2003, BED statistics have become an important component of the Nation's statistical infrastructure. BED data are routinely cited by policymakers, researchers, and the business community, as well as the popular press. One request that BLS has heard consistently from users is for the production of annual gross job gain and loss statistics, which would enable a comparison of BED statistics with gross job gain and loss statistics from the U.S. Census Bureau and

from other countries. The statistics that the BED program historically has produced cannot be compared with statistics from other statistical agencies, because the BED statistics are quarterly and other gross job gain and loss statistics are annual; four quarters of gross job gains and losses cannot be summed to create an annual measure of gross job gains and losses.

This article presents a new BED time series of annual gross job gain and gross job loss statistics. The article begins with a detailed documentation of how BLS has created annual BED statistics, and it discusses the value added by annual statistics notwithstanding the availability of quarterly statistics. The heart of the article is a comparison of the annual BED statistics with the quarterly BED statistics and a comparison of the annual BED statistics with similar statistics from the U.S. Census Bureau.

## Business Employment Dynamics

*An overview of quarterly BED data.* The BED program's quarterly measures of gross job gains and gross job losses are constructed from Quarterly Census of Employment and Wages (QCEW) microdata. These microdata represent quarterly contribution reports submitted to the States by employers. QCEW data are a comprehensive and accurate source of information on employment and wages, and they provide a near census (98 percent

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complete) of employees on nonfarm payrolls.<sup>1</sup> The QCEW is the sampling frame for BLS establishment-based surveys and is the employment benchmark for the Current Employment Statistics survey and other BLS establishment-based surveys. In the second quarter of 2008, QCEW statistics show an employment level of 136.6 million jobs in 9.1 million establishments in the U.S. economy. BLS publishes employment and wage data from the QCEW approximately 7 months after the end of each quarter.

All employers subject to State unemployment insurance laws must submit quarterly contribution reports to the State employment security agencies. These reports detail the establishments' level of employment by month and their wages by quarter. BED quarterly gross job gain and gross job loss statistics are tabulated by linking establishment-level microdata from the QCEW across quarters and then classifying establishments as expanding, opening, contracting, closing, or not changing their employment level. Following establishments across time using microdata is a complex and challenging exercise. BLS has developed a multistep process to link business-establishment microdata over time. This linkage process consists of two distinct administrative matches based on unique establishment identifiers maintained by the States, a probability-based weighted match, and an analyst review match.

The basic product of the BED program is statistics measuring quarterly gross job gains and gross job losses. BLS publishes quarterly BED data approximately 8 months after the end of the quarter.<sup>2</sup> Seasonally adjusted quarterly gross job gain and gross job loss statistics are plotted in chart 1. (The BED time series starts in the third quarter of 1992.) The 2001 recession is immediately evident in the chart. Both gross job gains and the gross job losses were climbing at relatively constant rates between 1992 and 1999, and then in 2001 gross job gains dropped substantially and gross job losses climbed dramatically. This shows that the net employment losses during the 2001 recession are the result of both falling gross job gains (a slowdown in the jobs created by establishment expansions and openings) and rising gross job losses (an increase in the jobs lost from establishment contractions and closings).

*Reasons for creating annual BED statistics.* There are three main reasons that annual measures of gross job gains and gross job losses should be produced despite the availability of quarterly measures. The first is to enhance people's understanding of labor market dynamics. Many establishments are seasonal and exhibit consistent patterns of growth and decline during the four quarters of the year. These seasonal expansions and contractions are short-term

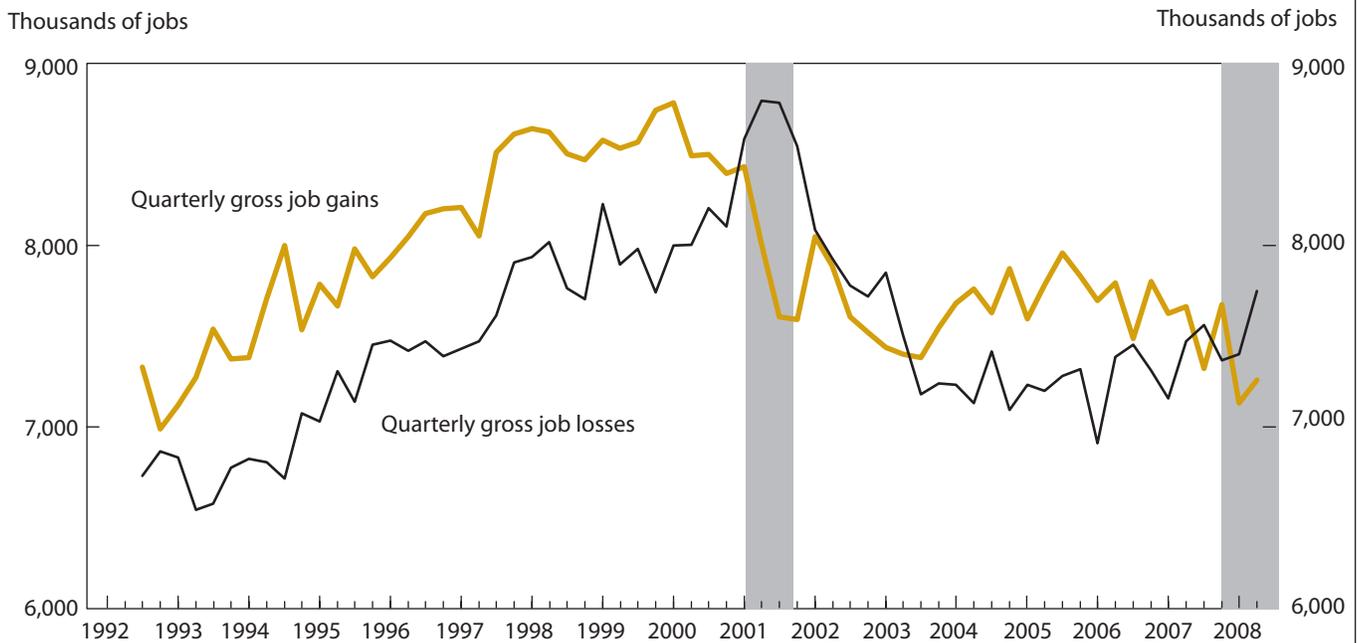
changes that reverse themselves in other quarters during the year. The seasonal variations in establishment-level employment are accounted for in the quarterly gross job gain and gross job loss statistics. However, gross job gains and gross job losses measured on an annual basis—the first quarter of each year, for example—are not affected by any seasonal employment variation that occurs during the year. As such, the annual statistics are arguably better measures of over-the-year growth and decline at the establishment level.

The second reason to produce annual statistics is related to the internal structure of the BED program. The BED program publishes statistics on establishment births and establishment deaths, and the definitions of births and deaths differ from the definitions of openings and closings that underlie the statistics that have been published thus far.<sup>3</sup> Businesses are allowed to and often do report zero employment to the State unemployment insurance systems for several quarters after they have effectively closed. This undoubtedly occurs when a business owner temporarily shuts down the business but anticipates starting it up again when economic conditions improve. By reporting zero employment and wages on the quarterly contributions form, the business owner can keep his or her unemployment insurance account active in preparation for reopening the business. As a result, in any given quarter one observes many businesses closing, but which of these businesses will start up again and which will die cannot be determined for several more quarters. The BED definition of establishment death requires four consecutive quarters of no positive employment, and implementing this definition requires longitudinally linking five consecutive quarters of cross-sectional QCEW microdata. An output derived from this five-quarter linkage is annual gross job gain and gross job loss statistics.

The third reason for creating annual BED statistics is to satisfy demands from users of BED data. As stated previously, users want annual BED data in order to compare the BED gross job gain and gross job loss statistics from BLS with similar statistics from the U.S. Census Bureau and from statistical agencies in other countries.

*The method of constructing annual BED statistics.* Creating annual BED statistics from quarterly cross-sectional QCEW microdata is difficult. The difficulty arises from trying to follow establishments through mergers, restructurings, and other ownership and administrative changes. It is important to do this correctly because the quality of longitudinal statistics hinges upon the ability to accurately follow establishments across time. Failure to follow an es-

**Chart 1. Quarterly gross job gains and gross job losses, third quarter 1992 through second quarter 2008, seasonally adjusted**



NOTE: The first quarter of each year ends in March, and the first quarter's endpoint is represented by the year's long tick mark. The shorter tick marks represent the endpoints of the second, third, and fourth quarters. The shaded bars denote National Bureau of Economic Research (NBER)-designated recessions, one running March 2001–November 2001 and the other beginning in December 2007. An endpoint for the more recent recession has yet to be designated.

establishment through mergers or other corporate restructurings would break a continuous longitudinal linkage and result in a spurious establishment closing and a concomitant spurious establishment opening. Annual BED gross job gain and gross job loss statistics must accurately measure the growth and decline of establishment-level employment rather than be distorted because of missed linkages due to changes in establishment identifiers in the administrative source data.

BLS has thoroughly researched the best way to create annual BED statistics from quarterly QCEW microdata and has determined that information from all quarters within the year needs to be used when creating an annual link.<sup>4</sup> BLS' research has shown that the annual gross job gain and gross job loss statistics would be biased upward by almost 10 percent if quarterly linkage information from within the year were not taken into account. This upward bias would result from establishments that go through mergers or other corporate restructurings and are incorrectly classified as establishments that have opened and/or closed during the year. It took a long time to develop the longitudinal-linkage algorithm that underlies the BED annual statistics, but the increases in data quality resulting

from the complex new algorithm have made the effort worthwhile.

### Annual tabulations

*Basic results.* Table 1 presents quarterly and annual tabulations of BED statistics. The statistics in table 1 are not seasonally adjusted. In the first quarter of 2007 there were 111,994,015 private-sector jobs, and in the first quarter of 2008 there were 112,130,509 private-sector jobs. The annual net employment change of approximately 136,000 jobs is the sum of the four seasonally unadjusted quarterly changes during the year: an increase of 2,932,000 jobs between the first and second quarters of 2007, a decline of 738,000 jobs between the second and third quarters, an increase of 323,000 jobs between the third and fourth quarters, and a decline of 2,380,000 jobs between the fourth quarter of 2007 and the first quarter of 2008. (The statistics do not add precisely because of rounding.) These quarterly and annual net employment changes are listed in the final column of table 1.

The annual net employment change of 136,000 jobs in table 1 is the difference between the annual gross job gains

**Table 1. Quarterly and annual gross job gains and gross job losses, first quarter 2007 through first quarter 2008, not seasonally adjusted**

(in thousands)

Timespan	Employment		Gross job gains			Gross job losses			Net employment change
	Beginning quarter	Ending quarter	Total	Gains from expansions	Gains from openings	Total	Losses from contractions	Losses from closings	
Quarterly:									
2007:Q1 – 2007:Q2.....	111,994	114,926	9,164	7,533	1,631	6,232	5,002	1,230	2,932
2007:Q2 – 2007:Q3.....	114,926	114,188	6,620	5,330	1,290	7,358	6,137	1,221	-738
2007:Q3 – 2007:Q4.....	114,188	114,511	7,648	6,321	1,327	7,325	6,077	1,248	323
2007:Q4 – 2008:Q1.....	114,511	112,131	6,485	4,984	1,501	8,865	7,108	1,757	-2,380
Quarterly average			7,479	6,042	1,437	7,445	6,081	1,364	
Annual:									
2007:Q1 – 2008:Q1.....	111,994	112,131	12,706	8,705	4,001	12,570	8,721	3,849	136

NOTE: Statistics may not add up precisely because of rounding.

and the annual gross job losses. Looking at the bottom row of table 1, one can see that between the first quarter of 2007 and the first quarter of 2008, employment in expanding establishments grew by 8.7 million jobs and employment in opening establishments grew by 4.0 million jobs. The number of annual gross job gains was 12.7 million. Employment in contracting establishments declined by 8.7 million jobs, and closing establishments accounted for a loss of 3.8 million jobs. The level of annual gross job losses was 12.6 million jobs. The difference between the 12.7 million jobs gained and 12.6 million jobs lost is the net employment change of 136,000 jobs.

The annual gross job gain and loss statistics in table 1 are higher in magnitude than the quarterly gross job gain and loss statistics from any quarter within the year. The quarterly gross job gains, on a non-seasonally adjusted basis, range from 6.5 million to 9.2 million during the first quarter 2007 to first quarter 2008 period. The average level of quarterly gross job gains is 7.5 million jobs, which is substantially less than the annual gross job gains of 12.7 million jobs. Similarly, the average number of quarterly gross job losses is 7.4 million, which is less than the annual gross job losses of 12.6 million jobs.

The difference between the annual and the average quarterly gross job gains is more prominent in the statistics on opening establishments than in the statistics on expanding establishments. When gross job gains are measured on an average quarterly basis, 81 percent of gross job gains are found to be due to expanding establishments (6,042/7,479 in table 1), whereas, when measured on an annual basis, 69 percent of gross job gains are found to be due to expanding establishments (8,705/12,706 in table

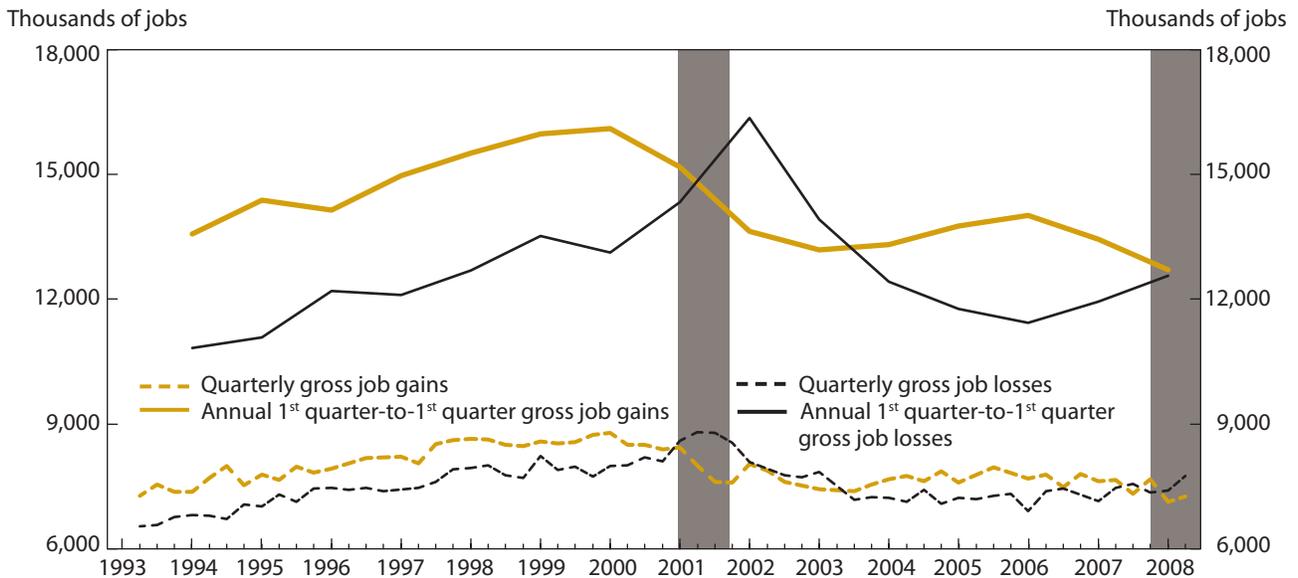
1). Similar computations show that 82 percent of quarterly gross job losses are due to contracting establishments, whereas 69 percent of annual gross job losses are due to contracting establishments. This greater importance of expansions and contractions in the quarterly statistics relative to the annual statistics is attributable to the transitory and seasonal nature of quarterly establishment-level employment changes that often reverse themselves during other quarters of the year.

The transitory nature of quarterly establishment-level employment changes is also the reason that the sum of four quarterly gross job gains or losses does not equal annual gross job gains or losses. The sum of the four quarterly gross job gain statistics in table 1 is approximately 30 million, yet this statistic has no clear interpretation.<sup>5</sup> The new BED annual gross job gain and gross job loss statistics make clear that it is not appropriate to use the sum of the four quarterly gross job flows statistics as an annual gross job flows statistic.

Chart 2 compares the time series of quarterly and annual BED gross job gain and gross job loss statistics. In this chart, the quarterly statistics are seasonally adjusted but the annual statistics are not. The quarterly statistics are identical to those in chart 1 (bearing in mind that charts 1 and 2 have different scales on their vertical axes). The annual statistics in chart 2 were tabulated by linking business establishments from the first quarter of the reference year to the first quarter of the previous year.

Consistent with the statistics in table 1, the annual gross job gains and losses in chart 2 are higher in magnitude than the quarterly gross job gains and losses. The magnitude of the annual gross job gains is 1.7 times greater,

**Chart 2. Quarterly and annual gross job gains and gross job losses, second quarter 1993 through second quarter 2008, quarterly data seasonally adjusted and annual data not seasonally adjusted**



NOTE: The first quarter of each year ends in March, and the first quarter's endpoint is represented by the year's long tick mark. The datum for each first quarter-to-first quarter year is plotted at the end of the year in question (in March). The shorter tick marks represent the endpoints of the second, third, and fourth quarters. The shaded bars denote National Bureau of Economic Research (NBER)-designated recessions, one running March 2001–November 2001 and the other beginning in December 2007. An endpoint for the more recent recession has yet to be designated.

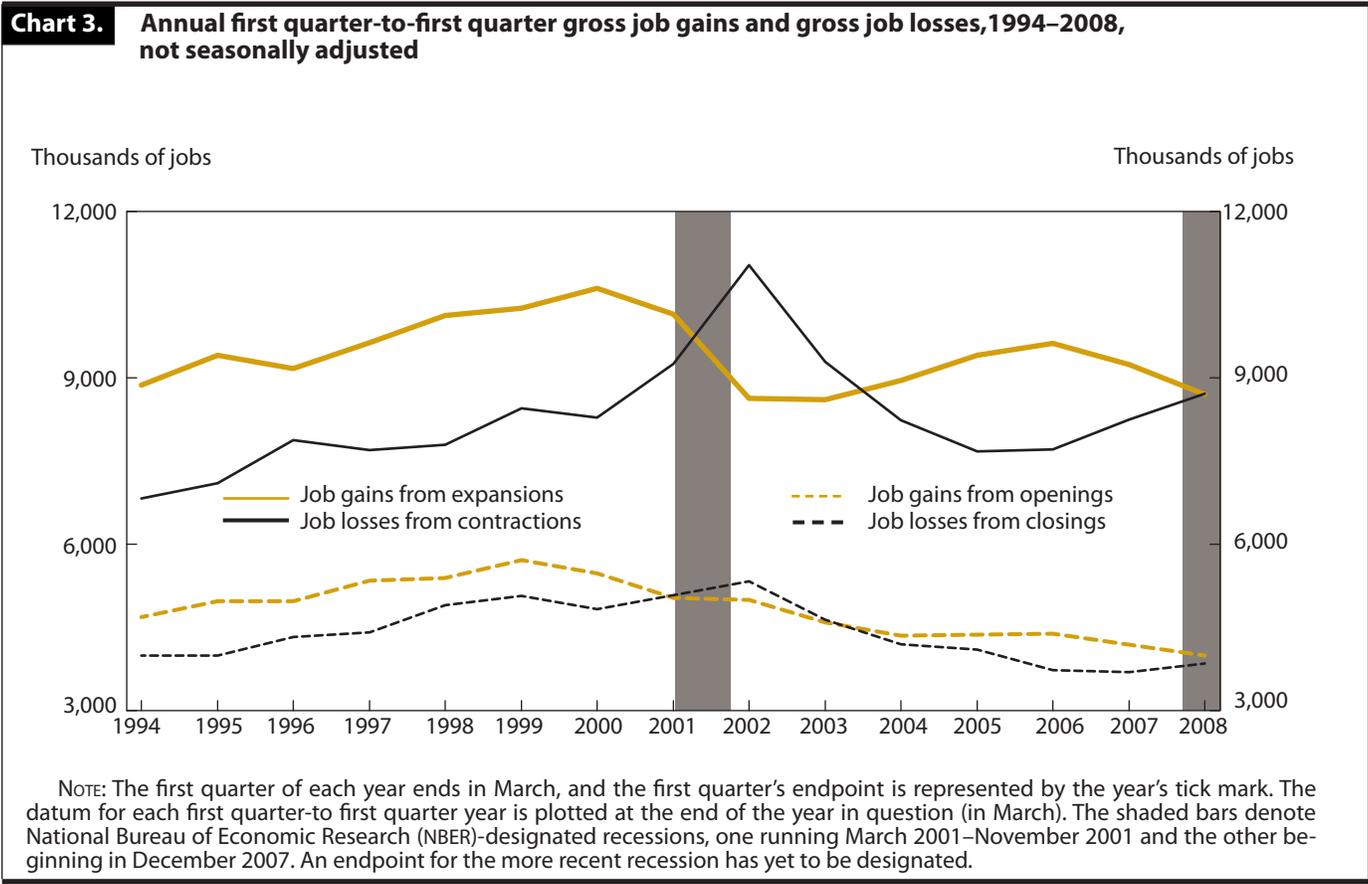
on average, than the magnitude of the quarterly gross job gains. Similarly, the magnitude of the annual gross job losses is 1.7 times greater, on average, than the magnitude of the quarterly gross job losses. Recall that the difference between gross job gains and gross job losses is net employment change. The fact that the gap between the annual gross job gains and losses in chart 2 is often larger than the gap between the quarterly gross job gains and losses should not be of concern, because annual first quarter-to-first quarter net employment growth is the sum of four quarters of net employment growth during the year.

It is important to note the ways in which the quarterly and the annual gross job gains and losses in chart 2 relate to the business cycle. During the 2001 recession, the difference between the quarterly gross job gain series and quarterly gross job loss series reaches its peak in the third quarter of the year. In this quarter, quarterly gross job losses are estimated to be 8.8 million and quarterly gross job gains are estimated to be 7.6 million, with a quarterly net employment decline of 1.2 million jobs. The annual first quarter-to-first quarter series shows the difference between gross job gains and losses peaking in the first quarter of 2002. In the first quarter of 2002, the annual gross job losses measure 16.4 million and the annual gross job gains measure 13.6 million, with an annual net employment decline of 2.8 million jobs. This difference

in timing should not be surprising: annual gross job gain and gross job loss statistics measure activity that occurred during the previous year.

The annual first quarter-to first quarter gross job gains at expanding and opening establishments and the annual first quarter-to first quarter gross job losses at contracting and closing establishments are presented in chart 3. When gross job gains and losses are measured annually, expanding establishments account for approximately two-thirds of jobs gained and contracting establishments account for approximately two-thirds of jobs lost. Both expansions and contractions, as well as openings and closings, behave about as one would expect throughout the business cycle. The net employment change attributable to expansions and contractions is positive in the 1990s, turns negative in the early 2000s, and becomes positive again in the mid-2000s. The net employment change attributable to openings and closings shows the same pattern, yet the magnitude of changes in net employment is greater overall in the expanding and contracting establishments than in the opening and closing establishments.

*Annual statistics based on other quarters.* The annual BED statistics presented in table 1 and charts 2–3 are based on comparisons of establishment-level employment from the first quarter of one year to the first quarter of the follow-



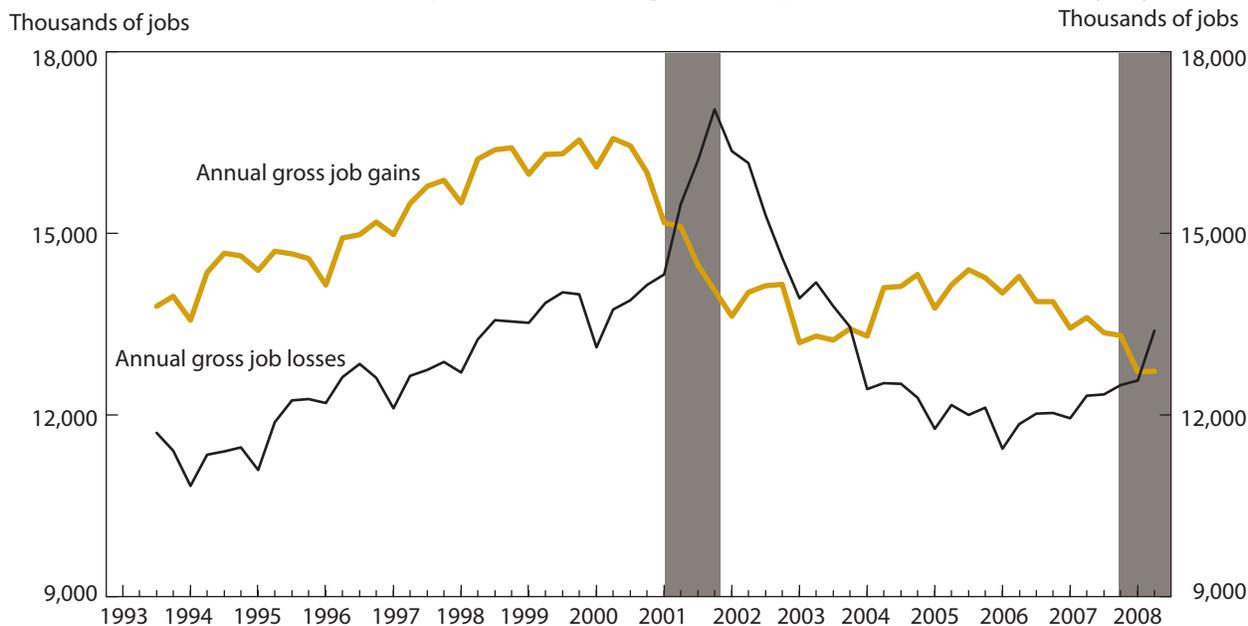
ing year. It is possible to calculate annual gross job gains and gross job losses for all quarters of the year. Chart 4 presents statistics that measure annual gross job gains and losses from first quarter to first quarter, from second quarter to second quarter, from third quarter to third quarter, and from fourth quarter to fourth quarter. These annual statistics in chart 4 are not seasonally adjusted. The long-term pattern of the annual gross job gains and losses, computed for every quarter within the year, appears similar to the pattern of the quarterly statistics in chart 1. The 2001 recession is particularly evident in the annual statistics: the annual gross job gains exceed the annual gross job losses for all quarters prior to 2001, and then during 2001 the gross job gains fall and the gross job losses rise.

The statistics in chart 4 are not seasonally adjusted, and a careful look reveals some seasonal properties in the annual gross job gains and losses when they are tabulated for every quarter of the year. Looking at the 1990s, where the seasonal pattern is quite evident in chart 4, one can see that the annual first quarter-to first quarter gross job gains are somewhat less than the annual gross job gains tabulated for second quarter-to-second quarter, third quarter-to-third quarter, and fourth quarter-to-fourth

quarter. Similarly, the annual first quarter-to first quarter gross job losses are somewhat less than the annual gross job losses tabulated for the other three quarters of the year. This seasonal pattern is much more evident in chart 5, which is the same as chart 4 except that it covers only retail trade, which is a very seasonal industry. In retail trade, annual gross job gains and gross job losses are low when computed first quarter-to-first quarter and are high when computed fourth quarter-to-fourth quarter. The resulting annual net employment change for retail trade, computed as the difference between the annual gross job gains and annual gross job losses, exhibits no seasonal pattern.

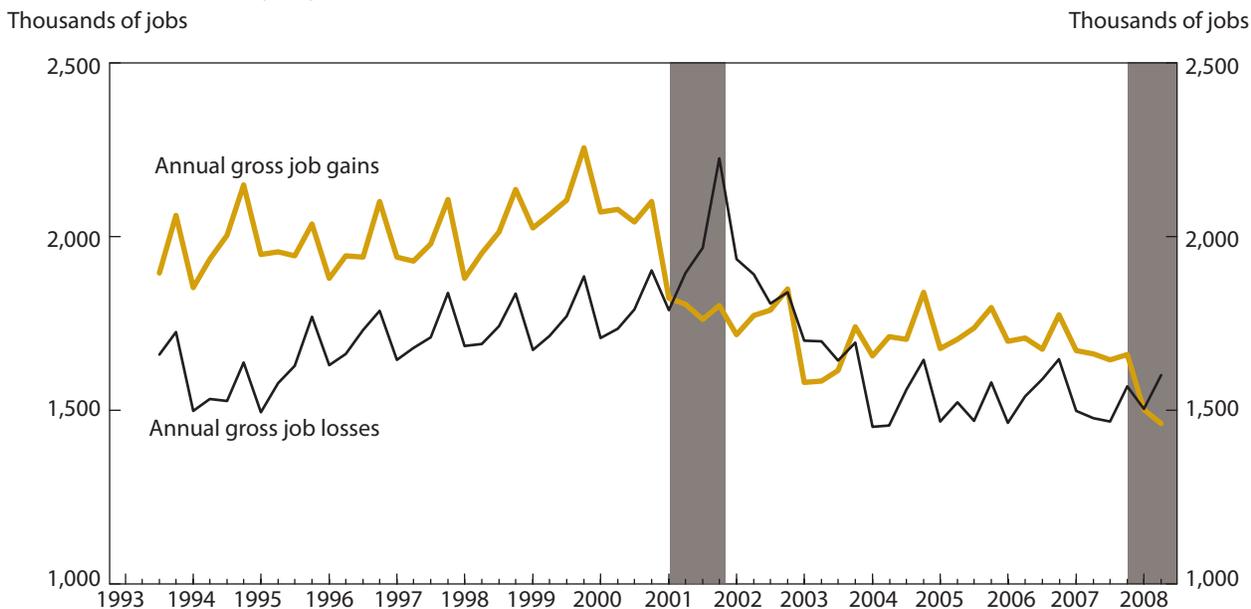
Annual gross job gains and losses, when tabulated for every quarter of the year, show a well-defined seasonal pattern in charts 4 and 5. The key to understanding this seasonal pattern begins with noting that the annual gross job gain series and gross job loss series for retail trade in chart 5 have the same seasonal pattern—both are low in the first quarter and both are high in the fourth quarter. This is different from the pattern of the non-seasonally adjusted quarterly gross job gains and gross job losses for retail trade, in which the quarterly gross job gains jump in the fourth quarter as establishments hire for the holiday

**Chart 4. Annual gross job gains and losses; first quarter-to-first quarter, second-to-second, third-to-third, and fourth-to-fourth; third quarter 1993 through second quarter 2008; not seasonally adjusted**



NOTE: The first quarter of each year ends in March, and the first quarter's endpoint is represented by the year's long tick mark. Each datum for each year of measurement is plotted at the end of the year in question. For example, the year from third quarter 1992 to third quarter 1993 is plotted in September 1993. The shaded bars denote National Bureau of Economic Research (NBER)-designated recessions, one running March 2001–November 2001 and the other beginning in December 2007. An endpoint for the more recent recession has yet to be designated.

**Chart 5. Annual gross job gains and losses in retail trade; first quarter-to-first quarter, second-to-second, third-to-third, and fourth-to-fourth; first quarter 1993 through second quarter 2008; not seasonally adjusted**



NOTE: The first quarter of each year ends in March, and the first quarter's endpoint is represented by the year's long tick mark. Each datum for each year of measurement is plotted at the end of the year in question. For example, the year from third quarter 1992 to third quarter 1993 is plotted in September 1993. The shaded bars denote National Bureau of Economic Research (NBER)-designated recessions, one running March 2001–November 2001 and the other beginning in December 2007. An endpoint for the more recent recession has yet to be designated.

season and then the quarterly gross job losses jump in the first quarter as the temporary holiday employees leave the retail establishments.

The source of the seasonality in chart 5 can be best explained with a simple example. Assume a simple economy with three establishments in the retail trade industry. All three of these establishments have 10 employees in the first, second, and third quarters, and all three establishments want to have 15 employees in the fourth quarter. If the first establishment manages to have 15 employees in the fourth quarter of every year, the annual gross job gains and gross job losses for this establishment will be zero whether they are measured from first quarter to first quarter, second quarter to second quarter, third to third, or fourth to fourth. Now assume that the second establishment has 14 employees in the fourth quarter of one year and 16 employees in the fourth quarter of the following year. The annual gross job gain for this establishment will be two employees when comparing employment from the fourth quarter of one year with the fourth quarter of the next year. To complete the example, assume that the third establishment has 16 employees in the fourth quarter of one year and 14 employees in the fourth quarter of the following year. The annual gross job loss for this establishment will be two employees when comparing employment from the fourth quarter of one year with the fourth quarter of the next.

In this simple example, industry employment is always 45 employees in the fourth quarter, but a seasonal spike occurs in the annual fourth quarter-to-fourth quarter gross job gains and gross job losses. Such a seasonal spike originates from establishment-level variation in the number of additional workers each establishment hires during its seasonal peak in employment. This illustration shows that one should expect annual gross job gain and gross job loss data to exhibit seasonal spikes when they are tabulated for every quarter of the year.

### Comparisons with other annual series

This section of the paper compares the BED annual gross job gain and loss statistics with the U.S. Census Bureau's Business Dynamics Statistics (BDS) data.<sup>6</sup> The Census Bureau released the first BDS data in December 2008.<sup>7</sup> The BDS program uses concepts and definitions that are similar to those of the BED program, as one can see by reading the technical documentation for the new BDS data: "The BDS data measure the net change in employment at the establishment level. These changes come about in one of four ways. A net increase in employment can come from either

opening establishments or expanding establishments. A net decrease in employment can come from either closing establishments or contracting establishments. Gross job gains include the sum of all jobs added at either opening or expanding establishments. Gross job losses include the sum of all jobs lost in either closing or contracting establishments. The net change in employment is the difference between gross job gains and gross job losses."<sup>8</sup>

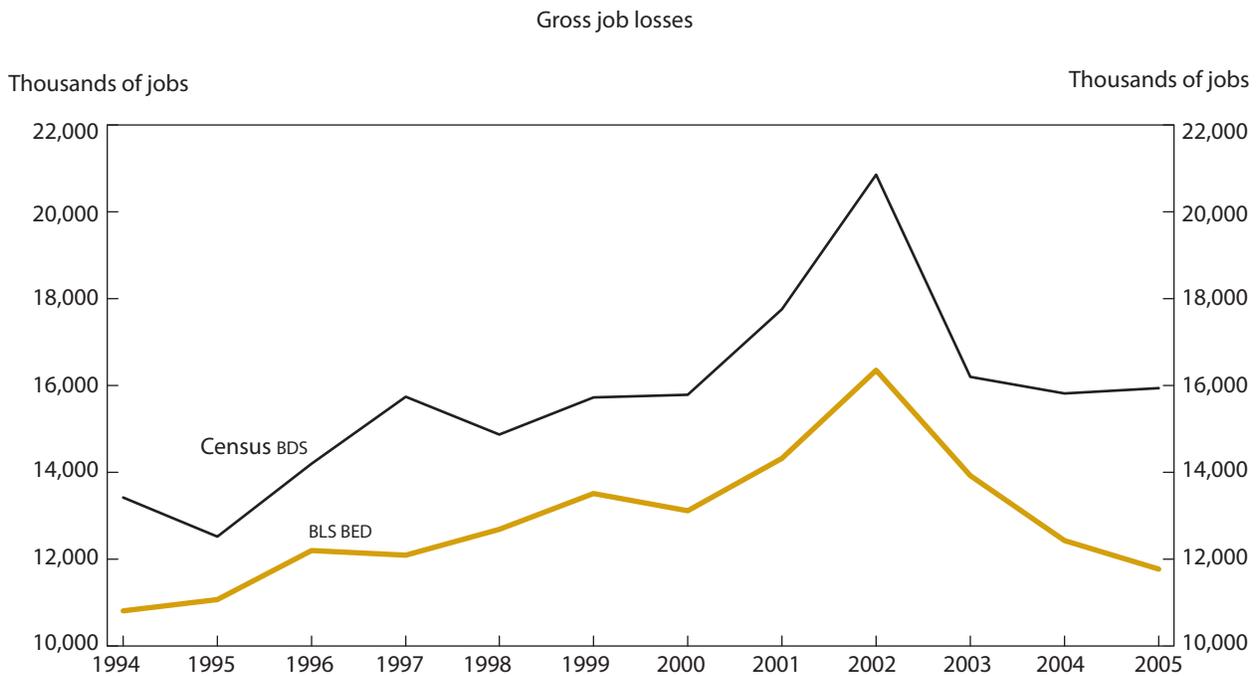
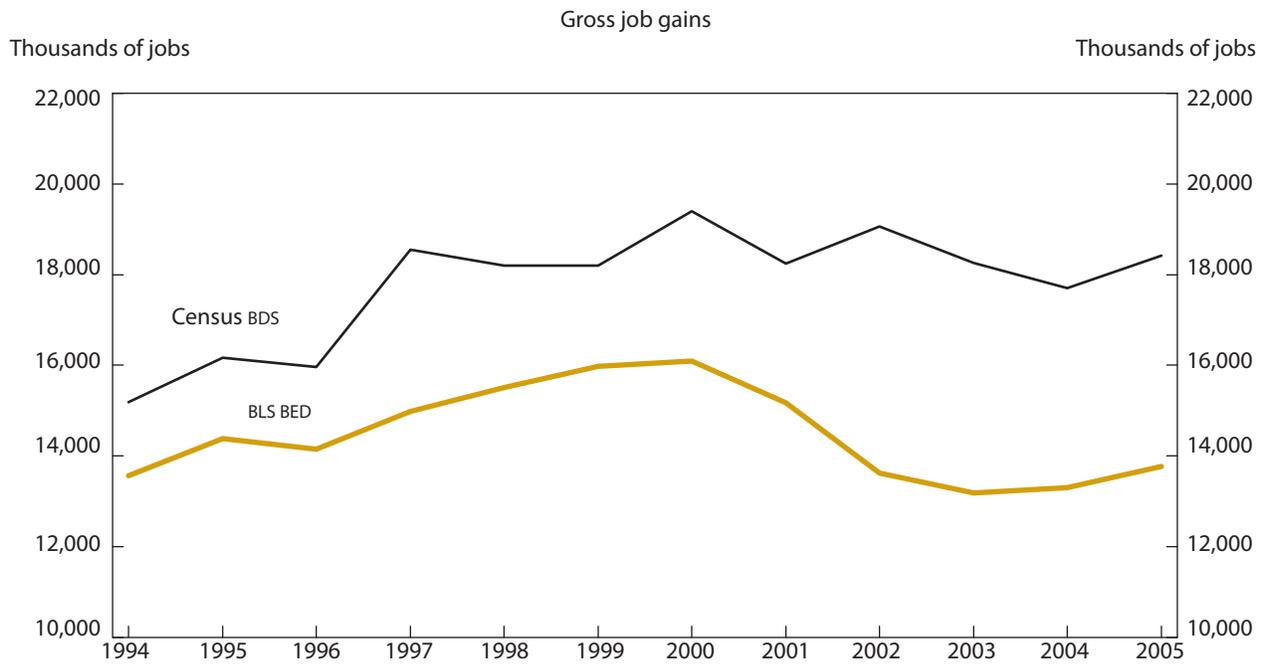
To compare the BED annual gross job gain and loss statistics with the Census Bureau's BDS data, this article uses the first quarter-to-first quarter BED data since the BDS data are tabulated as first quarter-to-first quarter comparisons. The BDS data are available for the years 1977–2005, whereas the BED annual data are available for the years 1994–2008. Charts 6 and 7 cover the 1994–2005 period, during which the two series overlap.<sup>9</sup>

Chart 6 shows gross job gains and gross job losses for the BED and BDS series. One can immediately see that every year, the BDS annual gross job gains and gross job losses are greater in magnitude than those of the BED program. In the 1994–99 period, the BDS gross job gains are 15 percent higher than the BED gains, and the BDS gross job losses are 20 percent higher than the BED losses. In the 2002–05 period, the BDS gross job gains are 36 percent higher than those of the BED program, and the BDS gross job losses are 27 percent higher than those of the BED program.

There are three plausible explanations for these differences in magnitude. First, the level of employment in the BDS data is consistently higher than the level of employment in the BED data, so it would be expected for the BDS statistics to fluctuate by larger numbers of jobs than do the BED statistics.<sup>10</sup> The BDS data show approximately 5 percent greater employment in the average year, and the magnitudes of the gross job gains and losses in the BDS statistics are 15 to 36 percent higher than they are in the BED statistics. As such, differences in employment levels can explain only some of the differences in magnitude observed in chart 6.

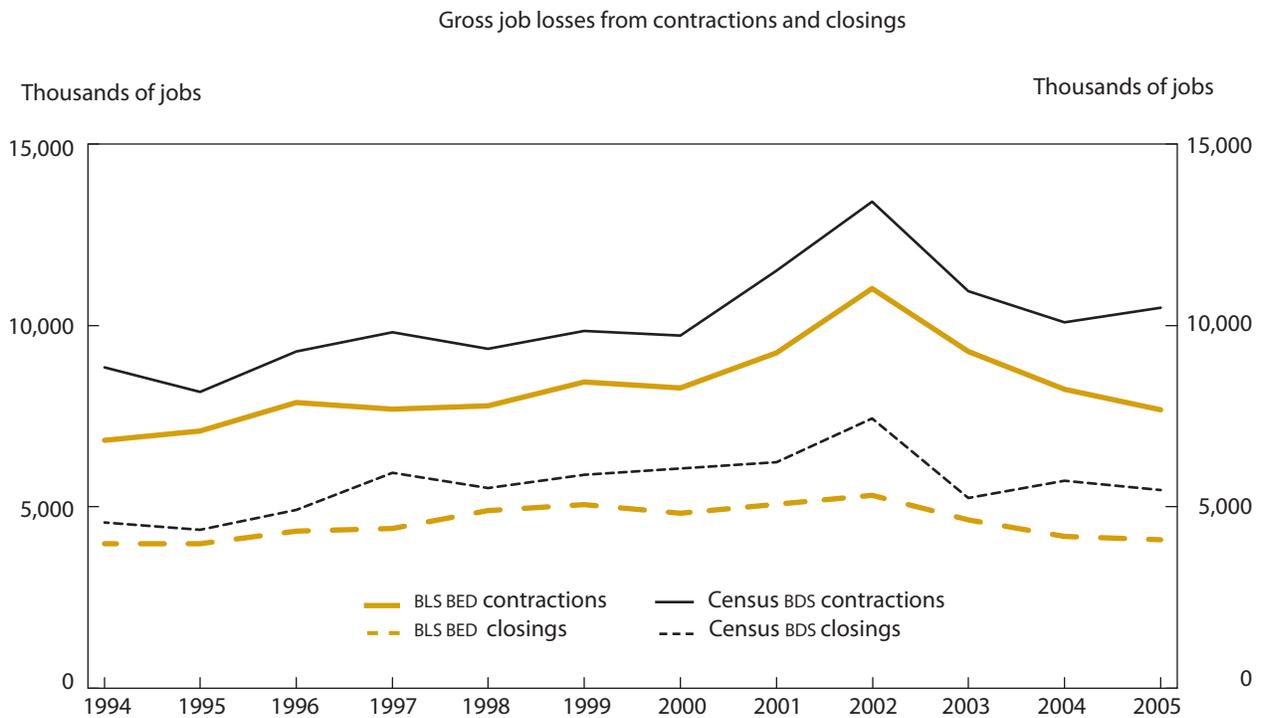
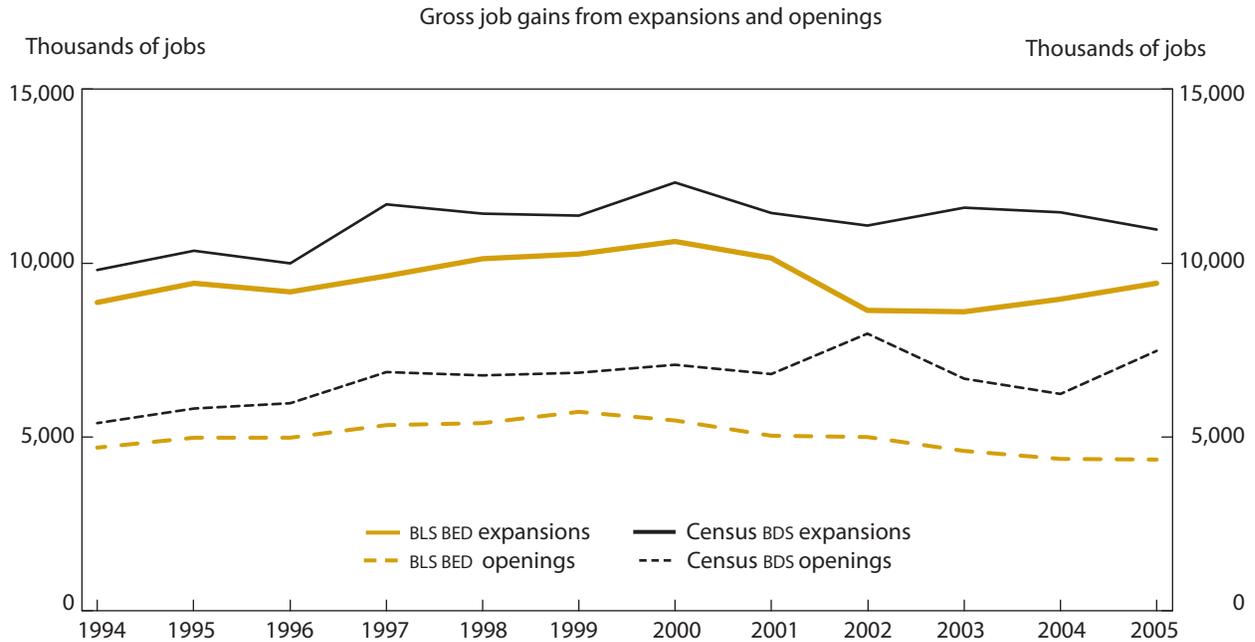
A second explanation for the higher levels of gross job gains and gross job losses in the BDS statistics relative to the BED statistics might be the failure to properly link data. As noted previously, analysis of the BED statistics has shown that gross job gain and loss data that do not take account of linkage information within the year lead to levels of gross job gains and losses that are about 10 percent higher. However, this hypothesis of missing links suggests that almost all of the difference between the BDS and the BED statistics should be in the openings and closings data, with only a small difference in the expansions

**Chart 6. BLS BED and Census BDS annual first quarter-to-first quarter series, 1994–2005, not seasonally adjusted**



SOURCES: Data are from the U.S. Census Bureau's Business Dynamics Statistics (BDS) program and the U.S. Bureau of Labor Statistics' Business Employment Dynamics (BED) program.

**Chart 7. BLS BED and Census BDS annual first quarter-to-first quarter series, 1994–2005, not seasonally adjusted**



SOURCES: Data are from the U.S. Census Bureau's Business Dynamics Statistics (BDS) program and the U.S. Bureau of Labor Statistics' Business Employment Dynamics (BED) program.

and contractions data. As will be shown later, this is not the case.

A third possible explanation for the difference in magnitudes is fundamental differences in the underlying source data. It could be that the QCEW microdata used to create the BED statistics have less year-to-year establishment-level employment variation than do the underlying cross-sectional microdata used to create the BDS statistics. Other than linking the BED and BDS microdata and comparing employment changes for matched establishments, there does not appear to be any simple way to evaluate the validity of the hypothesis of differences in the underlying source data.

Several other facts about the BED and BDS data in chart 6 are also apparent in the graphs. Looking at the time series, one can see that both the BED and the BDS data show a dramatic temporary increase in gross job losses in the first quarter 2001 to first quarter 2002 period. However, only the BED data show a decrease in gross job gains in the first quarter 2001 to first quarter 2002 period. This difference is important. Much of our knowledge of the labor market dynamics during the 2001 recession comes from quarterly BED data—the net employment decline during the 2001 recession is characterized by rising gross job losses and falling gross job gains. The annual first quarter-to-first quarter BED data show the same labor market dynamics as the quarterly BED data, albeit with an annual rather than quarterly reference period that makes it difficult to interpret short-run employment changes. (The 2001 recession was only 8 months in duration, as dated by the National Bureau of Economic Research.) However, trying to understand the 2001 recession using only the BDS data would miss the employment losses attributable to falling gross job gains.

Chart 7 explores the components of the BED and BDS gross job gain and gross job loss data. The first graph shows the employment gains from expansions and openings, and the second graph shows the employment losses from contractions and closings.<sup>11</sup> One can see that the BDS data on gross job gains from expansions and on gross job gains from openings are greater in magnitude than the corresponding BED data. One can also see that the BDS data on gross job losses from contractions and on gross job losses from closings are greater in magnitude than the corresponding BED data.

The most interesting difference between the BED and the BDS data in chart 7 is evident in the 2002 values for jobs gained from openings and jobs lost from closings. The BDS statistics for both have an upward blip in trend in this year. The number of jobs created from establishment openings according to the BDS statistics is 6.8 million in 2001, 8.0 million in 2002, and 6.7 million in 2003. The equivalent BED numbers are 5.0 million in 2001, 5.0 million in 2002, and 4.6 million in 2003. One possibility is that this difference in trend results from the processing of the 2002 quinquennial Economic Census.

QUARTERLY BUSINESS EMPLOYMENT DYNAMICS STATISTICS were initially released in 2003, and the BED program has expanded ever since. The program released industry statistics in 2004, size-class statistics in 2005, State statistics in 2007, size-of-employment-change statistics in 2008, birth and death statistics in 2009, and annual statistics in 2009. Annual statistics respond to needs of BED customers, and they also enhance people's understanding of labor market dynamics. This article has described how annual BED statistics are created, how they compare with quarterly BED statistics, and how they compare with the U.S. Census Bureau's BDS statistics. □

## NOTES

<sup>1</sup> This endnote summarizes the data sources and flows underlying the QCEW data. All employers subject to State unemployment insurance laws are required to submit quarterly contribution reports detailing their level of employment by month and wages by quarter to the State employment security agencies. The raw data require substantial editing and review. In addition, BLS directs the States to conduct two supplemental surveys that are necessary to yield accurate data at the local level. The first is the Annual Refiling Survey, for which the States contact nearly 2 million businesses each year to obtain or update business names, addresses, industry codes, and related contact information. The second survey is the Multiple Worksite Report, which collects employment and wage information for each establishment in multiunit firms within the State. The Multiple Worksite Report covers about 110,000 businesses (1.4 percent of all firms, 16 percent of all establishments, and 39 percent of employment) each quarter, allowing for the matching of employment and wage data with

the correct county and industry. After the raw data are augmented by the data from the Annual Refiling Survey and Multiple Worksite Report and are then thoroughly edited by the State Labor Market Information staff, the States submit these data and other business identification information to BLS as part of the QCEW program.

<sup>2</sup> For more detail on the construction of the BED data, see James R. Spletzer, R. Jason Faberman, Akbar Sadeghi, David M. Talan, and Richard L. Clayton, "Business employment dynamics: new data on gross job gains and losses," *Monthly Labor Review*, April 2004, pp. 29–42.

<sup>3</sup> For more detail on the definitions of establishment births and establishment deaths, see Akbar Sadeghi, "The births and deaths of business establishments in the United States," *Monthly Labor Review*, December 2008, pp. 3–18. BED

birth and death statistics are available at the BED website at [www.bls.gov/bdm](http://www.bls.gov/bdm) (visited May 21, 2009).

<sup>4</sup> Three research papers document this finding. First, see Joshua C. Pinkston and James R. Spletzer, "Annual Measures of Job Creation and Job Destruction Created from Quarterly Microdata," *American Statistical Association 2002 Proceedings of the Section on Business and Economic Statistics*, pp. 3311–16. Second, see Joshua C. Pinkston and James R. Spletzer, "Annual measures of gross job gains and gross job losses," *Monthly Labor Review*, November 2004, pp. 3–13. And third, see Sadeghi, "The births and deaths of business establishments."

<sup>5</sup> For a more complete discussion of the differences between an annual statistic and the sum of four quarterly statistics, see Pinkston and Spletzer, "Annual measures of gross job gains and gross job losses."

<sup>6</sup> The authors acknowledge and appreciate the comments of Ron Jarmin and Javier Miranda of the U.S. Census Bureau, who reviewed a prepublication draft of this article.

<sup>7</sup> The press release from the U.S. Census Bureau announcing the BDS data series can be found at [www.census.gov/Press-Release/www/releases/archives/employment\\_occupations/013012.html](http://www.census.gov/Press-Release/www/releases/archives/employment_occupations/013012.html) (visited April 2, 2009).

<sup>8</sup> This quote is from [www.ces.census.gov/index.php/bds/bds\\_overview#\\_](http://www.ces.census.gov/index.php/bds/bds_overview#_)

**Concepts\_and\_Methodology** (visited April 2, 2009). Note that the BDS program uses the terms "gross job gains" and "gross job losses" in its technical documentation, yet it uses the terms "job creation" and "job destruction" in its downloadable database. This article uses the terms "gross job gains" and "gross job losses" when comparing BED data with BDS data.

<sup>9</sup> The two series have strengths and weaknesses relative to each other. Users who want data that are more current will need to use the BED data, whereas users who want a time series dating back to the 1970s will need to use the BDS data.

<sup>10</sup> In the BDS database, the level of employment for the second quarter of 1998 is 106.6 million jobs. This is 4.4 million higher than the BED level of employment for the second quarter of 1998 (as published in Pinkston and Spletzer, "Annual measures of gross job gains and gross job losses"). The BDS level of employment is consistently higher than the BED level, and the difference grows over the 1998–2002 period; the difference is 6.4 million in the first quarter of 2002.

<sup>11</sup> The BDS program's technical documentation focuses on the terms openings and closings, whereas the downloadable BDS database uses the terms "entries" and "exits" as well as births and deaths. This article uses the terms openings and closings.