Why size class methodology matters in analyses of net and gross job flows

Net and gross job flow statistics by size class are produced with data from the Business Employment Dynamics program; alternative methodologies for defining size classes yield sharply different pictures of employment growth

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One of the most interesting and often asked questions in empirical economics is whether small businesses create the most jobs. Answering this question requires longitudinal establishment microdata and is an ideal application for the new Business Employment Dynamics data series produced by the Bureau of Labor Statistics. Although it is often argued that small businesses are the fountainhead of job creation and the engine of economic growth, this view is not universally accepted, largely because of differences in the methodology used to construct net and gross job flow statistics. Using different methodologies, this article calculates net and gross job flow statistics by size class, with the aim of showing how alternative methodologies can produce sharply different portraits of employment growth.

Methodology issues

Three methodology issues influence the calculation and interpretation of business employment dynamic statistics by size class: (1) how establishments should be classified into size classes in the construction of net and gross job flow statistics, (2) the appropriate measure to use in the denominator in the calculation of net and gross job flow rates, and (3) whether there are differences in the statistics if the establishment or the firm is the unit of analysis.[1]

Defining size classes. With cross-sectional microdata, defining size classes for establishments is straightforward. For example, an establishment with 3 employees is classified into the category "1 to 4 employees," and an establishment with 11 employees is classified into the category "10 to 19 employees." By contrast, defining size classes with longitudinal microdata is more difficult. For instance, if an establishment grows from 3 employees in the previous quarter to 11 employees in the current quarter, in which size category does it belong?

In the gross job flows literature, there are three methodologies for defining size classes: (1) in *base sizing*, establishments are classified into size categories on the basis of their size in the previous quarter; (2) in *end sizing*, establishments are classified into size categories on the basis of their size in the current quarter; and (3) in *mean sizing*, establishments are classified into size categories on the basis of their average size during the previous and current quarters. In the earlier example in which an establishment grows from 3 employees in the previous quarter to 11 employees in the current quarter, the base-sizing methodology would classify that establishment into the "1 to 4 employees" category, whereas the end-sizing methodology would classify it into the "10 to 19 employees" category. The mean-sizing methodology would classify the establishment into the "5 to 9 employees" category, because the average size during the two quarters is 7 (3 + 11, divided by 2).

The methodology of classifying establishments into size categories can have large effects on business employment dynamics sta-

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tistics. For establishments that are growing and that move from one size class category to another, base sizing results in statistics which indicate that employment growth is coming from smaller establishments, whereas end sizing results in statistics which indicate that employment growth is coming from larger establishments. Similarly, for establishments that are contracting and that move from one size class category to another, base sizing results in statistics which indicate that employment decline is coming from larger establishments, whereas end sizing results in statistics which indicate that employment decline is coming from smaller establishments. Economists refer to this statistical phenomenon as the "regression fallacy" or "regression-to-the-mean" bias.[2]

Calculating rates. Another methodological issue is the question of how to compute rates of net and gross job flows. That is, should previous-quarter employment, current-quarter employment, or an average of the two be used in the denominator of the rate? An example will help illustrate the difference between the methods. Suppose employment increases from 1 to 2 and then declines back to 1. A conventional growth rate that uses previous-quarter employment in the denominator would yield a 100-percent increase followed by a 50-percent decrease. Even though the employment changes in levels sum to zero (a one-employee increase followed by a one-employee decrease), the percentages do not sum to zero. In fact, using previous-quarter employment in the denominator results in the sum of the percentages being greater than zero; the sum would be less than zero if current-quarter employment were used in the denominator. In contrast, if average employment were used in the denominator, the growth rate in this example would be a 67-percent increase [(2 – 1)/1.5 = 0.67] followed by a 67-percent decrease. The example illustrates the fact that using average employment in the denominator results in rates that are equal in magnitude, but opposite in sign. (That is, the rates are symmetric.)

Unit of analysis: establishment or firm? An *establishment* is typically defined as an economic unit, such as a factory or store, that produces goods or provides services. An establishment is usually a physical location and is engaged in one, or predominantly one, type of economic activity. In contrast, a firm is defined as an aggregation of establishments under common ownership by a corporate parent. Establishment- and firm-level data will be identical for firms composed of a single legal entity and thus operating a single establishment. However, the size class distribution of employment differs at the establishment level compared with the firm level, because defining employment for a multiestablishment firm involves aggregating multiple establishments into a single larger firm. The methodological question raised in this article is whether there is a difference in net and gross job flow statistics if the establishment or the firm is used as the unit of analysis. Job flows should be less when the firm is the unit of analysis, because gains and losses of different establishments within a multiestablishment firm can offset each other.

Data and definitions

In what follows, net and gross job flows are computed under all of the various combinations of methodologies. Net and gross job flow statistics are calculated for establishments classified into size categories based on base sizing, mean sizing, and end sizing. The statistics are presented as levels and also as rates, with three possible denominators: previous-quarter employment, mean employment, and current-quarter employment. Also calculated in the article are net and gross job flow statistics at both the establishment level and the firm level.

The analysis uses data from the BLS Business Employment Dynamics program to calculate the net and gross job flow statistics. The new Business Employment Dynamics program is an extension of the Quarterly Census of Employment and Wages (QCEW) program. The data gathered in the QCEW program are a comprehensive and accurate source of employment and wages, and provide a virtual census (98 percent) of employees on nonfarm payrolls. The QCEW data are derived from quarterly Unemployment Insurance (UI) administrative microdata that all employers subject to State UI laws are required to submit. The establishment-level microdata in the QCEW program are then linked across time to create a longitudinal data set that can be used to measure establishment openings, expansions, contractions, and closings on a quarterly basis for the entire U.S. economy. This longitudinal establishment-level microdata is the foundation for the BLS Business Employment Dynamics program. The net and gross job flow statistics produced from the program are calculated from existing QCEW microdata without additional data collection efforts or additional respondent burden.[3]

Before discussing the results of the size class analysis, it is important to provide definitions of several terms that are used in discussing job flow estimates. *Establishment* estimates are estimates generated at the UI reporting-unit level, whereas *firm* estimates are estimates generated at the employer identification number level. Employer identification numbers are assigned to employers by the Internal Revenue Service to identify legal taxpaying business entities. In general, a firm operating in multiple States will have a separate UI account for each State, but will have one employer identification number covering all of its establishments across the Nation.

Gross job gains are defined as the summation of employment gains from expanding establishments and opening establishments. *Gross job losses* are defined as the summation of employment losses from contracting establishments and closing establishments. *Net employment growth* is the difference between gross job gains and gross job losses and is also the difference between employment levels in the current and previous quarters.

The statistics presented in this article use employment for the first and second quarters of 2000 and are not seasonally adjusted. Employment for the quarter is measured for the pay period that includes the 12th for the final month of the quarter. To be consistent with the scope of the establishments included in the Business Employment Dynamics program publications, private household workers, establishments in the public sector, and establishments located in Puerto Rico or the Virgin Islands are excluded from the analysis in this article. The aggregate net and gross job flow statistics presented herein replicate the official statistics (not seasonally adjusted) from the BLS Business Employment Dynamics program.

Before turning to the analysis, one caveat should be made perfectly clear. The empirical work presented in this article uses one quarter of longitudinal establishment microdata (employment growth from March 2000 to June 2000) to analyze how net and gross job flows are affected by various methodologies. It is not clear how methodology effects might interact with seasonality and cyclicality effects; thus, using *different* quarters of microdata may change the methodological and economic conclusions the article reaches.

Results: net employment change

Establishment-level net employment growth. Table 1 reports net employment growth statistics at the establishment level, calculated under the three alternative measures of employer size and the three alternative methods of calculating rates. The top third of the table uses the base-size method for categorizing establishments into size classes, the middle third uses the mean-size method, and the bottom third uses the end-size classification method. The three columns reporting net employment growth as rates rather than levels use previous-quarter, mean-quarter, and current-quarter employment in the denominator.[4]

The first observation of note from the table is that the method used to classify establishments into size classes has substantial effects on the measurement of net employment growth. The base-size statistics in the top third of the table and the end-size statistics in the bottom third provide different pictures of employment growth by size class, particularly for the smallest establishments. For example, for the smallest size category, 1 to 4 employees, the base-size statistic shows a net gain of more than 1 million jobs, whereas the end-size statistic indicates a net loss of more than 300,000 jobs.

The base-size and end-size statistics for the largest establishments also differ. For example, the base-size statistic shows that establishments with 500 to 999 employees had a net loss of 5,982 jobs, whereas the end-size statistic reveals a net gain of 285,743 jobs. Similarly, the base-size statistic indicates that establishments with 1,000 or more employees created 29,615 net jobs, in contrast to the end-size statistic, which shows that such establishments created 342,036 net jobs.

Clearly, the base-size and end-size statistics present sharply different portraits of net employment growth. These divergent outcomes are consistent with regression-to-the-mean effects: the base-size statistics indicate that the smallest establishments have substantial net job gains, while the end-size statistics indicate that the smallest establishments have sizable net job losses. The mean-size statistics in the middle of table 1 show a net employment growth profile that is between the base-size and the end-size profiles. The profile of net employment growth, by size class and for alternative methodologies, is graphed in chart 1.

With regard to the rates, the statistics given in table 1 show that the three different methods of calculating rates lead to only slight differences in the magnitude of net employment growth. For example, the middle third of the table shows that the net growth rate of establishments with 1 to 4 employees is 6.4 percent with previous-quarter employment in the denominator, 6.2 percent with mean employment in the denominator, and 6.0 percent with current-quarter employment in the denominator. For the largest size categories, the three methodologies result in a difference of only one-tenth of one percentage point in the net employment growth rates. Relative to the differences resulting from alternative size classification methodologies, using alternative employment measures in the denominator of the net employment change rate calculations has small effects regarding how net employment growth is measured.

Calculated under mean sizing and with mean-quarter employment in the denominator, the net employment growth rates are monotonically declining with size. Establishments with 1 to 4 employees have a net growth rate of 6.2 percent, and establishments with 1,000 or more employees have a 1.5-percent net growth rate. Thus, during the period from March 2000 to June 2000, smaller establishments have a higher net growth rate than larger establishments have. In addition to the caveat that this finding may not hold for other quarters,[5] it is important to keep in mind the distinction between rates and levels. The levels implied by a small percentage of a large base could exceed the levels implied by a large percentage of a small base. For example, for establishments with 100 to 249 employees, a 2.2-percent net growth rate results in 401,843 new jobs, whereas, for establishments with 5 to 9 employees,

Table 1. Establishment-level net employment growth, by size class, March 2000 to June 2000

Number of employees	Employment			Net employment growth		
	March 2000	June 2000	Change	Percent[1]	Percent[2]	Percent[3]
Base size class:						
Total	107,672,227	111,115,514	3,443,287	3.2	3.2	3.1
1 to 4	6,416,104	7,492,719	1,076,615	16.8	15.5	14.4
5 to 9	8,536,938	9,096,884	559,946	6.6	6.4	6.2
10 to 19	11,435,844	11,989,228	553,384	4.8	4.7	4.6
20 to 49	17,852,421	18,493,078	640,657	3.6	3.5	3.5
50 to 99	14,204,271	14,540,138	335,867	2.4	2.3	2.3
100 to 249	17,888,617	18,118,502	229,885	1.3	1.3	1.3
250 to 499	10,685,404	10,708,704	23,300	.2	.2	.2
500 to 999	7, 962,572	7,956,590	–5,982	–.1	–.1	–.1
1,000 or more	12,690,056	12,719,671	29,615	.2	.2	.2
Mean size class:						
Total	107,672,227	111,115,514	3,443,287	3.2	3.2	3.1
1 to 4	6,195,311	6,589,831	394,520	6.4	6.2	6.0
5 to 9	8,538,574	8,936,083	397,509	4.7	4.6	4.4
10 to 19	11,494,948	11,997,377	502,429	4.4	4.3	4.2
20 to 49	17,937,339	18,631,953	694,614	3.9	3.8	3.7
50 to 99	14,275,241	14,760,229	484,988	3.4	3.3	3.3
100 to 249	17,963,618	18,365,461	401,843	2.2	2.2	2.2
250 to 499	10,643,839	10,884,222	240,383	2.3	2.2	2.2
500 to 999	7, 947,198	8,077,217	130,019	1.6	1.6	1.6
1,000 or more	12,676,159	12,873,141	196,982	1.6	1.5	1.5
End size class:						
Total	107,672,227	111,115,514	3,443,287	3.2	3.2	3.1
1 to 4	6,783,156	6,473,174	–309,982	–4.6	–4.7	–4.8
5 to 9	8,475,384	8,726,219	250,835	2.9	2.9	2.9
10 to 19	11,345,563	11,788,778	443,215	3.9	3.8	3.8
20 to 49	17,776,005	18,542,280	766,275	4.3	4.2	4.1
50 to 99	14,180,981	14,792,541	611,560	4.3	4.2	4.1
100 to 249	17,869,045	18,546,738	677,693	3.8	3.7	3.7
250 to 499	10,614,761	10,990,673	375,912	3.5	3.5	3.4
500 to 999	7, 929,750	8,215,493	285,743	3.6	3.5	3.5
1,000 or more	12,697,582	13,039,618	342,036	2.7	2.7	2.6

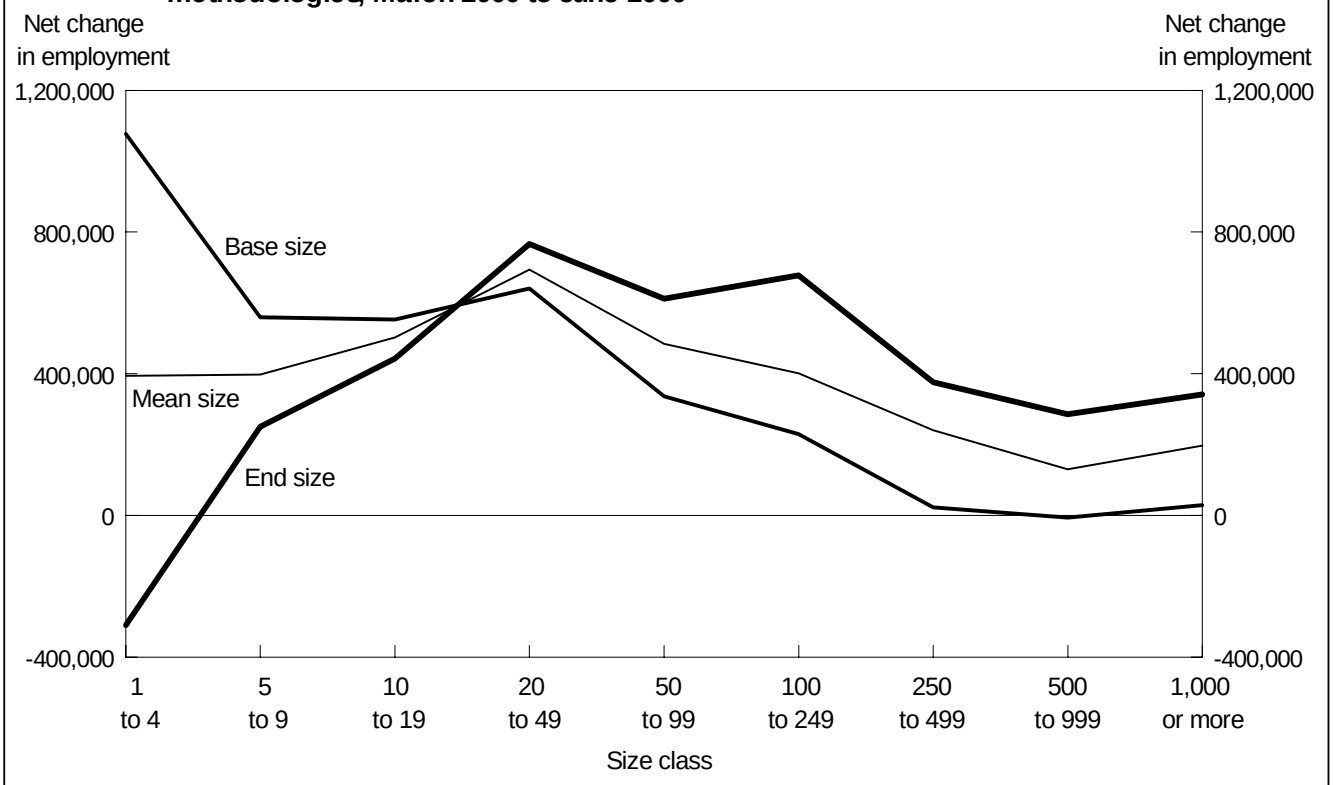
[1] Calculated with previous-quarter employment in the denominator.
[2] Calculated with mean-quarter employment in the denominator.
[3] Calculated with current-quarter employment in the denominator.

a 4.6-percent growth rate produces 397,509 new jobs.

Firm-level net employment growth. Table 2 reports net employment growth statistics at the firm level, calculated under the three alternative measures of employer size and the three alternative methods of calculating rates. The main results regarding how alternative methodologies affect calculations of the net employment growth of establishments also hold for calculations of the net employment growth of firms. Specifically, the method used to classify firms into size classes has substantial effects on net employment growth statistics, and the method used to calculate rates has relatively small effects. For the smallest establishments and the smallest firms, the base-size and end-size net growth statistics differ systematically in both magnitude and sign. The base-size and end-size estimates for the largest establishments and the largest firms also yield different results with respect to the magnitude of net job gains attributable to these businesses.

As mentioned earlier, the employment distributions differ for establishments as opposed to firms. For example, in June 2000, establishments with 1,000 or more employees accounted for slightly more than 13 million employees, whereas firms with 1,000 or more employees accounted for more than 41 million employees. In terms of percentages, 12 percent of jobs were in establishments with 1,000 or more employees, whereas 37 percent of jobs were in firms with 1,000 or more employees. Could this difference in the distribution of employment by size class affect the net employment growth statistics? Using the statistics from the mean-size methodology of classifying establishments and firms into size categories, chart 2 graphs the net employment growth by size class for establishments and for firms. The chart shows that, for most size categories, net job growth measured at the establishment level is somewhat higher than net job growth measured at the firm level. However, these small differences may be accounted for in the largest firm size category; that is, firms with 1,000 or more employees grew by 529,759 jobs, whereas establishments with 1,000 or more employees grew

Chart 1. **Establishment-level net employment growth, by size class, using alternative size class methodologies, March 2000 to June 2000**



by 196,982 jobs. The obvious conclusion, based upon chart 2, is that using the establishment, rather than the firm, as the unit of analysis does affect how we interpret the net employment growth attributable to small businesses compared with that of large businesses.

Results: gross job flows

Establishment-level gross job flows. The statistics in tables 1 and 2 report how employment grew from March 2000 to June 2000. This change in employment is the net result of the millions of business establishments in the U.S. economy changing their specific employment levels. Statistics on gross job gains and gross job losses decompose the net establishment growth statistic in such a way that one can observe the underlying dynamics resulting from establishment openings and expansions, as opposed to that stemming from establishment contractions and closings.

Establishment-level gross job flow statistics are reported in table 3. Similar to tables 1 and 2, table 3 reports gross job gains and gross job losses with the use of the base-size method, the mean-size method, and the end-size method for classifying establishments into size classes. All percentages reported in table 3 use mean-quarter employment in the denominator.

One immediate conclusion from the table is that the magnitude of the gross job flow statistics is substantially larger than that of the net employment growth statistics. The net employment change of 3,443,287 jobs between March 2000 and June 2000 is the result of gross gains of 10,306,902 jobs in expanding and opening establishments and gross losses of 6,863,615 jobs in contracting and closing establishments. Expressed in percentages, the net employment growth rate of 3.2 percent (rounded) is the difference of the gross job gain rate of 9.4 percent and the gross job loss rate of 6.3 percent. The relatively large gross job flow statistics indicate a substantial amount of "churning" underlying net employment growth.[6]

By definition, because the sum of gross job gains and gross job losses equals net employment growth, the substantial effects of alternative size classification methodologies on the net employment growth statistics also will affect the gross job gain and loss statistics. The gross job gains for the smallest establishments are almost twice as high when calculated with the base-size methodology (1.7 million) as when calculated with the end-size methodology (911,000). Similarly, the gross job losses for the smallest establishments are almost twice as high when calculated with the end-size methodology (1.2 million) as

Table 2. Firm-level net employment growth, by size class, March 2000 to June 2000

Number of employees	Employment			Net employment growth		
	March 2000	June 2000	Change	Percent[1]	Percent[2]	Percent[3]
Base size class:						
Total	107,672,227	111,115,514	3,443,287	3.2	3.2	3.1
1 to 4	5,298,827	6,199,132	900,305	17.0	15.7	14.5
5 to 9	6,446,111	6,912,377	466,266	7.2	7.0	6.7
10 to 19	8,048,243	8,512,151	463,908	5.8	5.6	5.4
20 to 49	11,670,622	12,215,929	545,307	4.7	4.6	4.5
50 to 99	8,926,325	9,218,794	292,469	3.3	3.2	3.2
100 to 249	11,274,986	11,537,905	262,919	2.3	2.3	2.3
250 to 499	7,955,188	8,050,794	95,606	1.2	1.2	1.2
500 to 999	7,536,968	7,596,981	60,013	.8	.8	.8
1,000 or more	40,514,957	40,871,451	356,494	.9	.9	.9
Mean size class:						
Total	107,672,227	111,115,514	3,443,287	3.2	3.2	3.1
1 to 4	5,097,751	5,469,221	371,470	7.3	7.0	6.8
5 to 9	6,448,735	6,822,652	373,917	5.8	5.6	5.5
10 to 19	8,081,625	8,522,480	440,855	5.5	5.3	5.2
20 to 49	11,722,143	12,314,797	592,654	5.1	4.9	4.8
50 to 99	8,954,323	9,359,883	405,560	4.5	4.4	4.3
100 to 249	11,346,789	11,724,154	377,365	3.3	3.3	3.2
250 to 499	7,936,870	8,121,182	184,312	2.3	2.3	2.3
500 to 999	7,556,513	7,723,908	167,395	2.2	2.2	2.2
1,000 or more	40,527,478	41,057,237	529,759	1.3	1.3	1.3
End size class:						
Total	107,672,227	111,115,514	3,443,287	3.2	3.2	3.1
1 to 4	5,541,802	5,349,199	–192,603	–3.5	–3.5	–3.6
5 to 9	6,345,319	6,640,041	294,722	4.6	4.5	4.4
10 to 19	7,923,764	8,377,792	454,028	5.7	5.6	5.4
20 to 49	11,634,857	12,301,435	666,578	5.7	5.6	5.4
50 to 99	8,921,007	9,397,704	476,697	5.3	5.2	5.1
100 to 249	11,362,907	11,859,807	496,900	4.4	4.3	4.2
250 to 499	7,906,094	8,185,199	279,105	3.5	3.5	3.4
500 to 999	7,517,396	7,760,933	243,537	3.2	3.2	3.1
1,000 or more	40,519,081	41,243,404	724,323	1.8	1.8	1.8

[1] Calculated with previous-quarter employment in the denominator.

[2] Calculated with mean-quarter employment in the denominator.

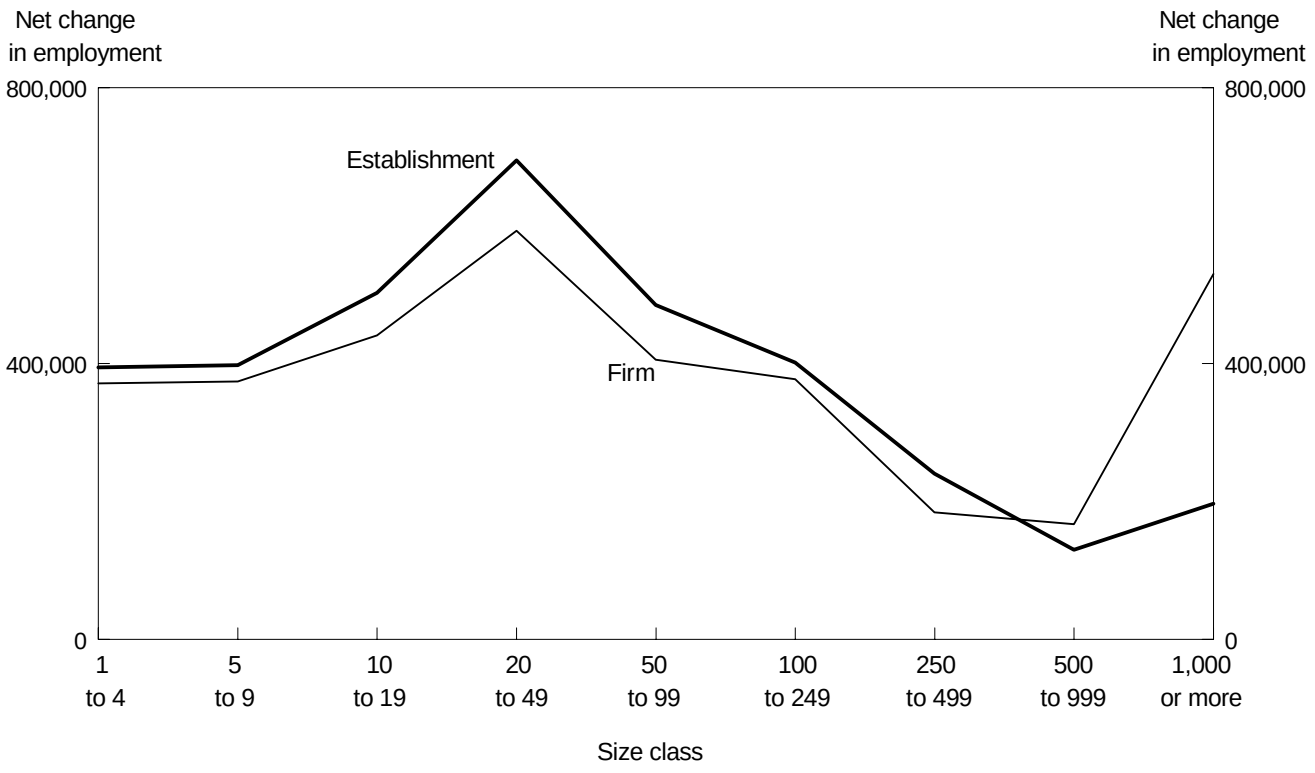
[3] Calculated with current-quarter employment in the denominator.

when calculated with the base-size methodology (668,000). These differences in both the gross job gain and the gross job loss statistics resulting from different size classification methodologies help explain why alternative methodologies have such a substantial effect on the net employment growth statistics for the smallest establishments (a gain of 1,076,615 jobs compared with a loss of 309,982 jobs). For all size classes, the mean-size methodology shows gross job flows that are between the base-size and end-size flows.

The gross job gain and gross job loss statistics by size class, computed under different methodologies, are depicted in charts 3 and 4**.** The base-size and end-size statistics show sharply different pictures of gross job flows by size class and emphasize how important differences in methodology are in examining longitudinal employment statistics. The high net employment growth of the smallest establishments computed under base sizing is the net result of both higher gross job gains and lower gross job losses relative to gross job flow statistics computed under alternative methodologies.

One additional finding in table 3 warrants mention: the gross job gain rates and the gross job loss rates both monotonically decline with employer size, regardless of the method used to categorize employers by size class. This means that small establishments gain and lose jobs at a much higher rate than do large establishments. However, caution is advised when these statistics are used to discuss job creation. First, finding that small establishments have a higher gross job gain rate than large establishments have is not equivalent to affirming that small establishments have more gross job gains. For example, from the mean size class portion of table 3, establishments with 1 to 4 employees have a gross job gain rate of 20.9 percent, and establishments with 10 to 19 employees have a gross job gain rate of 12.4 percent. But establishments with 1 to 4 employees have gross job gains of 1.335 million jobs, while establishments with 10 to 19 employees have

Chart 2. **Establishment- and firm-level net employment growth, using mean-size methodology, March 2000 to June 2000**



gross job gains of 1.453 million jobs. Second, it is important to keep in mind the distinction between gross job gains and net job gains, because, although small establishments have a high gross job gain rate, they also have a high gross job loss rate.

Firm-level gross job flows. Firm-level gross job flow statistics are reported in table 4. Although many of the conclusions about net and gross job flows at the firm level are qualitatively similar to the conclusions from the analysis of establishment-level statistics, one quantitative difference warrants mention. As noted earlier, a comparison of the statistics produced by the mean size class calculations in tables 3 and 4 shows that the net employment growth of the largest employers (with 1,000 or more employees) varies with whether establishments or firms are the unit of analysis (196,982 net jobs, compared with 529,759 net jobs). The number of gross jobs gained and gross jobs lost by the largest employers also varies as a function of whether the establishment or the firm is the unit of analysis. Establishments with 1,000 or more employees had 510,331 gross job gains, whereas firms with 1,000 or more employees had 1,374,207 gross job gains. As reflected in the relative similarity of the gross job gain rates, this difference between the establishment-level gross job flows and the firm-level gross job flows is attributable to the difference in the distribution of employment in establishments as opposed to firms.

USING MICRODATA FROM THE NEW BLS BUSINESS EMPLOYMENT DYNAMICS PROGRAM, this article has reviewed some of the core methodological issues involved in estimating net and gross job flows by size class. Some significant findings from the review are as follows: (1) base-sizing and end-sizing methods produce systematically different pictures of job flows, particularly for the smallest employers; (2) the measure used in the denominator to calculate job flow rates has relatively small effects on the net employment growth statistics; and (3) the contribution of large employers to net employment growth depends upon whether the unit of analysis is the establishment or the firm.

Table 3. Establishment-level gross job flows, by size class, March 2000 to June 2000

Number of employees	Level			Percent		
	Net employment growth	Gross job gains	Gross job losses	Net employment growth[1]	Gross job gains[1]	Gross job losses[1]
Base size class:						
Total	3,443,287	10,306,902	6,863,615	3.2	9.4	6.3
1 to 4	1,076,615	1,744,771	668,156	15.5	25.1	9.6
5 to 9	559,946	1,355,212	795,266	6.4	15.4	9.0
10 to 19	553,384	1,490,750	937,366	4.7	12.7	8.0
20 to 49	640,657	1,890,515	1,249,858	3.5	10.4	6.9
50 to 99	335,867	1,199,079	863,212	2.3	8.3	6.0
100 to 249	229,885	1,229,324	999,439	1.3	6.8	5.6
250 to 499	23,300	604,134	580,834	.2	5.7	5.4
500 to 999	–5,982	361,229	367,211	–.1	4.5	4.6
1,000 or more	29,615	431,888	402,273	.2	3.4	3.2
Mean size class:						
Total	3,443,287	10,306,902	6,863,615	3.2	9.4	6.3
1 to 4	394,520	1,335,401	940,881	6.2	20.9	14.7
5 to 9	397,509	1,280,702	883,193	4.6	14.7	10.1
10 to 19	502,429	1,453,232	950,803	4.3	12.4	8.1
20 to 49	694,614	1,920,906	1,226,292	3.8	10.5	6.7
50 to 99	484,988	1,315,253	830,265	3.3	9.1	5.7
100 to 249	401,843	1,342,194	940,351	2.2	7.4	5.2
250 to 499	240,383	710,309	469,926	2.2	6.6	4.4
500 to 999	130,019	438,574	308,555	1.6	5.5	3.9
1,000 or more	196,982	510,331	313,349	1.5	4.0	2.5
End size class:						
Total	3,443,287	10,306,902	6,863,615	3.2	9.4	6.3
1 to 4	–309,982	911,039	1,221,021	–4.7	13.8	18.4
5 to 9	250,835	1,147,300	896,465	2.9	13.3	10.4
10 to 19	443,215	1,411,638	968,423	3.8	12.2	8.4
20 to 49	766,275	1,968,567	1,202,292	4.2	10.8	6.6
50 to 99	611,560	1,386,546	774,986	4.2	9.6	5.4
100 to 249	677,693	1,506,673	828,980	3.7	8.3	4.6
250 to 499	375,912	801,911	425,999	3.5	7.4	3.9
500 to 999	285,743	544,439	258,696	3.5	6.7	3.2
1,000 or more	342,036	628,789	286,753	2.7	4.9	2.2

[1] Calculated with mean-quarter employment in the denominator.

The BLS Business Employment Dynamics program is dedicated to the development and publication of a wide variety of measures that reveal the underlying movements in business and employment. As a part of the extension of this work, the Bureau plans to release a research or development series of historical size class data in the fall of 2004, using the three alternative sizing methods described in this article. The publication of this series is intended to stimulate a review of the issues, methods, and concepts behind measuring employment change by size. The Bureau will be soliciting comments from the user community prior to introducing a formal publication-ready series of size class data. □

Chart 3. **Establishment-level gross job gains, by size class, using alternative size class methodologies, March 2000 to June 2000**

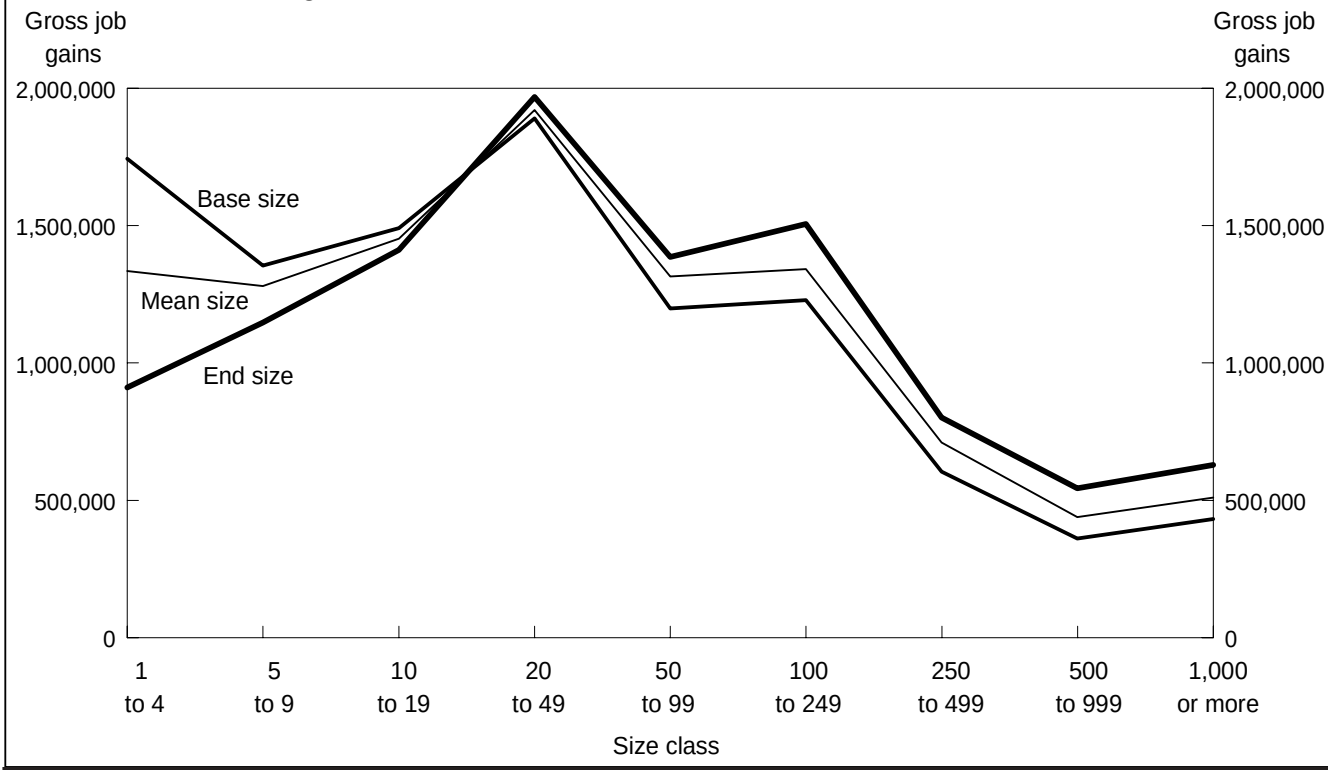


Chart 4. **Establishment-level gross job losses, by size class, using alternative size class methodologies, March 2000 to June 2000**

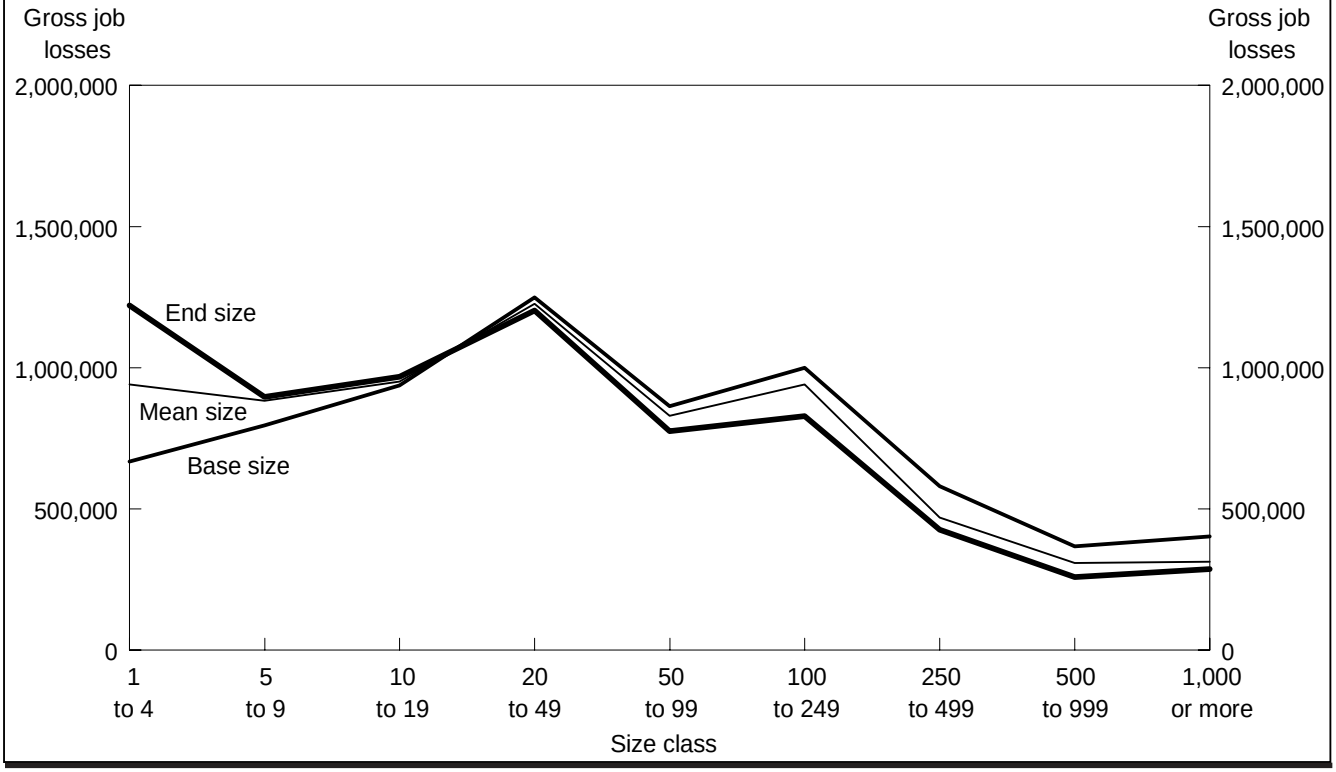


Table 4. Firm-level gross job flows, by size class, March 2000 to June 2000

Number of employees	Level			Percent		
	Net employment growth	Gross job gains	Gross job losses	Net employment growth[1]	Gross job gains[1]	Gross job losses[1]
Base size class						
Total	3,443,287	8,790,144	5,346,857	3.2	8.0	4.9
1 to 4	900,305	1,444,044	543,739	15.7	25.1	9.5
5 to 9	466,266	1,076,583	610,317	7.0	16.1	9.1
10 to 19	463,908	1,122,870	658,962	5.6	13.6	8.0
20 to 49	545,307	1,348,045	802,738	4.6	11.3	6.7
50 to 99	292,469	819,127	526,658	3.2	9.0	5.8
100 to 249	262,919	835,774	572,855	2.3	7.3	5.0
250 to 499	95,606	481,083	385,477	1.2	6.0	4.8
500 to 999	60,013	374,043	314,030	.8	4.9	4.2
1,000 or more	356,494	1,288,575	932,081	.9	3.2	2.3
Mean size class:						
Total	3,443,287	8,790,144	5,346,857	3.2	8.0	4.9
1 to 4	371,470	1,125,150	753,680	7.0	21.3	14.3
5 to 9	373,917	1,027,239	653,322	5.6	15.5	9.8
10 to 19	440,855	1,092,129	651,274	5.3	13.2	7.8
20 to 49	592,654	1,358,373	765,719	4.9	11.3	6.4
50 to 99	405,560	892,330	486,770	4.4	9.7	5.3
100 to 249	377,365	928,021	550,656	3.3	8.0	4.8
250 to 499	184,312	539,231	354,919	2.3	6.7	4.4
500 to 999	167,395	453,464	286,069	2.2	5.9	3.7
1,000 or more	529,759	1,374,207	844,448	1.3	3.4	2.1
End size class:						
Total	3,443,287	8,790,144	5,346,857	3.2	8.0	4.9
1 to 4	-192,603	769,315	961,918	–3.5	14.1	17.7
5 to 9	294,722	941,674	646,952	4.5	14.5	10.0
10 to 19	454,028	1,089,876	635,848	5.6	13.4	7.8
20 to 49	666,578	1,431,125	764,547	5.6	12.0	6.4
50 to 99	476,697	960,106	483,409	5.2	10.5	5.3
100 to 249	496,900	1,024,722	527,822	4.3	8.8	4.5
250 to 499	279,105	591,823	312,718	3.5	7.4	3.9
500 to 999	243,537	489,258	245,721	3.2	6.4	3.2
1,000 or more	724,323	1,492,245	767,922	1.8	3.7	1.9

[1] Calculated with mean-quarter employment in the denominator.

Notes

[1] One other issue that has been raised in the gross job flows literature is the definition of a small business. This article presents its statistics using BLS standard size class categories. Users can then aggregate categories in the manner they wish to for various definitions of the term *small business*.

[2] For more information on regression-to-the-mean bias, see Steven J. Davis, John C. Haltiwanger, and Scott Schuh, *Job Creation and Destruction* (Cambridge, MA, MIT Press, 1996), especially chapter 4; and Milton Friedman, "Do Old Fallacies Ever Die?" *Journal of Economic Literature*, December 1992, pp. 2129–32.

[3] For more information about the Business Employment Dynamics program, see James R. Spletzer, R. Jason Faberman, Akbar Sadeghi, David M. Talan, and Richard L. Clayton, "Business Employment Dynamics," *Monthly Labor Review*, April 2004, pp. 29–42. The Business Employment Dynamics program website is **www.bls.gov/bdm**.

[4] A technical point warrants mention. Establishment births in June 2000 are not in the database in March 2000, and establishment deaths are not in the database in June 2000. Thus, base-size employment is defined for openings as of June 2000, and end-size employment is defined for closings as of March 2000. To calculate the mean size of openings and closings, employment in the quarter in which the unit was not present was set to zero.

[5] This finding of monotonically declining (not seasonally adjusted) net employment growth rates does not hold for the other quarters in calendar-year 2000.

[6] For further analysis and discussion of this topic, see Spletzer and others, "Business Employment Dynamics."