

High Growth Firms

FIRST DRAFT

Please do not distribute without authors' permission

March 30, 2012

Akbar Sadeghi

Sadeghi.Akbar@bls.gov

James R. Spletzer

Spletzer.Jim@bls.gov

David M. Talan

Talan.David@bls.gov

U.S. Bureau of Labor Statistics

The views expressed in this paper are solely those of the authors and do not necessarily reflect the official positions or policies of the U.S. Bureau of Labor Statistics. The statistics presented in this article are research tabulations and are not official statistics from the U.S. Bureau of Labor Statistics.

I. Introduction

Employment growth is a key indicator of labor market performance. Particularly following recessions, policymakers look for the appropriate levers to pull that will accelerate employment growth. For several decades, it has been thought that small businesses are the fountain of job growth. This thinking is backed up by data from the Business Employment Dynamics (BED) program at the Bureau of Labor Statistics (BLS). The BED data show that firms with less than 500 employees – the criteria often used for defining small firms – account for about two-thirds of net jobs created.¹ However, the BED data also show that 99.5 percent of all firms have less than 500 employees and represent 54.5 percent of total private employment,² and thus targeting the large group of small firms as potential job creators may not be wise policy.

Recent thinking in the economic and policymaking communities has evolved to believe that young and small firms are a key source of job growth.³ Small firms are both young and old, and many well-established small firms do not aspire to be job generators – the corner grocery store comes to mind, as well as other examples such as neighborhood restaurants and the local dry cleaners. But some entrepreneurs dream of finding an untapped niche and starting a business that will grow to national stature; these are the entrepreneurs that policymakers have in mind when thinking of the future job generators. However, the problem with targeting young and small businesses – entrepreneurs – as the focus of job creation is that the outcomes of new businesses are very diverse. Some new businesses grow phenomenally, but twenty percent of establishment births don't survive their first year in business, 32 percent don't survive their first two years, and fifty percent don't survive their first five years.⁴ These death rates suggest that it is not wise policy to identify the large group of entrepreneurs as potential job creators.

In order to focus on those businesses that are truly job creators, economists and policymakers are now talking about “high growth firms.” High growth firms are a very small subset of all firms, but contribute substantially to job creation. In this article, we use the BED data to provide estimates of the number of high growth firms and their contribution to employment growth in the U.S. economy. We find that 1.5 percent of all firms in 2008 are high growth firms during the 2008-2011 time period, yet these relatively few high growth firms are responsible for 33.7 percent of all gross job gains by firms that expanded their employment over the 2008-2011 time period.

II. Defining High Growth Firms

The first step towards estimating the number of high growth firms and their contribution to employment growth is to define high growth firms. This is not as simple as one might think. We start our discussion with the OECD definition of high growth firms, which is firms with 10 or more employees that have average annualized growth greater than twenty percent per year over a three year period.⁵

One issue for defining high growth firms is the time period over which growth is measured. Note that the OECD uses “a three year period.” If the time period is short – say a year, then firms with temporary contracts might be classified as high growth firms even though

their employment growth is temporary and their employment levels will decline when the contract is completed. The time period for defining high growth firms should be long enough such that short-run transitory changes in employment are not falsely measured as high growth. In this article, we use the OECD definition and measure high growth firms over a three year period.

Related to the issue of short-run transitory growth is whether high growth firms should be defined based on sustained growth over the three year period. It is reasonable to state that a firm that grows by, say, twenty percent a year for three consecutive years is a high growth firm during this three year time period. This firm has grown by 72.8 percent growth over three years ($1.2 * 1.2 * 1.2 = 1.728$). But should a firm that grows by 72.8 percent in one year, with no growth in the other two years, be considered a high growth firm? We believe yes. The primary reason, continuing with the example, is that firms that grow by 72.8 percent in one year with no growth in the other two years have created the same number of jobs in a three year timeframe as firms that have grown by 20 percent in three consecutive years. When defining high growth firms by the number of jobs created during a three year period, the year-by-year patterns of how those jobs were created should not matter. As such, we follow the OECD definition and don't require sustained growth in consecutive years.

The OECD definition classifies firms as high growth firms if their employment growth exceeds the threshold of average annualized growth of twenty percent per year over a three year period. Some of the first estimates of high growth firms in the literature did not use a threshold, but focused on the top one percent of growing firms. The problem with this top one percent approach is that it is difficult to create a consistent time series of high growth firms since the threshold that defines the top one percent of firms is higher during the expansion phase of the business cycle and lower during the contraction phase. In this article, we follow the OECD definition and define high growth firms based on firm growth exceeding a given threshold that does not vary across time.

The threshold in the OECD definition is average annualized growth of twenty percent per year over a three year period. Note that this threshold is measured as a percentage rather than as a level. This requires some discussion. Measuring high growth firms as those that grow by a certain percentage will lead to small firms being more likely to be classified as high growth firms (it's easier for a small firm to grow by twenty percent – for example, a five employee firm needs to add just one employee). On the other hand, measuring high growth firms as those that grow by a certain level will lead to large firms being more likely to be classified as high growth firms (it's easier for a large firm to grow by 20 employees). In order to avoid classifying small firms with a small amount of growth as high growth firms, the OECD definition requires high growth firms to have 10 or more employees.

We want to include small firms in our estimates of high growth firms. In the U.S. private sector, 76 percent of firms have less than 10 employees.⁶ This means that if we adopt the OECD definition, approximately 3.8 million firms (of the five million total private sector firms) with less than 10 employees are excluded from being classified as high growth firms. We modify the OECD definition to incorporate a threshold in both levels and percentages.

We use a “kink point” approach for defining a threshold in both levels and percentages. Note that under the OECD definition, firms with 10 or more employees are classified as high growth firms if they grow by more than 72.8 percent over a three year period (this is equivalent to average annualized growth of greater than twenty percent per year over a three year period). Thus the threshold for a firm with 10 employees is growth of 7.28 employees or more over three years. Expressing this in integers, since the BED doesn’t measure fractions of a job, a firm with 10 employees needs to grow by 8 or more employees over a three year period to be classified as a high growth firm. Our “kink point” approach says that any firm with less than 10 employees that grows by 8 or more employees over a three year period will also be classified as a high growth firm. Combining this 8 employees or more threshold with the OECD threshold of 72.8 percent or more allows us to include both small firms and large firms in our analysis. The threshold in levels – 8 or more employees – will be the relevant threshold for defining small firms as high growth firms, and the threshold in percentages – 72.8 percent or more – will be the relevant threshold for defining large firms as high growth firms.⁷

III. The BED Data

The BED data is longitudinally linked microdata from the BLS business register. The Quarterly Census of Employment and Wages (QCEW) data is the BLS’ list of business establishments, covering 98 percent of employment on nonfarm payrolls. The QCEW data contain high quality, high frequency, and timely information on employment and wages. The QCEW data are used as the sampling frame and the employment benchmark for BLS establishment-based surveys, are a significant input to the national accounts, and are an important source of data for labor market research.

The BED data are created by linking QCEW establishments across quarters to create a longitudinal history. Establishments classified as government or private households are not in the BED data. In order to ensure the quality of the longitudinal establishment linkages, the BLS uses a multistep process to link the micro-data over time. This linkage process consists of administrative matches based on the unique identifier, a probability-based weighted match, and an analyst review match.⁸

The majority of BED statistics measure quarterly gross jobs gains and gross job losses. Gross job gains are the number of jobs gained by establishments that open or expand, and gross job losses are the number of jobs lost by establishments that close or contract. The sum of gross job gains and gross job losses is net employment change. The quarterly gross job gains and gross job losses are published for both establishments and firms. An establishment is defined as an economic unit that produces goods or services, usually at a single physical location, and engages in one or predominantly one activity. A firm is a business, either corporate or otherwise, and may consist of one or more establishments, aggregated by the Federal Employer Identification Number (EIN).

The statistics on high growth firms presented in this article are the natural next data product from the BED. In 2003, the BED started publication with quarterly establishment-level statistics of gross job gains and gross job losses. In 2005, the BED expanded its product line by

publishing quarterly firm-level statistics of gross job gains and gross job losses (note the distinction between establishment and firm in these two data products). The tabulations of gross job gains and gross job losses by firm size have become one of the BED's most popular outputs. In 2010, the BED released establishment age and survival statistics. These statistics document the number of establishments and the employment of all establishments born in a certain year, following establishments year by year from their birth to the current year.⁹ The high growth firm statistics in this article are based on multi-year linkages of the firm-level data, and are the first statistics from the BED program that track firms across long periods of time.

Two final points need to be mentioned. First, as a result of the longitudinal linkage algorithm used by the BED, the high growth firm statistics in this article are not influenced by the employment gains and losses that occur as a result of mergers and acquisitions. The technical details of this are explained in a long endnote.¹⁰ Second, all statistics in this article are research tabulations and are not official statistics from the BED program at the BLS.

IV. Estimates of High Growth Firms

IVa. Basic Estimates

Summarizing the discussion in section two, our definition of high growth firms is as follows: firms with 10 or more employees in the base year that grow by more than 72.8 percent over a three year period (72.8 percent is equivalent to average annualized growth of twenty percent per year), or firms with less than 10 employees in the base year that grow by 8 or more employees over a three year period. We refer to this as a modified OECD definition of high growth firms.

In Table 1, we report the number of high growth firms in the BED data. Beginning with the bottom row of Table 1, we see that there are 5.072 million private sector firms in March 2008, and these firms employ 112.088 million employees. We also see that 1.076 million firms that exist in March 2008 are expanding during the March 2008 to March 2011 time interval, and these expanding firms create almost nine and a half million jobs over this three year period. Of these expanding firms in the 2008-2011 time period, we classify 78,195 as high growth firms. These high growth firms create almost 3.2 million jobs during the three years.

Continuing with the bottom row of Table 1, 1.5 percent of the 5.1 million firms in 2008 are high growth firms in the 2008-2011 time period ($78,195 / 5,072,120$), and 7.3 percent of the 1.1 million expanding firms are high growth firms ($78,195 / 1,076,186$). Furthermore, as seen in the final column of the last row of Table 1, high growth firms contribute 33.7 percent of the gross job gains of expanding firms over the 2008-2011 time period ($3,192,080 / 9,469,136$). These statistics tell us that the number of high growth firms is relatively small, but these high growth firms create proportionally more jobs than the average expanding firm. If we calculate average jobs created, high growth firms create, on average, 40.8 jobs per firm ($3,192,080 / 78,195$) over the 2008-2011 time period, whereas all expanding firms create, on average, 8.8 jobs per firm ($9,469,136 / 1,076,186$) over the same time period. The average high growth firm creates roughly 4.6 times as many jobs than does the average expanding firm.

Table 1 also reports the time series of high growth firms during the past 14 years. We graph the time series of high growth firms, as a percentage of all firms, in Figure 1. We see that the percentage of firms that are high growth firms has declined over time, from 3.1 during the mid-to-late 1990s to 1.5 percent in the 2007-2010 and the 2008-2011 timeframe. Part of this decline appears to be a general trend across the 14 years of analysis, while the other part of the decline appears to be due to recessions.¹¹ We see a decline in the percentage of high growth firms during the years associated with the 2001 recession, from 3.1 percent in the mid-to-late 1990s to 2.2 percent for the three-year growth intervals 2000-2003 and 2001-2004. The percentage of high growth firms increased to 2.5 to 2.6 percent during the mid 2000's as the economy came out of the 2001 recession, but has fallen to its current low of 1.5 percent for the three-year growth intervals associated with the 2007-2009 recession.

IVb. Statistics by Size and Age

Often associated with discussions of high growth firms is the reference to gazelles. Gazelles are young high growth firms. The phrase gazelle dates back to the work of David Birch in 1979.¹² Birch referred to the fastest growing firms as gazelles, in addition to referring to the majority of small firms that don't grow as mice and referring to the large firms as elephants. In Table 2, we provide evidence on gazelles by documenting the number of high growth firms in the 2008-2011 timeframe by their age in 2008.

We see in Table 2 that 13,237 of the 78,195 high growth firms in the 2008-2011 timeframe are newly born firms (in Table 2, births in March 2008 are defined as those firms born after March 2007 and before March 2008). Expressed as a percentage, 16.9 percent of high growth firms are newly born firms. The statistics in Table 2 also tells us that the propensity to be high growth firms is monotonically declining with age: 3.1 percent of newly born firms (age=0) in 2008 will be high growth firms in the 2008-2011 time period, 2.5 percent of one-year old firms in 2008 will be high growth firms in the 2008-2011 time period, whereas 0.9 percent of firms 10 years old or older in 2008 are high growth firms in the 2008-2011 time period.

Although younger firms are more likely to be high growth firms, we also see that the younger high growth firms contribute proportionally less of the total high growth firms' gross job gains.¹³ For example, 16.9 percent of high growth firms are newly born firms, but these young high growth firms contribute only 11.7 percent of the gross job gains. Similarly, 11.5 percent of high growth firms are one year old, but these young high growth firms contribute only 8.2 percent of the gross job gains. On the other hand, 29.6 percent of high growth firms are 10 years old or older, and these older high growth firms contribute 43.1 percent of the gross job gains. These statistics highlight that the average older high growth firm creates more jobs than the average younger high growth firm. The average number of jobs created per high growth firm is increasing in the age of the firm (but is not monotonically increasing). High growth firms that are less than two years old create, on average, 28-29 jobs per firm over the 2008-2011 time period, whereas high growth firms that are 10 years old or older create, on average, 59 jobs per firm over the same time period.

In Table 3, we present statistics on high growth firms in the 2008-2011 time period by the size of the firm in 2008. These statistics are of interest because they show how our modification to the OECD definition affects the total number of high growth firms. Over half of the high growth firms in the 2008-2011 time period that we identify in the BED data have less than 10 employees in 2008. To be specific, the statistics in Table 3 show that 21,028 high growth firms have 1-4 employees in 2008, and 19,790 high growth firms have 5-9 employees in 2008. These 40,888 firms are 52.2 percent of the total 78,195 high growth firms. Recall that in the modified OECD definition, firms with less than 10 employees are classified as high growth firms if they grow by 8 or more employees during the 2008-2011 time period. As seen in the final column of Table 3, the 21,028 high growth firms that start with 1-4 employees grow by an average of 18.9 employees per firm, and the 19,790 high growth firms with 5-9 employees in 2008 grow by an average of 17.2 employees per firms. At the other end of the size distribution, high growth firms with more than 1000 employees in 2008 grow by an average of 2,624 employees per firm.

Although more than half of high growth firms have less than 10 employees in the base year, these initially small high growth firms contribute less than a quarter of the employment growth attributable to high growth firms. Firms with 1-4 employees in 2008 are responsible for 12.5 percent of the high growth job creation in the 2008-2011 time period, and firms with 5-9 employees in 2008 are responsible for 10.7 percent of the high growth job creation in the 2008-2011 time period. More broadly, high growth firms with less than 20 employees have proportionally less job creation than do high growth firms with 20 or more employees. The disparity is especially pronounced for the largest firms. Only 0.9 percent of high growth firms have 250 or more employees, but these 773 initially large high growth firms create 21.6 percent of all job creation attributable to high growth firms.

As stated in the introduction, young and small firms are the focus of economists and policymakers when thinking of job creation. In Table 4a, we present the number of high growth firms in the 2008-2011 time period classified by both the age and the size of the firm in 2008. We have aggregated the four highest size classes {100-249, 250-499, 500-999, 1000+} in order to limit disclosure problems associated with small cells. Note that the number of high growth firms classified by initial age in the last column of Table 4a matches the data reported in Table 2, and the number of high growth firms classified by initial size in the bottom row of Table 4a matches the data reported in Table 3.

The number of high growth firms is concentrated in two parts of Table 4a – the top left corner and the row for initial age 10 or older. In Table 4a, we have shaded all age-size cells with more than 1,500 high growth firms. The two largest cells in Table 4a are births with 1-4 employees (6,408 high growth firms), and firms that are 10 years old or older and initially have 10-19 employees (6,250 high growth firms). All age-size cells in the row for firms aged 10 years old or older contain more than 1,500 high growth firms – the 23,182 high growth firms identified here are 43.9 percent of all high growth firms. Eleven of twelve age-size cells in the upper-left corner of Table 4a, representing firms that are less than 4 years old and have less than 20 employees, also have more than 1,500 high growth firms. The 28,704 high growth firms identified in these eleven cells are 36.7 percent of all high growth firms. Thus over 80 percent of all high growth firms are firms aged 10 or older or firms aged 0-3 years old with less than 20 employees.

But just as important as the number of high growth firms is the number of jobs created by high growth firms. We report these data, by initial age and size, in Table 4b. In Table 4b, we have shaded all age-size cells with more than 100,000 gross job gains. The largest number of jobs created in the age-size cells of Table 4b is the 739,543 jobs created by firms that are large and old – those firms with 100 or more employees that are 10 years old or older. There are four other cells in Table 4b with job creation above 100,000. Three of these four cells are firms that are 10 years old or older and with 10-99 employees in the base year. The other large cell in Table 4b is the smallest and youngest firms – newly born firms with 1-4 employees in their first year.

We conclude that many high growth firms are the youngest and the smallest firms, and these young and small firms create many jobs. But many high growth firms are also older firms, and much of the job creation attributable to high growth firms comes from these older firms.

IVc. Statistics by Industry

In Table 5, we present statistics on high growth firms in the 2008-2011 time period by industry.¹⁴ Looking first at the number of high growth firms, we see that roughly half (48.2 percent) of high growth firms are in the following four industries: construction; professional, scientific, and technical services; health care and social assistance; and accommodations and food services. Looking at the number of jobs created, we see that roughly half (50.9 percent) of all jobs created by high growth firms are created in the following four industries: professional, scientific, and technical services; administrative, support, and waste management; health care and social assistance; and accommodations and food services.

IVd. The Distribution of Gross Job Gains

All the statistics presented thus far in this article are based upon what we call the modified OECD definition. In this section, we ask how our conclusions about high growth firms might change if we modified this definition.

In Table 6, we present the distribution of the number of expanding firms and the gross job gains by expanding firms over the 2008-2011 time period. The statistics in Table 6 are based on those firms that exist in 2008 and grow during the next three years. As such, any job creation from births that enter the universe after 2008 is not measured in this table, and the distribution of firm decline (gross job losses due to contractions and deaths) is not measured in this table.

The definition of firm growth in the first column of Table 6 is key to understanding this table. In the first row, we document the number of expanding firms and their job creation according to the criteria that these firms grow by less than 5 percent if they have an initial size greater than or equal to 10, or if these firms grow by 1 employee if their initial size is less than 10.¹⁵ The second row documents the number of expanding firms and their job creation according to the criteria that these firms grow by 5 percent or more but less than 10 percent if they have an initial size greater than or equal to 10, or if these firms grow by 2 to 3 employees if their initial size is less than 10. Note that these first two rows in Table 6 define distinct sets of firms. This

distribution of growth continues until the sixth row (the row preceding the row titled “Total”), which documents the number of expanding firms and their job creation according to the criteria that these firms grow by 25 percent or more if they have an initial size greater than or equal to 10, or if these firms grow by 10 or more employees if their initial size is less than 10.

The sum of the fifth and sixth rows shows the number of firms and their associated gross job gains for the modified OECD definition of high growth firms. The statistics in these two rows repeat the earlier tables, documenting that there are 78,195 high growth firms that create 3.192 million jobs during the 2008-2011 time period.

If we wanted a slightly “tighter” definition of high growth firms, we could look at the sixth row by itself rather than the sum of the fifth and sixth rows. This sixth row tells us that many (52,147 of 78,195) of the high growth firms according to the modified OECD definition would still be classified as high growth firms if we required 25 percent growth instead of 20 percent growth for the large firms, or growth of 10 or more employees instead of 8 or more for the initially small firms. Furthermore, much of the job creation attributable to high growth firms originates from the firms that are growing a lot: 2.572 million of the 3.192 million new jobs attributable to high growth firms comes from firms with the tighter growth requirements.

If we wanted a somewhat “looser” definition of high growth firms, we could look at the sum of the fourth, fifth, and sixth rows in Table 6. In the fourth row, we see that there are 49,528 firms that grow by 15-20 percent if their initial size is 10 or more, or grow by 6-7 employees if their initial size is less than 10. Since the first six rows in Table 6 are additive (and sum to the total), we see that the number of high growth firms would increase from 78,195 to 127,723 and the amount of job creation attributable to high growth firms would increase from 3.192 million to 4.116 million if we defined high growth firms as those firms that grow by 15 percent or more if they have an initial size greater than or equal to 10, or those firms that grow by 6 or more employees if their initial size is less than 10.

The conclusion that we drew from Table 1 earlier in this article is that high growth firms are a small number of expanding firms that contribute proportionally more job creation than the average expanding firm. What we learn from Table 6 is that this basic conclusion does not crucially depend upon the 20 percent and 8 employee thresholds that underlie the modified OECD definition. These 20 percent and 8 employee thresholds result in 7.3 percent of expanding firms being classified as high growth firms and 33.7 percent of job creation being attributable to high growth firms. If we tighten the 20 percent and 8 employee thresholds to 25 percent and 10 employees, we find that 4.8 percent of expanding firms are classified as high growth firms and 27.2 percent of job creation is attributable to high growth firms. If we loosen the thresholds to 15 percent and 6 employees, we find 11.9 percent of firms being classified as high growth firms and 43.5 percent of job creation is attributable to high growth firms. These statistics tell us that whether or not we tighten or loosen the thresholds in the modified OECD definition of high growth firms, we still find that high growth firms are a small number of expanding firms that contribute a large amount of job creation.

V. Conclusions

Although high growth firms have received a lot of recent attention in the press and policymaking community, little is known about the number of high growth firms in the U.S. and the number of jobs they create. This article fills that gap. Using a modified OECD definition of high growth firms, we document that 1.5 percent of firms that exist in 2008 are high growth firms during the 2008-2011 time period, and these high growth firms are responsible for 33.7 percent of all gross job gains from expanding firms. We find that 78,195 high growth firms created 3.192 million jobs from 2008 through 2011. We find that high growth firms tend to be young and small firms as well as older firms (10 years old or older), yet much of the job creation attributable to high growth firms comes from the older firms. We also find that high growth firms appear in a variety of industries.

Endnotes

¹ Sherry Dalton, Erik Friesenhahn, James Spletzer, and David Talan. “Employment Growth by Size Class: Comparing Firm and Establishment Data.” *Monthly Labor Review*, Vol. 134, No. 12, December 2011, pp. 3-12.

² http://www.bls.gov/web/cewbd/table_g.txt.

³ John C. Haltiwanger, Ron S. Jarmin, and Javier Miranda. “Who Creates Jobs? Small vs. Large vs. Young,” NBER Working Paper #16300, August 2010, <http://www.nber.org/papers/w16300>.

⁴ Carol Leming, Akbar Sadeghi, James R. Spletzer, and David M. Talan. “The Role of Younger and Older Business Establishments in the U.S. Labor Market.” *Issues in Labor Statistics*, #10-09, August 2010, <http://www.bls.gov/opub/ils/pdf/opbils86.pdf>.

⁵ The OECD definition is from the 2007 publication titled “Eurostat-OECD Manual on Business Demography Statistics.” We have replaced the term “enterprises” in the OECD definition with the term “firms.” Much of our discussion in this section is similar to the text in a recent working paper by Sven-Olov Daunfeldt, Niklas Elert, and Dan Johansson titled “The economic contribution of high-growth firms: Do definitions matter?”

⁶ http://www.bls.gov/web/cewbd/table_g.txt.

⁷ Based upon an OECD meeting in Copenhagen in January 2012 that we attended, we anticipate that OECD will change their definition of high growth firms to incorporate small firms. We anticipate that the forthcoming OECD definition will use the same “kink point” approach that we describe here.

⁸ For a more thorough description of the source data and the longitudinal linkages in the BED program, see James 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.

⁹ For more information on the establishment age and survival statistics, see Carol Leming, Akbar Sadeghi, James R. Spletzer, and David M. Talan “The Role of Younger and Older Business Establishments in the U.S. Labor Market,” *Issues in Labor Statistics*, #10-09, August 2010.

¹⁰ In a simple example of mergers and acquisitions, firm A acquires firm B and the new combined firm continues under firm A’s identifier. In a naïve linkage algorithm, firm A would be observed to die and firm B would be observed to expand. We don’t want this type of expansion to be classified as a high growth firm. The longitudinal linkage algorithm used by the BED controls for this by combining firm A and firm B in the previous time period and computing the employment growth as the employment of the actual combined firm in the current time period subtract the employment of the artificially combined firm in the previous time period. For a more detailed description, 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. 3311-3316, <http://www.bls.gov/osmr/pdf/st020230.pdf>.

¹¹ The business cycle dates we cite in this paragraph, and in the entire article, are from the National Bureau of Economic Research.

¹² Birch, David L., “The Job Generation Process,” unpublished report, (Washington, DC: MIT Program on Neighborhood and Regional Change for the Economic Development Administration, U.S. Department of Commerce, 1979). Birch, David L., “Who Creates Jobs?” *Public Interest* 65:3 (1981), 3–14. Birch, David L., *Job Creation in America: How Our Smallest Companies Put the Most People to Work* (New York: Free Press, 1987).

¹³ We need to emphasize that in this paragraph, we are discussing the contribution of younger and older firms to gross job gains and not their contribution to net employment growth. See Carol Leming, Akbar Sadeghi, James R. Spletzer, and David M. Talan “The Role of Younger and Older Business Establishments in the U.S. Labor Market,” *Issues in Labor Statistics*, #10-09, August 2010, for a discussion of the relationship between age and net employment growth.

¹⁴ This table is the first time that firms have been classified into industries using the BED data. Although it is trivial to classify establishments into industries, it is conceptually difficult to classify firms into industries. For firms with establishments in many industries, should the firm’s industry classification be defined by the maximum employment across industries, or by the maximum number of establishments across industries? Or should the firm be divided into multiple parts, with each part representing a unique industry? In Table 5, we classify firms into industries based upon the industry with the maximum employment. We emphasize that the statistics in Table 5 are research tabulations and are not official tabulations from the BED program at the BLS.

¹⁵ The growth of 0 to 5 percent for larger firms and the growth of 1 employee for smaller firms is based upon the “kink point” algorithm defined earlier in this article. The growth of percents and levels in each row of Table 6 is based on the “kink point” algorithm.

Table 1: High growth firms (HGF's)

Time period	Total number of firms in the base year	Total employment in the base year	Total number of expanding firms	Gross job gains by expanding firms	Number of high growth firms	Gross job gains by high growth firms	Number of HGF's as a percent of total firms	Number of HGF's as a percent of total expanding firms	Gross job gains by HGF's as a percent of gross job gains by expanding firms
1994 - 1997	4,371,354	91,285,619	1,386,851	16,692,634	137,349	7,406,388	3.1	9.9	44.4
1995 - 1998	4,452,654	94,587,920	1,372,494	17,297,423	134,632	7,734,711	3.0	9.8	44.7
1996 - 1999	4,499,284	96,535,424	1,401,180	18,141,319	138,786	8,227,784	3.1	9.9	45.4
1997 - 2000	4,582,633	99,409,463	1,424,565	18,718,508	142,452	8,398,678	3.1	10.0	44.9
1998 - 2001	4,615,354	102,225,657	1,389,479	17,887,921	134,619	7,997,312	2.9	9.7	44.7
1999 - 2002	4,696,446	104,680,386	1,337,401	15,222,729	118,144	6,101,836	2.5	8.8	40.1
2000 - 2003	4,738,860	107,656,901	1,282,732	13,687,884	105,512	5,294,056	2.2	8.2	38.7
2001 - 2004	4,760,163	108,503,560	1,301,211	13,359,247	104,876	5,006,604	2.2	8.1	37.5
2002 - 2005	4,765,453	105,774,633	1,327,554	14,185,233	111,164	5,375,980	2.3	8.4	37.9
2003 - 2006	4,813,800	105,048,472	1,377,653	15,484,154	123,154	5,902,606	2.6	8.9	38.1
2004 - 2007	4,875,307	105,920,838	1,367,614	15,409,133	122,152	5,501,995	2.5	8.9	35.7
2005- 2008	4,939,612	107,913,198	1,330,648	14,455,570	114,348	4,827,632	2.3	8.6	33.4
2006- 2009	5,052,954	110,493,780	1,157,367	11,275,608	90,441	3,658,879	1.8	7.8	32.4
2007 -2010	5,095,941	111,994,015	1,061,025	9,309,823	77,265	3,083,703	1.5	7.3	33.1
2008 -2011	5,072,120	112,088,374	1,076,186	9,469,136	78,195	3,192,080	1.5	7.3	33.7

Figure 1: High growth firms (HGF's)

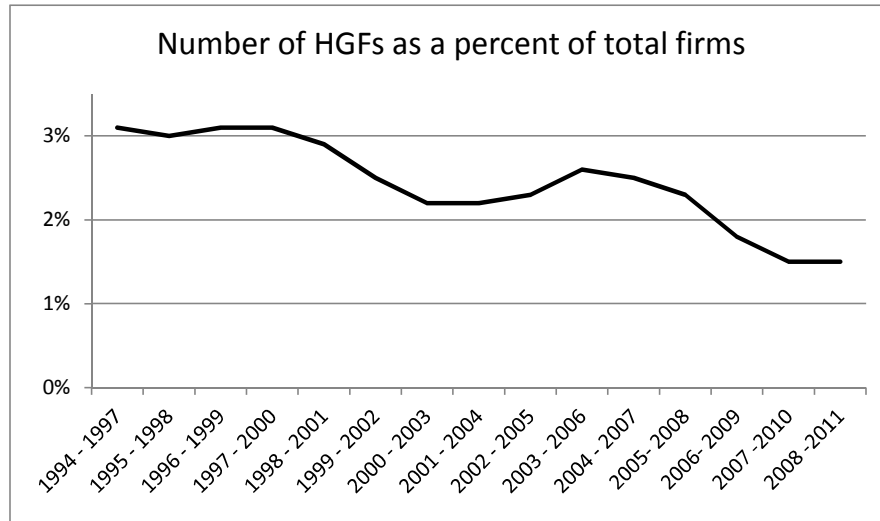


Table 2: High growth firms, 2008-2011, by age in 2008:Q1

Age in the base year	Total number of firms in the base year	Number of high growth firms	Gross job gains by high growth firms	HGF's as a percent of all firms	HGF's as a percent of all HGF's	Gross job gains by HGF's as a percent of all HGF's gross job gains	Average number of jobs gained by HGF's
0 : births	431,896	13,237	372,568	3.1	16.9	11.7	28.1
1 year old	367,227	8,999	263,080	2.5	11.5	8.2	29.2
2 years old	329,770	7,122	211,460	2.2	9.1	6.6	29.7
3 year old	285,172	5,733	194,730	2.0	7.3	6.1	34.0
4 years old	245,209	4,646	155,960	1.9	5.9	4.9	33.6
5 year old	225,387	3,994	148,414	1.8	5.1	4.6	37.2
6 years old	201,600	3,472	136,626	1.7	4.4	4.3	39.4
7 year old	187,257	2,973	129,084	1.6	3.8	4.0	43.4
8 years old	176,965	2,647	118,038	1.5	3.4	3.7	44.6
9 year old	160,930	2,190	86,969	1.4	2.8	2.7	39.7
10 or older	2,460,695	23,182	1,375,151	0.9	29.6	43.1	59.3
Total	5,072,108	78,195	3,192,080	1.5	100.0	100.0	40.8

Table 3: High growth firms, 2008-2011, by size in 2008:Q1

Size in the base year	Total number of firms in the base year	Number of high growth firms	Gross job gains by high growth firms	HGF's as a percent of all firms	HGF's as a percent of all HGF's	Gross job gains by HGF's, as a percent of all HGF's gross job gains	Average number of jobs gained by HGF's
1-4 employees	2,798,424	21,028	397,470	0.8	26.9	12.5	18.9
5-9 employees	1,007,408	19,790	340,500	2.0	25.3	10.7	17.2
10-19 employees	615,338	19,558	440,197	3.2	25.0	13.8	22.5
20-49 employees	397,691	11,471	559,625	2.9	14.7	17.5	48.8
50-99 employees	132,590	3,688	369,839	2.8	4.7	11.6	100.3
100-249 employees	76,429	1,887	395,578	2.5	2.4	12.4	209.6
250-499 employees	23,020	482	226,519	2.1	0.6	7.1	470.0
500-999 employees	10,999	189	194,696	1.7	0.2	6.1	1030.1
1000 or more employees	10,221	102	267,656	1.0	0.1	8.4	2624.1
Total	5,072,120	78,195	3,192,080	1.5	100.0	100.0	40.8

Table 4a: High growth firms, 2008-2011, by size and age in 2008:Q1

	1-4 employees	5-9 employees	10-19 employees	20-49 employees	50-99 employees	100 or more employees	TOTAL
0: births	6,408	3,480	2,214	911	166	58	13,237
1 year old	2,871	2,668	2,127	1,015	222	96	8,999
2 years old	1,922	2,043	1,840	984	231	102	7,122
3 year old	1,363	1,551	1,580	866	253	120	5,733
4 years old	1,054	1,245	1,271	734	217	125	4,646
5 year old	877	997	1,134	656	213	117	3,994
6 years old	752	853	972	588	180	127	3,472
7 year old	610	696	828	526	184	129	2,973
8 years old	511	621	747	458	162	148	2,647
9 year old	433	515	595	386	174	87	2,190
10 or older	4,227	5,121	6,250	4,347	1,686	1,551	23,182
TOTAL	21,028	19,790	19,558	11,471	3,688	2,660	78,195

Table 4b: Gross job gains by high growth firms, 2008-2011, by size and age in 2008:Q1

	1-4 employees	5-9 employees	10-19 employees	20-49 employees	50-99 employees	100 or more employees	TOTAL
0: births	132,762	73,775	65,989	58,814	25,281	15,947	372,568
1 year old	50,998	46,230	51,409	64,406	25,047	24,990	263,080
2 years old	32,596	35,922	42,441	48,289	24,305	27,907	211,460
3 year old	24,115	25,410	34,686	44,244	27,410	38,865	194,730
4 years old	21,621	19,166	26,841	34,150	20,700	33,482	155,960
5 year old	16,066	17,069	22,543	29,119	20,579	43,038	148,414
6 years old	13,797	13,023	23,826	25,262	19,580	41,138	136,626
7 year old	11,731	12,489	16,965	24,881	18,069	44,949	129,084
8 years old	8,992	9,745	16,323	20,813	14,996	47,169	118,038
9 year old	7,596	8,165	12,181	16,345	15,261	27,421	86,969
10 or older	77,196	79,506	126,993	193,302	158,611	739,543	1,375,151
TOTAL	397,470	340,500	440,197	559,625	369,839	1,084,449	3,192,080

4,276,529

Table 5: High growth firms, 2008-2011, by industry

Industry	Total number of firms in the base year	Number of high growth firms	Gross job gains by high growth firms	HGF's as a percent of all firms	HGF's as a percent of all HGF's	Gross job gains by HGF's, as a percent of all HGF's gross job gains	Average number of jobs gained by HGF's
Agriculture, Forestry, Fishing & Mining	76,194	1,378	48,796	1.8	1.8	1.5	35.4
Utilities	18,700	692	39,016	3.7	0.9	1.2	56.4
Construction	6,646	83	5,055	1.2	0.1	0.2	60.9
Manufacturing	631,349	7,611	219,894	1.2	9.7	6.9	28.9
Wholesale Trade	270,279	4,654	187,908	1.7	6.0	5.9	40.4
Retail Trade	295,231	4,408	155,122	1.5	5.6	4.9	35.2
Transportation and Warehousing	600,804	5,893	198,470	1.0	7.5	6.2	33.7
Information	140,400	3,080	102,454	2.2	3.9	3.2	33.3
Finance and Insurance	62,793	1,471	77,876	2.3	1.9	2.4	52.9
Real Estate and Rental and Leasing	225,093	2,308	162,775	1.0	3.0	5.1	70.5
Professional, Scientific & Technical Services	230,998	1,714	58,035	0.7	2.2	1.8	33.9
Management of Companies & Enterprises	636,186	9,977	422,851	1.6	12.8	13.2	42.4
Administrative and Support and Waste Management and Remediation Services	14,479	391	27,584	2.7	0.5	0.9	70.5
Education Services	267,206	6,751	488,606	2.5	8.6	15.3	72.4
Health Care and Social Assistance	60,555	2,175	129,785	3.6	2.8	4.1	59.7
Arts, Entertainment, and Recreation	562,363	10,951	437,963	1.9	14.0	13.7	40.0
Accommodation and Food Services	85,728	1,603	57,696	1.9	2.1	1.8	36.0
Other Services (except Public Administration)	412,747	9,128	278,189	2.2	11.7	8.7	30.5
Unclassified	429,855	3,890	93,457	0.9	5.0	2.9	24.0
	44,514	37	548	0.1	0.0	0.0	14.8
Total	5,072,120	78,195	3,192,080	1.5	100.0	100.0	40.8

Table 6: Distribution of Three-Year Growth 2008 - 2011

Firm Growth over three years:	Number of Expanding Firms 2008	Gross job gains 2008-2011	Percent of Expanding Firms	Percent of Gross Job Gains
0-5% average annual growth if initial size ≥ 10 or growth of 1 employee if initial size < 10	519,436	1,819,331	48.3	19.2
5-10% average annual growth if initial size ≥ 10 or growth of 2-3 employees if initial size < 10	319,255	2,147,802	29.7	22.7
10-15% average annual growth if initial size ≥ 10 or growth of 4-5 employees if initial size < 10	109,772	1,385,725	10.2	14.6
15-20% average annual growth if initial size ≥ 10 or growth of 6-7 employees if initial size < 10	49,528	924,198	4.6	9.8
20-25% average annual growth if initial employment ≥ 10 or growth of 8-9 employees if initial size < 10	26,048	619,957	2.4	6.5
25% or more average annual growth if initial employment ≥ 10 or growth of 10 or more employees if initial size < 10	52,147	2,572,123	4.8	27.2
Total	1,076,186	9,469,136	100%	100.0