

Kauffman Foundation Research Series:  
Firm Formation and Economic Growth

# Where Will The Jobs Come From?

November 2009



Dane Stangler and Robert E. Litan  
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## Abstract

Compared to all prior recessions since the end of World War II, the 2007-2009 recession ranks worst in terms of the number of jobs lost (over eight million), and second worst in the percentage decline (6 percent). The key to economic recovery will come in the form of newly created jobs. But where will these jobs come from?

Using United States Census Bureau data from 2006-2007, this paper examines net new job creation in terms of firm age rather than firm size. Until 2005, we knew that from 1980-2005, nearly all net job creation in the United States occurred in firms less than five years old. This data set also shows that without startups, net job creation for the American economy would be negative in all but a handful of years. If one excludes startups, an analysis of the 2007 Census data shows that young firms (defined as one to five years old) still account for roughly two-thirds of job creation, averaging nearly four new jobs per firm per year. Of the overall 12 million new jobs added in 2007, young firms were responsible for the creation of nearly 8 million of those jobs.

Given this information, it is clear that new and young companies and the entrepreneurs that create them are the engines of job creation and eventual economic recovery. The distinction of firm age, not necessarily size, as the driver of job creation has many implications, particularly for policymakers who are focusing on small business as the answer to a dire employment situation.

## Introduction

At no time since 1945 have so many jobs disappeared so rapidly in the United States. Compared to all prior recessions since the end of World War II, the 2007-09 recession ranks worst in terms of the number of jobs lost (over eight million), and second-worst in the percentage decline (6 percent).<sup>1</sup> Still worse, the broadest unemployment measure, U6, has touched ridiculously high levels—nearly one in five workers—and the number of hours worked per week has steadily decreased.<sup>2</sup> Put these together with a rapidly falling employment-to-population ratio, and the U.S. employment situation has not looked so bleak in several decades. Compounding this dreary picture, more than a few forecasters see a long and slow recovery from this

decline—and given that the last two employment recoveries were much longer than the postwar average, they could be right.<sup>3</sup>

Naturally, then, everyone is asking: where will the new jobs come from? The answer—though it has mostly been missing from policy discussions, is that we will get new jobs from where we always have: new firms.

Prior work from the Ewing Marion Kauffman Foundation has shown that, since 1980, nearly all net job creation in the United States has occurred in firms less than five years old.<sup>4</sup> This is an impressive figure, but it doesn't convey the whole story of job creation in America—the turmoil and churn of new firm creation, young firm survival or failure, and the scale growth of some firms. New data from the U.S.

1. See Floyd Norris, *The Jobs News Gets Worse*, NEW YORK TIMES, Oct. 3, 2009, at <http://www.nytimes.com/2009/10/04/weekinreview/04norris.html>.

2. The U6 indicator captures the total number of unemployed workers (which is what is usually reported as the standard unemployment figure), plus “all marginally attached workers, plus total employed part time for economic reasons.” That is, U6 includes people who have stopped looking for work and those who have had to find part-time work instead. See Bureau of Labor Statistics, “The Employment Situation—September 2009,” Oct. 2, 2009, Table A-12, at <http://www.bls.gov/news.release/pdf/empst.pdf>.

3. Norris, *supra* note 2.

4. See John Haltiwanger, Ron Jarmin, and Javier Miranda, “Jobs Created from Business Startups in the United States,” Kauffman Foundation, January 2009, at [http://www.kauffman.org/uploadedFiles/BDS\\_Jobs\\_Created\\_011209b.pdf](http://www.kauffman.org/uploadedFiles/BDS_Jobs_Created_011209b.pdf).

Census Bureau now allow us to peer under the economic hood, as it were, and tell a more comprehensive story about job creation. And it is this story—that new firms have been and are likely to continue to be the real engines of job growth in America—that should occupy the attention of policymakers and perhaps provide some cause for optimism amidst the continuing gloom about jobs.

## Employment in the United States

A commonly heard statement in any employment discussion is that “small businesses” account for half of the labor force and are therefore the key to future generation of jobs. This is roughly true: firms with fewer than 500 employees (the somewhat questionable cutoff between “small” and “large” companies used by the Small Business Administration) employed 50.2 percent of workers in “employer firms” in 2006.<sup>5</sup> Sensibly enough, employer firms are those companies that have employees, as distinguished from “nonemployer” firms, which are companies comprised of only the founder. If we take the entire workforce, firms with fewer than 500 employees accounted for about 42 percent in 2006. Not everyone would define a small business this way, so we can drill down a bit more to two smaller firm size classes: those employing fewer than 20 employees, and those employing 20-99 employees.

As shown in Table 1, whereas the smallest companies (fewer than twenty employees) account for an enormous share of all companies

(89 percent), they also account for only a small fraction (less than 20 percent) of total employment. In fact, those companies that account for only a sliver of the population of companies employ the “other” half of American workers. Firms with more than 500 employees represent only 0.3 percent of employer firms, yet account for just under half of employment within firms, and over half of firm payroll. This makes sense, of course—larger companies, even when there are fewer of them, will account for an outsized share of employment simply by virtue of their size. But the discrepancies here are quite noticeable, and belie the conventional narrative about “small businesses” and jobs. This becomes even more apparent when we look at the most detailed classifications of firm size and employment.

Across these standard categories, the largest share of employment is in firms with more than 10,000 employees, followed by companies with 20-499 employees; likewise with payroll. In general, then, the U.S. economy is comprised of a very large number of small companies, accounting for a small share of employment; a relatively small number of medium-sized companies, accounting for about a third of employment; and a tiny handful of very large firms, accounting for a relatively sizeable portion (about a quarter) of employment. We have a none-too-surprising inverse relationship among firm size, number of firms, and overall employment.<sup>6</sup>

The point of this is not to belittle the employment contributions of small businesses or to laud those of large companies, but instead to underscore that analyzing employment in terms of firm size actually

Table 1: Distribution of Employment, by Selected Firm Size Classifications

Size Class of Firm	Share of Employer Firms	Share of Employment in Firms	Share of Labor Force	Share of Firm Payroll
<20 employees	89.29	18.02	14.96	15.15
20-99 employees	8.89	17.58	14.59	15.48
<500 employees	99.69	50.22	41.69	44.42
>500 employees	0.30	49.78	41.33	55.58

Table 1. Source: U.S. Census Bureau, Statistics of U.S. Business, at <http://www.census.gov/econ/susb/>.

5. Small Business Administration, “The Small Business Economy 2009,” U.S. Government Printing Office, 2009, available at [http://www.sba.gov/advo/research/sb\\_econ2009.pdf](http://www.sba.gov/advo/research/sb_econ2009.pdf).

6. This has been documented in prior work. See, e.g., Robert L. Axtell, *Zipf Distribution of U.S. Firm Sizes*, 293, SCIENCE 1818 (2001).

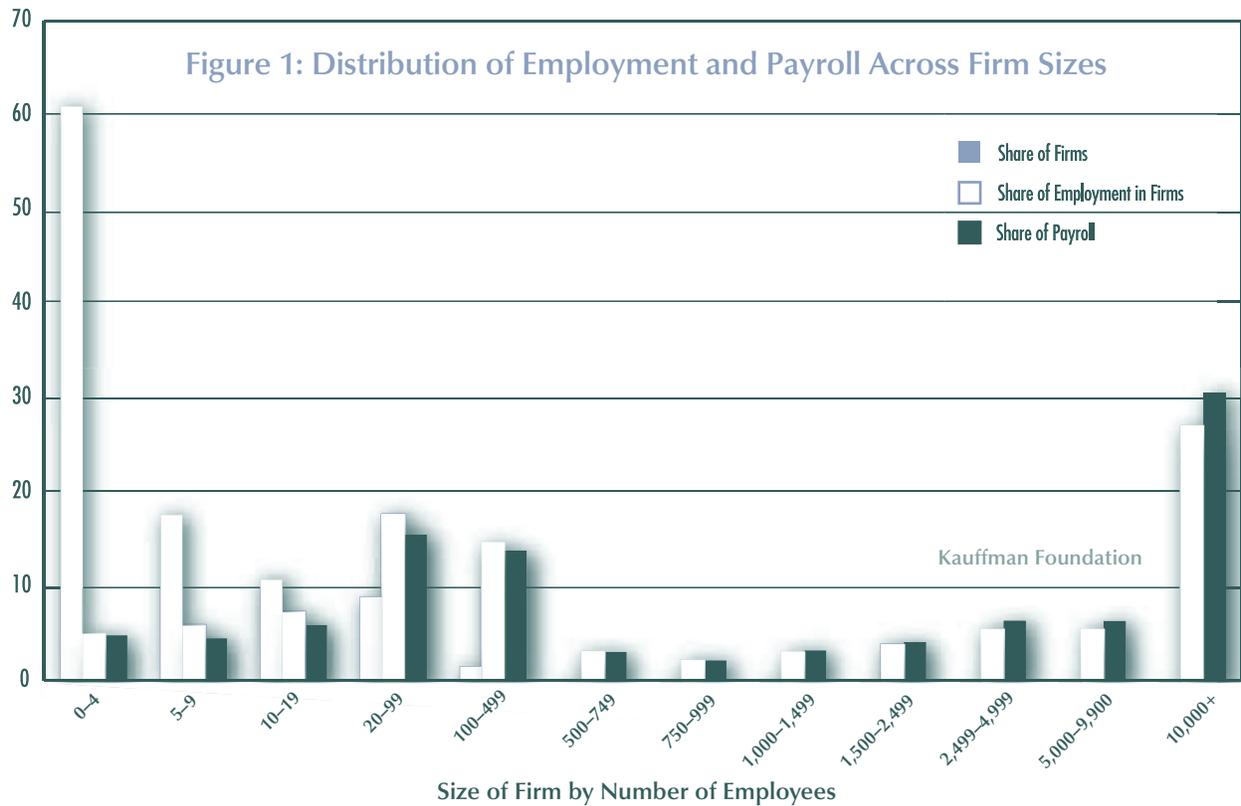


Figure 1. Source: U.S. Census Bureau, Statistics of U.S. Business, at <http://www.census.gov/econ/sub/>.

tells us very little about job creation. It would be more accurate, and much more revealing, to discuss employment in terms of firm age.<sup>7</sup>

The dynamics of firm age, moreover, point us away from a discussion on the existing distribution of employment and toward a focus on the annual changes in jobs. Let’s ask not where people work, but where each additional increment in net job creation occurs. This approach immediately forces one to recognize that companies in a given size class are not necessarily homogenous: a company with fifteen employees that is twenty-five years old will behave differently than one that is only two years old (differences that will multiply if we classify firms according to economic sector). To answer the pressing question of where new jobs will come from, therefore, we need to understand the ceaseless dynamic of new firm entry and exit, and

the behavior of existing firms and the subsequent impact in terms of net job creation.

## Where the Job Creators Are

As we have noted, nearly all net job creation since 1980 has occurred in firms less than five years old. If we want to know more about the dynamics of young companies and how they affect existing companies—and perhaps the sectoral distribution of new companies—we need to look at the data a little more closely. Fortunately, a recent Special Tabulation done by the Census Bureau for the Kauffman Foundation has provided a wealth of information on these very issues, and we will now present some of these findings.

7. Other research funded by the Kauffman Foundation and conducted by Census Bureau researchers clearly establishes this general principle, but has not yet been published. Historically, the United States statistical infrastructure, like those in most of the world, has not been equipped to track changes in business composition. Dynamics of businesses, particularly new and young companies, were not of much concern. This has recently been changing, in the United States and elsewhere.

In general, the net addition of jobs from year to year (i.e. job creation) comes from three sources: startups; young firms, ages one to five; and the largest and oldest companies. There is evidently somewhat of a barbell effect, with job creation occurring at the youngest and oldest ends of the firm age spectrum, and mostly flat in between.<sup>8</sup> This isn't the whole story, however, as there is a considerable amount of churn—job creation and destruction—occurring in the youngest companies, as well as an interactive dynamic between the youngest and oldest firms.

Let's begin with startups (defined in the data as "age zero" firms). Over the past thirty years, these newly created companies have served as a primary

source of immediate job creation for the U.S. economy.

Figure 2 has a remarkable implication: "excluding the jobs from new firms, the U.S. net employment growth rate is negative on average."<sup>9</sup> *Indeed, without startups, net job creation for the American economy would be negative in all but a handful of years.*

But not every startup sticks around—roughly a third will close by their second year of existence, while half will make it to age five.<sup>10</sup> This means the jobs that many firms create at birth will subsequently disappear, so part of their positive contribution to jobs in one year will turn to

Figure 2. The First Source of Job Creation: Startups

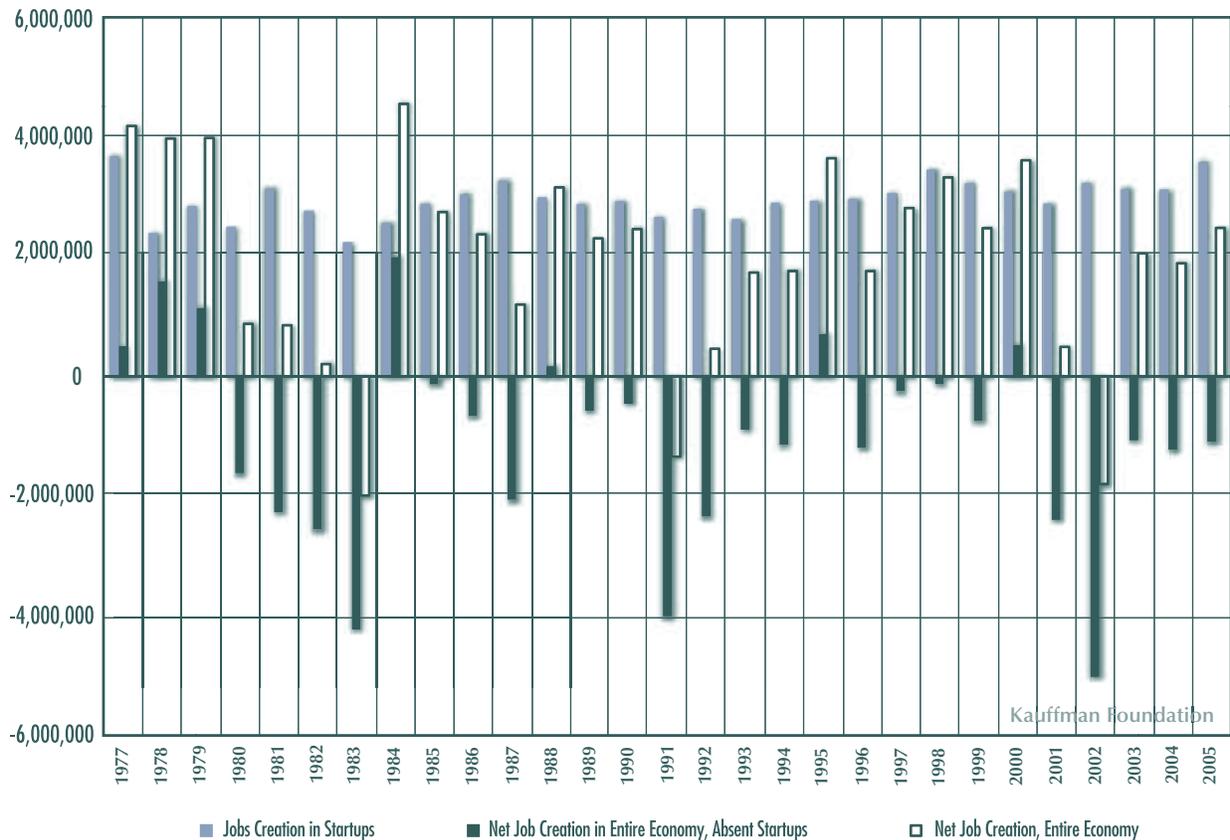


Figure 2. Source: U.S. Census Bureau, Business Dynamics Statistics, at <http://www.ces.census.gov/index.php/bds>.

8. We should again emphasize that we are discussing *net* job creation: the inflow and outflow of employment in firms of every age isn't reflected in the net figure. So firms in the middle part of the spectrum, those aged six to twenty-five, still hire people in gross. But every class of companies also lets go of a substantial number of people, and employees leave voluntarily. There is constant churn in terms of people flowing in and out of firms, but some classes of firms have a higher inflow than outflow and greater pool of firms, thus generating a positive net figure.

9. Haltiwanger, et al, *supra* note 5.

Figure 3: Young Firms Account for Largest Share of Job Creation



Figure 3. Shares of annualized net job creation in 2007. See text. Source: Special Tabulation by U.S. Census Bureau for Kauffman Foundation from Business Dynamics Statistics.

subtraction in the next few years. No economy could long survive if every year's new jobs were simply eliminated within such a short period. So what about the other half of startups, the fifty percent that survive until age five? This represents our second major source of net job creation.

Using the special tabulation from the Census Bureau, we can see that, among existing companies in 2007 (excluding startups), young firms accounted for the lion's share of job creation—roughly two-thirds, in fact.<sup>11</sup>

What this means is that in 2007, while the largest share of employment remained in the oldest and largest companies (the “left censored” category in Figure 3), young companies, those aged one to five, had been the most dynamic in adding new jobs to the economy. Of the entire pool of *new* jobs added in 2007 (roughly 12 million), about two-thirds was generated by these young companies. This critically important fact about job creation becomes even clearer when we translate Figure 3 into absolute numbers and look at lifetime net job creation for firms of different ages.

Again, firms between the ages of one and five create the most net new jobs, dwarfing the other age classes. These firms also create the highest average number of jobs: roughly four jobs per year. We also see in Figures 3 and 4 an apparently

positive contribution from the “left censored” category: the oldest companies. As discussed below, this highlights the continuing dynamic between young and mature companies wherein the latter rely on the former not only for jobs but also innovations and thus revenues.

These charts raise an obvious question: isn't age merely serving as a proxy for size? That is, when we talk about “young” firms aren't we really talking about “small business”? To address this, we can translate Figures 3 and 4 into size classifications. When we look across all firms of all ages, we do see somewhat of a skewed distribution by size of company: the firms responsible for net job creation are not only young but also small- and medium-sized (Figure 5).

What happens when we look only at young firms, those aged one to five? We see a similar breakdown by job growth and firm size (Figure 6).

It would appear, then, that firm age is somewhat coterminous with firm size. This makes sense because most young firms will tend to be small: very few grow to enormous size in their first three years of existence.

But there is a further way to approach job growth in the United States: the sectoral breakdown of job growth, which should shed some light on the

10. See Dane Stangler, “The Economic Future Just Happened,” Kauffman Foundation, June 2009, at <http://www.kauffman.org/uploadedFiles/the-economic-future-just-happened.pdf>.

11. Calculated by Census as two-thirds of annualized lifetime net job creation computed as total lifetime creation by firm age.

Figure 4: Young Firms Account for the Most Jobs and Highest Average Number of Jobs Created

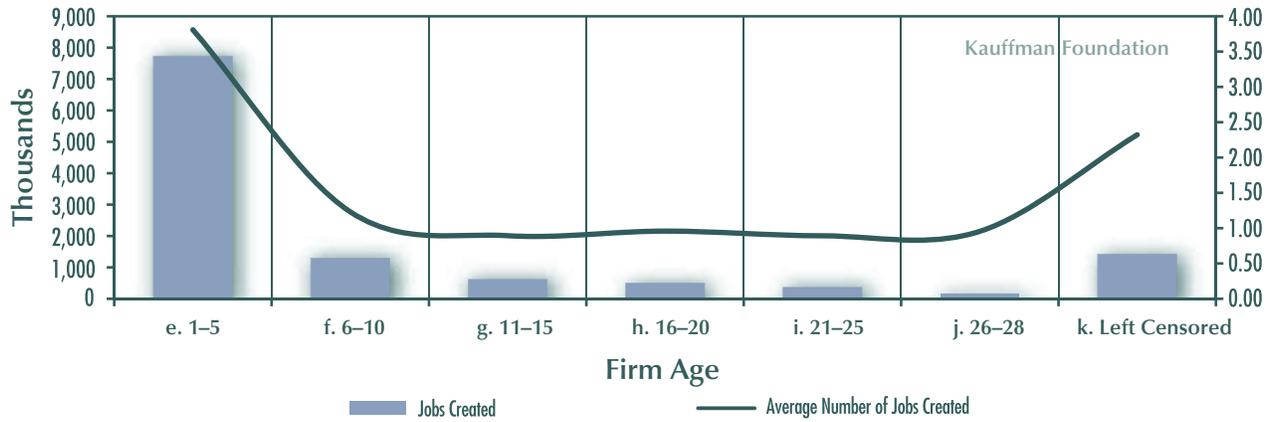


Figure 4. For change in employment 2006-07. Source: Special Tabulation by U.S. Census Bureau for Kauffman Foundation.

Figure 5: Share of Net Job Creation by Firm Size: 2007

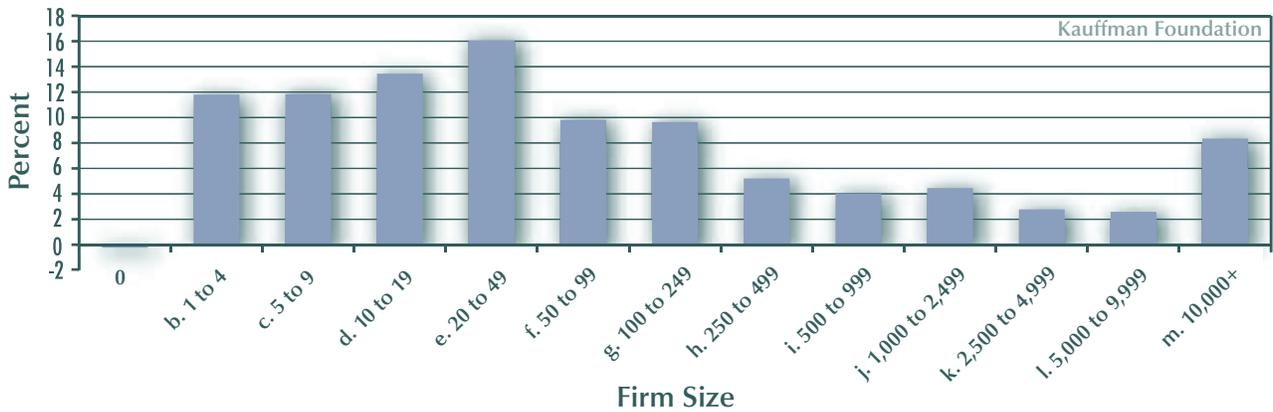


Figure 5. Source: Special Tabulation.

Figure 6: Young Firms Generally Small- to Medium-Sized Companies

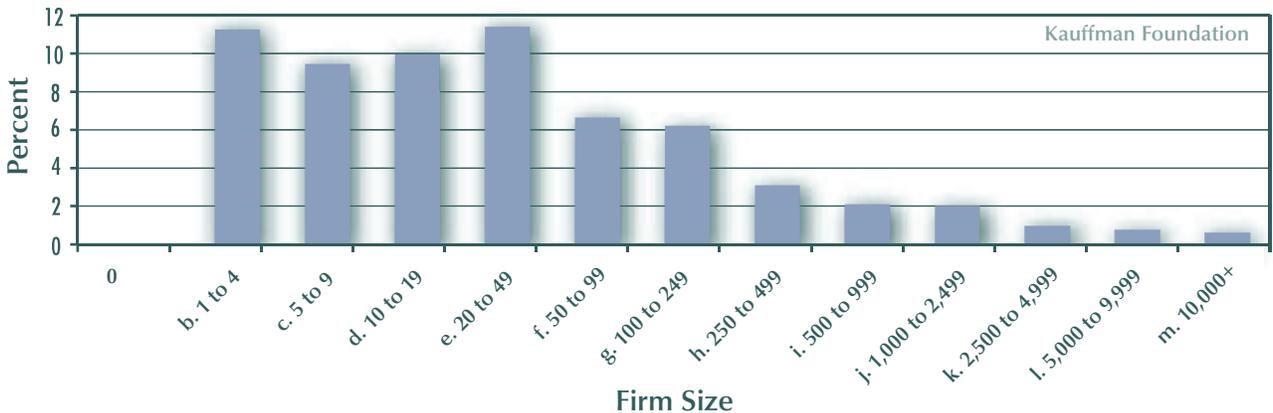


Figure 6. Share of Lifetime Net Job Creation by Firm Size, Young Firms only, 2007. Source: Special Tabulation.

Figure 7: What Industries Have Been Creating the Most Jobs?

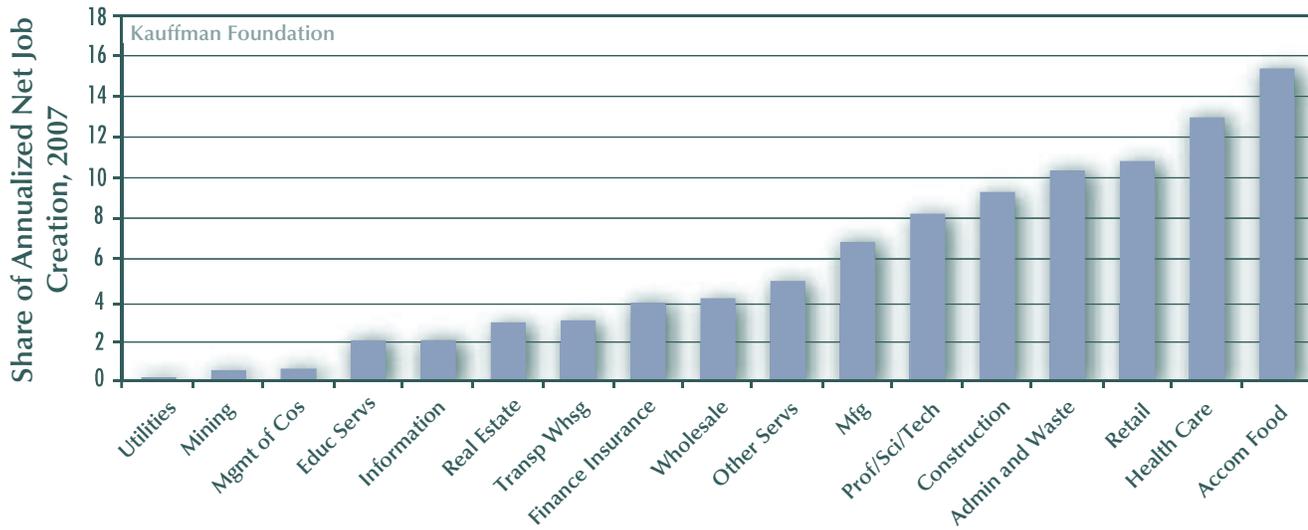


Figure 7. Source: Special Tabulation.

dynamic among young, mature, small, and old companies.

Taking the most general breakdowns by business sector,<sup>12</sup> it shouldn't be too surprising that there is a rather wide spread among industries. It is well established that at any given point in economic time, some sectors will be outperforming others. We need only look at the importance of information technology over the past decade as well as studies showing that the American productivity resurgence since 1995 has been heavily concentrated in just a handful of sectors.<sup>13</sup>

In particular, we have recently seen strong job creation in retail, health care, accommodation and food services, and professional, scientific, and technical services, while sectors such as educational services and information appear to have lagged. This distribution isn't altogether surprising: retail, health care, and accommodation and food services happen to be among the largest sectors in terms of employment and number of companies (Figure 7).

What is more interesting about the sectoral breakdown is what it reveals about the dynamic between firm size and age. In particular, there is very little relationship between the amount of small

firm employment in a sector and its job growth (Figure 8).

By contrast, there is an incredibly tight relationship between any particular sector's job growth and the performance of young firms within that sector (Figure 9).

The bottom line: young companies are the engines of job creation.

## Symbiosis, Churn, and the Wave Effect

Clearly, the important fact that young companies are primarily responsible for net new job creation has many implications, particularly for policymakers as they confront a dire employment situation. We will highlight three: the symbiosis between young and mature companies; the churn of employment and companies; and the effect of new companies through time.

Above, we mentioned a barbell effect with regard to job creation: startups and young companies account for a large share of new jobs. But one thing that stands out from the preceding charts—particularly Figures 3, 4, and 5—is that the largest

12. NAICS two-digit sectors.

13. See, e.g., Diana Farrell, Martin Baily, and Jaana Remes, "US Productivity After the Dot Com Bust," McKinsey Global Institute, December 2005, at [http://www.mckinsey.com/mgi/reports/pdfs/usproductivity/US\\_Prod\\_After\\_Dot\\_Com.pdf](http://www.mckinsey.com/mgi/reports/pdfs/usproductivity/US_Prod_After_Dot_Com.pdf).

Figure 8: Not Much Relationship Between Firm Size and Industry Job Growth

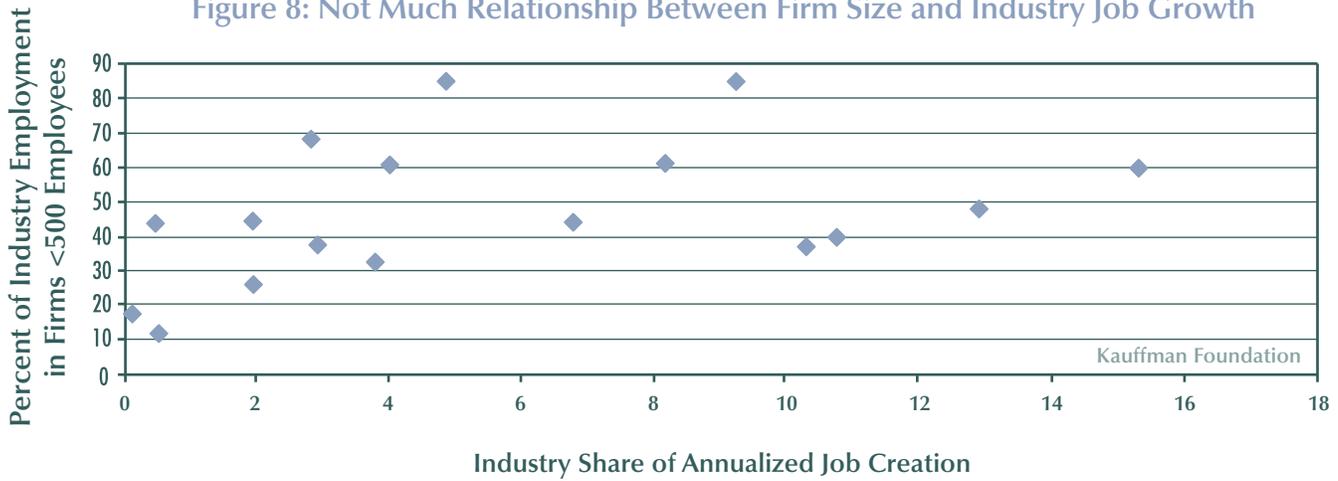


Figure 8. Authors' calculations from Special Tabulation and Census Bureau, Statistics of U.S. Business.

Figure 9: Industry Growth Driven by Young Firms

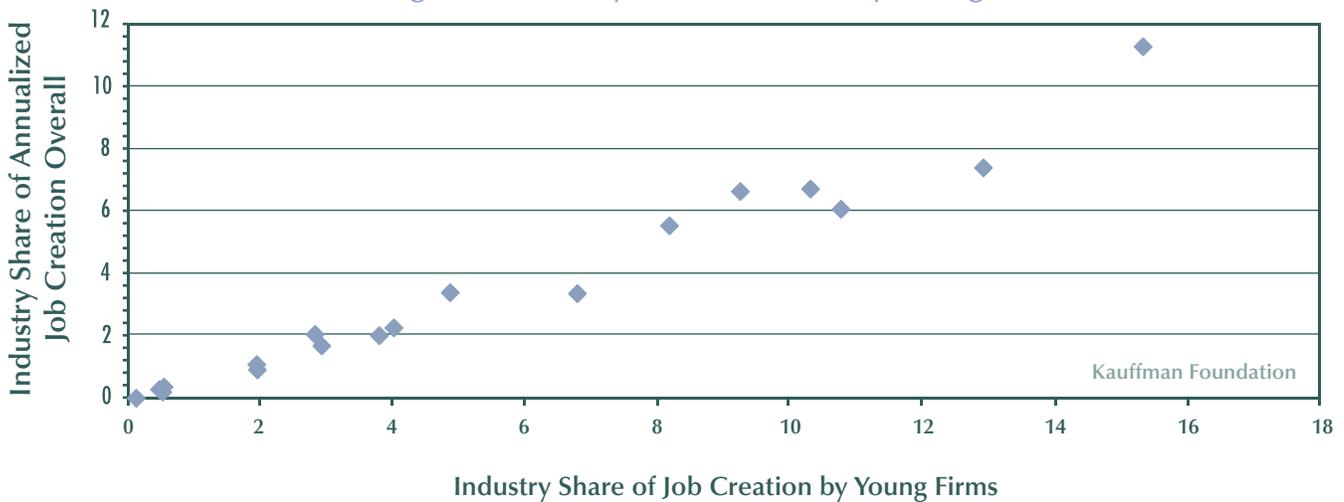


Figure 9. Source: Special Tabulation.

and oldest companies, represented as the far right column in these charts, still matter for job growth, accounting for over 10 percent of net job creation. Companies less than five years old, generally small- and medium-sized, join together with gigantic mature firms to expand employment. What this seems to be suggesting is a symbiotic relationship.

When we talk about net job creation, we mean the number of newly created jobs left once the dust of hirings and firings and voluntary separations

settles. Through expansion and recession, companies of all sizes are creating and destroying millions of jobs, and employees are leaving and joining (and starting) firms by the millions, in any year. To say that Company A created one hundred jobs in a year while Company B lost (or destroyed) one hundred jobs doesn't mean the employment pool at each company was static. Company A likely destroyed plenty of jobs while Company B likely created plenty of jobs—at the end of the year, the net change is positive or negative. Yet when we look at our

sectoral cross-section of job creation, we find that by and large those sectors with the greatest share of employment in large companies (10,000+ employees) were not those sectors with the highest shares of net job creation.

This pattern is not explained by the size of such companies: the average number of jobs created at these large firms is understandably big because they hire in large batches. Instead, Figure 10 reflects the huge number of young companies being formed in other sectors and adding more jobs. Remember, the average young company only adds about four jobs per year, meaning it takes a lot of young companies to add up to a bigger amount of job creation than the largest firms. How, then, can we explain the apparent finding in Figures 3, 4, and 5 that the biggest and oldest companies have positive rates of net job creation?

The nature of these data is such that we cannot break out mergers and acquisitions, but we suspect that the net addition of jobs in larger companies comes from their symbiosis with younger firms.<sup>14</sup> Namely, one of the only ways for big companies to

add net jobs is to acquire the younger companies that are not only generating jobs, but also are responsible for a good number of innovations that will keep the bigger company's revenue growth from diminishing. The U.S. economy supports an ongoing process of new firm creation, scale growth in some cases, another round of new firm creation, and selective acquisitions of new firms by those companies that achieved scale. It remains the case that young firms drive job creation—many of them are simply acquired at a young age by older and larger companies, a process seemingly reflected in positive net job creation for those established firms. Without more detailed data, a firm conclusion as to this dynamic eludes us; yet we suspect that such a process (among many) is at work. Anecdotally, at least, we see evidence of this in the acquisition strategies of companies such as Cisco and Medtronic, who rely on younger companies to pioneer innovations (and create jobs), at which point they purchase them. And, a good number of venture capital-backed companies have their "exit" in the form of acquisition. Such dynamism in the

Figure 10: Sectors with Highest Share of Employment in Biggest Companies are Not the Sectors with Biggest Net Job Creation

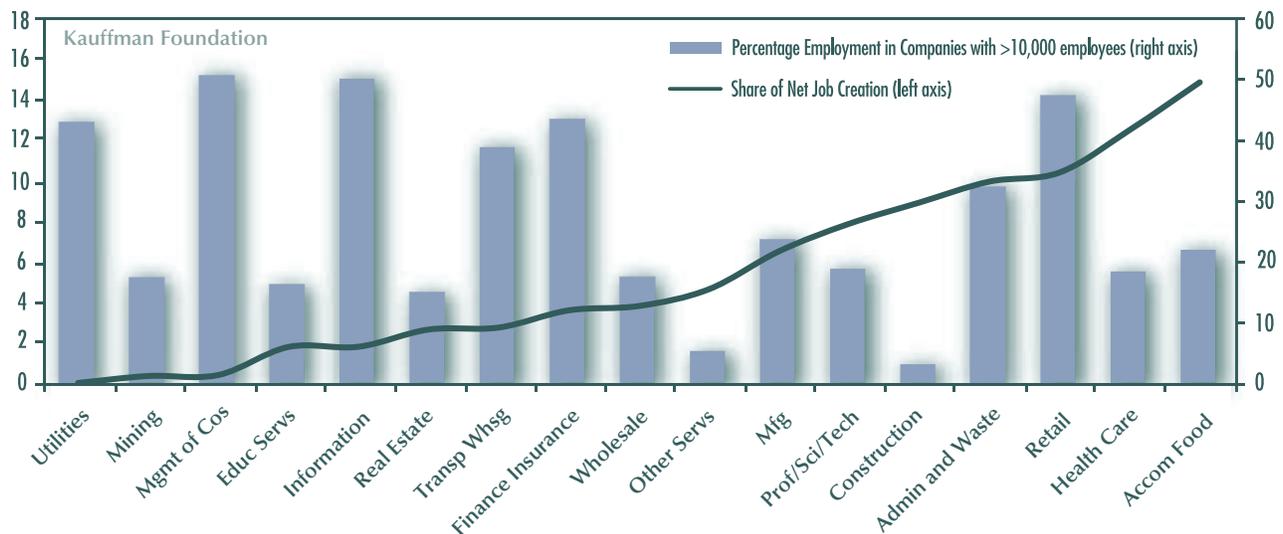


Figure 10. Authors' calculations from Special Tabulation and U.S. Census Bureau, Statistics of U.S. Business.

14. See, e.g., CARL J. SCHRAMM, THE ENTREPRENEURIAL IMPERATIVE (2006). We may also be seeing an effect due entirely to one sector—retail—which has both a high share of job creation and a greater number of giant companies than other sectors with comparable job creation numbers. That is, the finding that big and mature companies can still produce positive rates of net job creation could be a function of the size and firm composition of the retail sector, absent which this category of firms would show negative net job creation. This is an issue we will take up in subsequent papers.

Figure 11: Net Job Creation for the Fastest-Growing Young Firms by Size

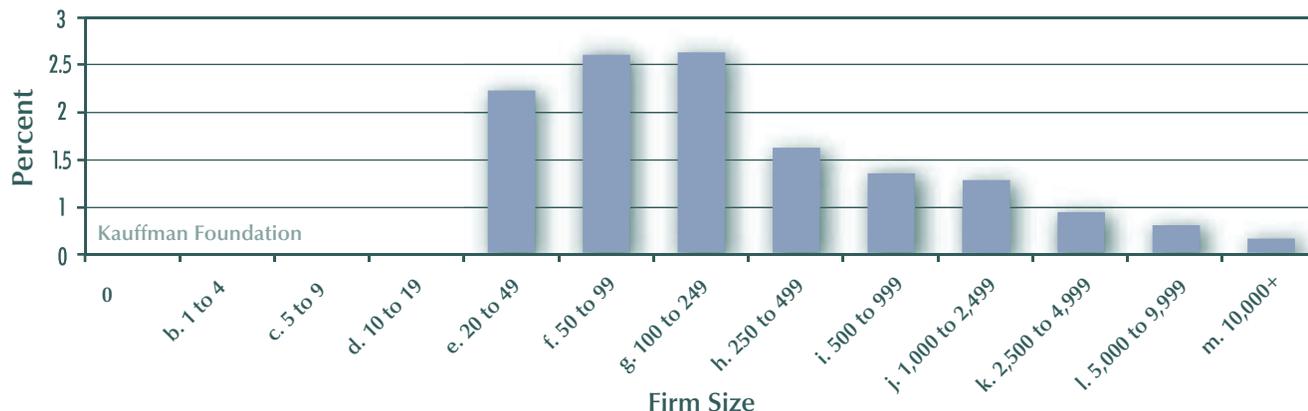


Figure 11. Percent of Annualized Net Job Creation for Top Performing Young Firms. Source: Special Tabulation.

capital markets (among mid-size companies as well) is an area deserving of further research.

This symbiosis that we suggest highlights a second feature of job creation: there is a considerable amount of churn among young firms. Job creation, as noted above, is not a smooth process, and this is especially true for those companies that are responsible for it. Indeed, young firms have the highest rates of job creation and job destruction. Some young firms, meanwhile, will survive to age nine or ten, and then shed many of the jobs they created. Others will create dozens of new jobs in years one and two, only to see them disappear in years three and four. Most findings on survival rates indicate that roughly a third of new firms fail to survive to age two. When we talk about young firms, then, we're talking about an ever-changing assortment of dynamic firms—entering and exiting; creating and destroying jobs. Such messiness is not cause for dismay or alarm; it is the provenance of net job creation. If we want to chart a rapid employment recovery, we need to foster such messy dynamism.

The third implication follows from this churn of jobs and firms: a snapshot of any given year's employment distribution fails to convey the wave-like movement of firms, particularly new firms, through time. When talking about job creation, we are unavoidably talking about the in-and-out dynamic of new and young companies (as well as more established companies, which occasionally fail as well). Firms creating jobs in a two-year period won't necessarily be the same companies creating jobs in the subsequent two-year period—and may

have even closed (or been acquired). This becomes especially apparent when we look only at the fastest-growing young firms in 2007, the top 5 percent of young job creators.

Figure 11 excludes one- and two-year-old firms, so we are looking only at firms aged three to five years, those creating the most jobs, on average twenty-six per year—or seventy-eight to 130 over a five-year span. And indeed we see that when displayed by firm size, these young companies have grown into much larger companies, in some cases employing thousands of people. Importantly, these companies could still fail at some subsequent point or be acquired by older and larger companies; or they could stop growing and remain the same size indefinitely. Some of these firms, meanwhile, continue to generate positive rates of net job creation at older ages—recall Figures 3 and 4, in which firms aged six to ten years show up as a considerable source of jobs (at least relative to older age categories). As will be explored in later reports, this can likely be explained by the presence of these fast-growing companies that continue to create jobs past the age five threshold.

What does all this add up to? Out of each pool of new companies, some emerge to create lots of jobs and are succeeded over the next year or next two years by an entirely new pool of firms. The net effect of all this is to consistently add roughly two million new jobs to the economy every year, assuming the demand to support their output exists. The economy generates a wave effect of new companies and new jobs each year.

## Entrepreneurs = Recovery

If the pessimistic forecasts for how long it will take the United States to recover from the current employment shock are even in the ballpark, we could well be facing a long and slow economic recovery in which employment lags behind most other indicators. There are various reasons, too, to think that the severity and nature of this recession could seriously dampen new firm formation. If existing companies see little reason to expand their workforce—after all, productivity is rising—why should anyone see fit to start a new company? In a darker vein, will companies formed in this recession be somehow weaker and more prone to failure? We have also seen a sharp contraction in credit, particularly commercial loans which, at the time of writing, showed few signs of recovering. Credit is oxygen for new and young firms and, if loans are scarce and if household wealth (a big source of financing) has fallen, will new companies be able to raise money?

These are important questions, not to be taken lightly, and they highlight the need to better understand the dynamics of firm formation, particularly in a macroeconomic and historical context. It could be the case, for example, that this recession opens up opportunities for massive amounts of reallocation—some see this underway already in the auto industry and among those laid off in that industry. “Too big to fail,” once a rough guideline for policymakers, has become a lightning rod for public opprobrium. It could be the case that the cachet of large organizations has taken an irreparable blow as people seek more security in younger and smaller companies. The slow recovery of employment may also work to spur even higher rates of firm formation: instead of waiting around for new jobs, people may take their future into their own hands.

To encourage new business creation, there are affirmative steps that can be taken, and negative steps that should be avoided. For example, with credit scarce, government at all levels may be able to help loosen the financing spigots. President Obama announced just this sort of step in October by raising the ceiling on SBA loan guarantees, and extending cheap credit to community banks willing to use it to make more business loans.<sup>15</sup> A much

bolder policy action would be to grant a payroll tax holiday for new and young companies, thus fostering job creation. Such a step would not be without difficulties (it would temporarily add to the deficit and might create a payroll tax ceiling beyond which companies hesitate to cross), but would serve as a signal that the U.S. economy, searching for a path to recovery, is open for (new) businesses.

Still, virtually all of the attention among policymakers and the media has focused on the waiting game by larger firms, currently reluctant to take back employees they dismissed, and unwilling so far to begin hiring new employees again. The analysis here, however, suggests this attention is misplaced. The overwhelming source of new jobs is new firms. The key implication for policymakers concerned about restarting America’s job engine, therefore, is to begin paying more attention to removing roadblocks to entrepreneurs who will lead us out of our current (well-founded) pessimism about jobs and sustain economic expansion over the longer run. This much-needed shift in focus cannot come soon enough.

15. See Henry J. Pulizzi, Obama Announces Steps to Channel Loans to Small Businesses, WALL STREET JOURNAL, Oct. 21, 2009, at <http://online.wsj.com/article/SB125615610024099681.html>.



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