Just How Important Are New Businesses?

New firms are the job engines of the economy, but firm formation has diminished. Should we worry?

BY THORSTEN DRAUTZBURG

New businesses create most of the new jobs in the U.S. economy each year — not small businesses, as popular wisdom holds. It may thus seem troubling that business formation has not kept up with overall growth in the U.S. economy over the last 35 years. And while counting jobs is just one way to quantify the success of new businesses, their relative decline matters not only for their owners and employees. That's because even though many new businesses fail, some survivors are innovators and grow rapidly, raising wage growth and productivity across the economy.

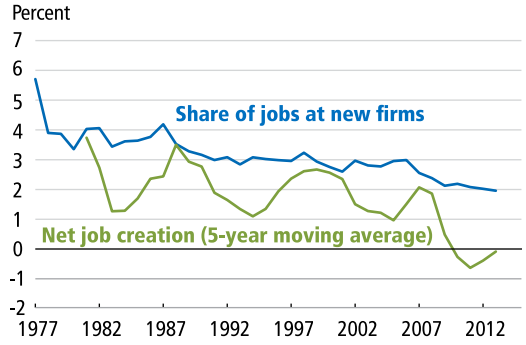
But we should be careful not to read too much into the drop in the headline numbers. The economic theory of creative destruction suggests that the success of new businesses comes at a cost to existing businesses.[1] Also, as I will show, Americans seem as entrepreneurial today as they were 20 years ago. Much of the fluctuation in the success of new businesses may actually have been driven by economywide forces such as demographics or technological opportunities, and not necessarily vice versa. So, even though it would be good to reverse the relative trend decline in business formation, it might not be as consequential as some believe.

What do I mean by "new" businesses? And why do they matter disproportionately for employment? Here I follow the Census Bureau's definition and define a new business's first, or *birth,* year to be the year it paid payroll taxes for an employee for the first time.[2] New businesses punch above their weight in terms of job creation. As Figure 1 illustrates, if new firms were to disappear and all else equal, employment in the U.S. would have fallen in every five-year period since 1977. That's because if the number of jobs created each year is calculated as a share of all jobs in the economy, the share created by new firms exceeds the share created by the U.S. economy as a whole — partly reflecting the fact

FIGURE 1

Share of Jobs at New Businesses Declining

Private nonfarm jobs created by new firms versus by all firms each year as shares of total jobs.



Sources: Census Bureau and author's calculations.

that each year many once-new businesses fail and destroy jobs.[3] Startup firms created an average of 3.6 million jobs per year between 1978 and 2013, but because aging startups and older firms shed jobs, only 2.1 million jobs a year on average were created in the economy as a whole during that period.[4] Even so, as Figure 1 also makes clear, the share of jobs created by startup firms has been falling since the mid-1980s, and the decline relative to the whole economy accelerated again during the Great Recession of 2007–2009.

Before going into details, it is worth emphasizing that the decline is relative to the growing U.S. economy. Between March 1982 and March 2007, just before the Great Recession, employment at firms up to three years of age had increased

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17 percent, and the number of firms up to age three had increased 14 percent. But overall employment had increased 61 percent, and the overall number of firms had increased 47 percent. Startups have failed to keep up.[5]

Until fairly recently, the role of young businesses in job creation had gone largely unnoticed, with much emphasis being placed instead on small businesses.[6] In 2013, John Haltiwanger and his coauthors pioneered the recent wave of U.S. research on the subject by compiling a data set that also tabulates the universe of U.S. firms by age. The researchers used the underlying firm-level data to argue "that once we control for firm age there is no systematic relationship between firm size and growth." This crucial role of newly formed businesses is consistent with data from other countries, such as Germany. Back in 1992, Tito Boeri and Ulrich Cramer had concluded that the opening of new businesses "is the driving force of trend employment growth."

Why had previous research focused on small rather than young firms? Since young firms tend to be small, it looks as if small firms per se are adding the most jobs unless one accounts for how long the firms have been in business.[7] Crucially, smaller firms do not grow any faster than larger firms of the same age. But new firms that survive their first year do grow faster than more established firms do. The average one-year-old firm increases its workforce by about 15 percent a year. Upon reaching five years of age, firms on average are adding about 3 percent more workers to their payrolls, while firms that have been around for more than 10 years are typically growing about 2 percent a year.

The high average growth rates for new businesses since the late 1970s mask the significant slowdown in new firm activity that has taken place. Figure 2 illustrates this slowdown by comparing the contribution to overall employment that new firms made in 1982 versus 2007 — both their initial share of total jobs in the economy and the growth of that share over the ensuing five years. Both the initial contribution and the growth were markedly lower in 2007 than in 1982. Firms that were started in 1982 employed 4.1 percent of private nonfarm workers and increased that share by an average of 3.2 percentage points over the next five years. The 2007 cohort, in contrast, initially employed only 2.6 percent of workers and increased that already-smaller share at the slower rate of 1.8 percentage points per year.

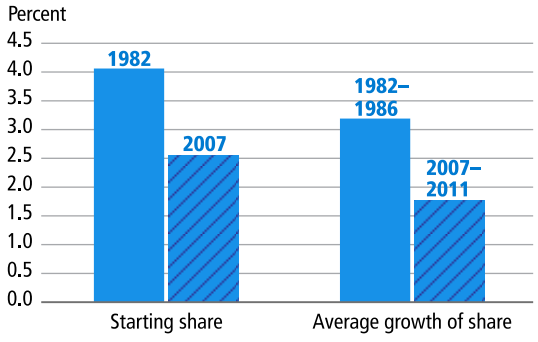
This slowdown has not been limited to the two years I illustrate here — Figure 3 provides the comprehensive picture and shows that the two cohorts displayed in Figure 2 are representative of the trend since the early 1980s.

Despite their diminishing contribution, new firms remain important employers in the U.S. For example, Figure 3 shows that in 1982, one out of five U.S. workers was employed at a firm that belonged to the 1977 cohort — and that was, therefore, up to six years old. By 2012, the ratio for the corresponding 2007 cohort had fallen to one out of 11, where it stayed in 2013.[8] In 2002, about 50 percent of employees worked at companies that had been started 25 years earlier. In 2013, that number had fallen to 39 percent.[9] This smaller role of new businesses is due both to the lower starting shares evident in Figure 2 (visible as increasingly lower starting points in Figure 3) and slower growth (visible in the ever-flatter slopes in Figure 3).

FIGURE 2

New Firms Used to Have Larger Share of Jobs

Starting share of employment and average growth during first five years by starting year.

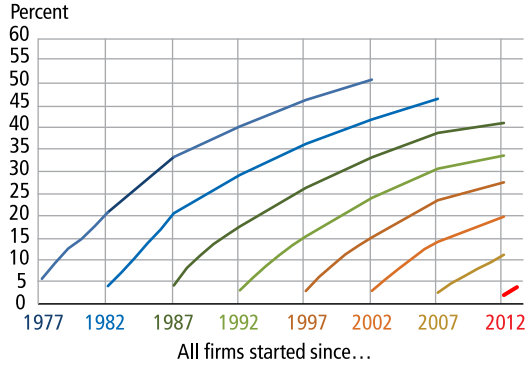


Sources: Census Bureau and author's calculations.

FIGURE 3

New Firms' Share of Jobs Is Shrinking

Cumulative share of private nonfarm employment of firms by starting year, 1977–2013.



Sources: Census Bureau and author's calculations.
Note: The data on firm ages top out at 25 years.

What are the economic implications of this decline in young companies' share of total employment? By one estimate, if the U.S. economy had maintained the startup dynamics that had prevailed in the late 1970s and early 1980s, and if established businesses had still been able to create the same number of jobs as they did without the added competition, the U.S. would have 15 million to 20 million more private sector jobs today.[10] Amid this trend decline in new firms' share of employment, the Great Recession accelerated the decline in firm formation: Thirty percent fewer businesses were created in the recession compared with the previous peak.[11] A decline of this magnitude is unprecedented in the data, which start in 1977. Worse, according to one study, those businesses that were created during the recession were, on average, smaller — and we should expect them to remain smaller throughout their existence.[12]

Some of the most prominent new businesses of the past few decades have become transformative technology companies such as Amazon, Google, and Facebook.

WHY CARE?

While these developments seem disconcerting, they do not tell us if we should care more about the fate of young firms than about established ones. After all, what difference does it make whether a job is created by an established business or a new one? Yet, clearly, startups have gone on to play an outsize role in today's economy — not only in terms of job counts. Some of the most prominent new businesses of the past few decades have become transformative technology companies such as Amazon, Google, and Facebook. These companies have gone on to create tens of thousands of mostly well-paying jobs and have certainly contributed to a more productive economy.

But it is hard to move beyond anecdotes to establish whether new businesses in general increase productivity and employment more than other expanding businesses do. Looking only at the stars among new businesses is misleading because of *survivor bias*: Naturally, the top startups were the successful ones. So we have to look at the job-generating effects of all the businesses formed within a given period. But even once we turn to young businesses as a whole, it becomes hard to tell whether, say, their productivity pushed overall productivity higher or whether they were pulled along by a general rise in productivity. And the more important new businesses are for the economy, the more difficult it is to quantify those benefits because of feedback effects — whether a productivity boom originated among the new businesses or was simply adapted by them.

So, to isolate the effects of new businesses, researchers have to find ways to construct a comparison with a counterfactual model of an otherwise identical economy with fewer or no new businesses. Consider new businesses in France, as a starting point. In the French data, new firms tend to have a productivity rate about 15 percent higher than that of older firms that are shrinking.[13] However, this might be because new firms use better technology that incumbents could also invest in. Interpreting the observed higher productivity is, therefore, hard. One creative study compared U.S. counties where large factories, called "million dollar plants" in the study, had chosen to locate with the runner-up counties.[14] The new plants made other businesses in the county 3 to 5 percent more productive. But no such increase occurred among businesses in the runner-up counties. New plants, like new firms, have access to the latest technologies or can introduce new product varieties. This difference in the counties' productivity thus supports the notion that new businesses are both more productive themselves and, unlike older businesses, make other local businesses more productive.

LIMITS TO THE ROLE OF NEW BUSINESSES

Despite the benefits that new businesses bring, the headline numbers for employment or productivity may overstate their economic impact for two reasons: First, increases or decreases in the importance of new businesses might just reflect other forces at work in the economy. Second, what is good for new businesses may be bad for old businesses.

One concern is that fluctuations or trends in the number and size of new firms might just be transmitting fluctuations originating elsewhere in the economy. If that were the case, any remedies would also likely have to address the underlying cause, and not firm creation, which would merely be a symptom. For example, one study suggests that supply shocks from demographic changes largely explain the trend decline of new businesses.[15] Another suggests that changes in monetary policy barely affect financing conditions for large firms but have a big impact on the ability of small firms (which, as we saw, are more likely to be young) to get

loans — often critical for starting a business and keeping a young firm going. [16] In these cases, policymakers might want to address demographics through immigration reform or credit supply through targeted loan programs.

Are Americans becoming less entrepreneurial and simply less inclined to start businesses? Even though new businesses as we have defined them — having an employer plus at least one employee — have diminished, the same cannot be said of self-employment in general. Working for oneself apparently has not declined. On average, around 0.3 percent of Americans reported becoming self-employed as their primary occupation from 1996 to 2014 (Figure 4). While the fraction of the newly self-employed fluctuates, it does so within a fairly narrow range, in contrast with the trend decline we have seen in the number of new employers. Figure 4 also shows that a stable fraction of Americans give up a job to start a business, suggesting that entrepreneurship is a choice and not due to a lack of jobs.

New technologies also affect the creation and growth of new businesses. An analysis of different technological eras from the 1870s to the 1990s that examined the leading new firms in different sectors found that new firms rose to importance faster during the electrification era in the late 19th century and in the information technology era of the second half of the 20th century than during the chemical-pharmaceutical era in the middle of the 20th century.[17]

The stock market provides a way to quantify the role of new firms over time. During eras when new firms rose rapidly, they quickly commanded a large share of the total stock market valuation. By this metric, today's startup slump no longer appears unprecedented. In both the 1890s and 1990s, new firms' stock market valuation and the growth of their share were both relatively high — only to be followed by slowdowns.[19] Yet, the slowdown in the mid-20th century was subsequently reversed with the commercial success of computers (Figure 5).

Tech Startups in History: Not All Gazelles

General Electric's founding in 1878 represents the start of the electrification era. It had its breakthrough innovation in 1880, grew rapidly during the electrification era of the late 1800s, incorporated, and went public in 1892. American Telephone & Telegraph was founded in 1885, had its breakthrough innovation in 1892, incorporated in 1895, and had its initial public listing in 1901.

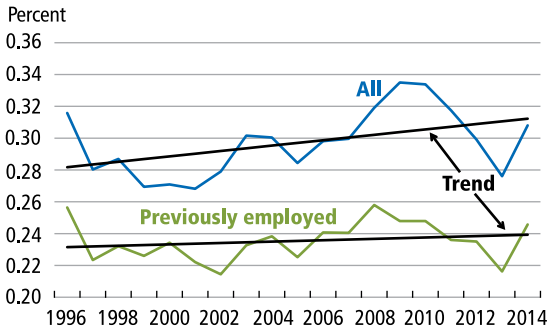
In contrast, major chemical and pharmaceutical companies were founded in the same era as GE and AT&T but had their breakthrough innovations and went public at much later ages. It took Pfizer 51 years to incorporate, in 1900, and almost 100 years until it achieved its breakthrough innovation in 1944. Merck progressed a little faster but still took 43 years to incorporate and 53 years to reach its breakthrough innovation, also in the chemical-pharmaceutical era of the mid-20th century. These companies went public in 1944 and 1946, respectively.

The information technology era has been characterized by an even faster rise to prominence by major firms than during the electrification era. The advent of computerization is represented by the rapid incorporation, breakthrough innovation, and initial public offering of Intel — all within four years of its founding in 1968. Microsoft reached the same milestones within 11 years of its incorporation in 1975.[18]

FIGURE 4

Americans as Entrepreneurial as in Late 1990s

Share of U.S. adults age 20–64 switching their main occupation to self-employed, by year.

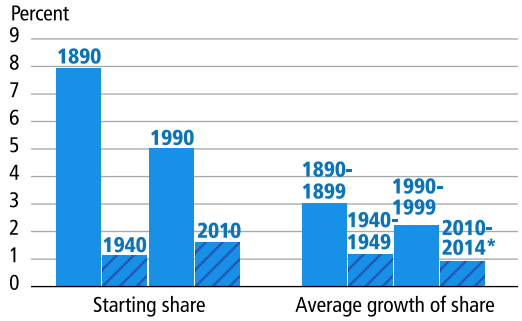


Sources: Kauffman Foundation and author's calculations.

FIGURE 5

Tech Waves? New Public Firms Slow After Roaring '90s…

Starting share and average growth of stock market capitalization by firm starting year, 1890–2015.

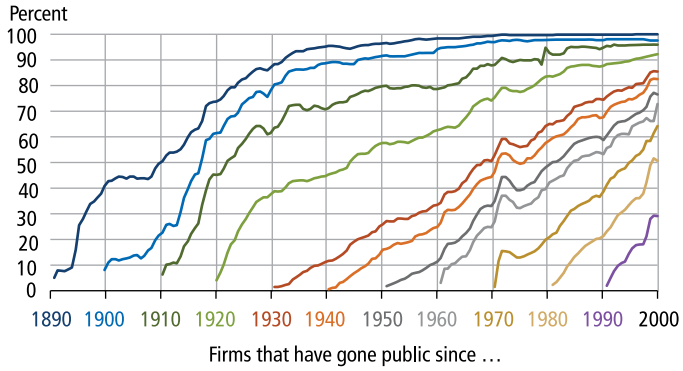


Sources: Jovanovic and Rousseau, 2002; Compustat*; and author's calculations.

FIGURE 6

…But History Shows Big Swings in Value

Cumulative share of U.S. stock market capitalization by firm starting year, 1890–2000.



Source: Jovanovic and Rousseau, 2002.

Figure 6 shows in more detail how the contribution of new firms to the U.S. stock market has fluctuated over the course of 110 years. Firms that got started before 1930 grew rapidly in market value, with cohorts achieving 20 percent market capitalization shares within 10 years, reflecting the rapid growth of firms during the electrification era. During the pharmaceutical and chemical era of the 1930s, 1940s, and 1950s, the share of young firms declined markedly. Yet, it recovered in the subsequent computerization era — before slowing again in the 2000s (Figure 5). If history is a good guide, we can hope for another rebound.

Are publicly traded firms a good indicator of new firms' success through history? They might not be. Which firms go public is not random, and the decisions underlying public offerings may change for reasons unrelated to startup formation. However, looking at the census data on all firms, public as well as privately held, shows that the recent decline in the total number of firms is not unprecedented. True, these totals do not tell us how much of an observed fall in the total number of firms is due to fewer startups and how much is due to more failures of existing firms. Yet, the fluctuations in the number of firms are consistent with the fluctuations in stock valuations over time, suggesting that the recent declines may very well reverse themselves. The decline in the Great Recession has precedents in the Great Depression and in the slowdowns in the 1950s and 1960s, all of which were subsequently reversed (Figure 7). A historical view thus suggests not reading too much into the decline of new firms because of technological underpinnings.

From a macroeconomic view, we do not care about the rate of startup creation or startup employment shares per se. For example, competition in the labor market from new businesses drives up wages so that more or bigger new businesses might lead to fewer or smaller existing businesses. Standard economic models[20] and recent empirical estimates suggest that this effect is sizeable. By one estimate, the crowding-out effect of increased competition can destroy jobs at established firms equal to anywhere from one-third to 90 percent of the jobs created by new firms.[21]

However, even if the crowding-out were complete and employment at new businesses came completely at the cost of old businesses, this reallocation of workers might still be beneficial for the economy. New firms are able to crowd out old firms only because they are more productive. This higher productivity may raise wages more than employment — my model implies precisely that the stronger the crowding out, the faster the wage growth. In the French study mentioned earlier, even a complete reallocation from old to young businesses was estimated to raise wages about 10 percent.

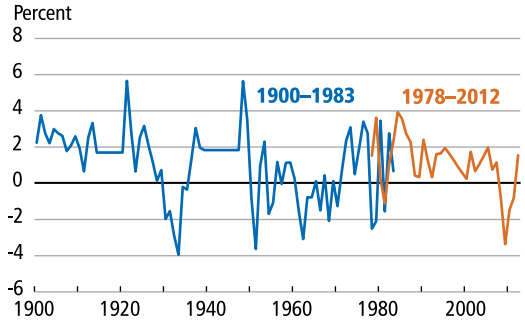
SHOULD WE BE WORRIED?

The pace at which businesses are started matters — but less so than their impressive job creation numbers would suggest. The reason is that ups and downs in the number of new businesses reflect other economic forces such as demographics and technology. New businesses contribute to productivity and employment growth, but partly at the cost of existing businesses. The current slowdown in business

FIGURE 7

Firm Formation Has Fluctuated Greatly over Time

Changes in the number of new U.S. firms, 1900–2012.



Sources: Census Bureau and author's calculations.
Notes: Data for 1900–1983 are Census Bureau firm births and deaths statistics. Data for 1978–2012 are Census Bureau Business Dynamics Statistics. Data around World War I and World War II are averages.

formation is therefore serious, but the underlying causes may well lie outside the realm of policies tailored at nurturing startups — such as offering new entrepreneurs insurance against risk or tax incentives. The slowdown in business formation, particularly in the Great Recession, likely reflected the overall economic slowdown more than it contributed to it. The experience of the U.S. economy over the 20th century gives reasons to hope that as technology evolves, a new entrepreneurial boom may well emerge.

That is not to say that policymakers can only stand by and wait. There is at least limited potential for policy. French legislation that provided some insurance against entrepreneurial earnings risk has increased business formation and employment without diminishing the quality of new firms.[22] Even if the employment effects were small, similar legislation in the U.S. might raise productivity and wage growth. ■

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NOTES

[1] Shigeru Fujita's *Business Review* article provides an overview of studies quantifying economist Joseph Schumpeter's famous insight that the continual churn of firm formations and failures is the "essential fact about capitalism."

[2] Formally, a new business has been in existence for no more than a year, has at least one paid employee, and is not owned by another business. Excluded are the self-employed who have no employees; private households that employ domestic help; and railroads, agricultural producers, and most government entities.

[3] The Business Dynamics Statistics data set assembled by John Haltiwanger and his coauthors and provided by the U.S. Census Bureau underlies this article.

[4] This difference partly reflects how business-level job creation is calculated: as the change from the size of the firm's workforce in the prior year. Since by definition a new firm has no prior year, it can only add jobs, while an older firm can shed them. For details on how the Bureau of Labor Statistics measures net changes in employment at the business level, see its Business Employment Dynamics FAQs, in particular question No. 9: http://www.bls.gov/bdm/bdmfaq.htm#9. To calculate these annual averages, I adjusted for changes in the working-age population by dividing by the ratio of the working-age population in a given year relative to 2013. I dropped 1977, which was a (positive) outlier. Note that gross job creation averaged 19.63 million jobs per year, adjusted for changes in the working-age population.

[5] The Census Bureau's Business Dynamics Statistics also charts the decline in absolute terms: http://www.census.gov/ces/dataproducts/bds/.

[6] David Birch's 1981 work actually emphasizes both the role of being a young firm and of being a small firm but does not address the correlation of young with small.

[7] Haltiwanger and his coauthors pointed out this misperception.

[8] Data for 2013 are not shown.

[9] This trend holds true within industries and across regions in the U.S. See also the research by Ryan Decker and his colleagues and by Benjamin Pugsley and Aysegul Sahin.

[10] Pugsley and Sahin, 2015. Such a high number exceeds the number of people unemployed in the U.S., which peaked at 15.2 million in 2009, and would thus imply an increase in labor force participation.

[11] See the discussion paper by Michael Siemer.

[12] See the paper by Petr Sedlacek and Vincent Sterk.

[13] See the paper by Johan Hombert and others. Ideally, one should compare entering with exiting firms. Because we do not observe the hypothetical productivity of firms that exited, Hombert and his coauthors instead compare the productivity of new and existing shrinking firms.

[14] The article by Michael Greenstone and his coauthors details the comparisons. Note that winning counties could also just have better productivity to start with than losing counties, but Greenstone and his coauthors find that "compared to losing counties in the years before the opening of the new plant, winning counties have similar trends in most economic variables," (p. 539).

[15] Fatih Karahan and his colleagues argue that the trend decline of new businesses that Pugsley and Sahin documented is, in fact, largely attributable to supply shocks arising from demographics.

[16] See Mark Gertler and Simon Gilchrist's study of monetary policy's effects on financing conditions for large versus small firms. Martin Schmalz and his coauthors and Manuel Adelino and his coauthors argue that because collateralized loans matter for entrepreneurs, startups transmit events in the housing market. They claim that 15 to 25 percent of the employment growth between 2002 and 2007 can be attributed to the U.S. housing boom's benefit to entrepreneurs.

[17] Boyan Jovanovic and Peter Rousseau's account of U.S. history shows how firm formation has reflected technological opportunities.

[18] Jovanovic and Rousseau, 2002.

[19] Because the data in Jovanovic and Rousseau end in 2000, I supplement calculations based on their data with data from Compustat in Figure 5. When the two data sets overlap in the 1990s, the implied starting share and growth rate are very similar.

[20] For example, a "span of control" model as calibrated in my 2013 paper.

[21] See the paper by Johan Hombert and his coauthors.

[22] Hombert and coauthors.