Startups and young firms in the economy

Trends, the Great Recession and a look ahead

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1. Some reasons for concern

The Great Recession was officially deemed to be over in 2009. Although many economic indicators have since turned towards brighter days, developments along certain dimensions related to startups and young businesses remain gloomy. For example, 2009 was also the year which, for the first time in recorded U.S. history, witnessed more businesses shutting down than starting up.[1] This pattern has not yet recovered. Even in 2012, three years after the official end of the crisis, the number of startups was still 31 percent below its pre-crisis level. The persistently lower number of startups also spilled over to a smaller share of young firms in the economy: in 2006 firms not older than 5 years accounted for 40 percent of all businesses, in 2012 it was 33 percent.

The above patterns are reasons for concern because young firms are known to be the "engines of growth" in the sense that they account for a disproportionately large chunk of aggregate job creation (see e.g. Haltiwanger, Jarmin, Miranda, 2013) and that a fast pace of entry and exit is associated with productivity-enhancing creative destruction (see e.g. Foster, Haltiwanger and Krizan, 2006). This report discusses potential sources and consequences of the declining share of startups and young firms in the economy. The last section is devoted to an attempt at pointing out missing links in our knowledge about the functioning of the economy. Further research in such areas will hopefully improve our position for providing policy recommendations.

2. The secular decline in the startup rate

While the Great Recession was characterized by large drops in the number (and rate) of startups, it was not a historical exception. In fact, there is a clear secular decline in the startup rate accompanied by a relatively stable firm exit rate (left panel of Figure 1).[2] Together, these patterns imply that the firm population is aging. While in 1982 half of the universe of firms was younger than 6 years, in 2012 it was only one third. This pattern is also reflected in a drop in the employment share of young firms from 20 to 10 percent (right panel of Figure 1).

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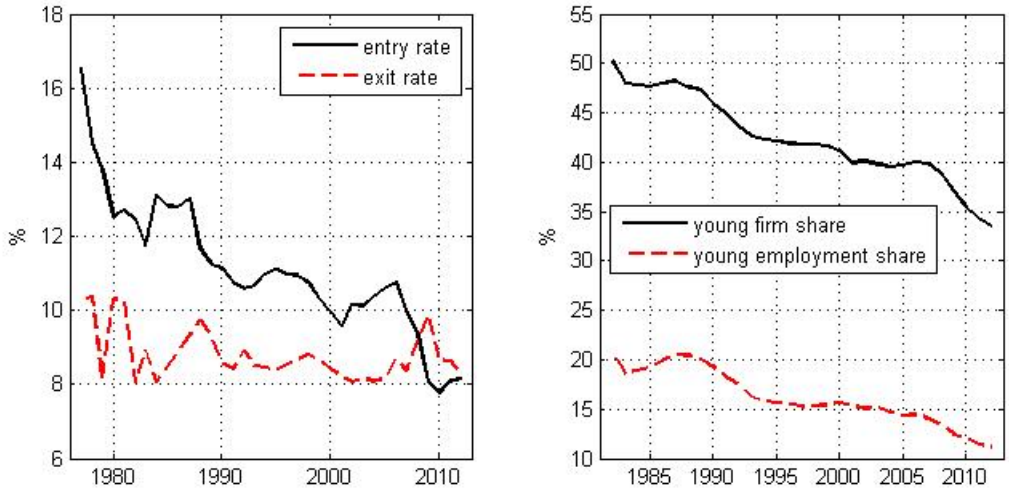
[1] All referenced data about firms and establishments are for the US economy and come from the Business Dynamics Statistics (BDS), unless stated otherwise. The BDS covers almost the entire universe of private employment and gives annual information on the number and employment behavior of firms and establishments from 1977 to 2012.

[2] On the contrary, the number of startups has been relatively stable in the past three decades (with the exception of the latest downturn, from which the number of startups has not yet recovered).

Figure 1. Entry and exit rates (left panel), firm and employment shares of young firms (right panel).



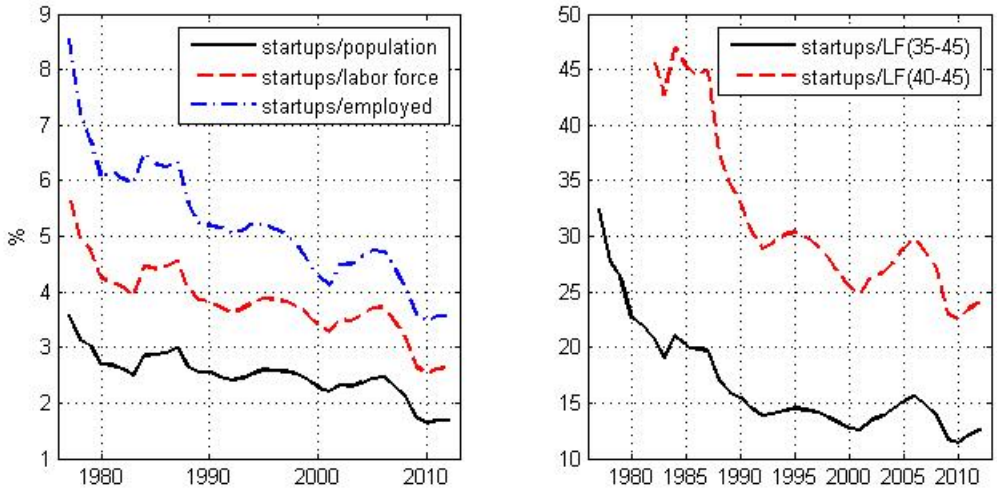
Note: The startup rate is defined as the number of firms younger than one year over the total number of firms in the economy. The exit rate is the number of firms shutting down over the total number of firms. Young firms are those younger than 6 years. Source: Business Dynamics Statistics.

What kind of startup rate?

The last three decades were characterized also by strong trends in the population of individuals. Therefore, perhaps a more meaningful measure of whether or not the economy has lost some of its ability to create new businesses is one in which the number of startups is scaled by the population, labor force or employment level. However, even these alternative measures display a downward trend (left panel of Figure 2).

The demographic changes mentioned above also include an aging worker population. A common misperception is that new businesses are founded by young individuals. Interestingly, according to the Kauffman Firm Survey, the median age of business founders is 45. Therefore, an aging population (of individuals) might lose its ability to create startups simply because the pool of potential entrepreneurs shrinks. Measuring the startup rate in terms of the number of economically active individuals aged 40-45, however, also reveals a strong downward trend (right panel of Figure 2).

Figure 2. Alternative measures of the entry rate.



Note: Startup rates are defined as number the of firms younger than one year over the civilian "population", "labor force" and "employed" (taken from the BDS) and over the labor force aged 35-45 and 40-45.
Source: Business Dynamics Statistics and Bureau of Labor Statistics.

What are the consequences?

Pugsley and Sahin (2014) investigate the consequences of an aging firm population for the aggregate economy. They find that once we take the developing firm demographics into account, incumbent firms have not changed their behavior over the past three decades. In other words, conditionally on age, firms' survival rates, employment growth rates and business cycle sensitivity have remained virtually identical to what it was thirty years ago.[3]

In an accounting sense, the shift away from young firms has a direct negative effect on aggregate trend employment growth. Moreover, because older businesses are less sensitive to business cycle movements, these secular patterns also dampen the cyclical component of aggregate employment growth. The trend decline in firm entry exacerbates the dampening during booms and masks it during recessions. Put together, these forces help explain the emergence of jobless recoveries when aggregate employment recovers slowly relative to output.

What are the potential sources?

While there is ample evidence documenting the presence of the secular decline in the startup rate (see also e.g. Davis and Haltiwanger, 2014, Decker, Haltiwanger, Jarmin, Miranda, 2014, Reedy and Litan, 2011), its sources are not yet well understood. Identifying the driving forces is crucial for policy: are we observing an efficient response of the economy to technological or demographic shifts or is the

[3] Davis, Haltiwanger, Jarmin, Miranda (2006) show, however, that business dynamism measured (employment weighted) average volatility of firm growth rates has declined by more than 40 percent since 1982. Only about one third of this decline can be traced back to a shift towards older businesses.

declining rate of business formation the result of increasing misallocation due to, for instance, rising costs of starting up a business?

While increasing costs of starting up a business may be part of the story, they would have to leave incumbent firm behavior unchanged (as documented by Pugsley and Sahin, 2014).[4] Moreover, a declining startup rate may also arise "naturally" in a growing economy. At this point, it is useful to revert back to a simple equilibrium condition, namely that labor supply is equal to labor demand. On the one hand, labor supply in the economy depends on the size of the population (L) and the employment rate (E/L). On the other hand, the number of workers demanded by firms in the economy is determined by the number of firms (N) and their average size (S). We can then rewrite this equilibrium condition in terms of growth rates

$$d \ln L + d \ln E/L = d \ln N + d \ln S$$
$$\textit{(1.2\%)} \quad \textit{(0.4\%)} \quad \textit{(1.1\%)} \quad \textit{(0.5\%)}$$

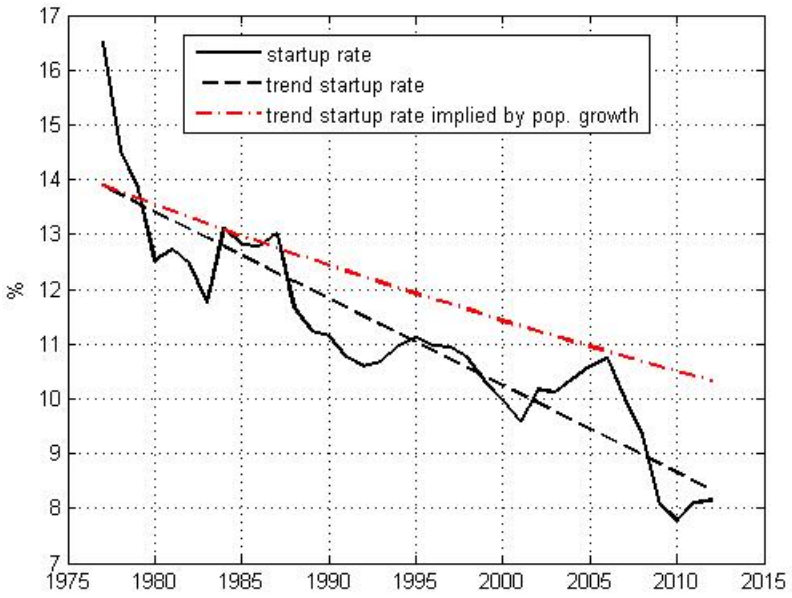
which simply states that labor supply growth (either because of a growing population or a rising employment rate) can be “accommodated” by the economy through an increase in the number of firms and/or by firm size growth. The numbers in brackets show the average values for the U.S. economy in the past 30 years.

What effect can this have on the firm entry rate? Keeping the relative contributions to growth fixed, a back-of-the-envelope calculation would suggest that population growth alone would result in a 0.8 percent annual growth of the number of firms.[5] This, together with a roughly constant inflow of the number of startups (as in the BDS data) implies a drop in the startup rate amounting to about 70% of the observed secular decline (Figure 3).[6] Karahan, Pugsley and Sahin (2015) come to a similar conclusion using cross-state variation in demographics and start-up rates to identify the impact of a slowdown in population growth on the rate of firm entry.[7]

In other words, and perhaps surprisingly, the majority of the startup rate decline seems to be explained by demographic changes. Missing from the above simple exercise, however, are feedback effects from the lack of startups to incumbent firms, an analysis of reasons why the economy adjusts both on the extensive (number of firms) and intensive margins (firm size) and most importantly what factors determine the relative strength of these adjustments.

[4] Nevertheless, there is some evidence that increased federal regulation in the U.S. has negatively impacted aggregate economic activity (see e.g. Dawson, Seater, 2013).
[5] Population growth accounts for ¾ of the labor supply increases. ¾ of the 1.1% growth in the number of firms gives an annual growth rate of 0.8 percent.
[6] See Stangler, Kedorsky (2010) for an analysis of the constancy of the number of startups.
[7] In their analysis between 50 and 75% of the observed secular decline in the startup rate is due to a slowdown in population growth.

Figure 3. Startup rate, trend and trend implied by population growth.



Note: Level and (linear) trend of actual startup rate and trend startup rate implied by observed population growth.
Source: Business Dynamics Statistics and author's calculations.

3. Has the Great Recession left a persistent scar?

The latest numbers of firm startups are not only the result of the trend decline discussed above, but they also stem from a particularly strong recession. Out of all the recessions since the late 70's, the Great Recession gave rise to the largest decline in startups, even when we take into account the severity of the downturn (either by looking at output growth or the increase in the unemployment rate). Can this unprecedented cyclical decline in the number of firms have persistently negative effects on the aggregate economy in future years?

A lost generation of firms

A decline in firm entry has not only a direct effect through a lack of job creation by startups, but it creates a ripple effect in later years as the smaller cohort of entrants grows older. In fact, the pro-cyclical nature of firm entry spills over to young firms resulting in pro-cyclical movements in the share of young businesses.[8] Moreover, a simple variance decomposition of the variation in aggregate employment reveals that young firms account for 40 percent of its cyclical fluctuations even though they employ only 16 percent of the workforce. This reiterates the findings of Haltiwanger, Jarmin and Miranda (2013) about the disproportionately large contribution of young firms to aggregate job creation on average, but this time at business cycle frequencies. Together these facts raise concerns about the medium- to long-run impact of the recently lost generation of firms in the Great Recession.

[8] Cyclical changes in firm survival rates turn out to explain only about 1 percent of the fluctuations in aggregate employment.

We can obtain a rough estimate of the potential impact of the lost generation of firms by simulating a drop in the entry rate in an economy which has survival and employment growth rates of incumbent firms fixed to their sample averages. The unemployment rate impact of a drop in the number of startups (of the magnitude seen in the Great Recession) is quite alarming: even 10 years after the shock subsides the unemployment rate remains more than 1 percentage point above its pre-crisis level (see Sedláček, 2015).

However, this type of calculation is somewhat misleading and Sedláček (2015) shows that the behavior of incumbent firms is instrumental for understanding the impact a lack of startups may have on the economy. Using an estimated structural model the paper shows that even if the number of startups had remained at its pre-crisis level up until 2012, the effect on the aggregate economy is limited (in subsequent years the unemployment rate would have been at most 0.5 percentage points lower). The reason is that incumbent firms take advantage of the lack of startups (and thus job creation) and they hire and retain workers more easily. Moreover, depressed wages increase firm profits and this promotes higher firm entry in future years.

The take-away message from the above analysis is that a lower number of startups per se does little to the aggregate economy unless there are reasons preventing incumbents from taking advantage of the slack in the labor market. The paragraphs below discuss two such reasons.

The composition of startups

One can imagine that the *composition* of startups is different in recessions compared to booms. On the one hand, perhaps only the relatively more productive startups are good enough to survive in the downturn. On the other hand, it may be that new firms starting up in recessions are dominated by "necessity" entrepreneurs trying to escape unemployment. Sedláček and Sterk (2014) analyze the cyclical changes in the composition of new firms by investigating the growth potential of cohorts of startups several years after they enter the economy. They find that cohort-level employment is extremely persistent and that the majority of its changes are driven by differences in firm sizes, rather than the number of firms across cohorts. In other words, cohorts of startups that enter small (typically in recessions) turn out to remain small even years down the track.

Moreover, using an estimated structural model they find that composition effects are important not only at the cohort-level, but also for aggregate fluctuations. In particular, changes in "birth" conditions of firms help shape the *trend* in aggregate employment. Their results therefore suggest that (all else equal) the unprecedented drop in the number of startups in the Great Recession may be followed by a prolonged period of lower aggregate employment due to negative selection effects among firms born during the crisis.

Figure 4. Startups per number of young in the labor force.

Note: Number of startups per the number of young (20-25 and 25-35) in the labor force.
Source: Business Dynamics Statistics and Bureau of Labor Statistics.

Who do startups and young firms hire?

Another reason why incumbent firms may not be able (or indeed willing) to compensate for the lack of job creation due to a lower number of startups is that new and young firms hire in "different markets". Ouimet and Zarutskie (2013) document that young businesses are more likely to employ (and hire) younger workers. In fact, they show that a regional increase in the supply of young workers is followed by a rise in the startup rate in those regions. Interestingly, this pattern is apparent also at the aggregate level where the number of startups per the number of economically active young is essentially flat (Figure 4).

A cyclical decline in the number of startups could then give rise to mismatch unemployment as the pool of job seekers becomes disproportionately occupied by workers who are not appropriate candidates for incumbent firms. That said, current research seems to assign only a limited role to mismatch for determining unemployment rate dynamics (see e.g. Sahin, Song, Topa, Violante, 2013).[9]

[9] Sedláček (2014) shows, however, that the severity of mismatch may be underestimated when job seekers from outside unemployment are not taken into account.

4. A look ahead, what would we like to know?

The currently low share of new and young firms in the economy is a combination of a 30 year secular decline and a particularly strong cyclical downturn following the Great Recession. Recent research shows that such changes in the firm age distribution have implications for the aggregate economy and may lead to a persistent drag on employment in years to come.

However, what is not yet well understood are the sources of these changes. In order to provide effective policy advice, we need to understand why does (the slowdown of) population growth affect both the number of firms (i.e. startups and firm closures) as well as average firm size and what determines the extent of adjustment along these two margins. In particular, what is the role of (possibly changing) costs of starting up and running a business in this adjustment process?

Moreover, existing evidence suggests that most young firms either fail or do not grow. The prowess of young firms in terms of creating jobs therefore comes from a relatively small fraction of very successful firms. In order to better understand the consequences of periods of low firm entry, we need to know more about these success stories: what do they do, who do they hire and what does this imply for aggregate productivity and employment growth?

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