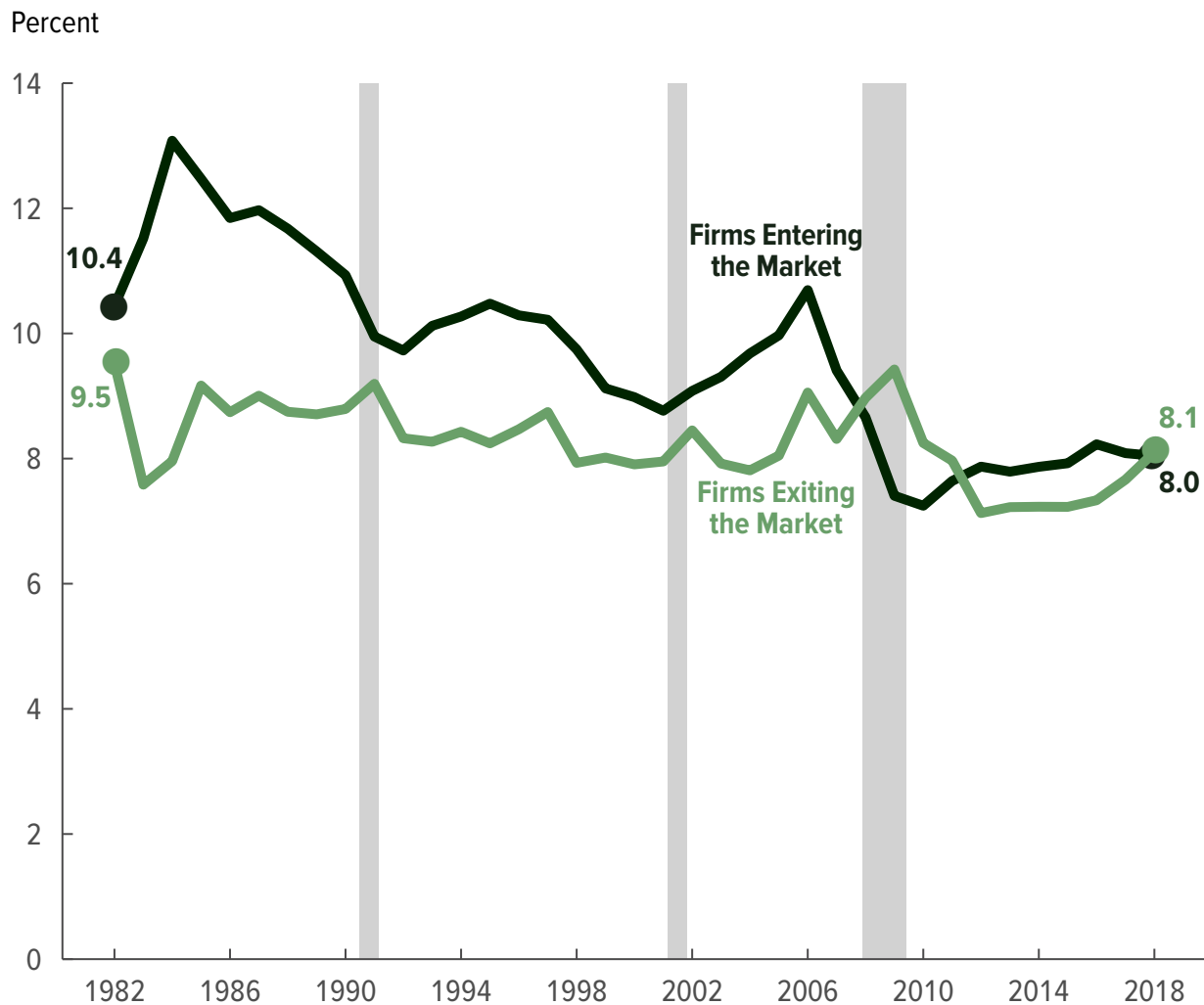


CBO

Federal Policies in Response to Declining Entrepreneurship



DECEMBER 2020

At a Glance

Entrepreneurship in the economy has declined significantly over the past four decades. The rate at which firms were created decreased from 10 percent of all businesses in 1982 to 8 percent in 2018, and the share of employment belonging to new firms (those less than five years old) fell from 14 percent to 9 percent over that same period.

New firms contribute to economic growth through the important role they play in allocating the economy's resources more efficiently. New firms provide innovative products and services, improve the productivity of the workforce, and ensure competition in the marketplace. The decline in entrepreneurship has been associated with a decrease in annual productivity growth whose cumulative effect has made the economy 3 percent to 4 percent less productive than if entrepreneurship had remained unchanged since the early 1980s, in CBO's assessment. The decline is frequently attributed to three types of factors, two of which are supported by strong evidence, whereas the third is uncertain:

- **Financial.** Much of the decrease in the formation of new businesses occurred during recessions, particularly the 2007–2009 recession, as firms faced restricted access to financing and a weaker economy.
- **Demographic.** The slower growth rate of the labor force after 1980 contributed to the decrease in entrepreneurship, as did the decline in the share of the workforce after 2000 of people ages 35 to 54, who are most likely to be successful entrepreneurs.
- **Regulatory.** Regulation affects entrepreneurship. Thus, changes in the regulatory environment might have contributed to the falloff in entrepreneurship, but that link has not been clearly established in the research literature.

If policymakers wish to spur entrepreneurship, they could put in place measures to give new firms greater access to financing or provide more financial support for the development of new technologies to those small businesses that are likely to be innovative. They could also facilitate the immigration of highly skilled workers and entrepreneurs to the United States, or they could alter the regulatory environment to assist new businesses. One challenge to such policies is that identifying potentially successful new firms can be difficult because about as many of them fail as succeed within their first five years. Still another challenge is that existing federal policies aimed at supporting entrepreneurship often focus on small businesses, but even though new businesses generally start small, most small businesses are not new. Different approaches would have their own advantages and disadvantages.



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Notes

Numbers in the text and figures may not add up to totals because of rounding.

Some of the figures in this report use shaded vertical bars to indicate periods of recession. (A recession extends from the peak of a business cycle to its trough.)

The terms “firm,” “business,” and “company” are used interchangeably throughout the report. The term “establishment” denotes a single physical location where business is conducted. Accordingly, a firm can own one or more establishments.



Federal Policies in Response to Declining Entrepreneurship

Summary

Entrepreneurship is beneficial to the economy in many ways. Policymakers may therefore be concerned about its continued decline over the past four decades and the implications for economic growth. In this report, the Congressional Budget Office examines the falloff in entrepreneurship, its potential economic consequences, factors that have contributed to it, and ways that federal policies could be changed to reverse the trend.

How Much Has Entrepreneurship Declined Since the 1980s?

Several measures of entrepreneurship have declined since the early 1980s. The rate at which new businesses formed decreased from 10 percent of all firms that existed in 1982 to 8 percent in 2018. New firms (defined here as those less than five years old with at least one employee on the payroll) constituted 38 percent of all businesses in 1982 but were only 29 percent of them in 2018. During that period, new firms' share of employment fell by a third, from 14 percent to 9 percent. The decline in new firms' share of employment was fairly consistent in both the retail and services sectors throughout the period, whereas the share of employment attributed to new businesses in the information and high-tech sectors rose in the 1990s, falling thereafter. Although an early indicator of entrepreneurship—applications for an employer identification number submitted by likely employers to the Internal Revenue Service—dropped precipitously after the start of the 2020 coronavirus pandemic, it subsequently rebounded strongly.

How Has the Decline in Entrepreneurship Affected Productivity Growth?

Entrepreneurship plays an important role in allocating resources more efficiently throughout the economy, thereby making it more productive. Innovative new firms can be a source of technological change, often introducing new products and services. New companies can also increase the productivity of workers by improving methods of production, and they can bring competitive

discipline to markets, forcing other companies to become more efficient to maintain business. Even the potential for new firms to enter a market can influence the behavior of existing firms.

The decline in entrepreneurship over roughly the past 40 years appears to have had a moderate impact on the overall growth of productivity. In particular, the decline was related to a falloff in labor productivity of at least 3 percent to 4 percent by the mid-2010s, in CBO's assessment, compared with what it would have been otherwise. In the 1990s, new firms in the information and high-tech sectors supplied products that were useful to a wide range of industries, and the growth of those firms was accompanied by greater productivity growth in the economy. When the growth of new businesses in those sectors later declined, so did the growth rate of productivity.

The effects of a reduction in entrepreneurship in a given sector of the economy may also depend on the cause underlying the reduction. In some cases, economic forces that led to increases in productivity, such as economies of scale and scope, hampered the formation of successful new firms. For example, technological advances commercialized during the last half of the 1990s enabled large incumbent firms in the retail sector to implement new, more efficient business practices. As a result, the decline in new firms and their employment share in that sector was associated with an *increase* in productivity growth, as smaller, local retailers could not compete with the large incumbent firms.

What Factors Have Caused a Decline in Entrepreneurship?

Financing constraints and broader economic conditions have played a significant role in the decline of entrepreneurship, particularly in the aftermath of the 2007–2009 recession. New firms are especially vulnerable to economic downturns and the concomitant adverse effects on revenues and bank lending. Although economic

uncertainty appeared to hinder entrepreneurship during the first few months of the coronavirus pandemic, the subsequent upswing in applications for employer identification numbers from potential new employers suggests many new firms may have launched in the latter part of 2020.

Demographic trends have also affected entrepreneurship. A decline in the growth of the working-age population, from 3 percent at the end of the 1970s to 1 percent at the end of the 2010s, has been linked to the decrease in new businesses. In addition, people between the ages of 35 and 54 are more likely to be entrepreneurial—and successful in their new businesses—than those of other ages, and their share of the workforce has fallen since 2000. Despite those overall demographic declines, the proportion of foreign-born people among the U.S. population grew from 10 percent in 1998 to 14 percent in 2018. Highly educated, foreign-born workers add to the pool of qualified employees for new firms, especially in the high-tech sector. Immigrants have also been more likely than native-born Americans to start new businesses. Looking forward, CBO expects a substantial drop in net immigration to the United States from 2020 through 2023 because of the coronavirus pandemic.

Regulation affects businesses, but the research literature provides mixed evidence regarding the quantitative impact of the regulatory environment on the formation and growth of new businesses. Some individual regulations discourage the entry of new firms, and some studies show that increases in the overall stringency of federal regulations hamper entrepreneurship, but others do not. The details of the regulations and of the industry setting affect the impact. The patent system generally encourages entrepreneurship by providing a legal framework that protects intellectual property, although large concentrations of patents held by incumbent firms can be a barrier to new businesses. Some economists are becoming concerned about diminished competition among firms—especially those firms involved in Internet-based commerce—and its harm to entrepreneurship, and about the impact of noncompete clauses. Changes in health care policy over the past 40 years have had varying effects. The continuation of group coverage upon separation from employment and an increase in the federal income tax deduction for health insurance provided to the self-employed have made entrepreneurship more attractive for many people than it was at the start of the 1980s. The passage of the Affordable Care Act (ACA) in

2010 made health insurance coverage cheaper and more accessible for some entrepreneurs but more expensive for others.

What Federal Policies Would Support Entrepreneurship?

Federal policies can address many of the factors that inhibit entrepreneurship. Policymakers could create a program to give new firms access to credit. A challenge is that new firms lack a track record demonstrating their ability to repay loans, and roughly half of them will fail within their first five years, on average. Providing them with greater access to credit would entail costs to the federal government and would run the risk of failures; it could also provide an incentive for firms to modify their operations solely to qualify for the subsidized credit. Policymakers could expand the Small Business Administration's (SBA's) existing credit programs. The SBA charges borrowers fees that are intended to be large enough to offset losses from loans to small businesses that are not fully repaid, which means that the agency has a limited ability to take risks on new firms. Expanded SBA lending would also potentially provide benefits to small businesses that are not new ones. Although virtually all new firms are small (say, with fewer than 100 employees), only 30 percent of such small businesses are new.

Policymakers could increase financial support for entrepreneurship in several other ways. They could direct a share of the federal government's spending on research and development (R&D) to be set aside for new companies or increase the existing share provided for small firms. Policymakers could take steps to subsidize products that are more likely to be supplied by cutting-edge new firms, or they could make tax preferences used primarily by small businesses more generous. A drawback to such approaches is that financial support directed to small businesses without regard to their age may not reach many innovative new companies. Moreover, it can be challenging for the government to predict which firms will be innovative and to determine which sectors of the economy to target with support for innovation.

Highly skilled immigrants have founded many companies in the United States that have increased innovation, job creation, and economic growth. Policymakers could support entrepreneurship by expanding programs that provide visas for highly skilled workers and entrepreneurs immigrating to the United States. A challenge here is

that expanding the pool of qualified workers through immigration would also entail a broader set of effects on businesses and wages throughout the economy. And programs that attempt to identify immigrant entrepreneurs are costly to administer and susceptible to abuse.

The federal government could make regulatory policies less burdensome for new firms in particular. Policymakers could also increase the scrutiny of incumbent firms' potentially anticompetitive actions directed toward rival start-ups. Finally, concerns about the impact of diminished competition on the formation and growth of new firms could be addressed by restricting the use of noncompete contracts. The effects of such policy changes on entrepreneurship would depend largely on the details of the policies.

The Decline in Entrepreneurship

Long before the coronavirus pandemic affected the economy, entrepreneurship had significantly diminished over the past four decades. The rate at which new firms entered the economy (relative to the total number of firms in operation) fell by about a quarter between 1982 and 2018, and the rate at which firms left the economy also fell below its long-term average.¹ As a result, new businesses account for both a smaller share of firms and a smaller share of employment. Those trends do, however, mask differences between different sectors of the economy at certain times. New businesses' share of employment fell in both the retail and services sectors, whereas it rose in the information and high-tech sectors from the mid-1990s through the early 2000s, falling thereafter.

Changes in the Rates at Which Firms Enter and Exit the Market

The annual rate at which new firms were created decreased from about 10 percent of all businesses in 1982 to about 8 percent in 2018, the most recent year for which such data are available (see Figure 1). Much of that decline occurred during recessions, including a drop of 2 percentage points over the period encompassing and immediately after the 2007–2009 recession. The rate at which firms exited the market typically ranged between 8 percent and 9 percent from 1982 to 2018, though that

rate spiked to a high of approximately 10 percent during the 2007–2009 recession. After the recession, it fell to 7 percent, not returning to its typical range until 2017.

Because this report examines the impact of entrepreneurship on economic productivity, CBO has only included firms with at least one employee on the payroll (sometimes called employer firms) in its measures of entrepreneurship. Several studies have linked such firms to trends in labor productivity. Some people start a business activity with no intent to grow it beyond their own involvement—and those activities are less likely to affect productivity and economic growth than those with employees. If those people eventually hire workers, their businesses will be included in the measure of employer firms used in this report. A person who starts a solo business contributes to the economy as well. But measures of entrepreneurship that include firms without employees, or other businesses that are not expected to grow their employment, are less useful for the purposes of the analysis presented here than employer firms, whose growth and decline have a larger impact on productivity and economic growth (see the appendix).

Changes in New Firms and Their Share of Employment

As the rates at which businesses enter and exit the market have declined over the past several decades, new firms—that is, firms started within the past five years with at least one employee—have shrunk considerably, both as a share of all businesses and in terms of their share of employment (see Figure 2). In 1982, new businesses constituted 38 percent of all employer firms; in 2018, they accounted for only 29 percent. Over that same period, the percentage of workers in those firms as a share of all workers fell by about a third, from about 14 percent to approximately 9 percent.

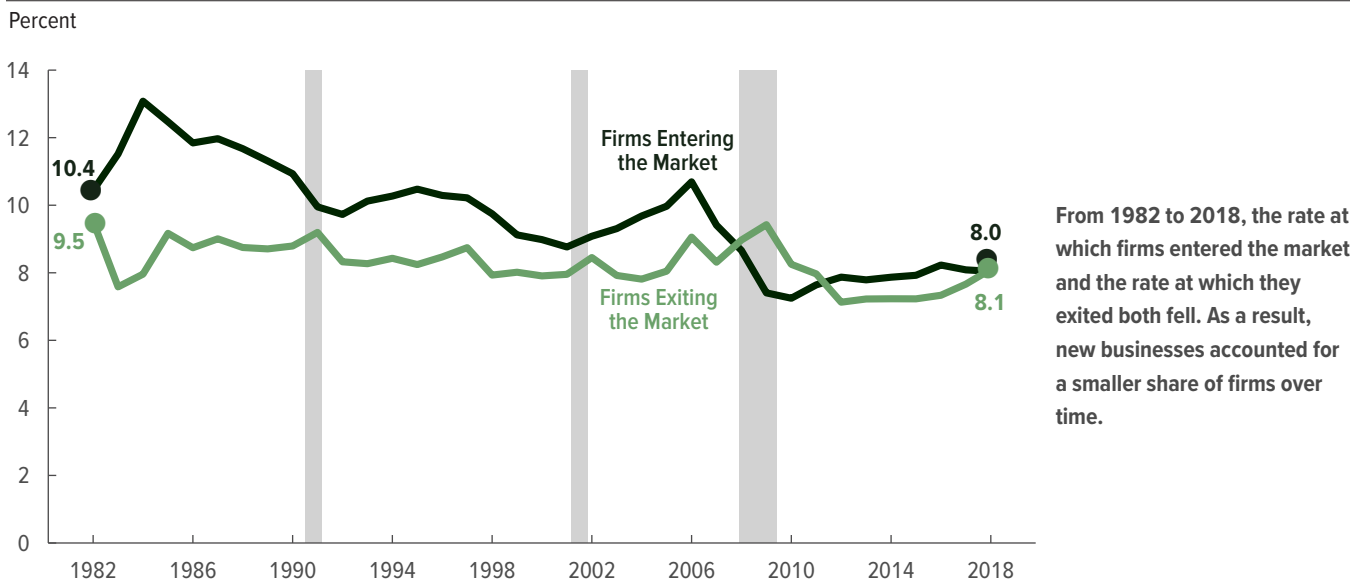
With the advent of the online “gig” economy, a growing number of people now freelance and have a different relationship with the firms that administer their work than with a traditional employer. Although the increased presence of gig workers may have reduced measures of employment at new firms, such workers account for only a small part of the decline in those measures (see Box 1).

Differences by Economic Sector

At certain times, the decrease in new firms' share of employment has varied depending on the sector of the economy in which they operate (see Figure 3 on

1. The rates at which firms enter and exit the market are measured relative to the average number of firms in operation throughout a given year and the preceding one. That approach mitigates the short-term effects of year-to-year fluctuations in the total number of firms on the reported rates of firms entering and exiting the market.

Figure 1.

Rates at Which Firms Entered and Exited the Market, 1982 to 2018

Data source: Congressional Budget Office, using data from the Census Bureau's Business Dynamics Statistics. See www.cbo.gov/publication/56906#data.

page 8). For example, the share of employment at new firms fell fairly steadily in both the retail and services sectors between 1982 and 2018 but was more stable in manufacturing. (Because services constitute such a large portion of economic activity, trends in the overall economy mirror trends in that sector.) And in the information sector, as well as the related high-tech and high-tech manufacturing sectors, the share of employment at new firms rose from the mid-1990s through the early 2000s, falling thereafter.²

The construction sector also saw greater-than-average declines in new firms' share of employment. Like segments of the services sector (such as repair services and personal services), the construction sector includes a larger share of "middle-skilled" business owners than other sectors. Middle-skilled workers are those with some additional education or training after high school, including an associate's degree or training at a technical or trade school, but without a four-year college degree. Entrepreneurship provides a source of economic opportunity for people without a college degree or high-tech

skills. A person with some technical skills can start a construction company, for example, with a moderate amount of capital investment.

Those sector-specific differences in the share of employment have had important implications for productivity growth. As is discussed in more detail below, when the employment share of new firms in the information sector grew, productivity growth increased. And when the employment share in that sector declined, productivity growth declined. But at times, the employment share of new firms in the retail sector has had the opposite relationship with productivity growth, when large retailers were the primary drivers of productivity-enhancing changes in that sector.

The Effect of the Coronavirus Pandemic on Entrepreneurship

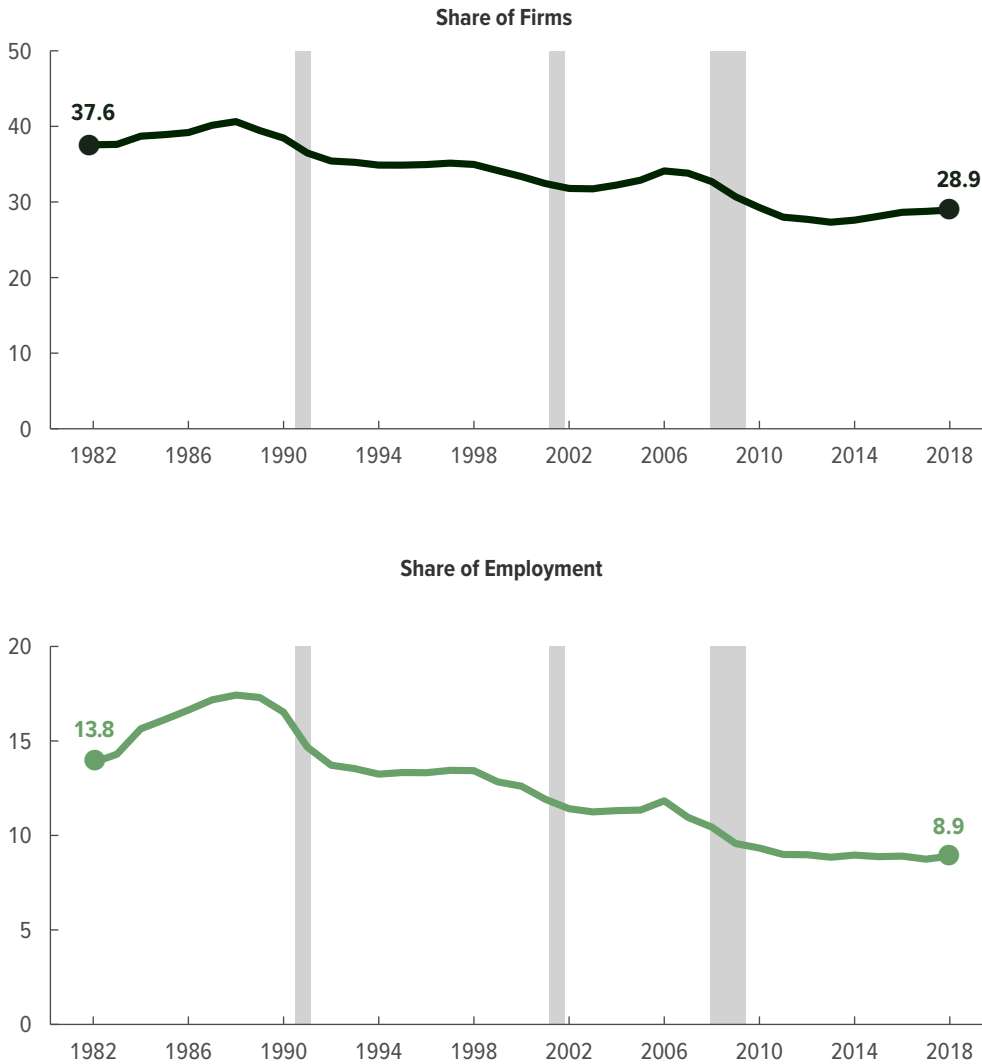
The initial spread of the coronavirus significantly curtailed entrepreneurship, but it strongly rebounded. A real-time indicator of early-stage entrepreneurial activity is the number of applications for an employer identification number submitted to the Internal Revenue Service by businesses that are especially likely to become employers. That number fell sharply after the declaration of the public health emergency in mid-March 2020 (see

2. For the definition of high-tech industries, see Daniel E. Hecker, "High-Technology Employment: A NAICS-Based Update," *Monthly Labor Review* (Bureau of Labor Statistics, July 2005), pp. 57–72, <https://go.usa.gov/xGWfb>.

Figure 2.

New Firms as a Share of Total Firms and Total Employment, 1982 to 2018

Percent



Firms less than five years old accounted for a much smaller percentage of all firms and employment in 2018 than they did in 1982.

Data source: Congressional Budget Office, using data from the Census Bureau’s Business Dynamics Statistics. See www.cbo.gov/publication/56906#data.

Figure 4 on page 9). But beginning in early June, the number of applications returned to and then substantially exceeded its pre-pandemic level. (The moderate falloff in applications during the final quarter of 2020 is consistent with seasonal trends.)

Many factors could be behind the rebound. Some applications may have been deferred from March and April, and others may represent acquisitions of businesses that were especially hard hit in the downturn, reflecting changes in ownership rather than the creation of new

firms. The increase in applications may also reflect a rise in early-stage entrepreneurial activity. For example, layoffs and social distancing may have prompted some people to start businesses offering goods and services that they had previously provided as an employee of another business (although this measure excludes those who become self-employed without hiring employees). Fewer opportunities for employment may have pushed people to try new ideas for businesses. Starting a new business may have become easier because fewer firms were competing for workers, equipment, and investment.

Box 1.

The Gig Economy and Its Effect on Entrepreneurship

Developments in technology have allowed more of the activities of freelance workers to be marketed and managed online (in some cases through smartphone-based “apps,” or software applications). Many workers participating in what is called the online gig economy are treated as independent contractors—rather than employees—by the firms that manage their work.

The growing popularity of services provided by such firms could affect measures of employment attributed to new businesses. Ride-sharing services, for example, match passengers to participating drivers (based on proximity and availability) who supply their own vehicles and are treated as contractors working for themselves rather than as employees. Drivers working in some food-delivery services operate in much the same way. As such start-ups expand, they might not register employment growth in the same way as other businesses with workers on their payrolls.

Despite its rapid growth, the online gig economy constitutes only about 1 percent of the workforce—still too small a percentage to account for much of the declining share of employment attributed to new firms.¹ The number of people reporting earnings from labor in the online gig economy rose from roughly 22,000 in 2012 to about 2,000,000 in 2016.² Even if all those people were considered to be employees of new firms (with app-based drivers, for example, thought of as employees), that 1 percent of the workforce would not significantly affect the decline in such firms’ share of employment from approximately 14 percent in 1982 to 9 percent in 2018. The growth of the gig

economy reflects its appeal to those workers for whom it provides both income and flexibility, but so far that growth does not explain the decline in the employment share of new firms.

Nor does the decline appear to have been caused by changes in the shares of independent contractors and other self-employed workers who do not rely on an Internet-based company for their job assignments. Those shares have generally remained consistent over the past few decades.³

This analysis counts people working in the online gig economy in the same way that the companies that administer their work report them because classifying them as individual new businesses would overstate the rate at which new firms are created. Those workers generally are not starting independent businesses intended to grow beyond their own involvement. Some people rely on gig-economy work as their primary source of income, whether on an ongoing basis or in between full-time work.⁴ Many other participants in the online gig economy do not earn much income from it (in 2016, most participants received a gross income of \$2,500 or less), and they use the work to supplement income earned elsewhere. Gig work shares characteristics with entrepreneurship in the sense that both gig workers and entrepreneurs have a good deal of control over their working hours.

Several recent developments may slow the growth of the online gig economy or even reduce its size. First, the classification of the workers as independent contractors rather than employees may be changing, which would affect the regulations governing gig workers and companies. A law passed in 2019 in California—a state with a large presence of online gig-economy workers—made gig workers and other nonsalaried workers more like salaried employees for the purpose of labor regulations, such as those governing eligibility for the minimum wage and overtime pay, unemployment insurance and family leave, and bargaining rights. Those changes

1. Some analysts estimate the share of gig workers in the economy to be as high as 10 percent or more. See Laura Schultz, *Defining and Measuring Gig Work* (Rockefeller Institute of Government, March 2020), <https://tinyurl.com/y7g522pf>; and Board of Governors of the Federal Reserve, *Report on the Economic Well-Being of U.S. Households in 2019* (May 2020), <https://go.usa.gov/xGGcn>. Those estimates include work in jobs outside of the online gig economy or include arrangements that have traditionally been informal or taken the form of self-employment. Other estimates that produce larger numbers include people who work in gig jobs only occasionally or for small amounts of time each week. The measure used here is intended to capture gig economy workers who might otherwise have been considered as employees if not for the online gig arrangement.

2. See Brett Collins and others, *Is Gig Work Replacing Traditional Employment? Evidence From Two Decades of Tax Returns* (Internal Revenue Service, Statistics of Income, March 2019), p. 3, <https://go.usa.gov/xGWaG> (PDF, 2.8 MB); and Bureau of Labor Statistics, *Electronically Mediated Work: New Questions in the Contingent Worker Supplement* (September 2018), <https://go.usa.gov/xGWas>.

3. See Brett Collins and others, *Is Gig Work Replacing Traditional Employment? Evidence From Two Decades of Tax Returns* (Internal Revenue Service, Statistics of Income, March 2019), p. 3, <https://go.usa.gov/xGWaG> (PDF, 2.8 MB).

4. Other characteristics of workers in the online gig economy suggest that its labor force is quite distinct from both independent contractors and other self-employed individuals elsewhere, as well as workers in the economy overall. For example, participants in the online gig economy are much more likely to be single males. They are also heavily concentrated in large cities and effectively absent from many rural areas.

Box 1.

Continued

The Gig Economy and Its Impact on Entrepreneurship

raised the cost of employing such workers and limited their ability to work flexible hours or part time—a hallmark of the gig economy. To the extent that the associated cost is passed on to customers, it would reduce the demand for the services the workers provide and thus tend to limit growth of the online gig economy. A ballot initiative in the November 2020 election reversed part of the law, effectively exempting

drivers for app-based transportation and delivery services from it. An ongoing challenge for workers in the gig economy is that the spread of the coronavirus has led to much weaker demand for many types of services they provide, such as ride-sharing and home-sharing (although partially offset by an increased demand for food delivery), and it is unclear when it will increase.

New firms may have been formed in response to business opportunities as a result of the conditions created by the pandemic, such as an increase in demand for delivering health- and education-related services remotely. Some of the increase in new business applications may be the result of fraudulent submissions made to obtain federal funds through the SBA's Economic Injury Disaster Loans program.³ In any case, the marked upswing in applications stands in stark contrast to the trend in entrepreneurship during the 2007–2009 recession, when the rate of firms entering the market fell sharply without subsequently returning to its prerecession level.

The economic contraction that initially chilled the formation of firms at the beginning of the pandemic also threatened the viability of businesses started in the past few years. Although weekly payroll data are not specifically reported for new firms, the data for small firms show that, from mid-February to late April, employment fell among them by more than it did among large firms.⁴ Increases in employment since then have made up for some, but not all, of those losses, in absolute terms. The remaining percentage declines are similar among firms of different sizes, suggesting that the net effects of the pandemic (and policies put in place to respond to it) may

not ultimately be much different for small businesses than for large ones.

The Impact of the Decline in Entrepreneurship on Economic Productivity

Entrepreneurs play an important role in allocating the economy's resources more efficiently, thereby increasing economic productivity. Start-ups often commercialize new products, and new firms that supply the same goods and services more efficiently than incumbents can force their competitors to perform better or lose business. Entrepreneurship has also long been viewed in America as a path to upward mobility for people of all skill levels and educational backgrounds, and not all new businesses are oriented toward future expansion. Some “mom-and-pop” stores, for example, are established to serve customers in their local neighborhood. But for those businesses that are geared toward future growth, the ability to expand is widely considered an important indicator of the economy's dynamism.

The decline in entrepreneurship—in terms of either the falloff in the rate of business formation or the decline in new firms' share of employment—has been linked to a modest decrease in productivity growth. In particular, evidence suggests that labor productivity was 3 percent to 4 percent lower in the mid-2010s because of the decline. In some cases, alternatively, a decrease in entrepreneurship could be the consequence of the economy's weak productivity performance rather than the cause. Additionally, in certain periods and industries, economies of scale and scope and incentives to perform R&D boosted productivity while favoring incumbent firms over new ones.

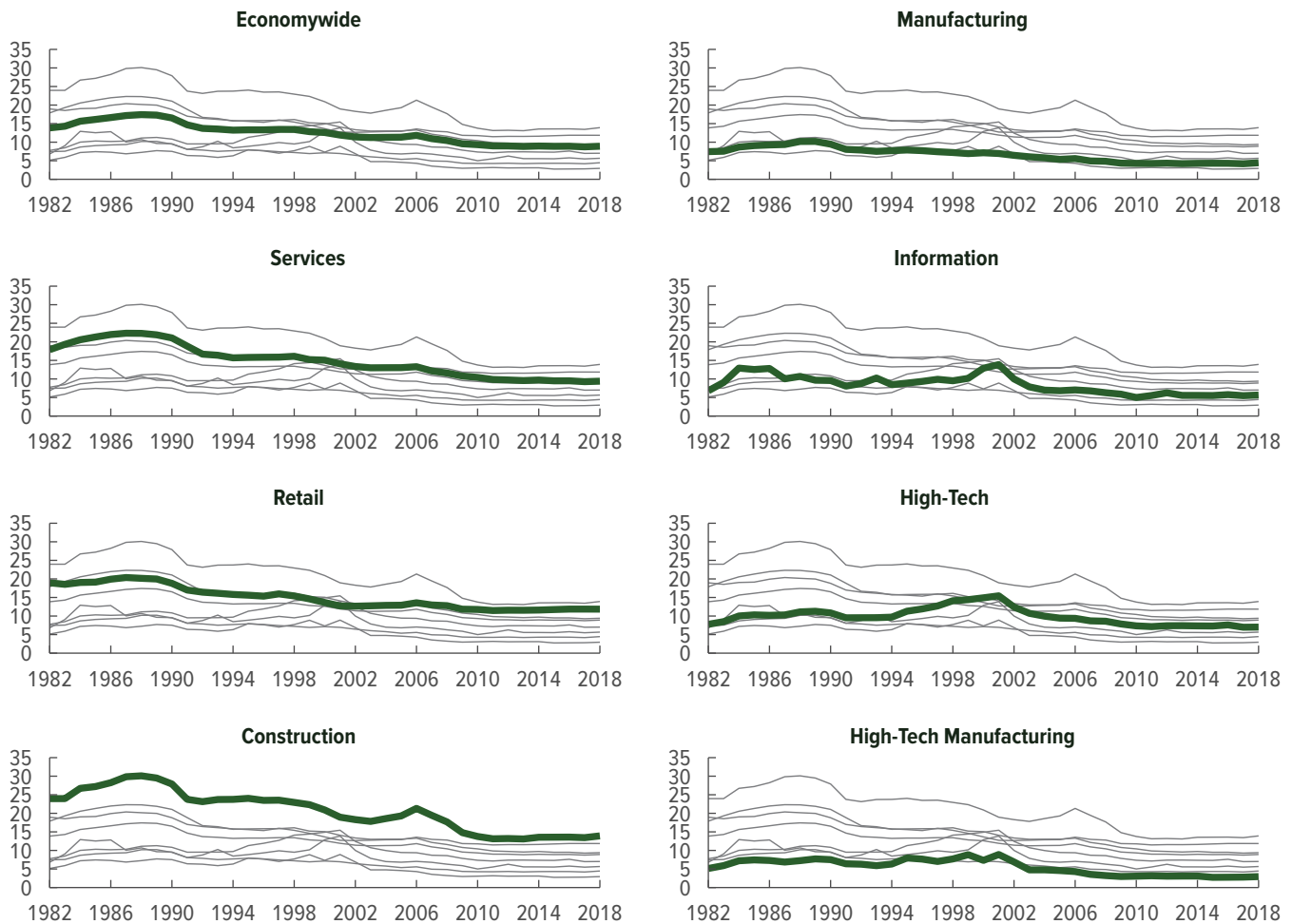
3. See Office of the Inspector General, “Serious Concerns of Potential Fraud in EIDL Program Pertaining to the Response to COVID-19” (Small Business Administration, July 2020), <https://go.usa.gov/x7hpz>.

4. See Tomaz Cajner and others, *The U.S. Labor Market During the Beginning of the Pandemic Recession*, Working Paper 2020-58 (Becker Friedman Institute for Economics at the University of Chicago, July 2020), <https://tinyurl.com/y6445pt7> (PDF, 1 MB).

Figure 3.

New Firms' Share of Employment, by Sector, 1982 to 2018

Percent



Between 1982 and 2018, new firms' share of employment fell in all sectors except the information and high-tech manufacturing sectors. In those sectors, employment rose from the mid-1990s to 2001, falling thereafter.

Data source: Congressional Budget Office, using data from Ryan A. Decker and others, *Changing Business Dynamism and Productivity: Shocks vs. Responsiveness*, Working Paper 24236 (National Bureau of Economic Research, January 2018) www.nber.org/papers/w24236. See www.cbo.gov/publication/56906#data.

The Contribution of Entrepreneurship to Greater Efficiency

Entrepreneurship brings greater efficiency to the economy in several ways, one of which is by introducing new products and technologies that increase productivity.⁵ Although relatively few new businesses perform R&D, those that do are more R&D-intensive and more likely than older businesses to test new technologies. Indeed,

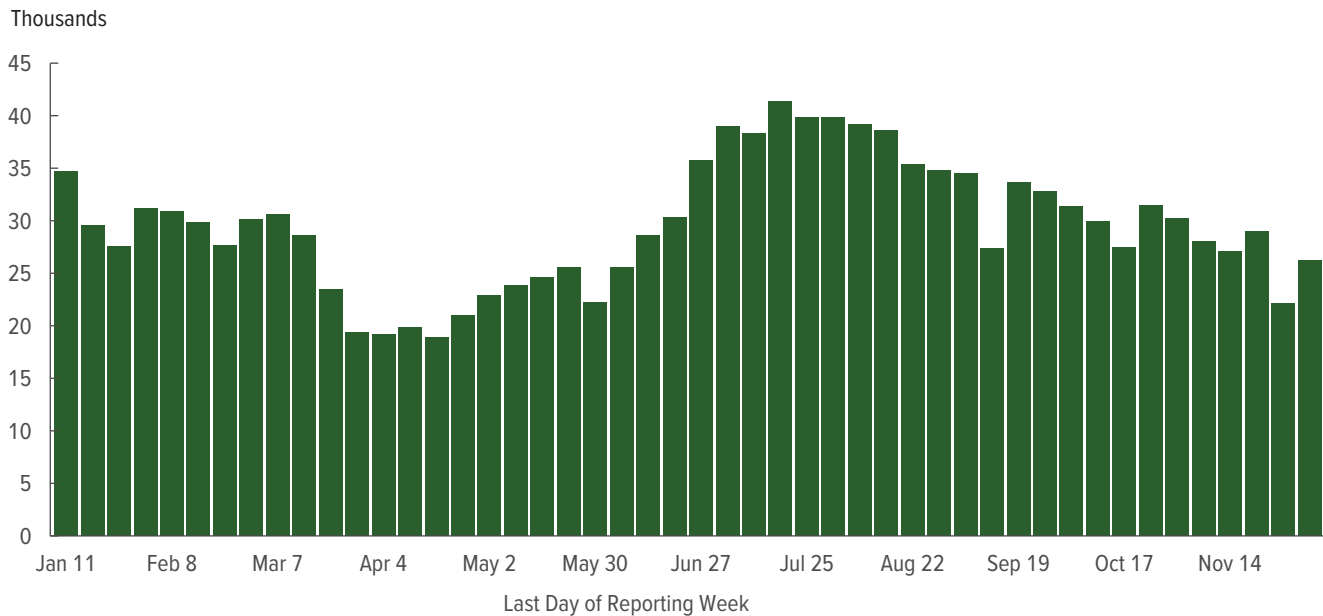
5. Frederic M. Scherer, *Industrial Market Structure and Economic Performance*, 2nd ed. (Rand McNally & Co., 1980), pp. 437–438.

most recently created manufacturing firms that have grown to become very large carried out R&D when they were new.⁶

6. See Daron Acemoglu and others, “Innovation, Reallocation, and Growth,” *American Economic Review*, vol. 108, no. 11 (November 2018), p. 3468 and p. 3471, <https://tinyurl.com/y73vatcs>; and Nikolas Zolas and others, “Measuring Technology Adoption in Enterprise-Level Surveys: The Annual Business Survey” (paper presented at the 2020 American Economic Association meeting, San Diego, Calif., January 3, 2020), <https://tinyurl.com/y7qwtpe> (PDF, 3.9 MB).

Figure 4.

Number of Weekly High-Propensity EIN Applications in 2020



Data source: Congressional Budget Office, using data from the Census Bureau's Business Formation Statistics. See www.cbo.gov/publication/56906#data.

Data for the first week in 2020 are excluded because substantially fewer EIN applications are usually submitted at the beginning (and at the end) of a calendar year, and their number is not informative of the trend in subsequent weeks.

On the basis of characteristics reported on Internal Revenue Service (IRS) Form SS-4, the IRS identifies applicants that have a high propensity of becoming businesses with payrolls. Those characteristics include being a corporate entity; anticipating hiring employees, purchasing a business, or changing organizational type; expecting to pay wages by a specific date; or being in the manufacturing, retail, health care, or restaurant/food-service industry.

EIN = Employer Identification Number.

Entrepreneurship also helps the economy when productive new firms increase their employment, thus promoting greater productivity as workers move from older, less efficient businesses to newer, more efficient ones. Those new businesses may provide new products and technologies, or they may do a better job of providing existing products and services, including middle-skill services such as construction. Entrepreneurship, to a certain extent, involves a variety of skills (not just technical skills) because the entrepreneur has to maintain a financially viable business.⁷ Although workers move among businesses of all ages, new firms typically display an “up-or-out” dynamic—grow and survive or shrink and eventually go out of business. Job gains at growing firms account for much of the employment lost at unsuccessful

ones. When new businesses do not emerge and grow, productivity languishes.⁸

As discussed later in the report, several federal programs established to bolster entrepreneurship target their support to firms of a certain size rather than to new firms. But it turns out that new businesses are more closely associated with increased employment than small ones.⁹ And while nearly all new firms begin small, the rapid

7. See Edward P. Lazear, “Balanced Skills and Entrepreneurship,” *American Economic Review*, vol. 94, no. 2 (May 2004), pp. 208–211, www.jstor.org/stable/3592884.

8. See Ryan A. Decker and others, “The Role of Entrepreneurship in U.S. Job Creation and Economic Dynamism,” *Journal of Economic Perspectives*, vol. 28, no. 3 (Summer 2014), pp. 7–8, www.aeaweb.org/articles?id=10.1257/jep.28.3.3.

9. See John Haltiwanger, Ron S. Jarmin, and Javier Miranda, “Who Creates Jobs? Small Versus Large Versus Young,” *Review of Economics and Statistics*, vol. 95, no. 2 (May 2013), pp. 347–361, https://doi.org/10.1162/REST_a_00288; and Congressional Budget Office, *Small Firms, Employment, and Federal Policy* (March 2012), www.cbo.gov/publication/43029.

growth of highly productive new firms distinguishes them from other small firms (of any age).¹⁰

A third way that entrepreneurship makes the economy more productive is by providing market discipline. New companies can compel established ones to improve their performance to maintain business, or they can even force them from the market. Such market discipline also prevents firms from exercising market power and raising prices to an extent that would be inefficient for the economy. If businesses that supply goods and services to contestable markets raise the prices of their products too high, new firms will have an incentive to enter the market and take customers.

Of course, not all new businesses contribute to the economy's growth. A large share fails within a few years of forming, and some that survive were established for reasons that may limit their eventual economic impact.¹¹

Estimates of the Impact of the Decline in Entrepreneurship on Productivity

The decline in entrepreneurship appears to be related to a recent decrease in productivity growth. Measures of productivity account for the amount of output produced by the economy using specific quantities of labor (or for some measures, labor and capital). The decline in entrepreneurship is associated with a falloff in labor productivity from at least 3 percent to 4 percent in the mid-2010s, in CBO's assessment.

Entrepreneurship has increased productivity through the innovations that new firms provided and the growth of those new firms, although it is difficult to know precisely how much each of those factors contributed to the increase. The shares of employment attributed to new firms in the high-tech sector (including the high-tech

manufacturing and service industries) and the information sector (which also includes a number of high-tech industries) rose from the mid-1990s through 2001. Firms that are more productive than their competitors tend to grow. Newly formed high-tech companies that were more productive than their competitors increased their employment more rapidly during that period than such firms had previously. The advances in information technology and communications brought about by those firms also allowed businesses in other sectors to increase their productivity, which in turn corresponded to an uptick in productivity in the broader economy: At its high point in 2001, the growth rate of labor productivity was more than double what it was in 1995 (see Figure 5).¹² After 2001, the shift in employment from low-productivity firms to high-productivity firms in the high-tech sector was much less pronounced.

In fact, what was true for the high-tech sector after 2001 was also true for the economy overall: More-productive firms tended to add fewer workers than before, while less-productive firms tended to shed fewer employees. Estimates indicate that labor productivity would have been 4 percent higher by 2013 had such an economy-wide decline in responsiveness not occurred. A similar pattern characterized changes in overall labor and capital productivity.¹³ As new firms innovated or otherwise improved on the performance of existing companies, the decline in new firms' share of employment after the early 2000s meant that they contributed less to overall productivity growth than they had in earlier periods. As a result, that measure also indicates that productivity would have been about 4 percent higher by 2013 if new firms had maintained their earlier level of contribution to productivity.¹⁴

10. See John Haltiwanger and others, "High Growth Young Firms: Contribution to Job, Output, and Productivity Growth," in John Haltiwanger and others, eds., *Measuring Entrepreneurial Businesses: Current Knowledge and Challenges* (University of Chicago Press, September 2017), pp. 11–62, www.nber.org/chapters/c13492.

11. See Erik Hurst and Benjamin Wild Pugsley, *What Do Small Businesses Do?* (Brookings Papers on Economic Activity, September 2011), <https://tinyurl.com/y8kvf7ep>; and Antoinette Schoar, "The Divide Between Subsistence and Transformational Entrepreneurship," in Josh Lerner and Scott Stern, eds., *Innovation Policy and the Economy*, Volume 10 (National Bureau of Economic Research, 2010), pp. 57–81, <https://tinyurl.com/y99v89h5>.

12. For a discussion of the nature of those advances in information technology and communications, see Congressional Budget Office, *The Role of Computer Technology in the Growth of Productivity* (May 2002), www.cbo.gov/publication/13675.

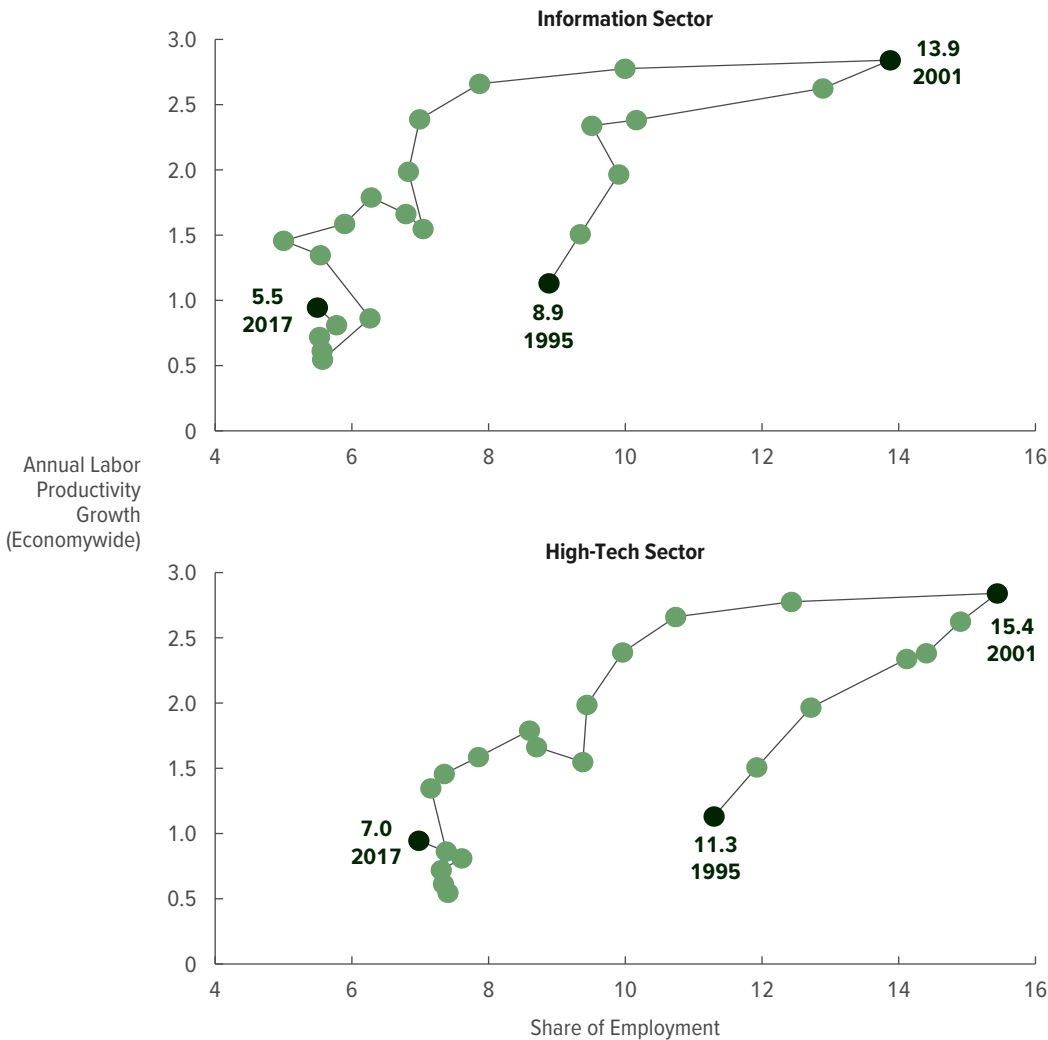
13. See Ryan A. Decker and others, "Changing Business Dynamism and Productivity: Shocks Versus Responsiveness," *American Economic Review*, vol. 110, no. 9 (September 2020), pp. 2859–2898, <https://tinyurl.com/y4ber8kk>.

14. See Peter J. Klenow and Huiyu Li, "Innovative Growth Accounting," in Martin Eichenbaum and Erik Hurst, eds., *NBER Macroeconomics Annual 2020*, Volume 35 (National Bureau of Economic Research, forthcoming), <https://tinyurl.com/yaphjsba>; and Daniel Garcia-Macia, Chang-Tai Hsieh, and Peter J. Klenow, "How Destructive Is Innovation?" *Econometrica*, vol. 87, no. 5 (September 2019), pp. 1507–1541, <https://doi.org/10.3982/ECTA14930>.

Figure 5.

Trends in New Firms' Share of Employment, by Sector, and Labor Productivity Growth in the Economy, 1995 to 2017

Percent



New firms in the high-tech and information sectors that were more productive than their competitors increased their employment more rapidly from the mid-1990s through 2001 than they had previously. The technological advances brought about in those sectors allowed firms throughout the economy to increase their productivity. After 2001, the shift in employment from low-productivity firms to high-productivity firms in the high-tech sector—and the broader economy—ebbed.

Data source: Congressional Budget Office, using data from the Bureau of Economic Analysis, the Bureau of Labor Statistics, and from Ryan A. Decker and others, *Changing Business Dynamism and Productivity: Shocks vs. Responsiveness*, Working Paper 24236 (National Bureau of Economic Research, January 2018), www.nber.org/papers/w24236. See www.cbo.gov/publication/56906#data.

The percentage changes in labor productivity represent five-year moving averages.

Deriving such estimates of productivity gains is complicated because measures of productivity may tend to understate the economy's growth from entrepreneurial innovation. When a new product drives an existing one from the market, the improvements in the new product's quality may not be captured in statistical data if the new product is not directly comparable to the old one. When cell phones were introduced, for example, it was

clear that they offered greater functionality than landline phones, but the transformative nature of their improved capabilities made it difficult to estimate the change in quality. That is because statistical agencies' surveys that do not include the defunct product (because it no longer exists) will fail to account for the new one (because it is

not categorically identical to what it replaced).¹⁵ It can therefore be difficult to determine the improvement that the new product represents—at least in terms of the additional amount of output it creates in the economy.¹⁶

Regardless of whether entrepreneurs create innovative products, newly established businesses are typically more productive than the firms that preceded them. As the rate of the formation of new firms declined, successively smaller shares of more productive new firms joined the economy. As a result, the productivity boost from consecutive waves of new firms—each wave containing, on average, more productive firms than the one before it—diminished over time. After 1980, that decline in new firms reduced productivity growth by an average of one-tenth of one percentage point each year. By 2014, the cumulative effect left labor productivity 3 percentage points lower than it would otherwise have been.¹⁷

The closing of less-productive businesses in conjunction with forming new ones appears to have had a positive effect on productivity as well. Between one-fifth and one-quarter of all total factor productivity growth (a measure that accounts for both labor and capital use) between 1977 and 1997 in a set of manufacturing industries was attributable to both the entry of new plants and the exit of older, less productive ones.¹⁸ The extent to which those measured effects can be combined or overlap each other, though, is ultimately unclear.

15. See Philippe Aghion and others, “Missing Growth From Creative Destruction,” *American Economic Review*, vol. 109, no. 8 (August 2019), pp. 2795–2822, <https://doi.org/10.1257/aer.20171745>.

16. See Jerry Hausman, “Cellular Telephone, New Products, and the CPI,” *Journal of Business and Economic Statistics*, vol. 17, no. 2 (April 1999), pp. 188–194, <https://economics.mit.edu/files/1023> (PDF, 693 KB); and Erica L. Groshen and others, “How Government Statistics Adjust for Potential Biases From Quality Change and New Goods in an Age of Digital Technologies: A View From the Trenches,” *Journal of Economic Perspectives*, vol. 31, no. 2 (Spring 2017), pp. 187–210, <https://tinyurl.com/y3zfp8pa>.

17. See Titan Alon and others, “Older and Slower: The Startup Deficit’s Lasting Effects on Aggregate Productivity Growth,” *Journal of Monetary Economics*, vol. 93 (January 2018), pp. 68–85, <https://tinyurl.com/y6y2fl6>.

18. A firm may have one or more plants. See Lucia Foster, John Haltiwanger, and Chad Syverson, “Reallocation, Firm Turnover, and Efficiency: Selection on Productivity or Profitability?” *American Economic Review*, vol. 98, no. 1 (March 2008), pp. 394–425, <https://tinyurl.com/y5xgkaf6>.

The correspondence between the declines in entrepreneurship and productivity growth might also have been influenced by other independent factors. For instance, having fewer opportunities to exploit new technology could affect both productivity growth and the formation of new firms. Some scholars believe that there has been less potential for technological advances (or fewer novel ideas to be exploited) since the mid-2000s than during much of the 20th century. In that case, the decline in productivity growth over the past decade would reflect the beginning of an era in which economy-boosting innovation occurred much less often because the potential for it had decreased. Fewer prospects for innovating could have then indirectly resulted in the declining rate at which new businesses were created.¹⁹

Not all declines in entrepreneurship correspond to declines in productivity growth. In at least one case, that of retail trade in the 1990s, a decrease in entrepreneurship was associated with *faster* productivity growth, as large retailers used innovations in information technology and logistics to undercut the prices of smaller stores. Economic forces that favor incumbent firms, such as economies of scale, have at times made the economy more efficient while working against the formation of successful new businesses (see Box 2). Ultimately, having some diversity in the size and structure of businesses within an industry may enhance the prospects for long-term economic growth.²⁰

Factors Affecting Entrepreneurship

Certain factors have contributed to the falloff in entrepreneurship since the early 1980s. New firms are especially vulnerable to economic downturns and reductions in bank lending and were thus greatly harmed by the 2007–2009 recession and its aftermath. Demographic trends also appear to have played a role in the long-term decline of entrepreneurship. The growth rate of the labor force is smaller today than it was in the 1980s, and the share of the workforce most likely to consist of successful entrepreneurs has fallen since 2000. Regulation affects

19. See Robert J. Gordon, *The Rise and Fall of American Growth*, (Princeton University Press, 2018); and Nicolas Bloom and others, “Are Ideas Getting Harder to Find?” *American Economic Review*, vol. 110, no. 4 (April 2020), pp. 1104–1144, <https://tinyurl.com/y9vy42lk> (PDF, 1,014 KB).

20. See Wesley M. Cohen and Steven Klepper, “The Tradeoff Between Firm Size and Diversity in the Pursuit of Technological Progress,” *Small Business Economics*, vol. 4, no. 1 (March 1992), pp. 1–14, www.jstor.org/stable/40228763.

Box 2.

Sources of Economic Efficiency That Favor Incumbent Firms

Productivity growth does not necessarily require the constant presence of robust new firms in all sectors of the economy. Some sources of efficiency—such as economies of scale, economies of scope, and incentives to undertake research and development (R&D)—are associated with larger and more established firms rather than smaller and newer ones. Incumbent firms create many jobs, and competition among those firms over the past two decades has produced a form of economic dynamism reflected in shifts in industry profitability.¹

Economies of Scale and Vertical Integration. In many instances, firms can operate more efficiently as they become larger; changes in technology have sometimes reinforced the advantages that incumbent firms have over new—and typically much smaller—competitors. For example, at the turn of the 20th century, large firms exploited economies of scale by vertically integrating (that is, owning and controlling) input supply, manufacturing, and distribution.²

In the 1990s, the dynamism of the retail sector came primarily at the expense of new businesses, as incumbent firms created new, more efficient establishments. Older firms (such as Walmart) opened a multitude of “big-box” retail stores by exploiting advances in information technology to operate very efficiently at a large scale. As a result, the decline in the share of employment belonging to new firms in the retail sector during the 1990s was accompanied by a rise in productivity.³ A trend toward vertical integration and increased efficiency from operating at a greater scale may also be under way today. For example, some online merchants have begun operating their own delivery services.

In addition, globalization—in the form of increased foreign trade and offshoring—may require a sufficient scale of

operation that new firms lack, making it more difficult for them to compete. Successful businesses may locate their production abroad, reducing their employment growth in the United States. Sectors of the economy that are particularly exposed to foreign trade are thus more likely to experience a decline in new firms.⁴

Economies of Scope. Just as firms can operate more efficiently at larger sizes, they may also do so by offering a wider range of services or a broader set of products. Several established Internet-based companies have used their expertise with information technologies to launch new business lines. Examples of such entrepreneurial ventures by incumbent firms include cloud computing services, autonomous vehicles, and the creation of media content. The benefits of exploiting economies of scope are not, of course, exclusive to the Internet age: Many decades ago, large catalog companies used their expertise in distribution to venture into new business lines, such as selling prefabricated houses.

Incentives to Pursue R&D. Although some new companies carry out R&D more intensively than large established ones do, the latter account for the greatest amount of R&D spending and patenting activity.⁵ Some economists believe that the most promising advanced technologies today, such as the development and application of machine learning to improve production, require large operations well beyond the small size typical of new firms.⁶ Others believe that large firms with market power may have incentives to pursue R&D to help preserve that market power—although to the extent that the result is inefficiently high prices, doing so would inhibit rather than enhance efficiency.⁷

1. See Richard L. Clayton and others, “High-Employment-Growth Firms: Defining Them and Counting Them,” *Monthly Labor Review* (June 2013), pp. 1–14, <https://tinyurl.com/yc2tbpy8>; and James Manyika and others, *Superstars: The Dynamics of Firms, Sectors, and Cities Leading the Global Economy* (McKinsey Global Institute, October 2018), <https://tinyurl.com/y5bpqb8q> (PDF, 935 KB).

2. See Alfred D. Chandler Jr., *Scale and Scope: The Dynamics of Industrial Capitalism* (Belknap Press, 1994), and *The Visible Hand: The Managerial Revolution in American Business* (Belknap Press, 1993).

3. See Lucia Foster, John Haltiwanger, and C. J. Krizan, “Market Selection, Reallocation, and Restructuring in the U.S. Retail Trade Sector in the 1990s,” *The Review of Economics and Statistics*, vol. 88, no. 4 (November 2006), pp. 748–758, <https://tinyurl.com/yycd676r>.

4. See Benjamin Wild Pugsley and Ayşegül Şahin, “Grown-up Business Cycles,” *The Review of Financial Studies*, vol. 32, no. 3 (March 2019), pp. 1102–1147, <https://doi.org/10.1093/rfs/hhy063>.

5. See Robert D. Atkinson and Michael Lind, *Big Is Beautiful: Debunking the Myth of Small Business* (MIT Press, 2018).

6. See Ajay K. Agrawal, Joshua S. Gans, and Avi Goldfarb, “Economic Policy for Artificial Intelligence,” in Josh Lerner and Scott Stern, eds., *Innovation Policy and the Economy*, Volume 19 (National Bureau of Economic Research, 2019), pp. 139–159, <https://tinyurl.com/y72nzyzj>; and Ufuk Akcigit and Sina T. Ates, *Ten Facts on Declining Business Dynamism and Lessons From Endogenous Growth Theory*, Working Paper 25755 (National Bureau of Economic Research, April 2019), www.nber.org/papers/w25755.

7. See Richard Gilbert and David M. G. Newbery, “Preemptive Patenting and the Persistence of Monopoly,” *American Economic Review*, vol. 72, no. 3 (June 1982), pp. 514–526, <https://tinyurl.com/yyrx4385>.

businesses and business formation, but the available evidence is not clear about whether changes in the regulatory environment contributed to the decline in entrepreneurship.

Financing Constraints and Economic Conditions

New firms often face financing constraints and, as a result, are especially susceptible to economic downturns. Those factors appear to have been particularly consequential during and after the 2007–2009 recession. Bank lending to start-ups (and other small businesses) fell sharply because of concerns about borrowers' creditworthiness amid the difficult economic conditions. Between 2006 and 2010, the rate at which new businesses were created fell by roughly 30 percent, from nearly 11 percent to just over 7 percent. During that time, the rate at which businesses exited the market spiked at close to 10 percent, and new firms displayed a very high rate of exit (their financial condition tends to be much less resilient than that of their older counterparts).²¹ The difficulty in obtaining financing persisted for several years after the recession: The value of commercial and industrial loans outstanding for small businesses did not return to its 2008 level until 2017.²²

During the 2007–2009 recession, the severe drop in the housing market contributed to entrepreneurs' restricted access to financing because they often use the equity value of a house as collateral for business loans. Housing values also constitute a large portion of people's wealth, changes in which affect consumer spending. The more housing prices dropped in a given locality in the wake of the recession, the more the rate at which businesses were created fell in that area. Conversely, the run-up in housing prices

in various localities before 2007 was associated with increasing rates of new businesses in those areas.²³

Financing constraints may especially affect entrepreneurial ventures that seek to achieve strong growth because such companies often need access to more than one round of financing as their business develops. In particular, companies that receive equity investments from venture capital firms represent a very select group of new businesses that are more likely to grow to become publicly traded and economically consequential. Those businesses typically receive infusions of cash at regular intervals to support their development and expansion so that investors may review the company's progress before committing additional funds. In that way, venture capital firms can manage a portfolio of investments and fully develop the most promising ones, but that process can also leave new ventures vulnerable to downturns in access to equity. An analysis of firms created between 1988 and 2014 found that their growth is correlated with both the general availability of capital and overall economic conditions.²⁴

Although the impact of the 2007–2009 recession was felt for several years after the economy stabilized, the financial environment for entrepreneurship had improved before the onset of the coronavirus pandemic. Housing prices rebounded significantly (but remained below their peak in 2005, after adjusting for inflation).²⁵ Venture capital financing increased substantially after 2008, exceeding \$100 billion in 2018 and 2019, its highest levels since 2000.²⁶

21. For a discussion of factors affecting firms' financial health, see Federal Reserve Bank of New York, *Can Small Firms Weather the Economic Effects of COVID-19* (April 2020), p. 2, <https://tinyurl.com/y5s2q9cm> (PDF, 296 KB).

22. See Federal Deposit Insurance Commission, *Loans to Small Businesses and Farms, FDIC-Insured Institutions, 1995–2017*, <https://tinyurl.com/yy6ftv6w> (XLS, 115 KB). The number of loan originations to small businesses (firms with revenues of \$1 million or less) fell by almost three-quarters from 2007 to 2010: See Rebel A. Cole, *How Did Bank Lending to Small Business in the United States Fare After the Financial Crisis?* (Small Business Administration, Office of Advocacy, January 2018), pp. 34–35, <https://go.usa.gov/xGX9R>.

23. See Steven J. Davis and John C. Haltiwanger, *Dynamism Diminished: The Role of Housing Markets and Credit Conditions*, Working Paper 25466 (National Bureau of Economic Research, January 2019), www.nber.org/papers/w25466.

24. See Jorge Guzman and Scott Stern, "The State of American Entrepreneurship: New Estimates of the Quantity and Quality of Entrepreneurship for 32 U.S. States, 1988–2014," *American Economic Journal: Economic Policy*, vol. 12, no. 4 (November 2020) pp. 212–243, <https://tinyurl.com/y89aym6w>.

25. See Robert J. Shiller, *Irrational Exuberance*, 3rd ed. (Princeton University Press, 2015), and see U.S. home price and related data for Figure 3.1 as updated by the author (accessed December 10, 2020), <https://tinyurl.com/yyta4pul> (XLS, 281 KB).

26. See Arnobio Morelix, *3 Facts You Probably Didn't Know About Venture Capital and Entrepreneurship* (Kauffman Foundation, May 13, 2016), <https://tinyurl.com/y3etnlpt>; and PwC/CB Insights, *MoneyTreeReport Q3 2020*, <https://tinyurl.com/y5bk4my6>.

In addition to exacerbating the challenges that financial constraints pose to new firms, economic downturns can inhibit their formation and growth, causing current revenues and expectations for future earnings to fall. In the wake of the coronavirus pandemic, a leading indicator of new business activity declined by more than 25 percent before rebounding strongly. The full extent of the impact will depend on the course of the pandemic and the measures implemented to contain it, particularly whether additional waves of outbreaks will require the reimposition of mitigation measures and the length of time it takes to distribute treatments and an effective vaccine. As the economic downturn continues to cause high unemployment, many people may turn to entrepreneurial activities to earn income. As long as the pandemic does not produce a full-blown crisis in the financial sector, such as the one that precipitated the 2007–2009 recession, entrepreneurship could maintain its pre-pandemic levels—if not exceed them—as the economy recovers.

In the long term, changes in the prices of labor and materials or other factors that affect their supply can also affect the incentives to create new firms and innovative products. For example, an increase in workers' wages can prompt the invention of equipment to replace labor at a lower cost. Some observers have suggested that shortages of certain kinds of labor in some advanced economies may promote the development and use of new technologies, such as artificial intelligence.²⁷ Higher energy costs can likewise induce the development of more fuel-efficient products.

Demographics and Immigration

Demographic shifts can affect rates of entrepreneurship. For example, people in certain age groups are more likely to be entrepreneurs. Although a popular notion is that the typical entrepreneur is very young, middle-aged people are more likely to start a business and be successful with it. More specifically, an increase in the share of the population between the ages of 35 and 44 is associated with higher rates of starting businesses. People of that age, along with those between 45 and 54 years old, are most likely to start a firm with at least one employee and are also most likely to start one that grows quickly. Founders of rapidly growing start-ups (with employees) between 2007 and 2014 were 45 years old, on average, and founders of high-tech start-ups were of a similar

age.²⁸ Throughout the 1980s and 1990s, the share of the labor force in the 35-to-54 age group rose before declining to roughly the level it was in 1990 (see Figure 6, upper panel).²⁹

A lack of employees can also stymie entrepreneurship because the overall growth rate of the labor force affects the formation of new firms. A decrease in that growth rate, from 2.7 percent during the 1970s to 1.0 percent in the 2000s, has been linked to a decline in new businesses (see Figure 6, middle panel).³⁰ That rate fell further in the aftermath of the 2007–2009 recession to an average of 0.6 percent growth in the 2010s. Several factors contributed to the changes in labor supply, including slower population growth; slower growth in women joining the labor force beginning in the 1990s; and a decline in the overall labor force participation rate after 2000 (see Figure 6, lower panel).³¹ The imminent shortage of qualified job candidates with STEM (Science, Technology, Engineering, and Math) skills is a particular concern.³²

Immigration of people with high skill levels contributes to the pool of qualified workers for new firms, whose success often depends on access to highly skilled employees. In particular, the foreign-born population accounts

27. See Hal Varian, "Automation Versus Procreation (Aka Bots Versus Tots)" (VoxEU, March 30, 2020) <https://tinyurl.com/y45yydc4>.

28. See Ian Hathaway and Robert E. Litan, *What's Driving the Decline in the Firm Formation Rate? A Partial Explanation* (Economic Studies at Brookings, November, 2014), <https://tinyurl.com/y2xjqxvq>; and Pierre Azoulay and others, "Age and High-Growth Entrepreneurship," *American Economic Review: Insights*, vol. 2, no. 1 (March 2020), pp. 65–82, <https://tinyurl.com/y4t5lu3s>.

29. See Mitra Toossi, "A Century of Change: The U.S. Labor Force, 1950–2050," *Monthly Labor Review* (May 2002), pp. 15–28, <https://go.usa.gov/x7BF2>.

30. See Fatih Karahan, Benjamin Pugsley, and Ayşegül Şahin, *Demographic Origins of the Startup Deficit*, Working Paper 25874 (National Bureau of Economic Research, May 2019), www.nber.org/papers/w25874; and Hugo Hopenhayn, Julian Neira, and Rish Singhania, *From Population Growth to Firm Demographics: Implications for Concentration, Entrepreneurship and the Labor Share*, Working Paper 25382 (National Bureau of Economic Research, December 2018), www.nber.org/papers/w25382.

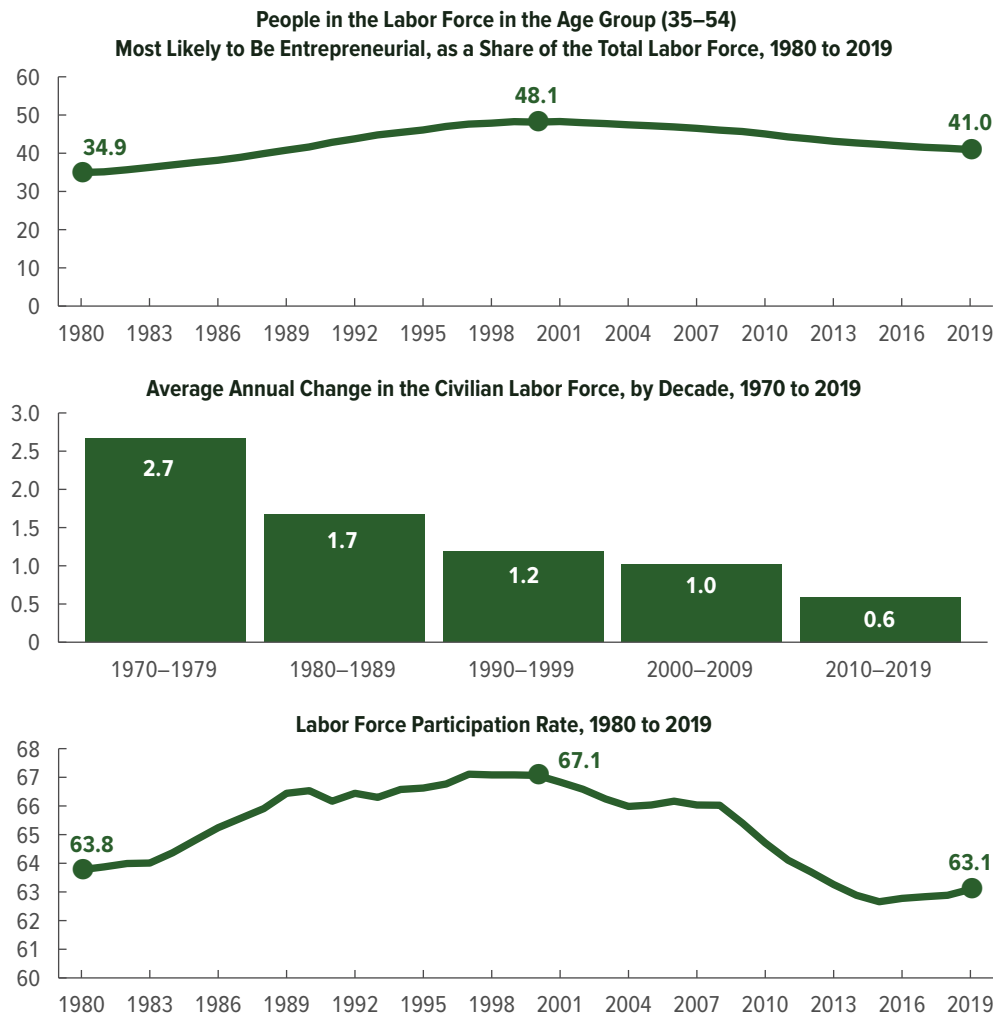
31. The labor force participation rate is the percentage of people in the civilian noninstitutionalized population who have jobs or are actively seeking work.

32. See National Academies of Sciences, Engineering, and Medicine, *Building America's Skilled Technical Workforce* (The National Academies Press, 2017), Chapter 2: Labor Market Patterns and Trends, pp. 21–38, <https://doi.org/10.17226/23472>.

Figure 6.

Demographic Trends Affecting Entrepreneurship

Percent



Demographic trends have also contributed to the decline in entrepreneurship over the past 20 years, including a falling share of the workforce among the age group most likely to be entrepreneurial, slower growth of the working-age population, and a lower rate of labor force participation.

Data source: Congressional Budget Office, using data from the Census Bureau and the Bureau of Labor Statistics. See www.cbo.gov/publication/56906#data.

The labor force participation rate is the percentage of people in the civilian noninstitutionalized population who have jobs or are actively seeking work.

for much higher shares of workers in science and engineering fields and those with doctorates than their share of the overall population. (And many foreign-born workers in the high-tech sector eventually start their own firms.)³³ New firms that fared better in the lottery for H-1B visas for highly skilled, foreign-born workers have

proven more successful in acquiring venture funding and in being acquired by a larger firm than new firms that were less lucky in their pursuit of such workers through that lottery.³⁴ Immigration is also linked to entrepre-

33. Workers with H-1B visas are not allowed to start a business unless they obtain a green card. For a more detailed discussion of the importance of foreign-born residents in the United States to innovation and productivity and of proposals to increase the immigration of skilled workers to the United States, see

Congressional Budget Office, *Federal Policies and Innovation* (November 2014), www.cbo.gov/publication/49487.

34. See Stephen G. Dimmock, Jiekun Huang, and Scott J. Weisbenner, *Give Me Your Tired, Your Poor, Your High-Skilled Labor: H-1B Lottery Outcomes and Entrepreneurial Success*, Working Paper 26392 (National Bureau of Economic Research, October 2019), www.nber.org/papers/w26392.

neurship because immigrants have been more likely than native-born Americans to create new businesses, having founded an estimated one-quarter of all start-ups in recent years.³⁵ Foreign-born business owners have been especially successful in the high-tech sector.³⁶

Changes in immigration do not appear to have negatively affected entrepreneurship over the past half-century. The presence of foreign-born residents in the United States has increased fairly steadily, from roughly 5 percent of the total population in 1970 to 14 percent in 2018.³⁷ CBO projects a substantial drop in net immigration to the United States over the next several years because of the coronavirus pandemic, which could hamper both overall economic growth and the pace of business formation.³⁸

The Regulatory Environment

The regulatory environment also affects the creation and growth of new businesses. Federal regulations affect firms directly, and antitrust policies can influence the competition they face. Intellectual property protections, especially in the form of patents, can also have an impact on the viability of new firms. The regulatory environment includes state and local regulations pertaining to non-compete clauses, the growing use of which has received greater scrutiny in recent years.

Federal Regulation. An increasingly burdensome regulatory regime is often cited as a factor in the decline in new businesses over the past four decades. Because they are typically small, newer firms may face a competitive disadvantage from regulation when compliance requirements are the same for businesses of all sizes. Larger firms—which tend to be older—can also better absorb regulatory costs, and they are more likely than new firms to have the wherewithal to lobby for favorable regulatory treatment, which may affect the rate at which the latter are created.³⁹ In addition, new companies in particular may need to spend considerable time learning how to comply with existing regulations—a barrier to entry in the form of a onetime expense that incumbents have already incurred.⁴⁰

The federal government does try to limit the potential competitive disadvantage imposed on small companies by regulations. The Regulatory Flexibility Act of 1980 (Public Law 96-354), along with subsequent legislation and executive orders modifying it, requires federal agencies to assess the effects of regulations on small businesses. If a regulation is likely to affect a substantial number of small firms, an agency must evaluate the burden of the regulation and identify less-costly alternatives. The Office of Management and Budget is also required annually to analyze the effect of federal regulations on small businesses. In addition, small firms are exempt from certain environmental requirements and provisions for employee health insurance.⁴¹

Empirical assessments do not always agree about the impact of federal regulation on new and small businesses in the United States.⁴² Some individual regulations

35. See Sari Pekkala Kerr and William Kerr, “Immigrant Entrepreneurship in America: Evidence From the Survey of Business Owners 2007 and 2012,” *Research Policy*, vol. 49, no. 3 (April 2020), article 103918, <https://tinyurl.com/y2dqnan7>.

36. See Robert W. Fairlie, *Estimating the Contribution of Immigrant Business Owners to the U.S. Economy* (Small Business Administration, Office of Advocacy, November 2008), <https://tinyurl.com/y6kra9yv> (PDF, 247 KB); and William R. Kerr, “High-Skilled Immigration, Innovation, and Entrepreneurship: Empirical Approaches and Evidence,” in Carsten Fink and Ernest Miguelez, eds., *The International Mobility of Talent and Innovation: New Evidence and Policy Implications* (Cambridge University Press, 2017), pp. 193–221, <https://doi.org/10.1017/9781316795774.007>.

37. See Congressional Budget Office, *A Description of the Immigrant Population—2013 Update* (May 2013), www.cbo.gov/publication/44134, and *The Foreign-Born Population and Its Effects on the U.S. Economy and the Federal Budget—An Overview* (January 2020), www.cbo.gov/publication/55967.

38. See Congressional Budget Office, *The 2020 Long-Term Budget Outlook* (September 2020), p. 43, www.cbo.gov/publication/56516.

39. See Germán Gutiérrez and Thomas Philippon, *The Failure of Free Entry*, Working Paper No. 26001 (National Bureau of Economic Research, June 2019), www.nber.org/papers/w26001.

40. The federal tax code is criticized along much the same lines; see Steven J. Davis, “Regulatory Complexity and Policy Uncertainty: Headwinds of Our Own Making” (paper prepared for the 2017 Hoover Institution Conference on ‘Restoring Prosperity,’ February 9–10, 2017), pp. 14–15, <https://tinyurl.com/y4f7zec2>.

41. See Lloyd Dixon and others, “The Impact of Regulation and Litigation on Small Business and Entrepreneurship,” WR-317-ICJ (RAND Corporation, February 2006) www.rand.org/pubs/working_papers/WR317.html.

42. See Office of Management and Budget, *2017 Draft Report to Congress on the Benefits and Costs of Federal Regulations and Agency Compliance With the Unfunded Mandates Reform Act* (March 5, 2018), pp. 37–40, <https://go.usa.gov/xGX9t>.

discourage the entry of new firms, and some research finds that, overall, increasing regulation is harmful to the formation and growth of new businesses. One study found such a relationship for firms with between 10 and 500 employees, although it did not report results for the smallest firms (of fewer than 10 employees), which account for about 90 percent of newly created ones.⁴³ Other studies that found a negative relationship between regulation and entrepreneurship are limited in their applicability because they compare countries at very different stages of development than the United States.⁴⁴ Two recent studies found different results—one showing a negative relationship and the other finding no relationship—even though they examined the same data over the same time periods using similar methods.⁴⁵

Antitrust Policies. Federal antitrust laws, as implemented by the Department of Justice and the Federal Trade Commission, can affect competition and market power in an industry. Large firms with market power could exercise that power in a way that results in diminished competition and less favorable conditions for entrepreneurship. Frequently cited indicators of market power include widespread increases in measures of concentration, such as the share of sales accounted for by the largest firms in an industry. Another indication is an increase in the dispersion in profitability across firms in the same market.⁴⁶ Although both the market shares claimed by the largest firms in an industry, and

their profitability, appear to have grown over the past two decades, evidence of the impact of market power on competition and entrepreneurship is still the subject of debate.

A rise in concentration and profitability may reflect superior performance by a relatively small group of firms, such as those that can use new technologies to achieve greater economies of scale or realize network effects (conditions under which demand for a good or service increases in relation to the number of people using it).⁴⁷ Greater market power may also be associated with behavior that makes it harder for entrepreneurs to start new firms and for their businesses to grow. For example, large established firms may acquire smaller, emergent competitors to quash the threat they pose—either by selling the competing product themselves or by terminating its development or sale.⁴⁸ Concern about such anticompetitive behavior is especially pronounced in the high-tech sector. Internet “platform” firms, for example, may use information about their customers’ online activity to identify potential competitors and lucrative product markets. They may then either acquire their future rivals or enter those markets directly with their own products. In either case, entrepreneurship may be less viable than before (though it is also possible that the acquisition improves the product of the firm being acquired).⁴⁹

43. See Germán Gutiérrez and Thomas Philippon, *The Failure of Free Entry*, Working Paper 26001 (National Bureau of Economic Research, June 2019), www.nber.org/papers/w26001.

44. See Simeon Djankov and others, “The Regulation of Entry,” *Quarterly Journal of Economics*, vol. 117, no. 1 (February 2002), pp. 1–35, <https://academic.oup.com/qje/article/117/1/1/1851750>; and Leora Klepper, Luc Laevan, and Raghuram Rajan, “Entry Regulation as a Barrier to Entrepreneurship,” *Journal of Financial Economics*, vol. 82, no. 3 (December 2006), pp. 591–629, <https://tinyurl.com/y68sabcd>.

45. See Nathan Goldschlag and Alex Tabarrok, “Is Regulation to Blame for the Decline in American Entrepreneurship?” *Economic Policy*, vol. 33, no. 93 (January 2018), pp. 5–44, <https://tinyurl.com/y9ls7sy5>; and James Baily and Diana Thomas, “Regulating Away Competition: The Effect of Regulation on Entrepreneurship and Employment,” *Journal of Regulatory Economics*, vol. 52, no. 3 (December 2017), pp. 237–254, <https://tinyurl.com/yycgfzax>.

46. See, for example, Jan De Loecker, Jan Eeckhout, and Gabriel Unger, “The Rise of Market Power and the Macroeconomic Implications,” *Quarterly Journal of Economics*, vol. 135,

no. 2 (May 2020), pp. 561–644, <https://doi.org/10.1093/qje/qjz041>.

47. See David Autor and others, “The Fall of the Labor Share and the Rise of Superstar Firms,” *Quarterly Journal of Economics*, vol. 135, no. 2 (May 2020), pp. 645–709, <https://doi.org/10.1093/qje/qjaa004>.

48. For evidence of the commercialization of new products being preempted through a competitor’s acquisition of the developing firm, see the research on the pharmaceutical industry by Colleen Cunningham, Florian Ederer, and Song Ma, “Killer Acquisitions,” *Journal of Political Economy* (forthcoming), <https://tinyurl.com/yb2m2rpv>.

49. See “American Tech Giants Are Making Life Tough for Startups,” *The Economist* (June 2, 2018), <https://tinyurl.com/y93nwkrh>; and James Pethokoukis, “Incumbents vs. Startups: The Case That Big Tech Is Squashing Small Tech” (blog entry, American Enterprise Institute, June 4, 2018), <https://tinyurl.com/y6fz3c5d>. For regulators’ consideration of competition issues in digital technology markets, see Federal Trade Commission, “FTC Hearing 3: Oct. 17 Session 3 Nascent Competition: Economic Incentives and Business Strategies of Tech Firms” (accessed December 16, 2020), <https://tinyurl.com/y7ye4rbo>.

The Patent System. Patents provide a legal framework for protecting investments in intellectual property. They give an incentive for people to engage in innovative activity by granting them the exclusive use of the patented product (or process) for a period of time in exchange for disclosing the discovery. Patents can help new firms in particular to overcome financing constraints: A patent can make a new firm more attractive to investors because it provides greater assurance of the firm's success. In some industries, such as the pharmaceutical industry, where new products can be replicated at low marginal costs once the blueprint for them is known, the patent provides incentive for innovation.

Patents held by others can act as barriers to entrepreneurs. Patents have proliferated in high-tech industries since the early 1980s.⁵⁰ Large patent portfolios held by incumbent firms in those industries may deter start-ups because cash-constrained new businesses may have difficulty bearing the costs of patent-related litigation.⁵¹

Noncompete Clauses. Trends in state and local regulations may compound or, alternatively, offset developments at the federal level. For instance, state and local regulatory policies that allow restrictions on labor mobility, such as noncompete clauses, can affect entrepreneurship. Unfortunately, few data are available with which to examine whether the incidence of noncompete clauses has increased over time.

Under a noncompete clause in an employment contract, a worker must wait a certain amount of time after leaving an employer before joining another firm in a related industry (or geographic area)—or before starting a business that could compete with the former employer. Firms pursue such clauses because they constrain employees' ability to leave, thus affording a greater opportunity to recoup training costs and to invest in other activities that allow workers to learn (such as R&D). Noncompete clauses can also restrict the creation

of new businesses and their growth in markets that rely on skilled employees.⁵²

Health Insurance. Federal and state regulations pertaining to health insurance markets may also affect entrepreneurship. When the regulatory environment makes health insurance available at a lower cost or better quality through employers than is available to individuals, employees with health insurance coverage provided through their employer are likely to view starting or joining a firm as less attractive.

Evidence suggests that insurance coverage can affect self-employment, at least in some circumstances in which alternative sources of coverage are not as readily available and families expect to need it.⁵³ Health insurance considerations may or may not influence the self-employment decisions of individuals more broadly among all ages and in all circumstances, or the decisions of individuals who are specifically considering founding (or leaving a current employer to join) a new growth-oriented firm.⁵⁴

Certain changes to health care policy over the past four decades have supported entrepreneurship, in CBO's assessment. The Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA) provided for the continuation of group coverage upon separation from employment (although at greater expense to the individual than when the coverage was subsidized by the employer). From 1986 to 2003, the federal income

50. See Congressional Budget Office, *Federal Policies and Innovation* (November 2014), www.cbo.gov/publication/49487.

51. See Ian Appel, Joan Farre-Mensa, and Elena Simintzi, "Patent Trolls and Startup Employment," *Journal of Financial Economics*, vol. 133, no. 3 (September 2019), pp. 708–725, <https://doi.org/10.1016/j.jfineco.2019.01.003>; and Bronwyn H. Hall, Georg von Graevenitz, and Christian Helmers, "Technology Entry in the Presence of Patent Thickets," *Oxford Economic Papers* (September 2020), <https://doi.org/10.1093/oepl/gpaa034>.

52. See Department of the Treasury, *Non-compete Contracts: Economic Effects and Policy Implications*, (March 2016), <https://go.usa.gov/xAjFY> (PDF, 500 KB); and Evan Starr, *The Use, Abuse, and Enforceability of Non-Compete and No-Poach Agreements: A Brief Review of the Theory, Evidence, and Recent Reform Efforts* (Economic Innovation Group, February 2019) <https://eig.org/noncompetesbrief>.

53. For example, see Robert W. Fairlie, Kanika Kapur, and Susan Gates, "Is Employer-Based Health Insurance a Barrier to Entrepreneurship?" *Journal of Health Economics*, vol. 30, no. 1 (January 2011), pp. 146–162, <https://doi.org/10.1016/j.jhealeco.2010.09.003>. However, see also Douglas Holtz-Eakin, John R. Penrod, and Harvey S. Rosen, "Health Insurance and the Supply of Entrepreneurs," *Journal of Public Economics*, vol. 62, no. 1-2 (October 1996), pp. 209–235, [https://doi.org/10.1016/0047-2727\(96\)01579-4](https://doi.org/10.1016/0047-2727(96)01579-4).

54. For example, see Bradley T. Heim and Ithai Z. Lurie, "Did Reform of the Non-Group Health Insurance Market Affect the Decision to Be Self-Employed? Evidence From State Reforms in the 1990s," *Health Economics*, vol. 23, no. 7 (July 2014), pp. 841–860, <https://doi.org/10.1002/hec.2960>.

tax deduction provided to the self-employed for health insurance rose from 25 percent to 100 percent, making coverage less expensive for the entrepreneur.⁵⁵

The passage of the ACA in 2010 made health insurance coverage cheaper and more accessible for some entrepreneurs but more expensive for others.⁵⁶ Some potential entrepreneurs may have been more likely to start a business because they could no longer be denied coverage on the basis of preexisting health conditions (either their own or their family members') or be charged higher premiums because of their health. The ACA also subsidized health insurance for some entrepreneurs, making it less expensive, and caused premiums to rise for others—in some cases by substantial amounts.⁵⁷ Recently, the Trump Administration promulgated rules expanding association health plans allowing entrepreneurs to join with other small employers to purchase insurance at a lower cost in the large group market. Statutory changes in 2016 and recent changes to rules governing health reimbursement arrangements also now allow entrepreneurs and their employees to purchase health insurance in the nongroup market on a tax-preferred basis.⁵⁸ (Sometimes called health reimbursement accounts, health reimbursement arrangements are employer-funded group health plans from which employees receive tax-free reimbursements for qualified medical expenses up to a fixed dollar amount per year.) The effects of those rules on entrepreneurship are not yet known.

Federal Policies to Support Entrepreneurship

Federal policies can address a number of the factors that influence entrepreneurship. Policymakers could increase

55. However, health insurance premiums paid by the self-employed are not sheltered from payroll taxes. By comparison, most premiums paid by employers and employees for group health insurance are excluded from both federal income and payroll taxes.

56. For more discussion of the impact of the Affordable Care Act, see Congressional Budget Office *Private Health Insurance Premiums and Federal Policy* (February 2016), www.cbo.gov/publication/51130.

57. See Bradley T. Heim and others, "The Impact of the ACA on Premiums: Evidence From the Self-Employed," *Journal of Health Politics, Policy, and Law*, vol. 40, no. 5 (October 2015), pp. 1061–1085, <http://doi.org/10.1215/03616878-3161248>.

58. See Congressional Budget Office, *How CBO and JCT Analyzed Coverage Effects of New Rules for Association Health Plans and Short-Term Plans* (January 2019), www.cbo.gov/publication/54915.

access to financing for new firms or provide more financial support for those small firms that are likely to be innovative. Policymakers could also support entrepreneurship by facilitating the immigration of highly skilled workers and entrepreneurs to the United States. Finally, policymakers could modify regulations that affect the conditions under which firms are started and grow.

Different approaches would have their own advantages and disadvantages (see Table 1). For policies that would increase federal outlays, lawmakers might want to consider whether the costs of such policies would exceed the benefits from any improvement in the economy's performance. Those assessments are beyond the scope of this report.

Financing and Financial Support for New Firms

Policymakers could increase access to financing for new firms by creating programs that explicitly target them or through existing programs that target small firms. They could also provide other forms of financial support to new or small firms, either directly or indirectly. In either case, a key consideration is whether to try to channel assistance to those new firms that are likely to be innovative and grow or to support small firms more broadly.

Increase the Availability of Financing. Financing constraints can limit entrepreneurship. The federal government could create a program to provide financing specifically for innovative new firms. Policymakers could also provide greater access to financing for small firms more generally by expanding programs run by the SBA.

Provide a Credit Program Specifically for New Firms.

New firms can face different—and sometimes more challenging—obstacles than existing businesses face. For example, it is often more difficult for promising new firms without a well-established track record of performance to obtain bank financing than older small firms of the same creditworthiness.⁵⁹ That is because new firms are more likely to fail than older firms. In fact, only about half of all new businesses survive past their first five years (see Figure 7). After that initial period, the chance of survival continues to decline, but more

59. Federal Reserve Bank of New York, *2016 Small Business Credit Survey: Report on Startup Firms* (August 2016), p. 19, <https://tinyurl.com/y4k394hv>.

Table 1.

Advantages and Disadvantages of Policies to Support Entrepreneurship

	Policy Approaches	Advantages	Disadvantages
Financial	1. Provide a credit program specifically for new firms	Would provide more targeted assistance to new firms	Would entail greater costs to the federal government and could run the risk of prominent failures
	2. Increase funding for SBA’s 7(a) or SBIC credit assistance programs	Could increase new firms’ access to financing	Most small firms are older firms
	3. Increase set-asides for SBIR and STTR programs	Some studies show these programs help firms start and grow	Could result in less-efficient allocation of federal funds
	4. Provide financial support for markets with innovative products	Could be particularly useful for products with social benefits	Could be difficult to identify promising technologies that would remain underdeveloped without government support
	5. Increase tax preferences such as those for capital gains, R&D investment, or depreciation allowances for capital spending	Would increase the after-tax return of starting a business	Would reduce tax revenues and accrue to many other firms in addition to new firms
Demographic	1. Allow for more immigration of skilled workers	Could increase the supply of qualified workers available to new firms—especially in the high-tech sector	Could depress the employment and wages of similarly skilled native-born workers
	2. Allow for more immigration of entrepreneurs	Could increase the number of people who start a firm in the United States	Could be difficult to identify foreign entrepreneurs and verify their activity in the United States
Regulatory	1. Reduce the regulatory burden for small or new firms	Could lower costs of regulatory compliance for new firms	Could limit the effectiveness of the regulations in question
	2. Expand the scope of antitrust enforcement	Could make it easier for start-ups in some markets to compete with larger, established firms	Could preclude some innovation- and productivity-enhancing mergers of new firms and incumbent firms
	3. Restrict the use of noncompete contracts	Could make it easier for workers to leave their employer and establish or join a new firm	Could weaken incentives for firms to invest in worker training or other types of intangible capital

Data source: Congressional Budget Office.

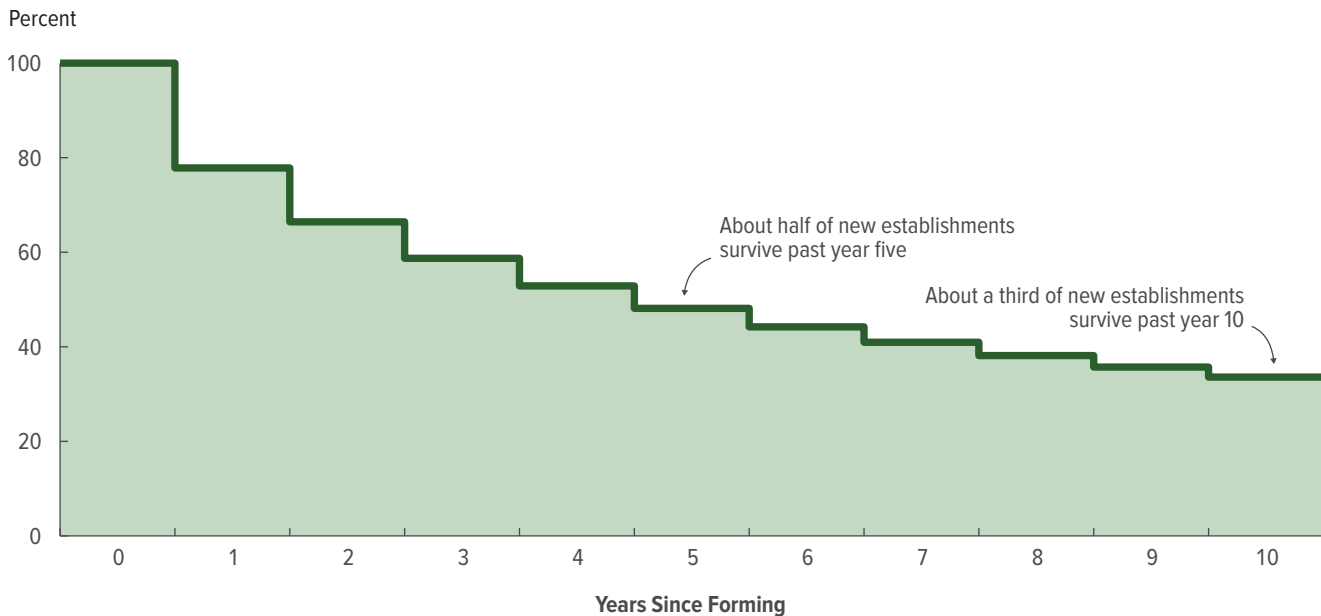
R&D = research and development; SBA = Small Business Administration; SBIC = Small Business Investment Corporation; SBIR = Small Business Innovation Research; STTR = Small Business Technology Transfer.

slowly.⁶⁰ (If it declined at the same rate as the first five years, only one-quarter of new businesses would survive after the second five years; but, on average, that percentage is instead about one-third.) Policymakers could help entrepreneurs overcome that impediment by establishing a loan guarantee program specifically targeting new businesses.

60. The relatively low survival rate of new firms may reflect a process of experimentation in which new firms enter a market with an expectation about their profitability and learn over time whether they are in fact a viable business. See, for example, Boyan Jovanovic, “Selection and the Evolution of Industry,” *Econometrica*, vol. 50, no. 3 (May 1982), pp. 649–670, <https://tinyurl.com/y5uncnpz>.

Choosing which new businesses to provide credit to can be particularly challenging, especially when choosing among those that are innovative and attempting to commercialize a new technology. The success of a new business often depends not only on an underlying technology but also on a broad array of other factors—including product design, the timing of product introduction, market placement, advertising, cost control, logistics, and product support. In the private sector, venture capital companies (which specialize in investing in new firms) anticipate that only one or two start-ups of every 10 they invest in will become high-growth firms. Three or four

Figure 7.

Average Survival Rate of Establishments Formed Between 2000 and 2009

Data source: Congressional Budget Office, using data from the Bureau of Labor Statistics. See www.cbo.gov/publication/56906#data.

An establishment is a single place of business, and any one firm can own multiple establishments, although that is unlikely during the early years of a firm's life.

will likely fail.⁶¹ The federal government is generally in a worse position than private investors to determine which businesses will succeed. The government is at a disadvantage because it is likely to incorporate other goals into its credit decisions. Some firms that could have obtained financing on their own might thus receive federally subsidized credit, also preventing firms that warrant federal support from receiving a portion of the limited resources.

In the past, when federal programs have sought to promote technologies by providing credit to firms, the programs have frequently addressed some type of failure in the private market. A market failure occurs, for example, when those who buy something do not pay for the costs it imposes on society, like the costs of pollution or traffic congestion. Other federal programs have boosted technologies that served a governmental mission, such as defense.

61. For more discussion of the difficulty that even venture capital firms have in identifying which new companies will be successful, see William R. Kerr, Ramana Nanda, and Matthew Rhodes-Kropf, "Entrepreneurship as Experimentation," *Journal of Economic Perspectives*, vol. 28, no. 3 (Summer 2014), pp. 25–48, <https://tinyurl.com/y3bv8zr6>.

Regardless of its overall purpose, a program designed to minimize costs to the federal government would either be limited in its ability to take risks on promising new firms or would have to charge borrowers very high fees to cover those risks. Ultimately, the amount of assistance provided to new businesses through such a program would depend on how much risk—and thereby cost—policymakers were willing to accept.⁶² In fact, the SBA recently discontinued one such program. In 2012, the agency established a five-year initiative to promote early-stage Small Business Investment Corporations (SBICs; the SBIC program is described in more detail in the next section). Early-stage SBICs were required to invest at least 50 percent of their funds in early-stage small businesses, which are those that have never been cash-flow positive. By the end of fiscal year 2018, early-stage SBICs had invested only \$267.5 million in 82 small businesses because the SBICs had trouble attracting qualified investment funds. The SBA had stopped accepting new applications for the program in 2017, and it ceased

62. As discussed below, because most SBA lending programs are designed to minimize costs to the federal government, they are limited in their ability to take risks on promising new firms or would have to charge borrowers very high fees to cover that risk.

efforts to improve the program in 2018, citing excessive costs and a lack of support for the initiative.⁶³

Targeting firms by age instead of size raises other questions, such as what age to use to qualify a business as new. SBA programs typically have different thresholds, varying by industry, for the sizes of firms that qualify as small businesses.⁶⁴ Moreover, the potential for a firm to manipulate its age could be an issue. Depending on how age was measured, a very small business could reestablish itself as a new business by closing temporarily and then reopening. Databases used to research firms may not work well to administer a federal program.

Increase Funding for SBA Credit Programs. The federal government typically supports new firms on the basis of their size rather than their age—mainly through the SBA, which helps small businesses access financing, primarily through two programs. Under the Section 7(a) program, the SBA guarantees loans originated by banks and other financial institutions. In 2019, that program supported \$23.2 billion in loans. Under the SBIC program, investment companies borrow at reduced cost using an SBA guarantee and then use the proceeds to make debt and equity investments in small businesses.⁶⁵ Those investments amounted to \$5.9 billion in 2019.

To increase federally supported access to financing for new firms, policymakers could raise the loan limits on the SBA's lending programs or provide funding to subsidize access to credit. The fees that the SBA receives from its small-business and SBIC borrowers are intended to offset losses from loans that are not fully repaid. The SBA has subsidized loans in certain years, as it did after the 2007–2009 recession and is doing again in 2020 in response to the coronavirus pandemic. The rates at which

7(a) program loans have been written off over the past decade have typically been less than 2 percent of unpaid loan balances each year.⁶⁶ If the federal government explicitly shouldered some of the cost of the loan guarantees, those loans could be offered at lower rates and hence made more accessible to new businesses. And with additional funding, SBICs could guarantee more loans or support investments in potentially more innovative but riskier firms. Or the amount of SBIC investments could be increased by raising the amount that firms can borrow with an SBA guarantee.

Assessments of the SBA's ongoing efforts to support small firms have been hampered by limited data.⁶⁷ Firms that received 7(a) loans in the 1999–2001 time frame were found to have fared as well as, or better than, firms that did not receive such loans. Between 70 percent and 85 percent of the time, borrowers (regardless of their size) survived for at least four years after receiving their loans, whereas firms that did not receive loans had a four-year survival rate of roughly 70 percent.⁶⁸ Survival rates over the same time horizon for firms that received SBIC investments were lower—between 50 percent and 80 percent (depending on the method used for the estimate).

One problem with expanding extant small-business programs to increase support for new firms is that doing so will inadvertently benefit many older businesses that happen to be small. Although almost all new firms are small, so too are many older firms. In 2018, for example, virtually all firms less than five years old had no more than 100 employees, but only about 30 percent of businesses with fewer than 100 employees were less than five years old.⁶⁹

63. See Robert Jay Dilger, *SBA Small Business Investment Company Program*, Report for Congress R41456, version 87 (Congressional Research Service, August 31, 2020), <https://go.usa.gov/xACcn>.

64. To establish eligibility for its programs, the SBA relies on a variety of measures—such as employment, annual receipts, and assets—to determine a firm's size. The choice of measure may vary by industry as well as by the program or provision in question; see Robert Jay Dilger, *Small Business Size Standards: A Historical Analysis of Contemporary Issues*, Report for Congress R40860, version 91 (Congressional Research Service, August 28, 2020), <https://go.usa.gov/xACcH>.

65. See Robert Jay Dilger and Sean Lowry, *Small Business Administration: A Primer on Programs and Funding*, Report for Congress RL33243, version 116 (Congressional Research Service, October 6, 2020), <https://go.usa.gov/xACY3>.

66. See Small Business Administration, “Small Business Administration Loan Program Performance” (accessed April 26, 2020), <https://tinyurl.com/y6xqxrqi>.

67. See Robert Jay Dilger, *SBA Assistance to Small Business Startups: Client Experiences and Program Impact*, Report for Congress R43083, version 29 (Congressional Research Service, November 24, 2020), <https://go.usa.gov/xACcz>; and Government Accountability Office, *Priority Open Recommendations: Small Business Administration*, GAO-19-371SP (April 4, 2019), <https://go.usa.gov/xGsj6>.

68. Urban Institute, *A Performance Analysis of SBA's Loan and Investment Programs* (January 2008), <https://tinyurl.com/yy5xmgx> (PDF, 220 KB).

69. CBO analyzed data from the Census Bureau's Business Dynamics Statistics program. For the data, see www.census.gov/programs-surveys/bds.html.

Increase Other Forms of Federal Financial Support.

The federal government provides financial support for innovative small firms directly through research programs at federal agencies and indirectly through the tax code. Boosting that financial support could take the form of either increased funding for those programs or more favorable tax provisions for small businesses. Policymakers could target such support directly to new firms by substituting age requirements for size requirements. That approach would be more effective at providing support to new firms but would also entail more risk that recipients could fail despite the support.

Increase Set-Asides for Small-Business Research and Technology Programs. Policymakers could increase support for innovative new firms by modifying the Small Business Innovation Research (SBIR) program or the Small Business Technology Transfer (STTR) program. Under the SBIR program, every federal department with an R&D budget of \$100 million or more must allocate a fixed share (currently 3.2 percent) of that budget to pay for work done by small firms. The STTR program funds research proposals that are developed and executed cooperatively between small businesses and scientists in nonprofit research organizations. The program receives a set-aside (currently 0.45 percent) from the R&D budgets of federal departments that spend more than \$1 billion per year on joint R&D efforts between private firms and nonprofit scientists. Increasing the set-aside for the STTR program would increase the funding available to small high-tech businesses, and raising the share allocated for the SBIR program could increase the participation of such businesses in federal R&D efforts.

Some assessments of the SBIR program have found evidence that it helps firms start and grow. Start-up rates have risen in localities where at least one business has received an SBIR grant, and the program appears to have increased the share of R&D undertaken by smaller firms relative to larger ones.⁷⁰ The program has also been associated with several measures of future success

for businesses, such as a higher likelihood of increased revenue and venture capital funding.⁷¹

Other observers have been more skeptical, arguing that the SBIR program is susceptible to lobbying as well as waste, fraud, and other abuse.⁷² A potential disadvantage of modifying either the SBIR program or the STTR program is that doing so could result in a less-efficient allocation of federal funds. And administering a program that is selective can require substantial resources. For example, the 11 federal agencies participating in the SBIR program in fiscal year 2017 reviewed just over 19,000 initial-stage proposals, making funding awards to roughly one in six firms.⁷³

Provide Financial Support for Markets That Draw on Innovative Technologies. Another way to support leading-edge new companies is to subsidize demand for their products.⁷⁴ That approach could valorize products that embody technologies whose development would provide social benefits that the marketplace may not otherwise value, such as improving national security or reducing greenhouse gas emissions. One challenge for such an approach is the potential difficulty in determining which technologies will prove to be commercially successful and

70. See Haifeng Qian and Kingsley E. Haynes, "Beyond Innovation: The Small Business Innovation Research Program as Entrepreneurship Policy," *Journal of Technology Transfer*, vol. 39 (December 2014), pp. 524–543, <https://tinyurl.com/yclu62qn>; and Matthew R. Keller and Fred Block, "Explaining the Transformation in the U.S. Innovation System: The Impact of a Small Government Program," *Socio-Economic Review*, vol. 11, no. 4 (September 2013), pp. 629–656, <https://tinyurl.com/y3qyvbhf>.

71. See Sabrina T. Howell, "Financing Innovation: Evidence From R&D Grants," *American Economic Review*, vol. 107, no. 4 (April 2017), pp. 1136–1164, <https://doi.org/10.1257/aer.20150808>.

72. See Marcy E. Gallo, *Small Business Research Programs: SBIR and STTR*, Report for Congress R43695, version 5 (Congressional Research Service, May 5, 2020), <https://go.usa.gov/xACYx>; and Josh Lerner, "Government Incentives for Entrepreneurship," in Austan Goolsbee and Benjamin Jones, eds., *Innovation and Public Policy* (National Bureau of Economic Research, forthcoming), <https://tinyurl.com/ya4nyuf5>.

73. See Small Business Administration, *Small Business Innovation Research and Small Business Technology Transfer Annual Report: Fiscal Year 2017*, pp. 6–7, 12, <https://go.usa.gov/xGNzw> (PDF, 5.88 MB). In the initial stage of the SBIR program (referred to as Phase I), selected firms establish the technical merit, feasibility, and commercial potential of their proposed project. Awards at subsequent stages (Phases II and III), which are also competitively based, allow for continued R&D and commercialization, respectively.

74. For more discussion of this kind of approach, which is credited with fostering the development of integrated circuits in the 1960s, see Congressional Budget Office, *Federal Policies and Innovation* (November 2014), p. 16, www.cbo.gov/publication/49487.

which of those would remain underdeveloped without government support.

Modify the Federal Tax System. Small businesses currently benefit from several tax preferences. Those preferences could be made more generous and directed toward new firms instead of small ones. Major tax provisions that provide financial support to small firms include an expensing allowance for investment in qualifying equipment, which largely comprises machinery, equipment, and off-the-shelf software. Although businesses of all sizes can claim the allowance, it is capped at \$1 million and thus primarily benefits small firms (because the expensing limit represents a greater share of their investment than it does for larger firms). The \$1 million expensing allowance reflects a \$0.5 million increase brought about by the 2017 tax act (P.L. 115-97). However, because the 2017 tax act also provided 100 percent bonus depreciation (which also allows for expensing of equipment) for all firms through 2022, that increase will have little or no incremental value to small (and new) firms until 2023.⁷⁵

Other tax provisions that support small businesses include the option to use cash rather than accrual accounting; an exclusion for gains from the sale of qualified small business stock; and a tax credit for the cost of providing employees with health insurance. Those provisions accounted for nearly all of the roughly \$23 billion in federal tax expenditures for fiscal year 2019 associated with measures that favor small firms. The amount of forgone federal revenues from those major tax provisions varies widely. In fiscal year 2019, forgone revenues amounted to \$15.7 billion from the expensing allowance; \$6.0 billion from the option to use cash rather than accrual accounting; \$1.3 billion from the exclusion of gains from the sale of qualified small business stock; and less than \$50 million from the tax credit for the cost of providing employees with health insurance.⁷⁶

75. Additionally, the 2017 tax act replaced the previous corporate tax rates (which were increasing in corporate income) with a uniform rate of 21 percent. The lower, uniform rate could have hurt new (and small) firms relative to older (and large) ones; see Gary Guenther, *The 2017 Tax Law (P.L. 115-97) and Investment in Innovation*, Report for Congress IF10757, version 3 (Congressional Research Service, April 9, 2018), <https://go.usa.gov/xACYg>.

76. See Joint Committee on Taxation, *Estimates of Federal Tax Expenditures for Fiscal Years 2019-2023*, (December 18, 2019), <https://www.jct.gov/publications/2019/jcx-55-19/>.

The support provided by the tax system through those tax expenditures could be expanded to larger firms, which could also increase the financial support for growing entrepreneurial ventures. For instance, the \$1 million cap on depreciation allowances could be increased, which would subsidize a larger amount of investment by new firms.⁷⁷ Policymakers could also raise the gross asset ceiling used to treat a business's stock as a qualified small business stock (currently \$50 million) and expand the roster of eligible industries, making such tax-preferred investment available to more companies. The portion of capital gains that may be excluded from gross income could also be increased. Some observers have already argued that the criteria that businesses must meet to qualify for the provision are overly restrictive.⁷⁸

Finally, policymakers could alter tax laws that govern how businesses treat their expenses for conducting R&D. The 2017 tax act repealed the option for firms to expense research expenditures, requiring instead (starting in 2022) that they be capitalized and amortized over five years. The option to expense R&D may have been especially beneficial to small firms because it allowed them to avoid a relatively complex tax filing.⁷⁹ Another way to reduce the after-tax cost of R&D for new firms would be to allow them to receive a refund for the R&D tax credit. Because of start-up costs, young businesses are more likely than older ones to post losses and may not have sufficient tax liability to apply the credit fully (if at all).⁸⁰ A consideration weighing against such an approach is that experience with refundability in other contexts has shown that such allowances can be abused and difficult to administer.

77. The \$1 million cap represents an increase from the previous level of \$510,000 and was one result of the 2017 tax act (P.L. 115-97). For additional effects of the 2017 tax act on small firms, see Gary Guenther, *P.L. 115-97, the 2017 Tax Revision, and Small Business Taxation*, Report for Congress IF10723, version 7 (Congressional Research Service, February 9, 2018), <https://go.usa.gov/xACYD>.

78. See Alan D. Viard, "The Misdirected Debate and the Small Business Stock Exclusion," *Tax Notes*, vol. 134, no. 6 (February 2012), <https://tinyurl.com/y4vrw5zj>.

79. See Bronwyn H. Hall, "Tax Policy for Innovation," in Austan Goolsbee and Benjamin Jones, eds., *Innovation and Public Policy* (National Bureau of Economic Research, forthcoming), <https://tinyurl.com/yapzfwb9>.

80. See Gary Guenther, *The 2017 Tax Law (P.L. 115-97) and Investment in Innovation*, Report for Congress IF10757, version 3 (Congressional Research Service, April 9, 2018), <https://go.usa.gov/xACYZ>.

A result of modifying the federal tax system to benefit entrepreneurs would be a greater after-tax return when starting a business and the incentives that it would create to encourage start-ups. There are several potential disadvantages to that approach. Generally, greater federal financial support for new firms would either increase deficits or require reductions in spending for other government activities. More specifically, providing a tax preference for capital gains from the sale of new firms' stock could provide a windfall to investors who would have taken an equity stake in those businesses anyway. In addition, making the R&D tax credit more easily claimed by new firms could provide them with an incentive to mitigate revenue losses by falsely claiming the credit for non-R&D related activities. Moreover, because new firms may not be profitable right away, additional tax preferences might not be of immediate use to them.

Immigration of Highly Skilled Workers and Entrepreneurs

Another way to increase entrepreneurial activity is to increase immigration to the United States of highly skilled workers or of people who are particularly likely to start a business.

Facilitate Immigration of Highly Skilled Workers. The federal government could increase the supply of qualified workers available to new firms—especially in high-tech industries—by facilitating the immigration of highly skilled workers to the United States.⁸¹ One approach for expanding the pool of foreign-born, high-tech workers is to increase employment-based immigration under the H-1B visa program. An H-1B visa admits highly skilled, foreign-born workers into the United States to work for up to three years (with the possibility of renewal). The H-1B program has a cap of 65,000 visas.⁸² Applications submitted by businesses for new H-1B workers have routinely exceeded limits in recent years—during the

first week or even on the first day that they are accepted, in some cases.⁸³

One potential unintended consequence of increasing the cap on visas in the H-1B program is that it would admit foreign-born workers to work in more industries than just those that are high-tech. Other possible unintended consequences are the effect on the employment and wages of native-born workers and the potential for companies to abuse the program by hiring foreign-born workers to replace native-born workers at lower wages. Increasing the employment of young, highly skilled immigrants decreases the employment of older native-born workers, either absolutely or as a share of total employment. In the past, CBO has estimated that increasing the size of the H-1B program would decrease wages slightly over several years for workers in the top fifth of the skill distribution.⁸⁴

Another way to increase the number of highly skilled, foreign-born workers in the United States is to grant permanent residency (by issuing what are commonly called green cards) to more of those workers who qualify for it. Because of country-specific caps on green-card issuance, some foreign-born workers (from countries that supply a large share of work-based visa holders, who generally come with high skills) must wait a long time to become permanent residents. Such a delay could encourage those foreign-born workers to seek citizenship elsewhere and discourage nonresident, foreign-born workers from immigrating to the United States.⁸⁵

81. See Sari Pekkala Kerr and William R. Kerr, "Immigration Policy Levers for U.S. Innovation and Startups," in Austan Goolsbee and Benjamin Jones, eds., *Innovation and Public Policy* (National Bureau of Economic Research, forthcoming), <https://tinyurl.com/ybsn4mn9>.

82. Visa applicants for employment at universities and nonprofit research facilities are exempt from the cap, as are the first 20,000 applicants with a master's degree or doctorate from a university in the United States.

83. See Jill H. Wilson, *Temporary Professional, Managerial, and Skilled Foreign Workers: Policy and Trends*, Report for Congress R43735, version 7 (Congressional Research Service, August 9, 2016), <https://go.usa.gov/xACYK>. For a description of the H-1B visa program and its requirements, see Citizenship and Immigration Service, "H-1B Specialty Occupations, DOD Cooperative Research and Development Project Workers, and Fashion Models" (accessed December 10, 2019), <https://go.usa.gov/xGnW7>.

84. Economic studies have generally found that increases in the number of skilled workers raise the productivity of less-skilled workers. See Congressional Budget Office, *The Economic Impact of S. 744, the Border Security, Economic Opportunity, and Immigration Modernization Act* (June 2013), p. 20, www.cbo.gov/publication/44346.

85. See William A. Kandel, *Permanent Employment-Based Immigration and the Per-country Ceiling*, Report for Congress R45447, version 3 (Congressional Research Service, December 21, 2018), <https://go.usa.gov/xACY9>.

A third approach to facilitating immigration is to provide employment-based visas to foreign-born students in STEM fields, allowing them to stay in the United States after graduation. Such visas could be temporary or could confer permanent-resident status. Many students in STEM-related fields already remain in this country after graduation, but providing visas especially for such students would make it much easier for them to do so.⁸⁶ Linking education in the United States to immigration prospects would affect incentives for foreign-born people to study here and for U.S. colleges and universities to provide them opportunities to do so.

Facilitating the immigration of highly skilled, foreign-born workers would expand the pool of such employees for large incumbent firms as well as for new firms. The additional inflow of workers could, however, depress the employment and wages of similarly skilled, native-born workers—although such effects appear to be small.⁸⁷ Another concern is that some countries that have linked immigration to education have found that certain educational institutions increased their enrollment of foreign-born students substantially by lowering educational standards.⁸⁸

Facilitate Immigration of Entrepreneurs. Another approach that lawmakers could take to encourage foreign-born entrepreneurs to come to the United States would be to expand visa programs exclusively for immigrant business owners or investors. A program that reflects that approach (and simultaneously illustrates the difficulty of implementing such a narrowly targeted

policy) is the International Entrepreneur Rule (IER).⁸⁹ Under the IER, the Department of Homeland Security can extend for up to two and a half years (renewable once) the stay of foreign-born business owners who can establish that they have started a firm within the past five years that has the potential to grow rapidly, create jobs, and provide other benefits to the United States. According to federal regulations, evidence of such future business prospects is significant capital investment by U.S. citizens or the receipt of grants from a state, local, or federal government entity.⁹⁰ Although the IER was established in January 2017, it was suspended before it was due to take effect and is currently being considered for termination. Among the reasons cited for terminating the IER is the difficulty of implementing it.⁹¹ Identifying foreign-born individuals who can start successful businesses in the United States (and monitoring the performance of those firms to confirm that outcome) can entail a significant commitment of staff and time. The more demanding the eligibility criteria of a given program, the more effort is required to administer it.

Another program, the Immigrant Investor Program (also known as EB-5), targets immigrant investors who create a new commercial enterprise or invest in one of the federally designated regional centers that pools funds to make investments to promote economic growth. Under the program, entrepreneurs can apply for a visa for permanent residence. Each year, a maximum of 10,000 people (and their families) who invest at least \$1.8 million in a new business and create 10 jobs in the United States, or who invest \$900,000 in a new business in an underdeveloped or high-unemployment area, receive EB-5 visas. One source of concern is that, because the program defines “new” as any firm established after 1990, the investment that takes place through EB-5 visas may not always support new start-ups. In recent years, participation in the program has shifted away from directly creating new businesses to investing in the

86. Such an employment-based visa could be a replacement for, or an extension of, the Optional Practical Training (OPT) currently available to foreign-born students. The OPT is a temporary employment directly related to a student’s major area of study. Individuals can apply to receive up to 12 months of OPT employment authorization before or after completing their academic studies; foreign-born students with STEM degrees can generally apply for a 24-month extension of their post-completion OPT employment.

87. See Congressional Budget Office, *The Economic Impact of S. 744, the Border Security, Economic Opportunity, and Immigration Modernization Act* (June 2013), www.cbo.gov/publication/44346.

88. See Lesleyanne Hawthorne, *Competing for Skills: Migration Policies and Trends in New Zealand and Australia* (New Zealand Department of Labour, 2011), pp. 108–114, <https://tinyurl.com/y676d93s> (PDF, 1.7 MB).

89. See Sari Pekkala Kerr and William R. Kerr, “Immigration Policy Levers for U.S. Innovation and Startups,” in Austan Goolsbee and Benjamin Jones, eds., *Innovation and Public Policy* (National Bureau of Economic Research, forthcoming), <https://tinyurl.com/ybsn4mn9>.

90. See International Entrepreneur Rule, 82 Fed. Reg. 5238 (January 17, 2017).

91. See Removal of International Entrepreneur Parole Program, 83 Fed. Reg. 24415 (2018).

regional centers. The program has also been subject to concerns about fraud.⁹²

An advantage of facilitating the immigration of foreign-born entrepreneurs to the United States is that it could increase the number of individuals who start a firm. A disadvantage is that the challenges of administering such programs may be substantial.

The Regulatory Environment's Effects on Competition

Policymakers could make the regulatory environment more favorable for new firms by reducing the burden of regulations that directly affect them, strengthening anti-trust policy, or limiting the use of noncompete clauses.

Reduce the Regulatory Burden on New Firms. The Congress could further lighten the burden of federal regulations on entrepreneurship by expanding the requirements for federal agencies to limit the impact of regulations on small firms. Alternatively, because not all small firms are new, a more focused approach could establish new eligibility criteria for existing regulatory exceptions so that only new firms, and not all small ones, would benefit from them. To help formulate such a policy, lawmakers could require that either the Office of Management and Budget or another federal agency explore how new firms are disproportionately burdened by federal regulations relative to incumbent firms generally and to older small firms in particular.

One advantage of reducing the regulatory burden on entrepreneurship is that it could lower the costs of regulatory compliance for new businesses, making it easier for them to start and grow. A disadvantage is that doing so could limit the effectiveness of the regulations in question.

Change Antitrust Enforcement. The Congress could require antitrust regulators to examine the effects of increasing concentration on the ability of start-ups to

compete and grow. For example, the Congress could revise the Clayton Act to require the Department of Justice and the Federal Trade Commission (the agencies responsible for applying antitrust laws) to investigate the likely effects of mergers and acquisitions on innovation, which could result in fewer mergers and acquisitions being allowed. But innovation, by its nature, is very difficult to predict, so the result of such a review would likely be inconclusive. A more immediate course of action would be to increase funding for those agencies' efforts to enhance their current monitoring of competition in U.S. technology markets, including competition among firms with online platforms.⁹³

Restrict the Use of Noncompete Contracts. Another way the federal government could address regulations that presumably constrain entrepreneurship is to move to limit the anticompetitive use of noncompete contracts. Although regulating noncompete contracts has traditionally been the responsibility of state governments, the Congress could preempt state labor laws to restrict the use of such contracts. That approach could increase the pool of potential employees for both new and incumbent firms.

One advantage of federal intervention in noncompete contracts is that although several states already limit the use of such contracts, employees are often unaware of that fact.⁹⁴ A federal measure could ensure that restrictions on noncompete contracts were uniform among states and were clearly communicated to both current employees and potential hires. While limiting or eliminating the use of noncompete contracts could make it easier for workers to leave their employers and establish or join new firms, it could also weaken incentives for employers to invest in worker training or other types of human capital.

92. U.S. Securities and Exchange Commission, "Investor Alert: Investment Scams Exploit Immigrant Investor Program," (accessed December 10, 2020), <https://go.usa.gov/xA37H>.

93. See Federal Trade Commission, "FTC's Bureau of Competition Launches Task Force to Monitor Technology Markets" (accessed May 2, 2019), <https://go.usa.gov/xGsZW>.

94. See Matt Marx and Lee Fleming, "Non-compete Agreements: Barriers to Entry ... and Exit?," in Josh Lerner and Scott Stern, eds., *Innovation Policy and the Economy*, Volume 12 (National Bureau of Economic Research, 2012), pp. 39–64, www.nber.org/chapters/c12452.



Appendix: Alternative Measures of Entrepreneurship

Several measures of entrepreneurship other than the one used in this report are used in different contexts. The measure of new firms with at least one employee, used here, is more likely than the others to capture full-fledged business operations with growth prospects. Although alternative measures include those of new entrepreneurs, nonemployer firms and self-employment, and sole proprietorships identified by tax filings, once they began hiring workers, those entities would be included in the measure of employer firms used here.¹

The Rate of New Entrepreneurs

One alternative measure of entrepreneurship is the rate at which entrepreneurs start their own businesses—with or without employees. An entrepreneur may not want to hire employees right away when commercializing a new product or service. With the attendant responsibilities of establishing a payroll, reporting tax information, and fulfilling other types of employer requirements, starting a new business is inherently risky, and the likelihood of success is uncertain.

The Kauffman Foundation’s “Rate of New Entrepreneurs,” which is based on data from the Current Population Survey, only includes individuals who report a weekly commitment of 15 hours or more to their new business.² By doing so, it attempts to distinguish between those people who have opted for self-employment as their primary activity and those pursuing a business interest “on the side.”

Over the 1996–2016 period, the Rate of New Entrepreneurs fluctuated but remained within a relatively narrow band around 0.3 percent. The divergence between the trend in that measure and the rate at which employer firms were created was most pronounced during the 2007–2009 recession. The Rate of New Entrepreneurs actually rose from 0.30 percent in 2007 to 0.34 percent in 2010, while the rate of new employer firms dropped sharply over that period. The upswing in entrepreneurship during that time primarily represented unemployed people who started their own businesses.

Nonemployer Firms and Self-Employment

Independent tradesmen and contractors who conduct essentially routine types of business may form firms without employees or otherwise be self-employed. As a result, measures of those activities may also overstate innovative and highly productive entrepreneurship.

The Census Bureau records statistics on nonemployer firms, and the Bureau of Labor Statistics compiles data on the incidence of self-employment. Neither source shows the declines in activity that the statistics on new employer firms show. The share of nonemployers in the total number of business establishments remained roughly constant, at around 75 percent, over the 2005–2014 period, and the incidence of self-employment (either incorporated or unincorporated) was fairly stable from 1990 through 2009.³

1. See Robert W. Fairlie, Javier Miranda, and Nikolas Zolas, “Measuring Job Creation, Growth, and Survival Among the Universe of Start-ups in the United States Using a Combined Start-up Panel Data Set,” *ILR Review*, vol. 72, no. 5 (October 2019), pp. 1262–1277, <https://doi.org/10.1177/0019793919862764>.

2. The Census Bureau supplies its own data on entrepreneurship using business tax filings to inform its *Annual Survey of Entrepreneurs*. See Census Bureau, “Annual Survey of Entrepreneurs (ASE)” (accessed December 10, 2020), www.census.gov/programs-surveys/ase.html.

3. See Census Bureau, “Having a Boss vs. Working for Yourself” (accessed December 10, 2020), <https://go.usa.gov/xGs9y>; and Steven F. Hipple, “Self-employment in the United States,” *Monthly Labor Review* (Bureau of Labor Statistics, September 2010), pp. 17–32, <https://go.usa.gov/xGs9f>. For data on nonemployer firms, see the Census Bureau, “Nonemployer Statistics (NES)” (accessed December 10, 2020), <https://go.usa.gov/xA3Ac>. For data on self-employment, see Bureau of Labor Statistics, “Labor Force Statistics From the Current Population Survey” (accessed December 10, 2020), www.bls.gov/cps/lfcharacteristics.htm#self.

Sole Proprietorships

Entrepreneurs can form sole proprietorships to test an idea before establishing a more formal business structure. Sole proprietorships may also serve purposes that have little relation to an active or innovative business pursuit, such as receiving payments from an avocation or a passive investment. Only about half of sole proprietorships engaged in activities that qualified for business tax deductions between 2007 and 2010.⁴

4. See Richard Prisinzano and others, *Methodology to Identify Small Businesses*, Technical Paper 4: Update (Department of the Treasury, Office of Tax Analysis, November 2016), Tables 1a and 1b, <https://go.usa.gov/xGn5N> (PDF, 1.14 MB); and see

Sole proprietorships are tallied through tax filings to the Internal Revenue Service. The share of business tax returns filed by sole proprietorships rose slightly between 1980 and 2015, from 69 percent to 72 percent, while net income reported on tax returns filed by sole proprietorships fell by about one-third, from 16 percent to 10 percent.⁵

the tables published by the Treasury at <https://go.usa.gov/xAgbt> (XLS, 338 KB). Changes in the tax regime may have affected how new firms are identified using those measures.

5. See Internal Revenue Service, “SOI Tax Stats 1–Integrated Business Data” (accessed July 9, 2020), <https://go.usa.gov/xGs97>.



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About This Document

This report was prepared in response to a request from the Chairman of the Senate Budget Committee and the Chairman of the Senate Committee on Small Business and Entrepreneurship. In keeping with CBO's mandate to provide objective, impartial analysis, it contains no recommendations.

Nathan Musick wrote the report, with guidance from Joseph Kile and Chad Shirley. Pranav Bhandarkar contributed to the analysis. Useful comments were provided by Rebecca Heller, Junghoon Lee, John McClelland, Allison Percy, Joseph Rosenberg, Robert Shackleton, Natalie Tawil, and Jeff Werling of CBO. Ryan Decker of the Federal Reserve Board of Governors, William Kerr of Harvard Business School, Huiyu Li of the Federal Reserve Bank of San Francisco, and Benjamin Pugsley of the University of Notre Dame also provided helpful comments. The assistance of external reviewers implies no responsibility for the final product, which rests solely with CBO.

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CBO continually seeks feedback to make its work as useful as possible. Please send any comments to communications@cbo.gov.

A handwritten signature in black ink, appearing to read "Phillip Swagel", with a long, sweeping flourish extending to the right.

Phillip L. Swagel
Director
December 2020