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The Other Aging of America: The Increasing Dominance of Older Firms

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Summary

Like the population, the business sector of the U.S. economy is aging. Our research shows a secular increase in the share of economic activity occurring in older firms—a trend that has occurred in every state and metropolitan area, in every firm size category, and in each broad industrial sector.

The share of firms aged 16 years or more was 23 percent in 1992, but leaped to 34 percent by 2011—an increase of 50 percent in two decades. The share of private-sector workers employed in these mature firms increased from 60 percent to 72 percent during the same period. Perhaps most startling, we find that employment and firm shares declined for every other firm age group during this period.

We explore three potential contributing factors driving the increasing share of economic activity occurring in older firms, and find that a secular decline in entrepreneurship is playing a major role. We also believe that increasing early-stage firm failure rates might be a growing factor.

We are unable to find strong evidence of a direct link between business consolidation and an aging firm structure. Though we document a clear rise in consolidation during the last few decades, it doesn't appear to be a major contributor to business aging directly—which has been occurring across all firm size classes, and the most in the smallest of businesses.

This leaves some questions unanswered, but it clearly establishes that whatever the reason, it has become increasingly advantageous to be an incumbent, particularly an entrenched one, and less advantageous to be a new entrant.

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Introduction

It is no secret that the population in the United States is aging; the product of a baby boom and increased life expectancy. The numbers validate the obvious: the Census Bureau projects that the share of America's population accounted for by people aged 65 or over will explode from 13 percent in 2010 to more than 20 percent by 2025.[1] The strains this aging of the population will place on the economy and our society are well known.

Here we provide evidence of another type of aging that hasn't received enough attention yet—the aging of American businesses, or the firm structure of the U.S. economy.

Previously, we documented the decline in entrepreneurship and in overall "business dynamism" in the American economy, finding that this has been occurring across a broad range of sectors, firm sizes, states, and metropolitan areas.[2] Business dynamism is the inherently disruptive, yet productivity-enhancing process of firm and worker churn that reallocates capital and labor to more productive uses.[3] Older firms are less dynamic than younger ones, and their increasing share in the American economy coincides with a three-decade decline in business dynamism.

We highlight the flip side of an economy that has become less entrepreneurial: the shift of economic activity into mature firms. While this may not come as a surprise to some, we think the sheer magnitude will.

In this essay we highlight the flip side of an economy that has become less entrepreneurial: the shift of economic activity into mature firms. While this may not come as a surprise to some, we think the sheer magnitude will. Though more research is needed, we think that an American economy that has become less entrepreneurial and more concentrated in mature firms could support the "slow growth" future that many economists have projected.

1. U.S. Census Bureau, *American FactFinder and National Population Projections*.

2. Hathaway and Litan (2014), "Declining Business Dynamism in the United States: A Look at States and Metros," Brookings Institution

3. See Syverson (2011), "What Determines Productivity?," *Journal of Economic Literature*, 49(2): 326–65; Haltiwanger (2011), "Job Creation and Firm Dynamics in the U.S.," *Innovation Policy and the Economy, Volume 12*, NBER.

Business Aging

The Census Bureau's Business Dynamics Statistics allow us to measure various flows and stocks of businesses and employees across a wide range of geographies, sectors, firm ages, and firm sizes. While economic activity is captured at each local establishment (and thus each physical business location), it is linked back to the parent firm (in the case of multi-establishment enterprises). This enables us to analyze enterprise-wide age and size characteristics.[4]

The data series begins in 1977, allowing us to track business age with certainty from that year forward, adding various businesses age categories in subsequent years. For example, for 1977 there are two firm age categories: age zero (firms born that year) and age unknown (firms born prior to 1977 and still alive). For 1978 there are three categories: age zero (firms born that year), age one (firms born in 1977 and still alive), and age unknown (firms born prior to 1977 and still alive), and so on.

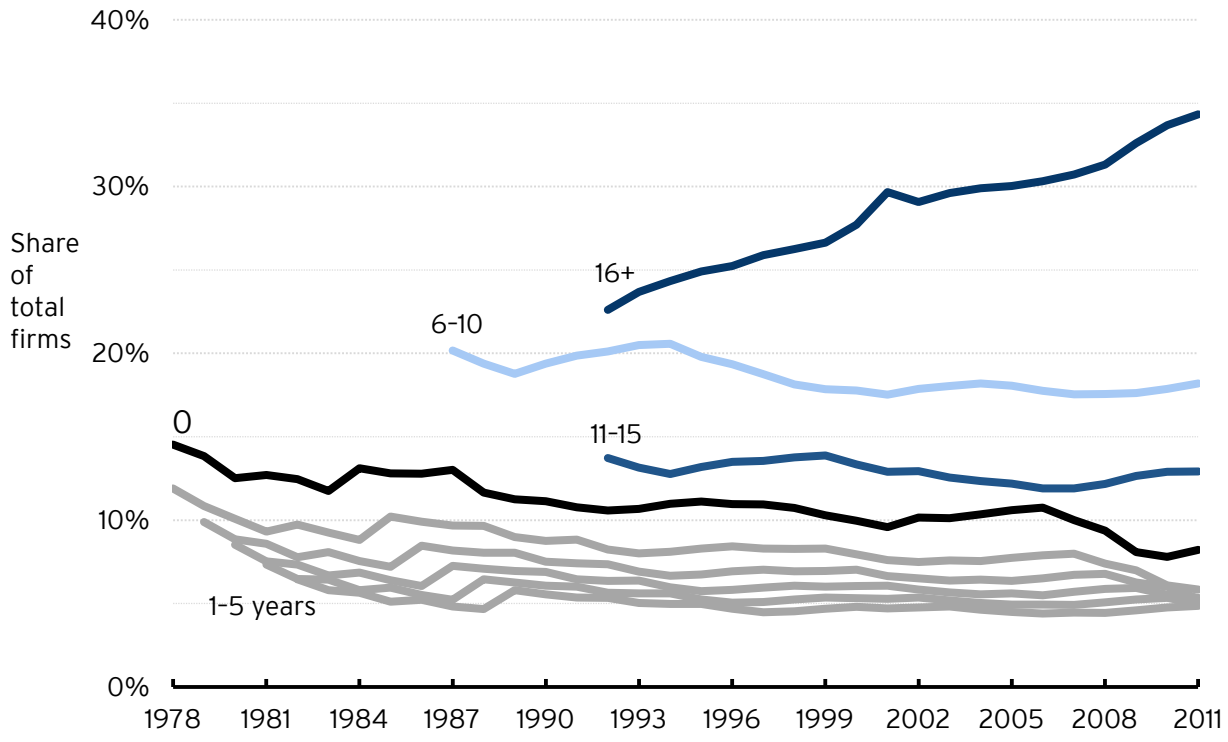
Figure 1 shows the distribution of firms by age over time. Because of the data collection process described above, our data here are staggered across various intervals as age categories become available—starting with firms aged zero and ending with a consolidated group of firms aged 16 years or more that can first be calculated with certainty in 1992.

Figure 1 illustrates one clear finding: there is a secular increase in the share of firms aged 16 or more years, while simultaneously there have been steady declines in the share of firms at every other age category during the history of our data. The firm share of 16 years or more businesses rose from 23 percent in 1992 to 34 percent by 2011– an increase of 50 percent in just a two-decade period. The declines were largest, in percentage terms, for the youngest of firms—driven largely by the decline in new firm formations (fewer new firms necessitates fewer young firms in subsequent years). However, other factors may have contributed as well, which we discuss later.

4. Important to note, the BDS tracks employer-firms and excludes the self-employed or non-employer firms. For more on the BDS, see U.S. Census Bureau Center for Economic Studies: http://www.census.gov/ces/dataproducts/bds/

Figure 1.

Distribution of Total Firms by Firm Age in Years (1978-2011)

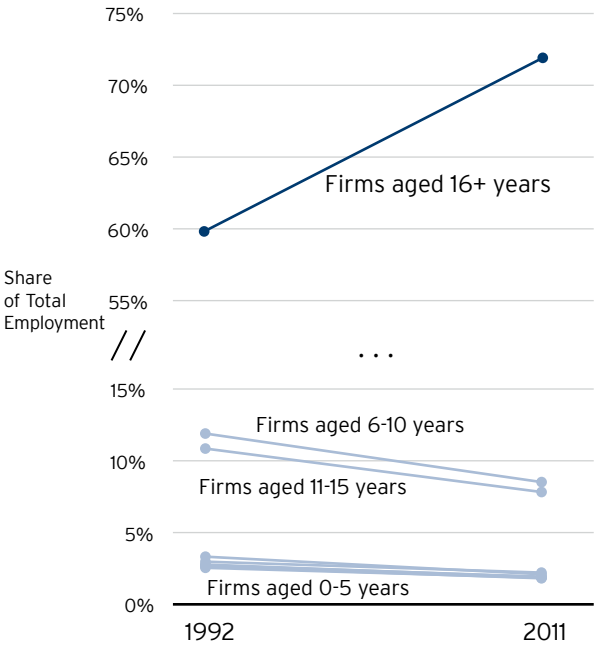


Source: U.S. Census Bureau, BDS; authors' calculations

Figure 2 reveals similar trends for the distribution of employment by firm age. The private sector employment share increased substantially at firms aged 16 years or more between 1992 and 2011, from 60 percent to 72 percent, and fell at each of the other age categories.

Figure 2.

Distribution of Total Employment by Firm Age, 1992 v. 2011



Source: U.S. Census Bureau, BDS; authors' calculations

Incorporating public sector workers into this calculation increases this point. Let's assume that all government "firms" are in the mature category (governments at all levels have been around for a long time) and that about 17 percent of total employment comes from the public sector (as was the case during this period). With these assumptions, we can reasonably estimate that in 2011, 77 percent of American workers were employed at organizations born at least 16 years earlier. Nearly two decades before, in 1992, that share was 67 percent. When considering the number of product innovations and household-name businesses that have emerged in the last two decades, the fact that nearly four-in-five American workers are currently employed by organizations born prior to 1995 is remarkable.

Perhaps more surprising is the sheer pervasiveness of this trend, which is occurring in every U.S. state and nearly every metropolitan area, across all firm size categories and broad industrial segments; even in high-tech (see Appendix A, B, and C).[5] The largest increases in firm aging, in percentage terms, have been among smaller and medium-sized firms; in the agriculture, construction, and wholesale trade sectors; and in the Western and Southern states (those that had previously lower shares of mature-aged firms, and also experienced some of the largest increases in population and economic activity).

When considering the number of product innovations and household-name businesses that have emerged in the last two decades, the fact that nearly four-in-five American workers are currently employed by organizations born prior to 1995 is remarkable.

Taken together, the data presented here clearly show a private sector where economic activity is sharply concentrating in older firms—a trend that is occurring in a nearly universal fashion across sectors, firm sizes, and geographies. This begs the question of whether a shift towards older firms matters. We discuss this in more detail later, but the implication based on what we know from previous research is that an economy that is saturated with older firms is one that is likely to be less flexible, and potentially less productive and less innovative than an economy with a higher percentage of new and young firms.

5. For a detailed definition and discussion of the high-tech sectors, see: Hathaway (2013), "Tech Starts: High-Technology Business Formation and Job Creation in the United States," *Kauffman Foundation*.

Declining Entrepreneurship

One major factor contributing to an aging private sector is a decline in entrepreneurship, which we measure by new firm formations. Earlier this year, we showed that the rate of new firm formations has been on a secular decline the last three decades.[6] Perhaps more striking, our research showed that the decline in new firm formation rates had occurred in every U.S. state and nearly every metropolitan area, in each broad industry group, and in all firm size classes – or the same patterns we have just reported for the share of mature firms.

Figure 3 plots annual rates of firm entry and exit between 1978 and 2011. As it shows, the rate of new firm formations fell significantly during this period—occurring because the number of new firms being formed each year (numerator) didn't keep pace with the growth in the stock of total firms in the economy (denominator). The same was not true of firm exits, which did keep pace with the growth in total firms—allowing the firm failure rate to hold mostly steady before rising in the second half of the last decade.

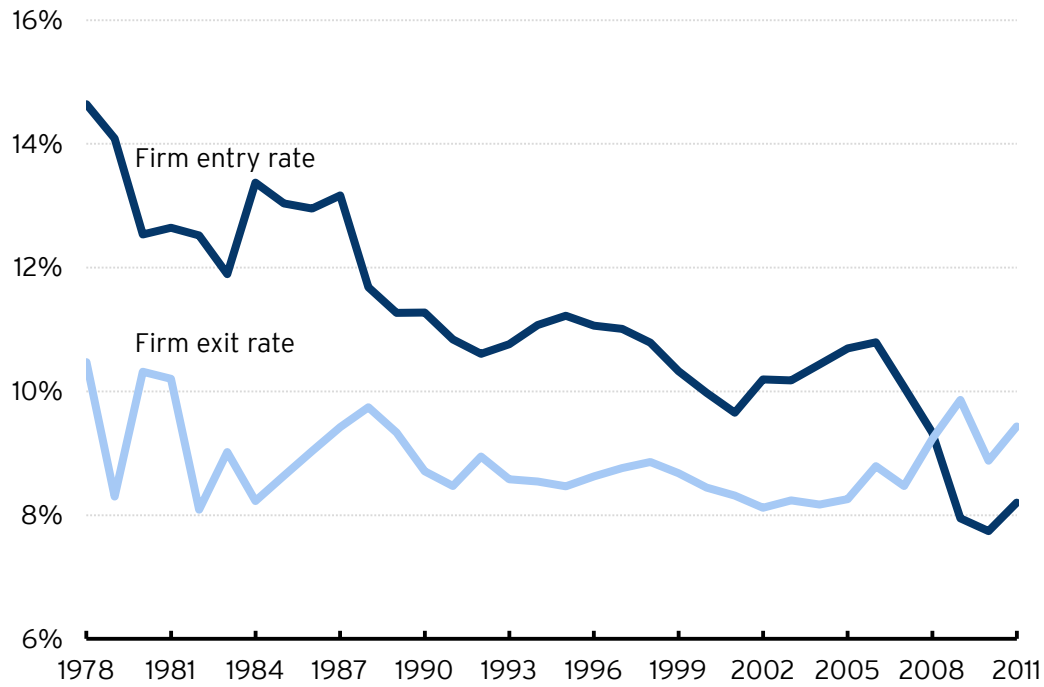
It's easy to see why a declining share of new entrants each year would contribute to an older age distribution of firms. Recall that our data are dynamic, so each year represents a new flow of firm formations. In this way, it's a path-dependent process where declining entrepreneurship directly contributes to the aging of the business sector. Outside of there being radically different firm failure rates that work in the opposite direction (an issue we address later), fewer new firms each year means fewer young firms, which means fewer medium-age firms, and so on.

But as we show next, the rate of firm failures is not homogenous across all segments of the economy. In fact, failure patterns are accelerating the aging of the private sector economy, and we think may be contributing to the decline in entrepreneurship as well.

6. Hathaway and Litan (2014), "Declining Business Dynamism in the United States: A Look at States and Metros," Brookings Institution

Figure 3.

Firm Entry and Exit Rates (1978-2011)



Source: U.S. Census Bureau, BDS; authors' calculations

Firm Exit

Figure 4 shows the probability of firm failure conditional upon reaching certain age thresholds. Because of the noisiness in the data from year to year, Figure 5 smooths out the data from Figure 4 to more clearly illustrate the underlying trends.

There are several major takeaways from these figures. First, business failure rates appear to have increased steadily, though at varying intervals and to varying degrees, for each of the age categories except for one—firms aged 16 years or more, where the trend is basically flat. As less mature firms fail more frequently, that necessarily raises the share of older firms in the overall firm structure.

Outside of the youngest firms (more on that below), there is a pickup in firm failure rates beginning in the late-1990s and early-2000s–marking a clear distinction from years prior. We don't have an explanation for this. But we are also not the first to find an acceleration of a longer-term decline in entrepreneurship and business dynamism during this period. Other economists have documented an accelerated decline in both high-tech entrepreneurship and the rate at which firms achieve very high growth beginning with this period.[7]

In addition, the rate of failure for firms aged one year has increased substantially, and is in fact the clearest observation from this chart. This increase has been both sharp and persistent since the early-1990s—failure rates have increased by as much as two-thirds (from around 16 percent to around 27 percent) during the two-decade period that followed. The increase in failure rates for this age group is by far the most pronounced.

These firms are also closest in age to firms newly formed, and we think may explain some of the decline in entrepreneurship after the early-1990s. It may be that because firms are substantially more likely to fail in their earliest years, would-be entrepreneurs are holding back. Of course, this can't be the only explanation, particularly because the longer decline in entrepreneurship predates this period. But, we think it is a plausible factor.

Like with other measures, we find that these trends aren't isolated. The figures located at Appendix D show that early-stage failure rates have increased substantially in nearly each broad industrial sector, in each firm size class, in every U.S. state, and nearly every metropolitan area between the early-1990s and 2011. Among these very young firms, increases in failure rates were greatest in the smallest firms, and in the agriculture, construction, and services sectors.

To recap: there are fewer new firms being born, which reduces the pipeline of young firms as they make their way through the maturing process. Compounding this, young firms have been increasingly likely to fail in the early years. But, it doesn't end there because firm failure rates have increased for each of the firm age categories except for the most mature ones—those aged 16 years or more—in the last decade.

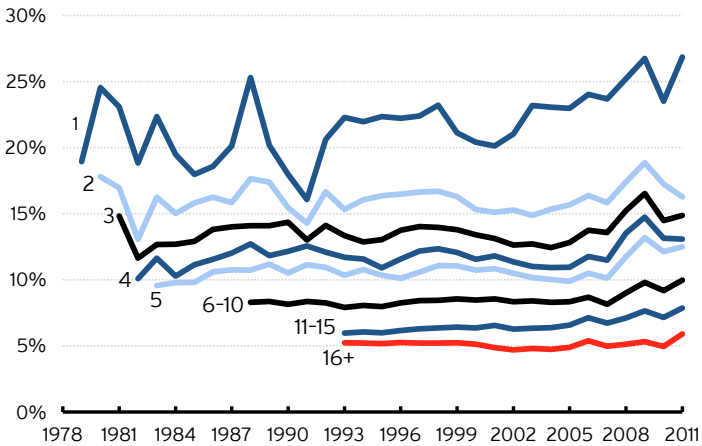
This evidence allows us to draw one early conclusion: whatever the cause, it appears to have become increasingly advantageous to be an incumbent, particularly a mature one, and increasingly disadvantageous to be a new entrant in the American economy.

We turn next to another popularly discussed thesis—business consolidation—and examine whether this helps explains the aging of the firm structure.

7 Haltiwanger, Hathaway, and Miranda (2014), "Declining Business Dynamism in the U.S. High-Technology Sector," Kauffman Foundation; Decker, Haltiwanger, Jarmin, and Miranda (2014), "The Secular Decline in Business Dynamism in the U.S.," *University of Maryland working paper*; Clayton, Sadeghi, Talan, and Spletzer (2013), "High-employment-growth firms: defining and counting them," Bureau of Labor Statistics.

Figure 4.

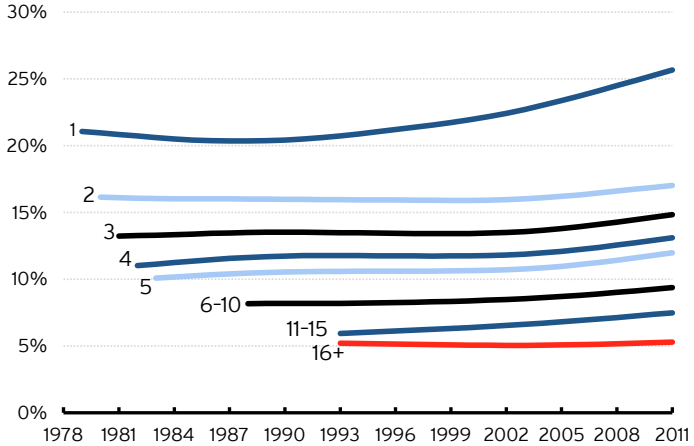
Firm Exit Probabilities by Firm Age (1978-2011)



Source: U.S. Census Bureau, BDS; authors' calculations

Figure 5.

Firm Exit Probabilities by Firm Age, Trends (1978-2011)



Source: U.S. Census Bureau, BDS; authors' calculations.
Data have been smoothed using a Hodrick-Prescott Filter with a multiplier of 400.

Business Consolidation

Business consolidation is all around us. Look no further than the invasion of big box retailers and too-big-to-fail financial institutions, to name a few. It's reasonable to assume that consolidation has played some role in firm aging—giving incumbents increased market power, constructing higher barriers to entry, and reducing competition. But do these effects necessarily translate into impacts on the age structure of firms?

We begin to answer this question by first sorting out some relevant facts about consolidation itself. How much is really occurring? We then attempt to draw out the implications of the consolidation measure we study for the aging of the firm structure.

Figure 6 shows the average firm size against the average establishment size, as well as the ratio of these two figures during the last three decades. Recall that a business establishment is a physical location of business activity, while a firm refers to an entire business enterprise. In the substantial majority of cases, firms are single-establishment enterprises—meaning that the size of the firm is equal to the size of its lone establishment. In the case of multi-establishment firms, they are different—and in many cases, vastly so (e.g. Starbucks, Wal-Mart, McDonalds, Home Depot, Target, IBM, Chase Bank, Ernst & Young, FedEx, etc.)

The ratio of average firm to establishment sizes should be helpful for understanding business consolidation, since it illustrates the relationship between the number of employees required to conduct business in a single location against the number of workers that are employed within entire firms. If consolidation were increasing, we'd expect the gap between the average firm size and the average establishment size to be widening. In other words, we'd expect the ratio of firm to establishment size in Figure 6 to be increasing.

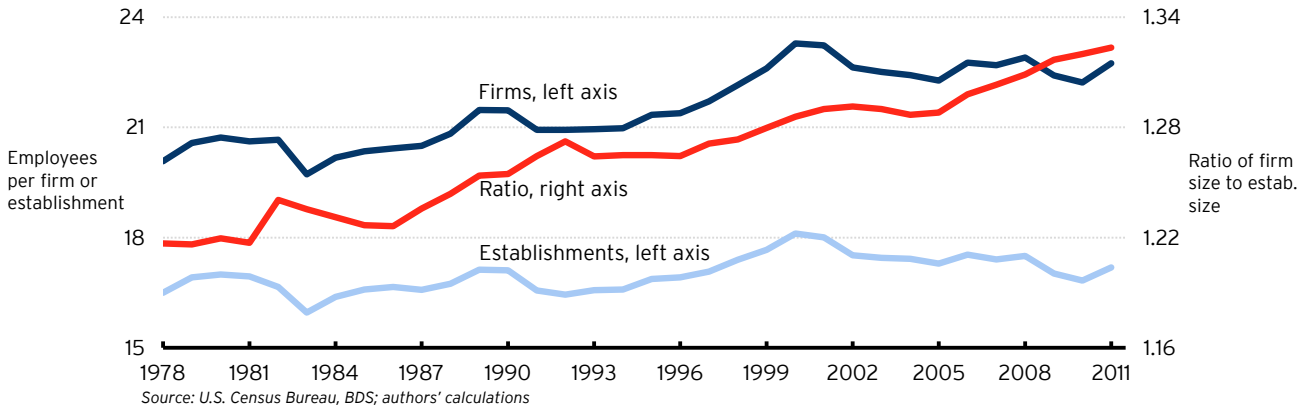
This is exactly what has been occurring. Though establishment and firm sizes exhibit similar growth patterns over time (flat in the 1980s, large increases in the 1990s, slight declines to steadying in the 2000s), the pace of the increase in average firm sizes was persistently greater than for establishment sizes, as illustrated by the constantly increasing ratio.

Like before, we document similar trends across most broad industrial sectors, each firm size categorization, every state and nearly every metropolitan area (see Appendix E). The increase was by far the largest in the finance sector, but was also significant in retail and in the broad transportation, communications, and utilities sector. It held flat in the goods producing sectors of agriculture, mining, construction, and manufacturing. Consolidation was also greatest in the largest firms, to no surprise, but it also increased across all medium and large firm size classes (we did not make this calculation for small businesses).

Another way of studying consolidation is by measuring the distribution of economic activity (in this case, employment) by various firm sizes. More importantly, we look at how it has changed over time. If consolidation were at play we would expect to see employment shares accounted for by larger firms increasing and shares accounted for by smaller ones decreasing.

Figure 6.

Average Firm and Business Establishment Sizes, and Ratio (1978-2011)



Source: U.S. Census Bureau, BDS; authors' calculations

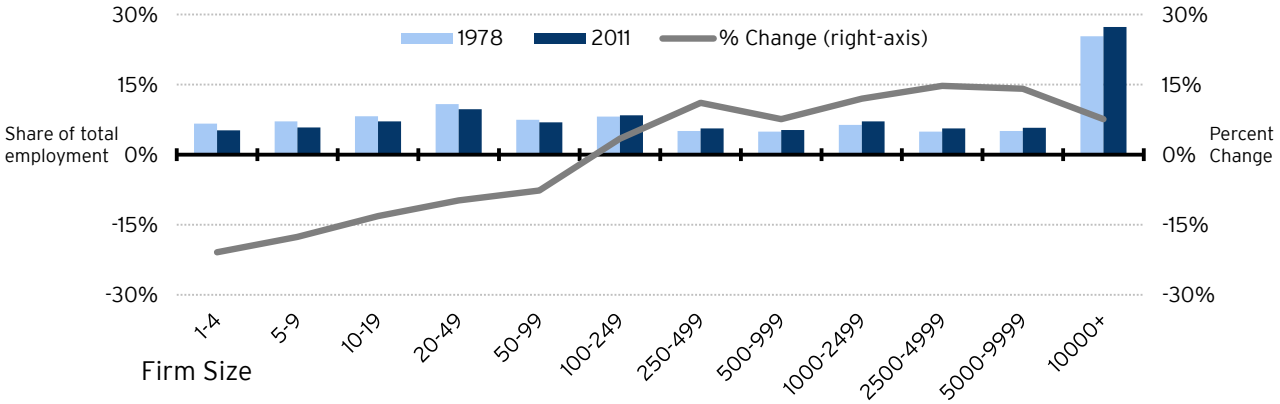
Again, Figure 7 shows this to be the case. Employment shares increased at all firm sizes above 100 employees between 1978 and 2011, but grew the most in percentage terms for some of the largest firm size categories—those above 2500 employees. Firms at each size category below 100 employees saw their shares of total employment fall. More relevant to our discussion about entrepreneurship, the largest declines in the total employment share occurred in the smallest of these firms.

And like before, we examine these trends in subgroups of the economy (see Appendix F). The large firm employment share increased in each broad industry sector but mining and manufacturing; growing the most in services and retail. Large firms also make up a greater share of employment in 2011 versus 1978 in 45 of the 50 states, and in nearly 80 percent of the 366 metropolitan areas.

So, growing consolidation is a fact, consistent with the popular perception—multi-establishment enterprises are becoming more prevalent relative to single-establishment firms, and the share of employment occurring in large firms has increased at the expense of small businesses. Now we address whether and to what extent increasing consolidation has been contributing to an aging private sector.

Figure 7.

Distribution of Total Employment by Firm Size (1978-2011)



Source: U.S. Census Bureau, BDS; authors' calculations

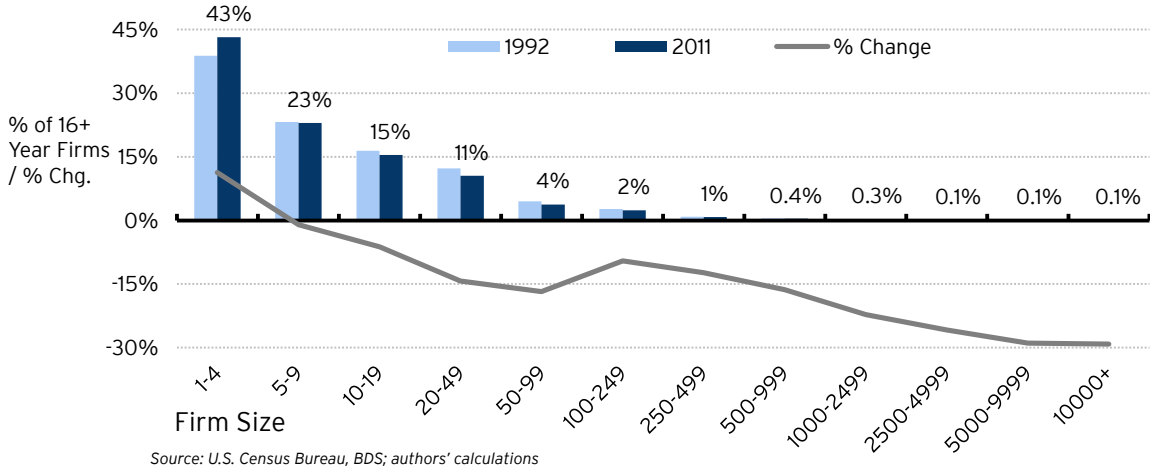
We do this in two figures. Figure 8 shows the firm size distribution of firms aged 16 years or more, while Figure 9 shows the distribution of employment for these mature firms also by firm size. We've already shown that the distribution of firms and employment is shifting into this mature-aged group, but we haven't yet shown how this growth has been divided among the various firm size categories.

As the figures show, small businesses account for most of the numbers of mature firms while large firms represent the lion's share of mature firm employment.

If consolidation were driving the aging process, we would expect growth within the mature-aged firms to be driven by larger firms—as firms consolidate they become larger, driving them up the firm size chain. However, that is not

Figure 8.

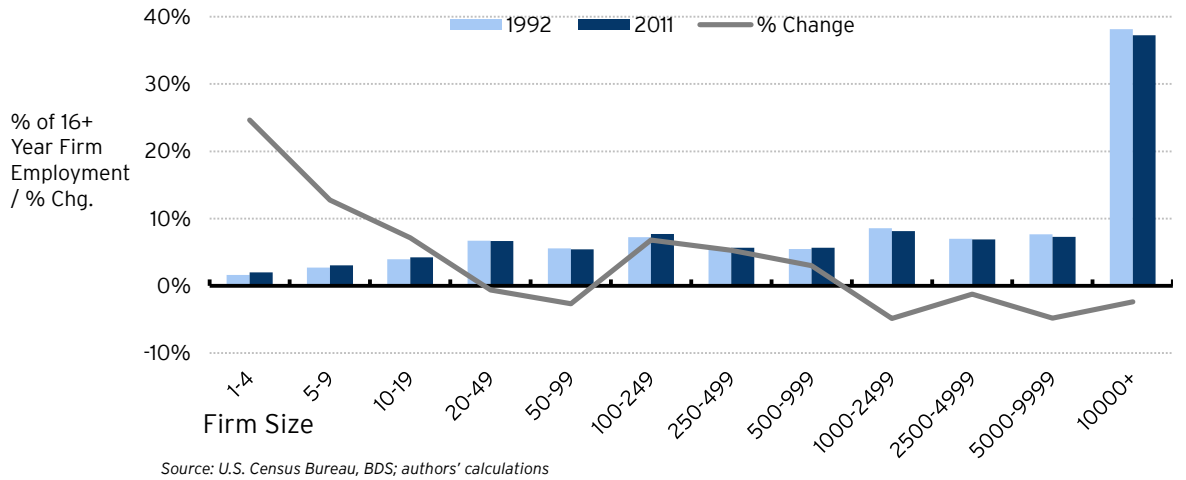
Distribution of 16+ Year Firms by Firm Size (1992 v. 2011)



Source: U.S. Census Bureau, BDS; authors' calculations

Figure 9.

Distribution of Employment at 16+ Year Firms by Firm Size (1992 v 2011)



Source: U.S. Census Bureau, BDS; authors' calculations

what we see in the data. In fact, we see the opposite—the growth in firm and employment shares by mature firms has been driven more by smaller firms. This relative growth is surprising, at least to us.

In short, while economic activity is shifting into mature firms generally, it is the smaller mature firms where the most growth is occurring. It seems unlikely that if consolidation were a major factor driving business aging, we would be seeing the faster relative growth of small versus large mature firms—unless of course it is contributing directly to the decline in new firm formations, which is not something we specifically analyze here.

In short, while economic activity is shifting into mature firms generally, it is the smaller mature firms where the most growth is occurring.

This is not to say that consolidation isn't playing a factor at all, but perhaps surprisingly, we don't see evidence that it is a major factor in contributing to the aging of the firm structure directly. Other economists have uncovered evidence that is consistent with this conclusion, estimating that the contribution of firm aging to declining business dynamism may be as much as three times as is the portion accounted for by changes in firm size.[8]

8. Decker, Haltiwanger, Jarmin, and Miranda (2014), "The Secular Decline in Business Dynamism in the U.S.," University of Maryland working paper

Conclusions

We provide substantial evidence of a secular increase in economic activity occurring in older firms at the expense of firms in each additional firm age category. Whatever the cause, it is increasingly advantageous to be an incumbent, particularly an older one, and apparently more difficult to be a new entrant. We document these trends across a broad range of industrial sectors, firm sizes, and regions throughout the United States.

We believe that a major driver of the aging of the firm structure is a decline in the rate of new firm formations, which fuels a path-dependent process of fewer young- and medium-aged firms maturing through the pipeline from the start. Compounding this is an increase in business failures at each firm age category except for the most mature firms. The uptick in business failures has been the most pronounced for the very youngest of businesses, and may be a contributor to the decline in new firm formations after 1990 as well.

Like is well-known among the population, the business sector of United States also appears to be getting "old and fat."[9] However, it appears that it is getting fat because it is getting old—not the other way around. This is an important point for public policy. While we aren't denying the increase of business consolidation—in fact, we document substantial evidence of this—we are unable to find strong evidence that it is a major factor driving the aging of American businesses directly, which has occurred across all firm sizes. There is, however, the possibility that consolidation is contributing to the drop in new firm formations—which we've already claimed is a major contributor to firm aging. We don't measure the direct link between consolidation and firm entry here, but we do think it is an important area for future research.

The trends described here raise some cause for concern in our view. Holding all factors constant, we'd expect an economy with greater concentration in older firms and less in younger firms to exhibit lower productivity, potentially less innovation, and possibly fewer new jobs created than would otherwise be the case.

The decline in the startup rate, coupled with the rising share of mature firms in the economy, is especially disturbing because new firms rather than existing ones have accounted for a disproportionate share of disruptive and thus highly productivity enhancing innovations in the past—the automobile, the airplane, the computer and personal computer, air conditioning, and Internet search, to name just a few.[10] If we want a vibrant, rapidly growing economy in the future, we must find ways to encourage and make room for the startups of the future that will commercialize similarly influential innovations.

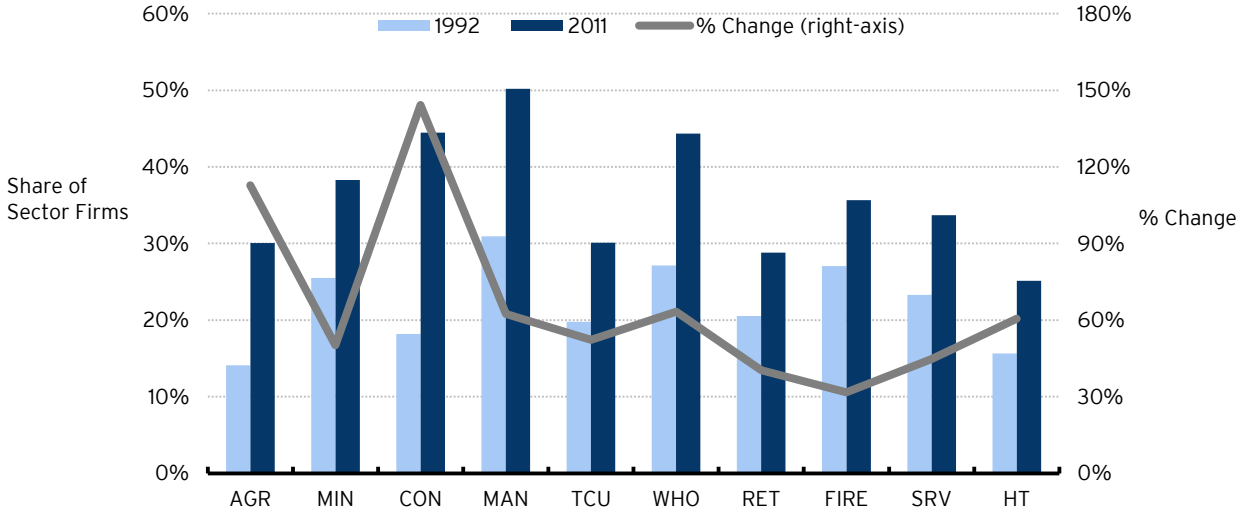
9. Decker (2013), "We're getting old and fat!" *Updated Priors*, March 18.

10. William Baumol, Robert E. Litan, and Carl Schramm (2007), *Good Capitalism, Bad Capitalism: The Economics of Growth and Prosperity* (New Haven: Yale University Press).

Appendix A: Firm Aging by Sector

Figure A1.

Share of Firms Aged 16+ Years by Sector

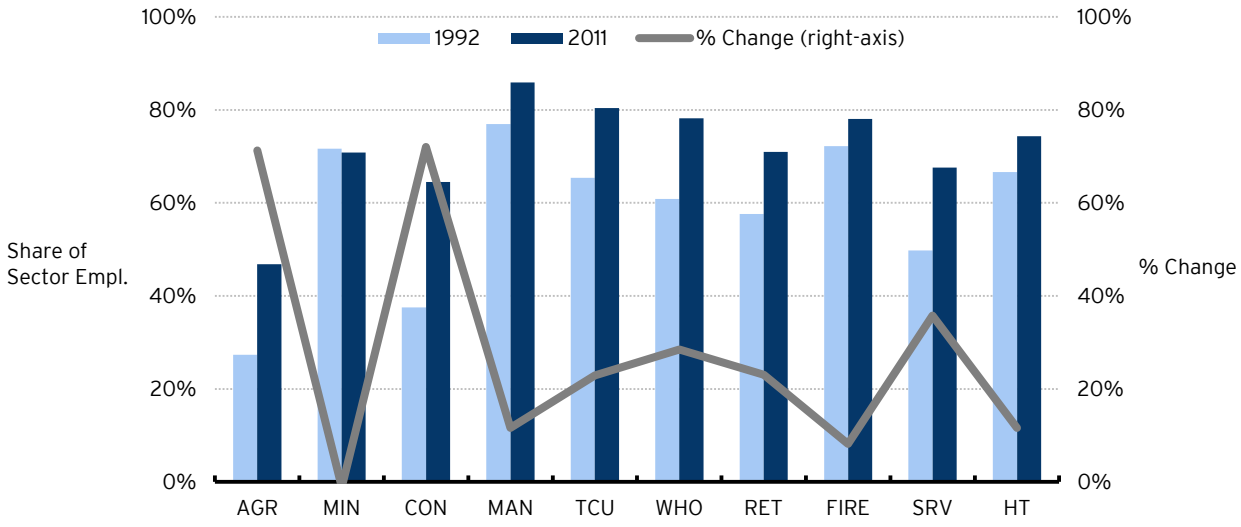


Source: U.S. Census Bureau, BDS; authors' calculations

Note: **AGR**=Agriculture; **MIN**=Mining; **CON**=Construction; **MAN**=Manufacturing; **TCU**=Transportation, Communications, and Utilities; **WHO**=Wholesale Trade; **RET**=Retail Trade; **FIRE**=Finance, Insurance, and Real Estate; **SRV**=Services; **HT**=High-Tech

Figure A2.

Share of Employment at Firms Aged 16+ Years by Sector



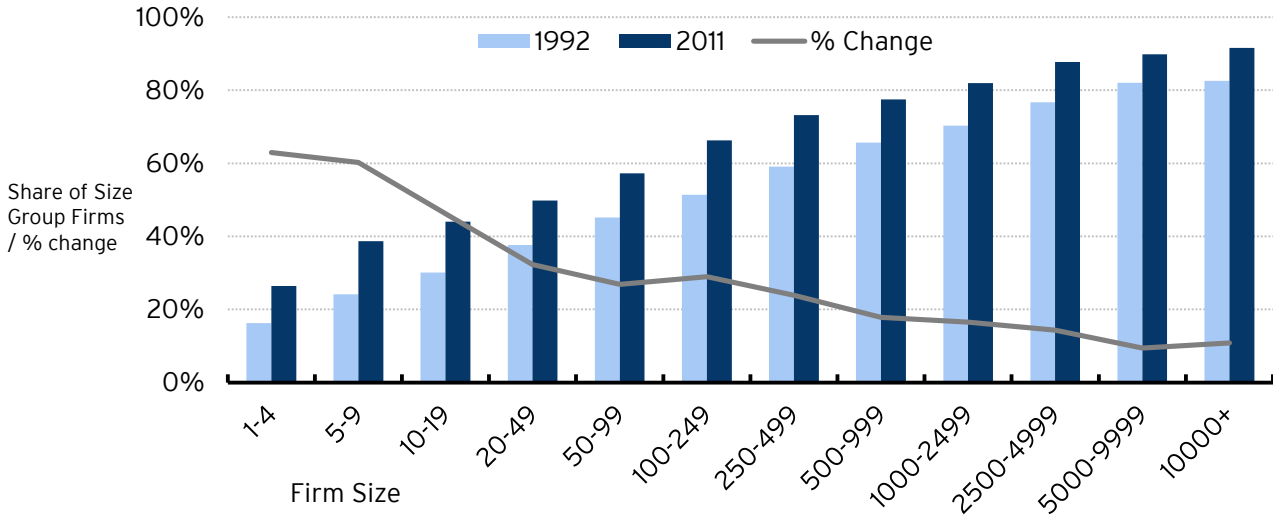
Source: U.S. Census Bureau, BDS; authors' calculations

Note: **AGR**=Agriculture; **MIN**=Mining; **CON**=Construction; **MAN**=Manufacturing; **TCU**=Transportation, Communications, and Utilities; **WHO**=Wholesale Trade; **RET**=Retail Trade; **FIRE**=Finance, Insurance, and Real Estate; **SRV**=Services; **HT**=High-Tech

Appendix B: Firm Aging by Firm Size

Figure B1.

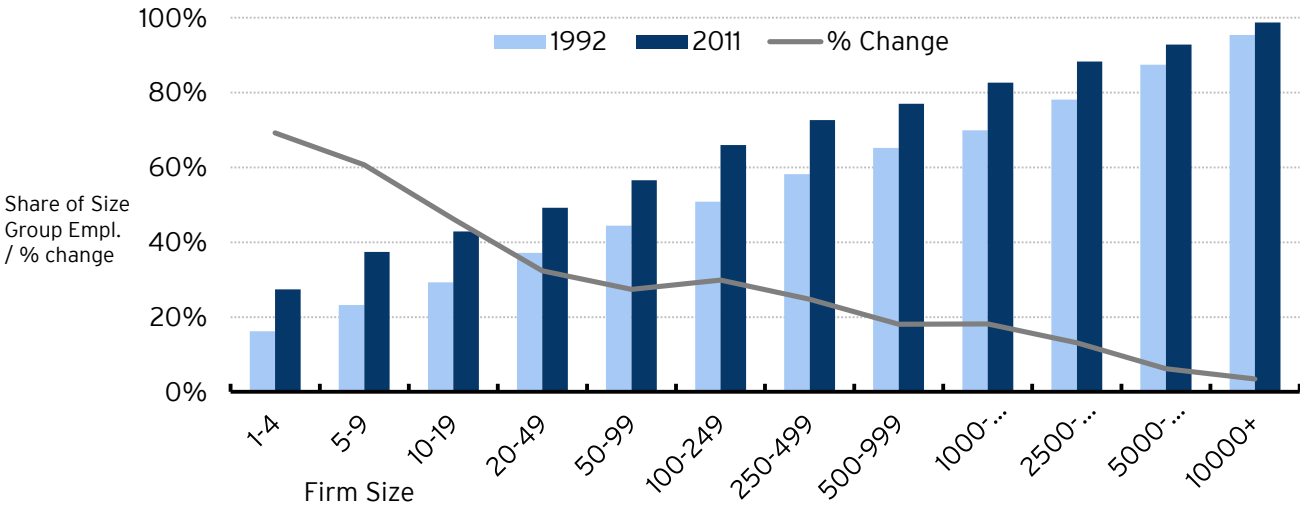
Share of Firms Aged 16+ Years by Firm Size



Source: U.S. Census Bureau, BDS; authors' calculations

Figure B2.

Share of Employment at Firms Aged 16+ Years by Firm Size

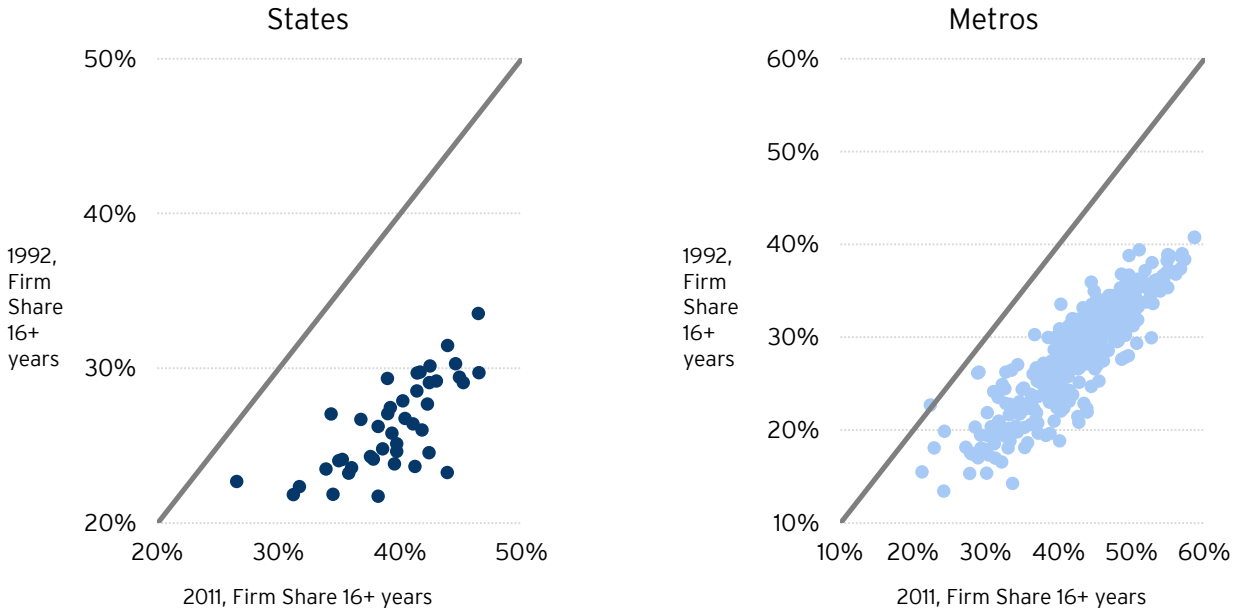


Source: U.S. Census Bureau, BDS; authors' calculations

Appendix C: Firm Aging by State and MSA

Figure C1.

Share of Firms Aged 16+ Years by State and MSA (1992 v. 2011)



Source: U.S. Census Bureau, BDS; authors' calculations

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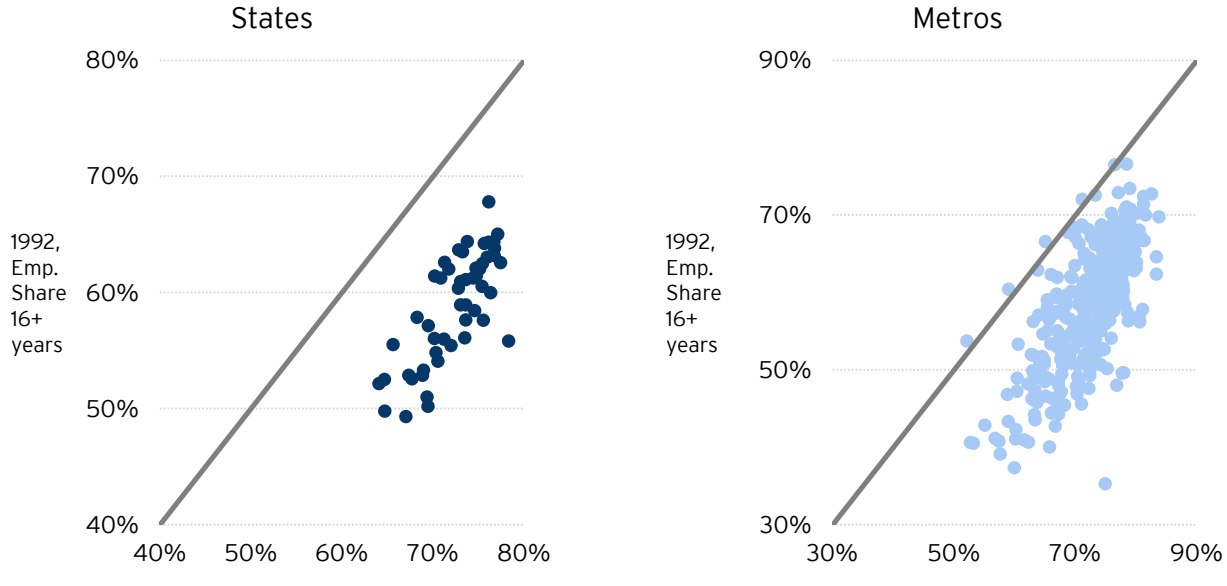
Figure C2.

Share of Employment at Firms Aged 16+ Years by Firm Size



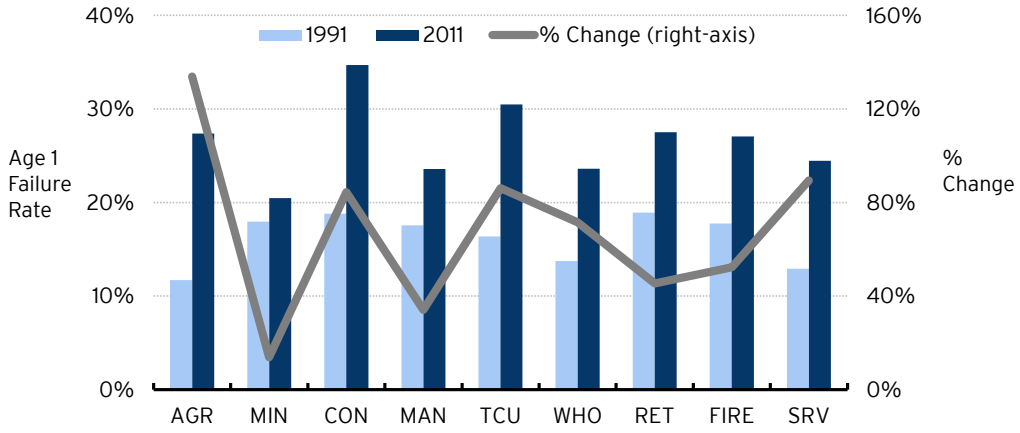
Source: U.S. Census Bureau, BDS; authors' calculations

Source: U.S. Census Bureau, BDS; authors' calculations

Appendix D: Early-Stage Firm Exit Rates

Figure D1.

Exit Rate of Firms Aged One Year by Sector

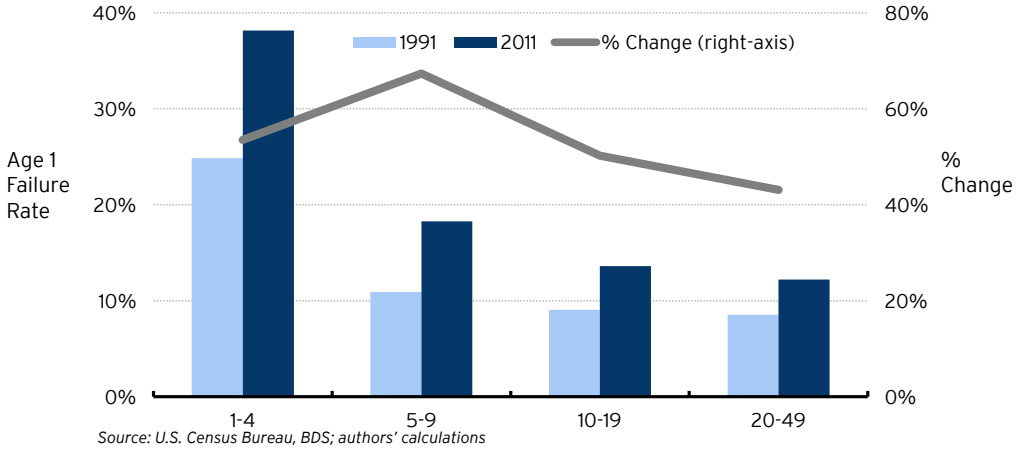


Source: U.S. Census Bureau, BDS; authors' calculations

Note: **AGR**=Agriculture; **MIN**=Mining; **CON**=Construction; **MAN**=Manufacturing; **TCU**=Transportation, Communications, and Utilities; **WHO**=Wholesale Trade; **RET**=Retail Trade; **FIRE**=Finance, Insurance, and Real Estate; **SRV**=Services; **HT**=High-Tech

Figure D2.

Exit Rate of Firms Aged One Year by Firm Size

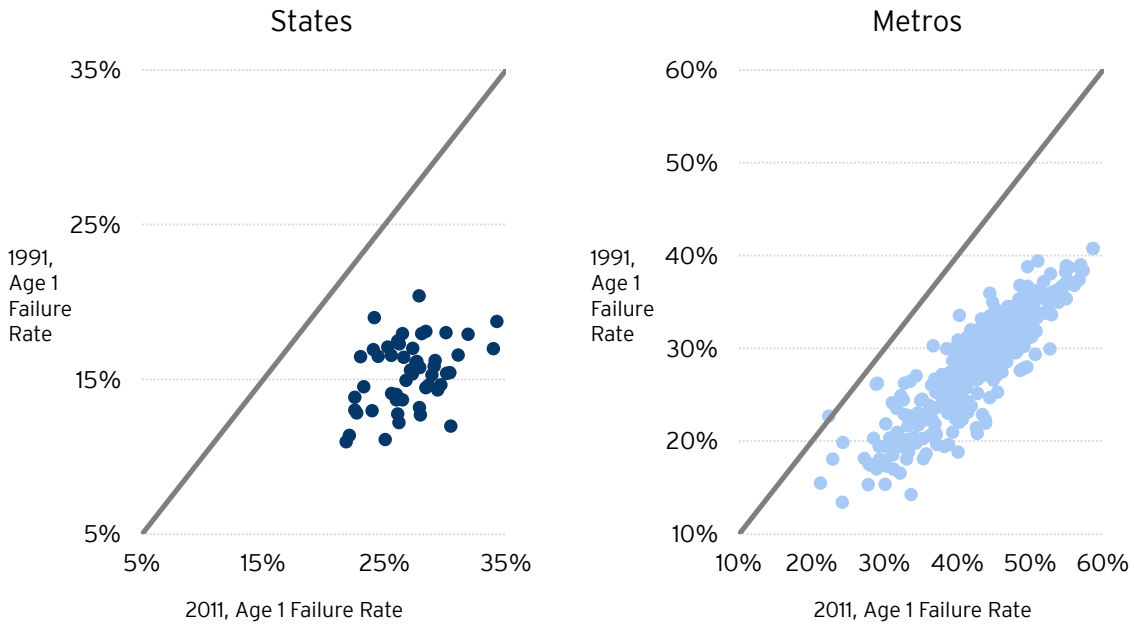


Source: U.S. Census Bureau, BDS; authors' calculations

Note: Only select firm sizes are used because of the relatively few number of very young firms over a particular size threshold

Figure D3.

Exit Rate of Firms Aged One Year by State and Metro

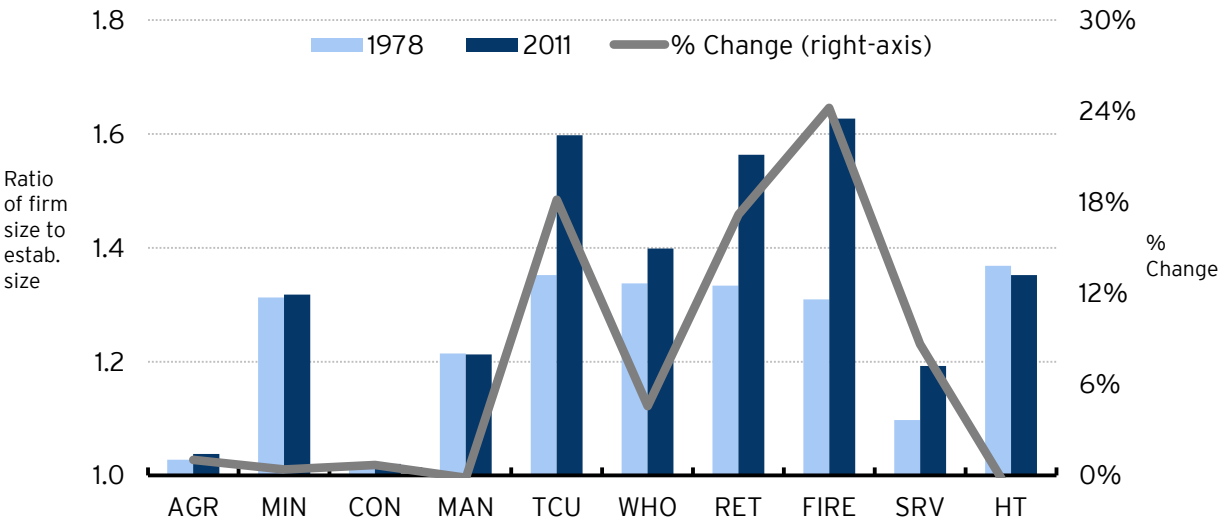


Source: U.S. Census Bureau, BDS; authors' calculations

Appendix E: Average Firm and Establishment Size Ratios

Figure E1.

Ratio of Firm Size to Establishment Size by Sector

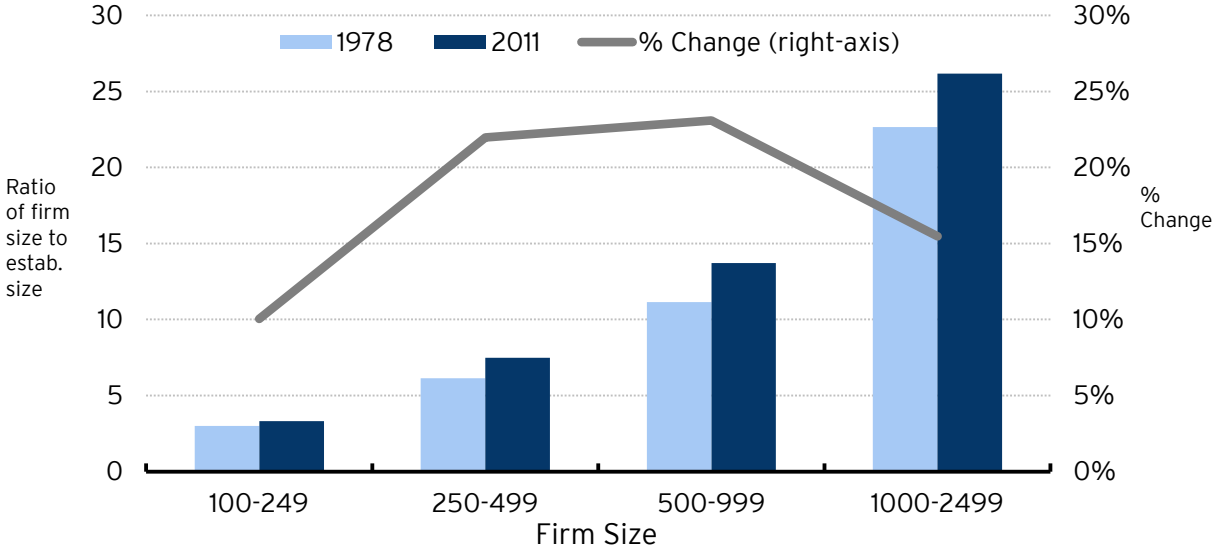


Source: U.S. Census Bureau, BDS; authors' calculations

Note: **AGR**=Agriculture; **MIN**=Mining; **CON**=Construction; **MAN**=Manufacturing; **TCU**=Transportation, Communications, and Utilities; **WHO**=Wholesale Trade; **RET**=Retail Trade; **FIRE**=Finance, Insurance, and Real Estate; **SRV**=Services; **HT**=High-Tech

Figure E2.

Ratio of Firm Size to Establishment Size by Firm Size

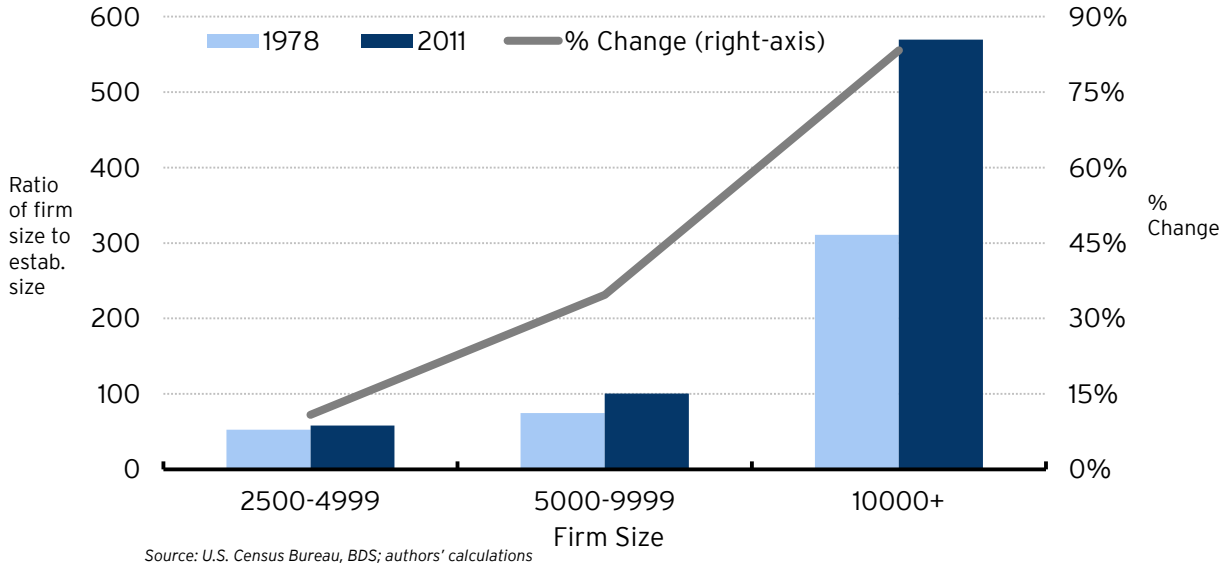


Source: U.S. Census Bureau, BDS; authors' calculations

Note: Only select firm sizes are used because of the relatively few number of multi-establishment firms over certain size thresholds

Figure E3.

Ratio of Firm Size to Establishment Size by Firm Size, continued

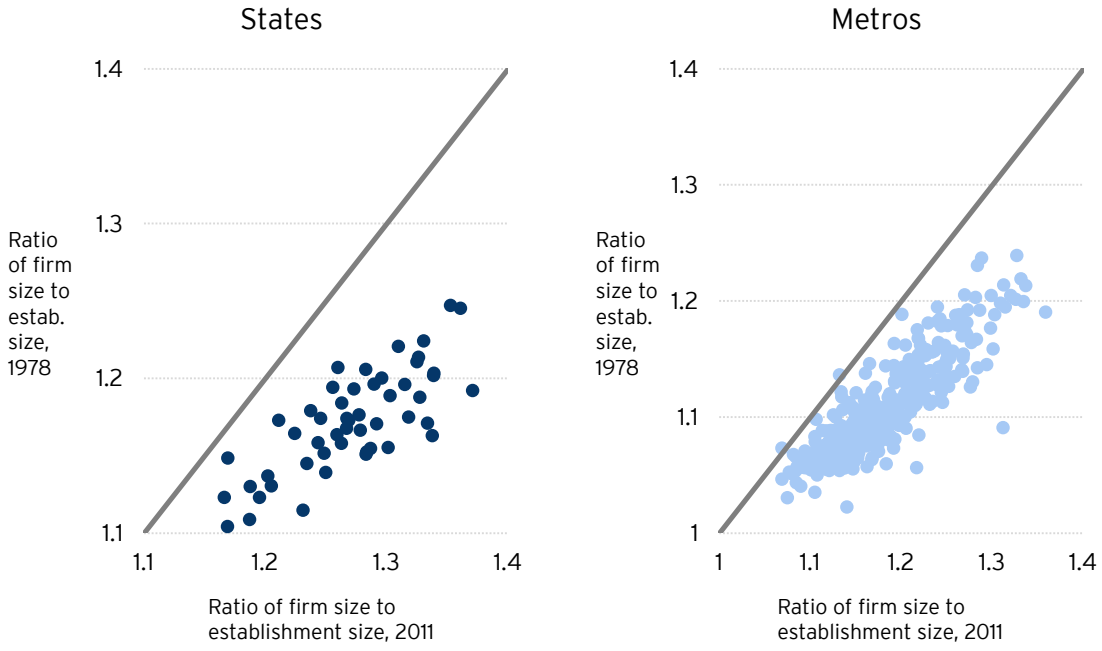


Source: U.S. Census Bureau, BDS; authors' calculations

Note: Only select firm sizes are used because of the relatively few number of multi-establishment firms over certain size thresholds

Figure E4.

Ratio of Firm Size to Establishment Size by State and Metro

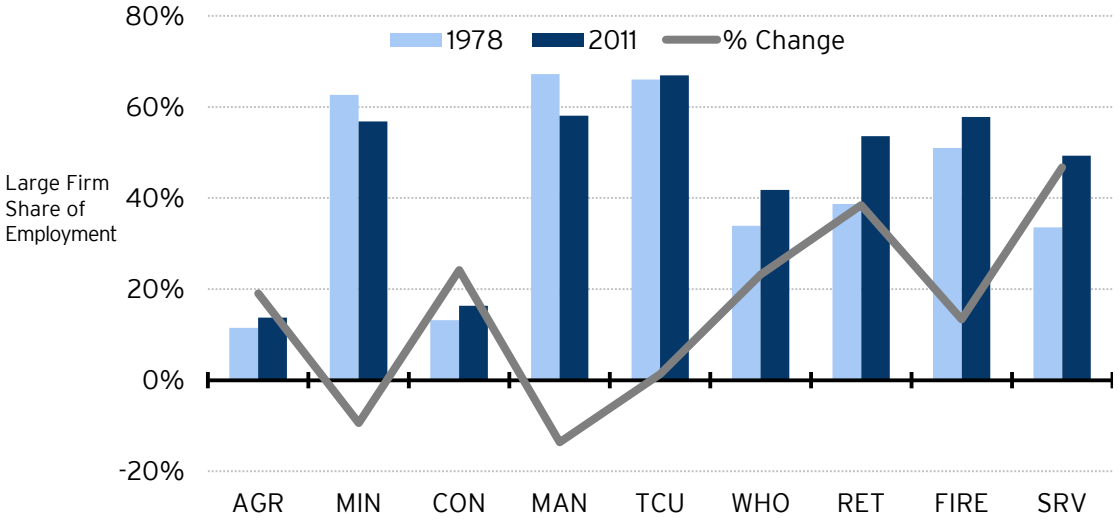


Source: U.S. Census Bureau, BDS; authors' calculations

Appendix F: Large Firm Employment Share

Figure F1.

Employment at Large Firms (500+ Employees) as a Share of Sector Total

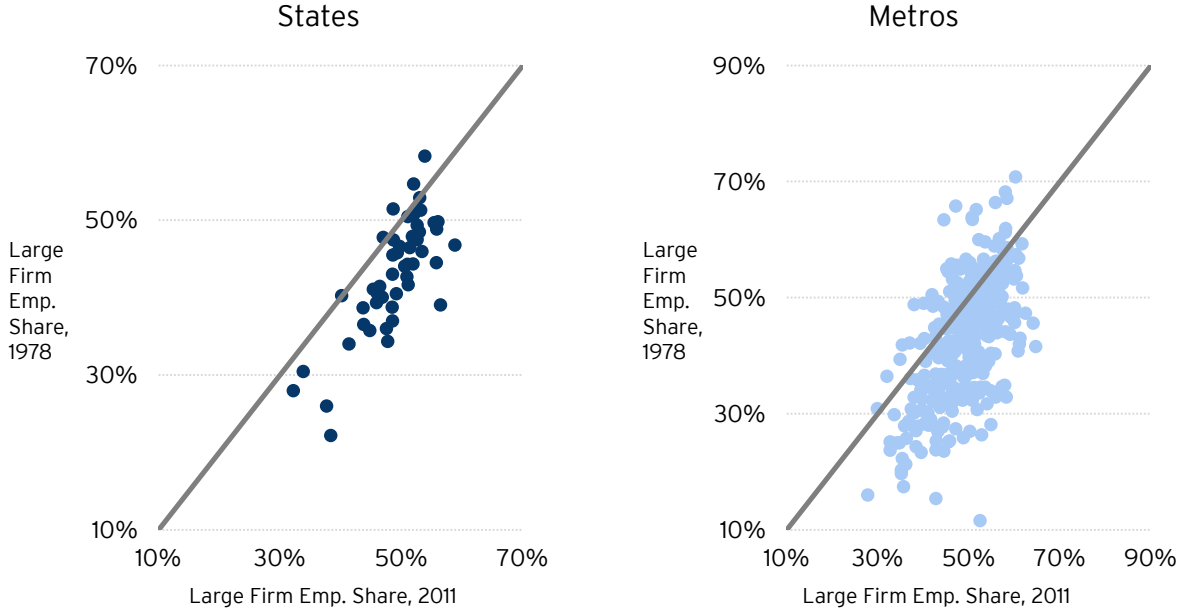


Source: U.S. Census Bureau, BDS; authors' calculations

Note: **AGR**=Agriculture; **MIN**=Mining; **CON**=Construction; **MAN**=Manufacturing; **TCU**=Transportation, Communications, and Utilities; **WHO**=Wholesale Trade; **RET**=Retail Trade; **FIRE**=Finance, Insurance, and Real Estate; **SRV**=Services; **HT**=High-Tech

Figure F2.

Employment at Large Firms as a Share of Total by State and Metro



Source: U.S. Census Bureau, BDS; authors' calculations