THIRD WAY

REPORT *Published March 10, 2015* • *29 minute read*

A Less Dynamic American Economy: What's Going On?

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How do we ensure American middle class prosperity in an era of ever-intensifying globalization and technological upheaval? That is the question we are trying to answer with NEXT—a project at Third Way that taps into cutting edge research by top American academics.

What's NEXT?

The emergence of such innovative new business like Uber and Airbnb leave the impression that our economy, at its core, remains dynamic despite the Great Recession. As we struggle to increase economic growth and restore the many jobs that were lost, central to Americans' ideals about their economy is that it is vibrant and entrepreneurial such that an individual can strike out on his or her own, start a business in their garage, and grow it. But lately there are signs that the entrepreneurial dynamism so central to our economic growth and to our belief in the uniqueness of our economy is lagging.

Ian Hathaway and Robert E. Litan tackle this question in the latest paper in Third Way's NEXT series. Like many Americans they value entrepreneurship and argue that "A dynamic

economy is a more flexible one, and entrepreneurs inject fresh thinking and new energy into our business sector." They then go on to plot a three decade long decline in business dynamism in the United States—using the "job reallocation rate" for the U.S. economy—a measure that sums the rates of job creation and destruction in a given year and can measure "the dynamic process of business births and expansions (job creation) and business deaths and contractions (job destruction)."

They attribute much of the decline in dynamism to the shift of economic activity into older firms. This "secular decline in startups, coupled with the secular rise in mature firms," appears to be an important factor in the modern American economy. In other words, there is a greater percentage of old firms and people working within them than in any time in recent years. They then go on to look at some explanations including rising failure rates, consolidation and firm maturity, consolidation and firm entry, and mounting regulation. Although they are properly cautious in drawing too many conclusions from this preliminary research they point to three areas that might help address or rectify the underlying causes of the trends discussed earlier; the mounting number of regulations, restrictions on high-skilled immigration, and doing more to motivate talented students to think about an entrepreneurial career. And they conclude with a plea for ideas and policies that can help reverse the secular decline in the business startup rate.

Hathaway and Litan's paper, *A Less Dynamic American Economy: What's Going On?*, is the latest in a series of ahead-of-the-curve, groundbreaking pieces published through Third Way's NEXT initiative. NEXT is made up of in-depth, commissioned academic research papers that look at trends that will shape policy over the coming decades. Each paper dives into one aspect of middle class prosperity—such as education, retirement, achievement, or the safety net. We seek to answer the central domestic policy challenge of the 21st century: how to ensure American middle class prosperity and individual success in an era of ever-intensifying

globalization and technological upheaval. And by doing that, we'll be able to help push the conversation towards a new, more modern understanding of America's middle class challenges—and spur fresh ideas for a new era.

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A debate is raging among economists in academia and in the federal government over the long-run growth prospects of the U.S. economy. The Congressional Budget Office worries because future growth determines how easy or hard it will be to deal with projected long-term federal budget deficits. The Federal Reserve is concerned because it must tailor monetary policy against how fast the economy is capable of growing in an inflation-stable environment.

The outlook projected by these two agencies has grown decidedly less optimistic over the past decade, especially since the onset of the Great Recession. After it was expected to grow by well more than 3% a year in the 1990s, government forecasters project long-run U.S. economic growth to barely exceed 2% at best. The declining growth prospects prompted *The Economist* to declare on its cover in an issue this summer, "America's Lost Oopmh." [1]

We are by nature optimists, and tend to have faith like many other economists that pessimistic projections like these ignore the past forecasts of doom that didn't come to pass. We remember reading about the infamous declaration by the head of the U.S. Patent Office at the dawn of the 20th century that the age of significant new patented inventions was then coming to an end. Something in us naturally recoils when such a well-known productivity expert, Robert Gordon of Northwestern University, recently has been restating essentially the same conclusion: that America has run out of big ideas. [2]

The Patent chief was wrong over a century ago. And while it is

impossible really to know with any precision what the future growth path of innovation and productivity will look like, our instincts tell us that Gordon's pessimism is misplaced as well.

But, we must also reconcile our outlook with the countervailing facts. For example, two measures used to gauge the health of a modern economy—the amounts of economic dynamism and entrepreneurship—have been pointing in the wrong direction over the last few decades, and in particular the latest one.

A dynamic economy is a more flexible one, and entrepreneurs inject fresh thinking and new energy into our business sector. Business dynamism improves economic growth by reallocating labor and capital to more productive uses. Entrepreneurial ventures have historically been responsible for a disproportionate number of disruptive innovations that have powered growth in the past—the telephone, the car, the automobile, air conditioning, computers and the software that operates them, just to name a few.

This essay documents trends in declining business dynamism and entrepreneurship during the last three decades, offering what we hope is some informed speculation for the reasons why and suggested areas for future study. [3]

A Less Dynamic Economy

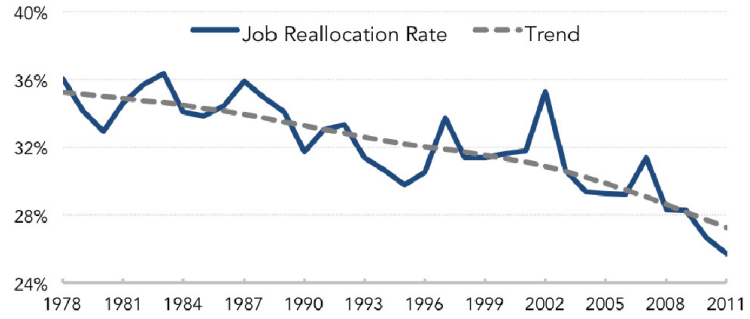
First, let's define what we mean by "dynamism." Business dynamism is the process by which firms are constantly being born, failing, growing, or shrinking. This process is an inherently disruptive one, but it is as an important source of productivity growth in the long run. [4] This "creative destruction" witnesses more productive firms replacing less productive ones, while workers are better matched with employers.

To measure business dynamism, we analyze the publicly available Business Dynamics Statistics. The U.S. Census Bureau—in collaboration with the Internal Revenue Service—collects data each year on the entire universe of firms and

business establishment in the United States with employees on payrolls. In this regard, the data are not survey-based; but rather, aggregates of administrative data from the federal government.

Figure 1 plots a broad-based measure of business dynamism called the "job reallocation rate" for the U.S. business sector from 1978 (the start of our data) through 2011 (the end of our data). [5] The job reallocation rate sums the rate of job creation and the rate of job destruction for a given year—reflecting the dynamic process of business births and expansions (job creation), and business deaths and contractions (job destruction).

Fig. 1: Job Reallocation Rate (1978-2011) [6]



Note: Trend rate has been calculated using a Hodrick-Prescott filter with a multiplier of 400

As Figure 1 shows, the job reallocation rate has been on a steady, persistent decline during the last three decades—accelerating in the post-2000 era. As we, and others have documented, this decline occurred in each broad industry sector, a rage of firm size categories, and across all fifty U.S. states and nearly each of the 366 metropolitan areas. [7] In other words, this isn't just isolated to a few sectors or regions. Instead, it is occurring in a nearly universal fashion.

The Decline of Entrepreneurship

We understand that the title of this section might rub some readers the wrong way, because everything in our recent culture and indeed what we believe to be most true of America

—that its economic vitality has been powered by entrepreneurs—seemingly is inconsistent with that phrase. How can it be that a nation that invented the venture capital industry, that is home to the most innovative region in the world, and where pitching one's business plan is part of the cultural zeitgeist (are you fans of Shark Tank on television? We are), has been experiencing a decline in entrepreneurship?

Well, that's what the numbers show, if economy-wide entrepreneurship is measured the way we believe most appropriate: firms less than a year old with at least one employee as a share of all firms in the economy. We compute this ratio, which we call the "startup rate," from the BDS [we've already referenced the term spelled out so we think it's fine to use the initials here], which captures the age of each firm in the United States.

Figure 2 shows the national startup rate has been declining steadily for over three decades. What is even more remarkable is that we have computed the startup rate by state, metro area and industry, and the secular decline is occurring in each. [8]

Fig. 2: Firm Entry and Exit Rates (1978-2011) [9]

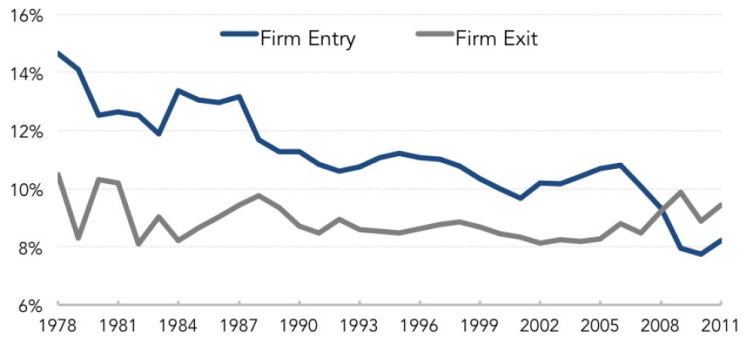


Figure 2 also shows a different, essentially flat pattern, for firm exits as a share of all firms. In 2009, or in the midst of the Great Recession, the two lines crossed, and the annual firm exit since has exceeded the startup rate since.

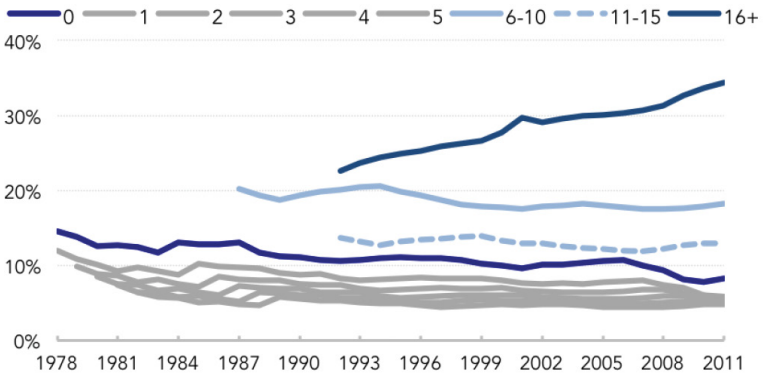
About the only good news in the national data is that the startup rate ticked up a bit in 2011 relative to 2010. Shortly before this essay went to press, the Census Bureau released a new round of data, showing a slight uptick in the startup rate in 2012. This is what one would hope given the steady economic expansion, but it's not enough of a lift to substantially alter the long-run downward trend.

The Maturing of the Firm Structure

Public discussion over the state of the economy often focuses on the aging of the population, and the upward pressure this will apply to the long-run federal budget deficit. Rarely, if at all, do policy makers or observers point out that the same aging process has been affecting the firm structure of the U.S. economy. But that is, in fact, what the Census data show.

Figure 3 depicts the share of firms in the economy by different ages, also during the 1978 to 2011 period. Note however that data of some age groups are staggered because of the data collection process—the Census Bureau only began tracking firm age from 1977 forward. So, for example, we can only begin to calculate firms aged five years beginning in 1982, or for our catch all of "mature" firms (those aged 16 years or more) beginning in 1992.

Fig. 3: Distribution of Total Firms by Firm Age (1978-2011) [10]

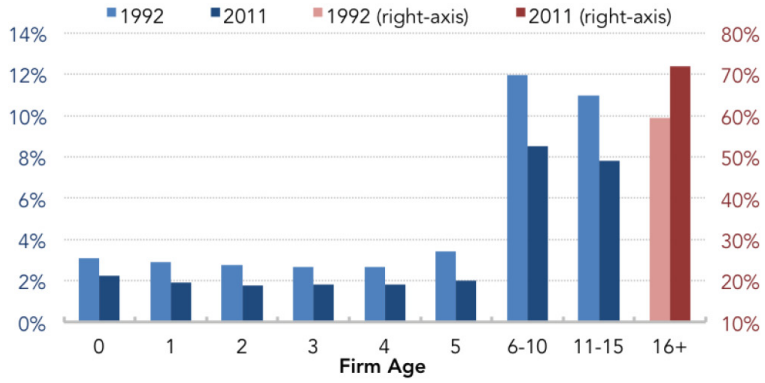


The results are striking, at least to us. In every age category, the firm share has been stable or declined over this period,

except for one: firms 16 years or older. The rising share of mature firms is especially remarkable, from 23% in 1992 to 34% by 2011—an increase of 50% in two decades.

Though not shown here, 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). [11]

Fig. 4: Distribution of Total Private-Sector Employment by Firm Age (1992 v 2011) [12]



The same aging story emerges when we distribute employment across firms of different ages over time. Figure 4 compares the employment share of each age group in all U.S. firms for 1992 and 2011, respectively. The share of private-sector workers employed in mature firms increased from 60% to 72% during the same period. If one counts government employment as being in a "mature organization," then remarkably, that means about four in every five American are currently working in a mature firm or organization, up from two-thirds in 1992— hardly the picture of a dynamic firm structure of economy.

This shift of economic activity into older firms helps explain a fair amount of the decline in business dynamism documented before. Older firms are less dynamic than younger ones, and one group of economists calculates that the changing age structure of the business sector can explain approximately

one-quarter of the declining in the job reallocation rate—or almost three times the contribution of the well-known shift into larger firms (larger firms are less dynamic than smaller ones, too). [13] Changes in industry composition have worked in the opposite direction—pushing the up the rate of business dynamism.

Some Explanations

We suggested at the outset that the maturation of the firm age structure matters for long run growth since young firms are more likely to come with the kinds of disruptive innovations that can really power productivity growth, and because of the downward effect it has on dynamism that we talked about later. Mature firms engage in incremental innovation and efficiencies in production, and cumulatively this adds up. But other things equal, we believe that a younger economy—people and firms—is likely to be more dynamic.

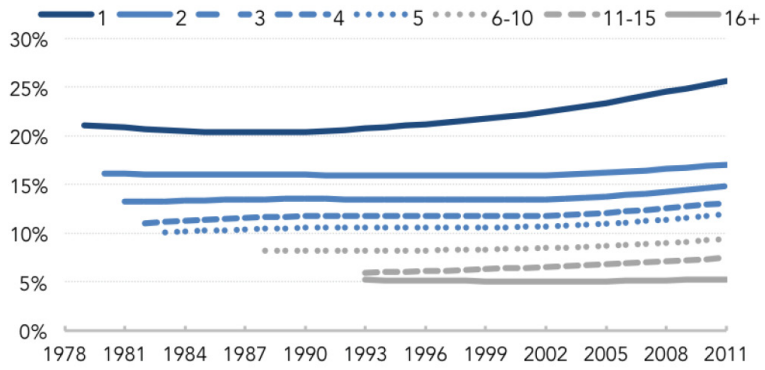
So what accounts for the secular decline in startups, coupled with the secular rise in mature firms? We link the questions together because it is likely that the explanations are also related. Below is an exploration of some possible causes. This list is by no means exhaustive, and in fact is a call to more determinative research than anything else.

Rising Failure Rates

One possible factor is the failure rate of young firms. If more firms are failing over time, our thinking is, this might discourage the formation of new firms. Secondly, as a matter of simple arithmetic, this tilts the age structure upward. In fact, this is what the data show.

Figure 5 shows the probability over time of firm failure conditional upon reaching certain age thresholds, smoothed to remove the noisiness in the data from year to year, in order to more clearly reveal long-run trends.

Fig. 5: Firm Exit Probabilities by Firm Age—Trend Rates (1978-2011) [14]



There are several major takeaways from Figure 5. 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.

Second, 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% in the actual rate to around 27%) during the two-decade period that followed. The increase in failure rates for this age group is by far the most pronounced.

It seems reasonable that the rising failure rate of very young firms could explain at least some of the decline in the startup rate: would-be entrepreneurs, even without the benefit of these data, may be understanding in their gut or through anecdotes, that the risks of launching a business justify holding back. The quantitative evidence of this remains unclear at this time, but we think this could be one area worth exploration in future research. But it wouldn't be a factor in the falling firm entry rate over the entire period of our data, as the uptick doesn't occur until more than a decade after we begin documenting its decline.

Though not shown here, we also found 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. [15] Among these very young firms, increases in failure rates were greatest in the smallest firms, and in the agriculture, construction, and services sectors.

Consolidation and Firm Maturity

What about the apparently rising business consolidation in the economy? Isn't it contributing to the aging of the firm structure?

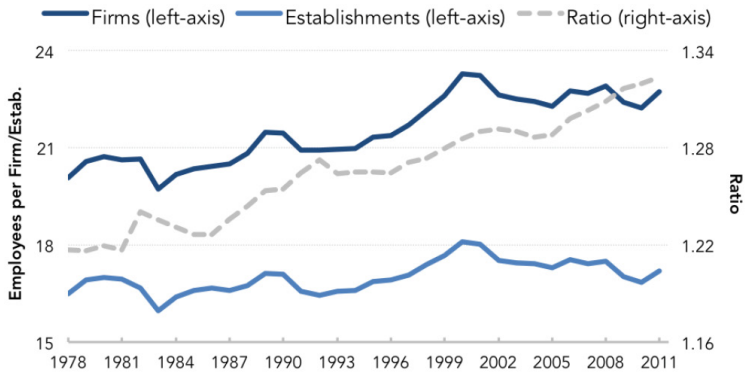
That consolidation is happening seems to be self-evident, from the growing importance of big-box retailers to the increased concentration in banking and financial services. Nonetheless, we need some hard data to know to what extent the business landscape really is consolidating.

We do so here by comparing the average firm size against the average establishment size, as well as the ratio of these two figures, during the last three decades. 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, 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 numbers 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 to be increasing, and that is exactly what Figure 6 shows.

Fig. 6: Average Firm and Business Establishment Sizes, and Ratio (1978-2011) [16]



The fact that consolidation has been happening does not necessarily mean that this is a major reason for the aging firm structure, however.

We address this important question in two figures. Figure 7 shows the firm size distribution of firms aged 16 years or more, while Figure 8 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.

Fig. 7: Distribution of 16+ Year Firms by Firm Size (1992 v 2011) [17]

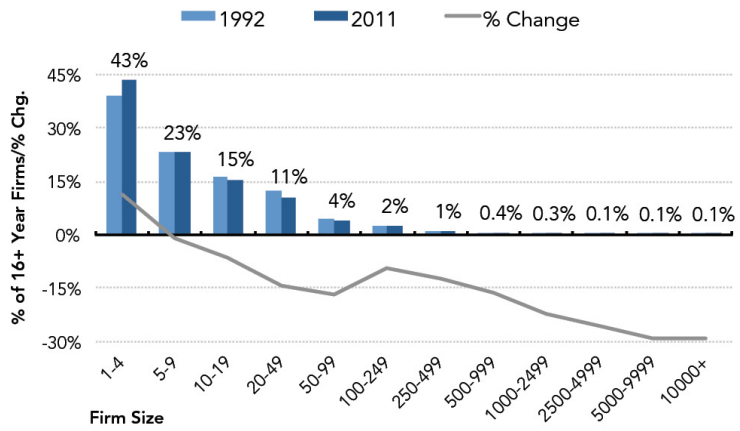
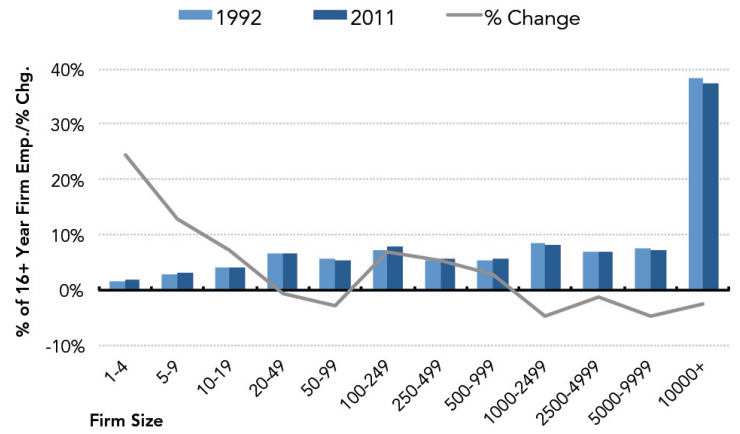


Fig. 8: Distribution of Employment at 16+ Year Firms by Firm Size (1992 v 2011) [18]



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. That shouldn't be surprising.

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 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 primarily 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 driving business aging, we would be seeing the faster relative growth of small versus large mature firms.

All of 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. As we noted before, 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. [19]

Consolidation and Firm Entry

While we were unable to find strong evidence directly linking business consolidation to the aging of the firm structure, we wondered if it is doing so indirectly through the firm entry rate. In other words: is the much discussed and well-documented increase in business consolidation a factor in the declining firm formation rate?

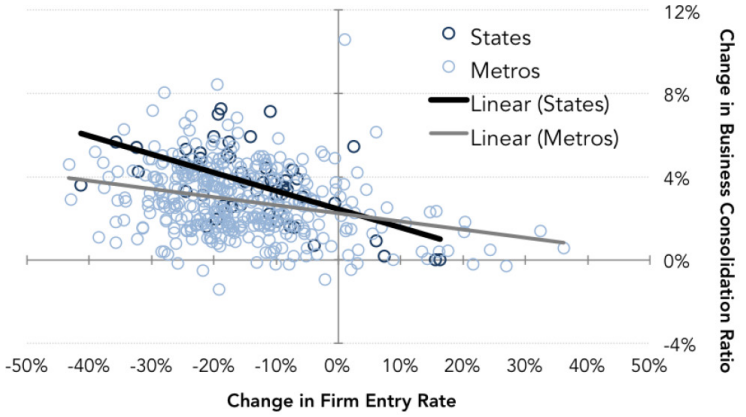
Figure 9 plots the relationship between the change in the business consolidation measure used above using annual averages for the years 1978-1980 and 2009-2011 for a state or metropolitan area, against the change in the firm entry rate in that same region during the same period.

In other words, the chart plots changes in the startup rate against changes in the business consolidation rate for each state and metro, with trend lines that summarize the overall relationship between these measures across regions. Trend lines angled up to the right indicate a positive relationship between the measures—on average, where one measure increased over time, so did the other. A line pointing down to the right indicates the opposite—where one rate increased over time, the other tended to fall. A third possibility is a trend line that is flat as it runs from left to right—indicating that these measures are not correlated.

As Figure 9 shows, there doesn't appear to be a statistical relationship between these two rates over the more than thirty years of data across the U.S. states and metropolitan areas, indicating that business consolidation is not playing a role in the declining firm entry rate. However, to test whether this relationship is being affected by variation in the business cycle (the end point of our data rests in the midst of recovery from the Great Recession after all) or otherwise sensitive to time periods, Figure 10 also shows the long-term relationship between these two measures but instead uses the average during two expansionary periods: 1987-89 and 2004-06. [20]

Fig. 9: Business Consolidation v Firm Entry—States, Metros (1978-80 avg. v 2009-11 avg.) [21]

Fig. 10: Business Consolidation v Firm Entry—States, Metros (1987-89 avg. v 2004-06 avg.) [22]



As Figure 10 shows, the relationship is much different here. There exist negative relationships between the change in

new firm formation rates in a region and the change in our measure of business consolidation. In other words, regions that experienced larger increases in business consolidation also witnessed larger decreases in the firm entry rate, on average.

A simple linear regression shows that our results are statistically significant, though the effect is much larger at the state level (indicated by a steeper trend line). Still, we caution interpreting these results. As economists often say, correlation does not imply causation, nor does it identify which factor is driving which. Likewise, this simple correlation doesn't account for other factors that might be affecting both measures. However, economic theory suggests that increasing consolidation probably would be driving declining firm formation rates rather than other way around.

Finally, the large disparity in this relationship between the two time periods of analysis indicates that the business cycle (or potentially some other time-dependent factor) plays a non-trivial role in either the consolidation rate or the entry rate—and perhaps affecting both. In research we published for Brookings in November, we confirmed that consolidation is indeed contributing to declining startup activity across the country.

Mounting Regulation

One potential factor favoring incumbent firms relative to startups and younger firms is the cumulative total of regulation—from all levels of government. [23] Regulations carry fixed costs, and those associated with starting a business can be firm-formation-prohibitive. One study commissioned by the Small Business Administration, for example, estimated that the regulatory burden faced by a typical small business is more than one-third higher than the cost of a typical large business on a per-employee basis. [24]

Indeed, for many companies requiring a physical location, local zoning and other municipal and state regulations may have more of an impact than the climbing volume of federal

regulations. Unfortunately, there is no easy way—yet—of statistically documenting the role of regulation in inhibiting startups or benefiting incumbents.

At the national level, there are no reliable quantitative measures of regulation at all levels of government. The number of pages in the Federal Register is one often-used measure, but pages do not necessarily correlate with the impact or cost of regulation, or its benefits. The Mercatus Center has come up with an alternative measure of federal regulation—the numbers of commands ("shall" and "shall not", for example)—but there is no corresponding series for all state and local regulation.

In theory, it may one day be possible to use state and local measures of regulatory activity to estimate whether variations in this measure help explain variations in local and/or state startup activity. A recent survey published by online services platform Thumbtack and the Ewing Marion Kauffman Foundation aims to, among other things, do just that: ranking the states on the regulatory burdens they impose on all businesses. [25] But with only one year of data any such estimates would be unreliable because surely there are lags between regulatory intensity in any year and their impacts, if any, on startups and other older firms.

The Arithmetic of Firm Maturity

Finally, as a matter of simple math, the decline in the startup rate has to be contributing to an aging of the overall firm structure. The BDS data are dynamic, so each year represents a new flow of firm formations. In this regard, the share of young firms is a path-dependent process where declining new firm formation directly contributes to the aging of the business sector over time. Outside of there being radically different firm failure rates that work in the opposite direction (which as we've documented, isn't the case), fewer new firms each year means fewer young firms, which means fewer medium-age firms, and so on. At the end of the line, this means a higher proportion of those firms surviving at any point in time must be older firms.

Policy Implications

Although we seem to have identified some purely path-dependent reasons behind the aging of the firm structure—specifically falling startup rates and rising firm failure rates—we do not pretend to have a complete, or even a satisfying partial explanation of the growing advantage of incumbency by older firms. And without a good explanation it is impossible to come up with policies that are highly likely to make the economy more dynamic.

Nonetheless, we offer here two broad policy ideas, which we also believe address or would help rectify underlying causes of the trends discussed earlier. We outline them in the spirit of igniting what we believe is an important national conversation over the aging of the firm structure and what, if anything, policy makers can and should do about it.

Mounting Regulation

Assuming that mounting regulation at all levels is contributing to the aging of the firm structure, there are no easy solutions.

For one thing, many if not most of these rules are in place to protect consumer and worker safety, and many may have benefits that exceed their costs. So any negative impact on the aging structure may just be another cost, albeit one that may not be well recognized, that has to be factored into assessment of the rules. At the same time, the consumer or worker safety rationale can be a thin veneer for protection of incumbent firms from competition.

Assuming that many regulations are no longer useful or should be modified because facts on the ground have changed since they were first issued, the Obama Administration has adopted a "look-back" procedure requiring agencies to weed out outdated rules. This "solution" may not have much of an impact on startup activity, in particular, given the relatively small number of

rules that have been changed compared to the huge stock of regulations left in place.

A more aggressive idea would take the military base closing commission concept and form one-shot or repeat regulatory clean sweep commissions at all levels of government, followed by up-or-down legislative votes on the entire package of proposed rule eliminations. An even bolder approach would impose sunset requirements on all "major" rules—those with at least $100 million in impact for federal rules, suitably lower thresholds for state and local rules—after, say, 10 or 15 years, on the books, forcing agencies to come up with modified rules to suit changing times, or to eliminate the rules. The sunset idea can only work, however, if strict limits are placed on legal challenges, or the number of rules subject to sunset is limited; otherwise, the burden on the agencies and the legal system likely would be overwhelming.

High-Skilled Immigration

Immigrants have long been more entrepreneurial than native-born Americans, in large part of necessity (they find difficulty getting jobs with established firms) and in part due to self-selection (those who leave their homelands are more likely to have the propensity than the average native-born American). Extensive survey work by scholar Vivek Wadwha also confirms this to be the case with high-tech startups and patents in particular: immigrants account for about a quarter of each, despite accounting for less than 15% of the U.S. population.

One obvious way to boost the startup rate would be to change U.S. immigration policy in two important respects: give permanent work permits (not just temporary H1-B visas) to more immigrant entrepreneurs and those with technical backgrounds, especially those studying for degrees in the STEM field (science, technology, engineering and math) at U.S. universities. A comprehensive immigration reform bill passed by the Senate in 2013 incorporates both these ideas, along with others aimed at beefing up border security and

establishing a pathway to citizenship for millions of illegal immigrants already in this country. But as readers of essay know well, the House has refused to take up the bill, and its inclination to do so (not that it needed any more help) was stiffened by the child immigrant crisis during the summer of 2014.

Culture

Finally, given the TV shows about entrepreneurship, the lionization of some highly successful tech entrepreneurs, and the growing popularity of college and MBA courses on entrepreneurship, it may seem surprising that cultural factors have been contributing to a secular decline in the startup rate. On the other hand, these are recent developments, while the declining firm formation rate stretches back several decades. Additionally, the data seem to potentially point to a workforce that has become more risk-averse overall: including, fewer job "quits," longer job tenure, and less worker migration, in addition to the declining rate of new firm entry.

But whether or not culture has played a role in the declining startup rate—or similarly, if a change in attitudes in very recent years would reverse this—one idea that should be pursued on its own merits is for colleges, especially the more selective ones where student statements may affect admissions, to require applicants to include in their essays an answer to the question: "What activities have you pursued so far that have been entrepreneurial in nature, or that indicate you will you will take an entrepreneurial approach to the challenges you will later face in life." That single question may do more to motivate already highly driven students, at a critical time in their lives, to seriously think about an entrepreneurial career and taking steps in the high school years to put them on that path. As for K-12, we encourage public schools, most likely charters since they have more freedom, to experiment with ways to teach business applications of math and science concepts as a way of

showing how school readies them, and ideally encourages them, for an entrepreneurial life.

Conclusion

Dynamic economies are healthy ones. The constant churn of new firms entering, disrupting older ones is one of the major ways that economies achieve growth.

By a number of measures, the American economy is becoming steadily less dynamic. This does not portend well for the future, when higher rates of growth will be needed not only to sustain higher living standards, but to provide resources for addressing America's mounting income and health care obligations for the aging baby boomer generation, while at the same time repairing and supplementing our aging infrastructure, and upgrading our schoools.

We have offered some explanations for decilining dynamism, but they boil down to what we see as one primary cause: a secular decline in the startup rate. A long overdue political debate is now needed to produce ideas and policies that can help reverse these trends.

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About the Authors

Ian Hathaway is a Manager at Frontier Economics, where he advises clients in the technology, financial services, professional services, and non-profit sectors on a range of economics, research, and strategic issues. He is also a Nonresident Senior Fellow at the Brookings Institution and an Adjunct Professor at New York University.

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Litan is currently on the research advisory boards of the Smith Richardson Foundation and the Committee for Economic Development. He previously served on the international advisory board of the Principal Financial Group, and has practiced law with two Washington, D.C.-based law firms.

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END NOTES

1. "America's Lost Oomph," *The Economist*, July 16, 2014. Print.

2. See, e.g. Robert J. Gordon, "Is U.S. Economic Growth Over? Faltering Innovation Confronts the Six Headwinds," National Bureau of Economic Research, Working Paper, No. 18315, August 2012. Print.

3. The results in this essay, in part, draw on and summarize our earlier work on this topic published online by the Brookings Institution: Ian Hathaway and Robert E Litan, "Declining Business Dynamism in the United States: A Look at the States and Metros," The Brookings Institution, May 5, 2014. Available at: http://www.brookings.edu/research/papers/2014/05/declining-business-dynamism-litan; See also Hathaway and Litan, "The Decline in Dynamism: It's Real," The Brookings Institution, May 22, 2014. Available at: http://www.brookings.edu/research/papers/2014/05/22-decline-business-dynamism-is-for-real-litan-hathaway; See also Hathaway and Litan, "The Other Aging of America," The Brookings Institution, July 31, 2014. Available at: http://www.brookings.edu/research/papers/2014/07/aging-america-increasing-dominance-older-firms-litan. The material in the sections on possible causes is largely new.

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

5. Note however that after drafting of this report was completed, the Census Bureau updated this database to include the year 2012.

6. U.S. Census Bureau, Business Dynamics Statistics (BDS). Available at: http://www.census.gov/ces/dataproducts/bds/; authors' calculations.

7. Ian Hathaway and Robert E Litan, "Declining Business Dynamism in the United States: A Look at the States and Metros," The Brookings Institution, May 5, 2014. Available at: http://www.brookings.edu/research/papers/2014/05/declining-business-dynamism-litan; See also U.S. Census Bureau, Business Dynamics Statistics (BDS). Available at: http://www.census.gov/ces/dataproducts/bds/. autho rs' calculations; See also Decker, Haltiwanger, Jarmin, and Miranda, "The Secular Decline in Business Dynamism in the U.S.," University of Maryland working paper, 2014. Available at: http://faculty.chicagobooth.edu/workshops/appliedecon/pdf/Haltiwangersecular.pdf.

8. Ian Hathaway and Robert E Litan, "Declining Business Dynamism in the United States: A Look at the States and Metros," The Brookings Institution, May 5, 2014. Available at: http://www.brookings.edu/research/papers/2014/05/declining-business-dynamism-litan; See also U.S. Census Bureau, Business Dynamics Statistics (BDS). Available at: http://www.census.gov/ces/dataproducts/bds/; authors' calculations.

9. U.S. Census Bureau, Business Dynamics Statistics (BDS). Available at: http://www.census.gov/ces/dataproducts/bds/; authors' calculations.

10. Ian Hathaway and Robert E Litan, "Declining Business Dynamism in the United States: A Look at the States and Metros," The Brookings Institution, May 5, 2014. Available at: http://www.brookings.edu/research/papers/2014/05/declining-business-dynamism-litan; See also U.S. Census Bureau, Business Dynamics Statistics (BDS). Available at: http://www.census.gov/ces/dataproducts/bds/; authors' calculations.

11. See also Hathaway and Litan, "The Other Aging of America," The Brookings Institution, July 31, 2014. Available at: http://www.brookings.edu/research/papers/2014/07/aging-america-increasing-dominance-older-firms-litan; See also Ian Hathaway and Robert E Litan, "Declining Business Dynamism in the United States: A Look at the States and Metros," The Brookings Institution, May 5, 2014. Available at: http://www.brookings.edu/research/papers/2014/05/declining-business-dynamism-litan; See also U.S. Census Bureau, Business Dynamics Statistics (BDS). Available at: http://www.census.gov/ces/dataproducts/bds/; authors' calculations.

12. Ian Hathaway and Robert E Litan, "Declining Business Dynamism in the United States: A Look at the States and Metros," The Brookings Institution, May 5, 2014. Available at: http://www.brookings.edu/research/papers/2014/05/declining-business-dynamism-litan; See also U.S. Census Bureau, Business Dynamics Statistics (BDS). Available at: http://www.census.gov/ces/dataproducts/bds/; authors' calculations.

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