

# The Age of the Entrepreneur: Demographics and Entrepreneurship

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*This paper looks at how age-related demographic changes in the United States will affect entrepreneurship and recommends possible policy responses.*

*Demographics is one of the most important factors affecting entrepreneurship, job creation, and innovation. Demographic change shapes all issues that occupy most economic discussions — education, employment policy, taxes, technological changes, and more. Demographic analysis anticipates future trends, helping decision makers to prepare policy interventions accordingly.*

*The United States will undoubtedly have an aging population over the next few decades. The median age is rising, more people are elderly and the fertility rate is falling. The old age dependency ratio will soon begin rising.*

*One might expect that an aging population means less entrepreneurship and new business creation. Older individuals (over age 55) tend not to become new entrepreneurs, aside from self-employment. Older individuals are presumed to have lower levels of risk tolerance and higher opportunity costs.*

*But, contrary to these expectations, there can be reasons to expect that entrepreneurship will not decrease. It may even increase:*

- *From now until 2030, the absolute number of americans in their 30s-40s will be bigger than ever before. Empirical research highlights this as a “peak age” for entrepreneurship.*
- *Continued immigration will mitigate general aging. Immigrants have higher rates of business creation, including innovative, high-growth companies. Immigrants have higher fertility rates, too.*
- *The aging population and other demographic trends present enormous entrepreneurial opportunities in sectors such as health, medicine, education, construction, finance, and transportation.*

*Demographic trends predict the future population with good certainty — at least over two or three decades. But demography is not necessarily destiny.*

*The United States can respond to prospective demographic trends with several policies to reap an entrepreneurial boon:*

- *Identify and lower barriers for entrepreneurial entry*
- *Ensure labor market flexibility.*
- *Ensure smooth and certain paths of entry for immigrants.*
- *Connect younger and older entrepreneurs through programs and networks of various kinds.*

- *Provide new financing options for entrepreneurs*
- *Address issues of intergenerational inequality that may confront younger entrepreneurs*

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## 1. Introduction: What Will Changing Demographics Mean For Entrepreneurship?

Entrepreneurship contributes fundamentally to economic growth. It is well established that net new job creation comes primarily from young and growing companies. Innovation, too, depends heavily on entrepreneurial firms. Entrepreneurs not only solve many problems facing society—they also discover those problems in the first place.<sup>1</sup> Given this importance, it is no surprise that reams of research have been devoted to understanding the phenomenon of entrepreneurship—why do people become entrepreneurs? How can we encourage more of them?

Understandably, much of this work looks at personal characteristics of entrepreneurs, the influence of public policy, or other micro-level issues. In this paper, we investigate the relationship of entrepreneurship and demographics, and what demographic trends—particularly age-related demographics—might mean for the future of entrepreneurship. Our approach looks at demographic effects on entrepreneurship with aid from the lens of life-cycle theory.<sup>2</sup> We combine this with the latest data on entrepreneurship and demographic trends. Our focus is the United States, partly because of the detailed availability of data, but also because many other countries face similar trends.

Our principal finding is that despite nearly universal pessimism regarding the effect of demographic change on entrepreneurship, there are very good reasons for being optimistic.

Demographic analysis has obvious limitations — not only are long-term population projections speculative, behavioral responses to demographic trends generally depend on economic incentives.

Demographics is destiny in the sense that population age distribution is set decades before

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<sup>1</sup> William J. Baumol, Robert E. Litan, and Carl Schramm, *Good Capitalism, Bad Capitalism* (Yale, 2007); Robert E. Litan and Carl Schramm, *Better Capitalism* (Yale, 2012); Harold Evans, *They Made America* (Back Bay, 2004); Joel Mokyr, *The Lever of Riches* (Oxford, 1992).

<sup>2</sup> See Appendix. The basic framework is developed in Daniel F. Spulber, 2013, *The Innovative Entrepreneur*, forthcoming.

its effects occur. But the economic response is typically more adaptive than demographic determinism would suggest.<sup>3</sup>

The effects of age on entrepreneurship are likely to change in response to economic incentives, which in turn will be affected by the age distribution of the population and other demographic effects. Nevertheless, demographic analysis has the advantage of identifying population trends that may affect individual decision making in the short- and medium-term future. Today's fertility rate will have an effect for the next two or three decades, as will trends in aging and life expectancy. Demographics help set a country's social and economic tempo and shape other developments: "Few things influence a population more than its age structure."<sup>4</sup>

General population aging is one of the most noteworthy demographic trends in America today. The first cohort of the baby boomers turned 65 in 2011, and the last baby boom cohort will turn 65 in 2029. Together with a low fertility rate, this means the general age structure of the United States is shifting—the population pyramid is becoming more of a rectangle. At the same time, that mass entry of people into their older years will likely live longer than any other cohort in American history. For most of the past few hundred years, gains in life expectancy came from combating mortality of children under five years old. In recent decades, such gains have come from extending life at older ages. One consequence of these changes is that the working age population as a share of total population, which was relatively stable from 1980 to 2010, will decline over the next two decades.

Articles and books are full of anxiety over these trends. In a forthcoming book, Jonathan Last says forget every other "cliff" the media identifies: "What America really faces is a demographic cliff."<sup>5</sup> We will not be able to support ourselves, keep our government solvent (because of the cost of Social Security and Medicare), or defend the country. The United States, in this line of argument, is "declining in the most important sense—demographically."

We do not discount these concerns—a historically unprecedented demographic shift clearly will have far-reaching consequences.<sup>6</sup> Adaptation will be required. In some ways, of course, the United States is just emerging from a somewhat demographically unique period. Nothing like the baby boom of 1946 to 1964 had occurred in American history before; when baby boomers began entering the labor force en masse in the mid-1960s, they drove a steady rise in the size of the labor force. This helps explain the stability of the working-age population since 1980. This effect was accompanied by rising labor force participation by women and a falling dependency ratio (the number of children and elderly as a share of the working-age population). Meanwhile, immigration

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<sup>3</sup> Nicole Maestas and Julie Zissimopoulos, "How Longer Work Lives Ease the Crunch of Population Aging," *Journal of Economic Perspectives*, Vol. 24, No.1, Winter 2010.

<sup>4</sup> S. Jay Olshansky et al, "Aging in America in the Twenty-first Century: Demographic Forecasts from the MacArthur Foundation Research Network on an Aging Society," *The Milbank Quarterly*, vol. 87, No. 4, 2009 at: [http://www.politico.com/pdf/PPM41\\_agingsociety\\_pdf.pdf](http://www.politico.com/pdf/PPM41_agingsociety_pdf.pdf).

<sup>5</sup> Jonathan V. Last, "America's Baby Bust," *Wall Street Journal*, February 2-3, 2012, at: <http://online.wsj.com/article/SB10001424127887323375204578270053387770718.html>.

<sup>6</sup> "The fundamental conclusion of our study is that, barring a significant increase in labor force participation, population aging will lead to a reduction in per capita consumption." Louise Sheiner, Daniel Sichel, and Lawrence Slifman, "A Primer on the Macroeconomic Implications of Population Aging," Finance and Economics Discussion Series, Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board, 2007.

rose steadily during this period. Almost none of these demographic developments will be present during the next two or three decades, as current trends might suggest.

So while we appreciate the potential consequences of these demographic changes, our focus is narrower: what will changing demographics mean for entrepreneurship in the United States? Because so many factors affect an individual's decision to become an entrepreneur, there can be no definite connection between demography and aggregate entrepreneurship. However, looking at entrepreneurship and demographic data together may suggest how age-related demographic trends in the United States will influence aggregate rates of entrepreneurship.

## 2. Trends in Entrepreneurship and Demographics

We suggest below that there is a “peak age” for entry into entrepreneurship. Importantly, this does not imply the absence of entrepreneurship at older ages—entrepreneurs in their thirties and forties could be more likely to become serial entrepreneurs in their fifties and sixties. While self-employment is not synonymous with entrepreneurship, self-employment rates rise with age, and older age groups have higher levels of self-employment.<sup>7</sup> But this notion of “peak age” does suggest that *new* entry into entrepreneurship at older ages will be lower relative to entry at younger ages.<sup>8</sup> If the overall population is aging past the peak ages of entrepreneurship, that obviously raises a concern that business creation will fall.

### 2(a). Recent history of entrepreneurship and demographics

Over the last few decades, the United States has reaped several demographic dividends. The median age of the American population touched its highest point in 1960 at 40.5 years and, as the baby boom generation came of age, the median age steadily fell, reaching a low point of 34.6 in 1980.<sup>9</sup> One consequence of a population perpetually in the demographic “sweet spot” was a rapidly growing labor force, which expanded at a 1.6 percent annual rate from 1950 to 2000.<sup>10</sup>

This also meant a relatively stable working-age population—in the 1960s, the working-age population constituted 60 percent of the total population, which was down from nearly 65 percent in 1950 (see chart below). Such volatility ceased in 1980, and the working-age share of the total population stabilized at around 66 percent for thirty years. Meanwhile, the American fertility rate plummeted after the baby boom ended in 1964, but the country has still enjoyed a high volume of births, even experiencing an “echo baby boom” in the 1980s and early 1990s. Indeed, the annual number of births in the United States has risen steadily since the 1970s and in 2007 the country

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<sup>7</sup> Steven F. Hipple, “Self-employment in the United States,” *Monthly Labor Review*, September 2010; Lynn A Karoly and Julie Zissimopoulos, “Self-employment among older U.S. workers,” *Monthly Labor Review*, July 2004.

<sup>8</sup> See also Parker, *The Economics of Entrepreneurship*, 114: “Taken together, these arguments [those cited above] can be interpreted to suggest that individuals are increasingly likely to become entrepreneurs as they age, up to a certain point, after which the probability of becoming an entrepreneur declines with age.”

<sup>9</sup> Mitra Toossi, “A century of change: the U.S. labor force, 1950-2050,” *Monthly Labor Review*, May 2002. By 2000, the median age had climbed to 39.3. For future projection, see Section 3(c).

<sup>10</sup> Mitra Toossi, “A century of change: the U.S. labor force, 1950-2050,” *Monthly Labor Review*, May 2002.

had the highest number of births in history, even exceeding the 1957 peak of the baby boom.<sup>11</sup>

So, while the country reaped a demographic dividend, what did this mean for entrepreneurship? Perhaps the most notable aspect of business creation in the United States has been its fairly steady volume, at least according to aggregate data from the Census Bureau.<sup>12</sup> Accompanying this, however, has been a falling *rate* of business creation—new firms naturally constitute a smaller share of a growing population of businesses overall, but the per capita rate has also trended steadily downward.

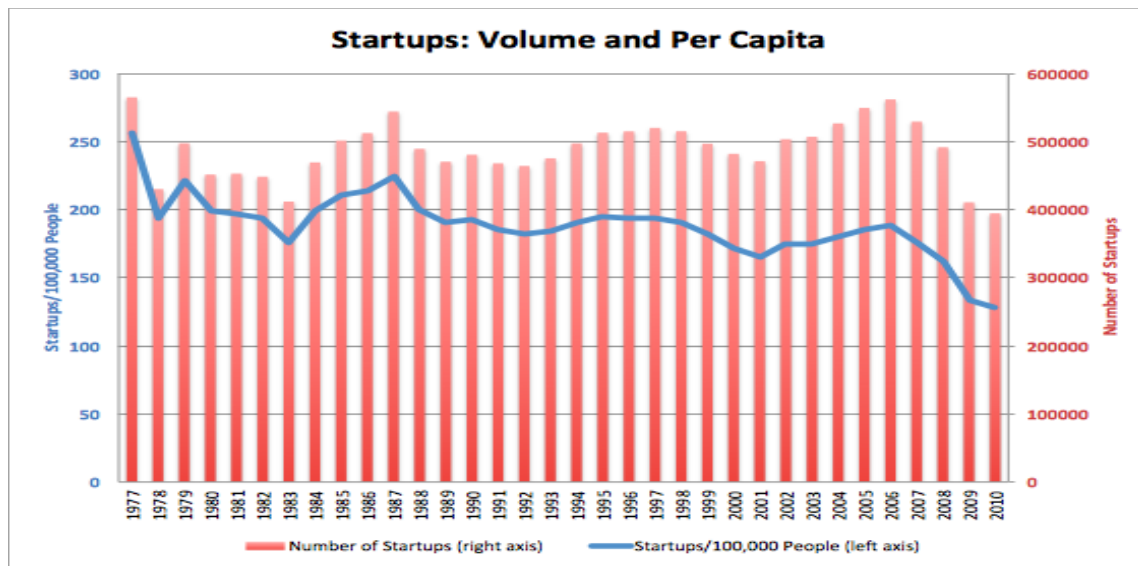


Figure 1. Source: Business Dynamics Statistics, U.S. Census Bureau, at: <http://www.census.gov/ces/dataproducts/bds/>.

Even when the annual number of new companies has risen—for example in the mid-1990s and then during the housing bubble of the 2000s—the per capita rate has either fallen or only risen modestly.

Part of the long-term stability of new business formation may in fact be a function of the stability of the working-age population since 1980. Although we have no comparable earlier entrepreneurship data with which to compare it, the concurrence of working-age and business creation stability over the past three decades has been remarkable.

<sup>11</sup> Nicole Maestas and Julie Zissimopoulos, “How Longer Work Lives Ease the Crunch of Population Aging,” *Journal of Economic Perspectives*, Winter 2010.

<sup>12</sup> Dane Stangler and Paul Kedrosky, “Exploring Firm Formation: Why is the Number of New Firms Constant?” Kauffman Foundation Research Series on Firm Formation and Economic Growth, January 2010, at: [http://www.kauffman.org/uploadedFiles/exploring\\_firm\\_formation\\_1-13-10.pdf](http://www.kauffman.org/uploadedFiles/exploring_firm_formation_1-13-10.pdf).

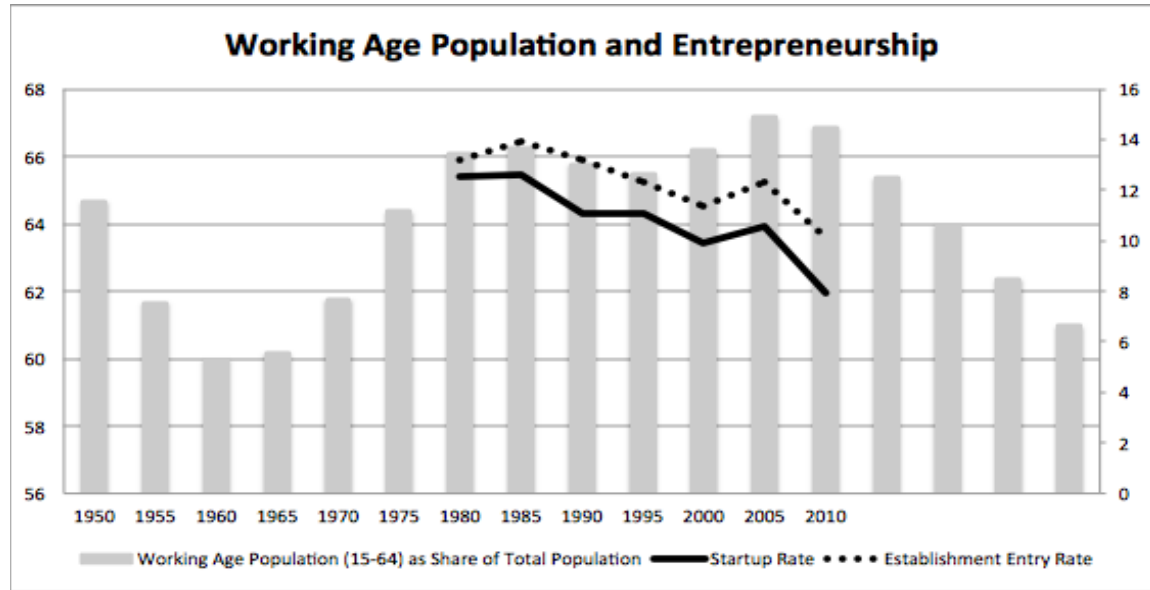


Figure 2. **Note:** the startup rate and establishment entry rate here are based on a denominator of the overall population of business firms, not the general people population, as in the prior chart. **Source:** U.S. Census Bureau and Business Dynamics Statistics.

The baby boomers were in their twenties and thirties in the 1970s and 1980s and led the information technology and personal computer revolutions and all the new firm creation that accompanied those. Take, for an imperfect sample, the icons of the early digital age: Steve Jobs (born 1955); Bill Gates (born 1955); and Mitch Kapor (born 1950).

So as the country enjoyed a growing and stable labor force, the United States also enjoyed fairly steady volumes of new business creation—according to Census data, in 2006 there were more new business started than in any other year in the dataset except 1977 (see chart). At the same time, the rate of business creation steadily fell. This raises a question that will recur below: do we care more about the overall number of new companies started, or the relative rate (and potential rate) of their creation?

## 2(b). Age and Entrepreneurship

Most empirical studies find a peak age for business creation: entrepreneurs tend to be individuals in their thirties and forties. The general consensus of research findings is that “entrepreneurship is concentrated among individuals in mid-career, i.e. between thirty-five and forty-four years of age.”<sup>13</sup> This differs from the conventional belief that entrepreneurship is mostly the province of the very young, who are presumably unfettered, willing to take risks, have low discount rates, and are undeterred from challenging established ways of doing things.

The Kauffman Firm Survey (KFS), a longitudinal survey of nearly 5,000 companies that were legally formed in 2004, has become something of a gold standard for entrepreneurship data. Among KFS founders, the mean and median age were both 45, and the age distribution of first-time founders was

<sup>13</sup> Simon Parker, *The Economics of Entrepreneurship* 114 (Cambridge, 2009). By far the most common empirical finding is the “probability of being or becoming an entrepreneur is increasing up to a maximum at some age in the forties or early fifties, before declining thereafter.” *Id.*

highest in the late thirties and early forties. Not surprisingly, serial entrepreneurs were slightly older.  
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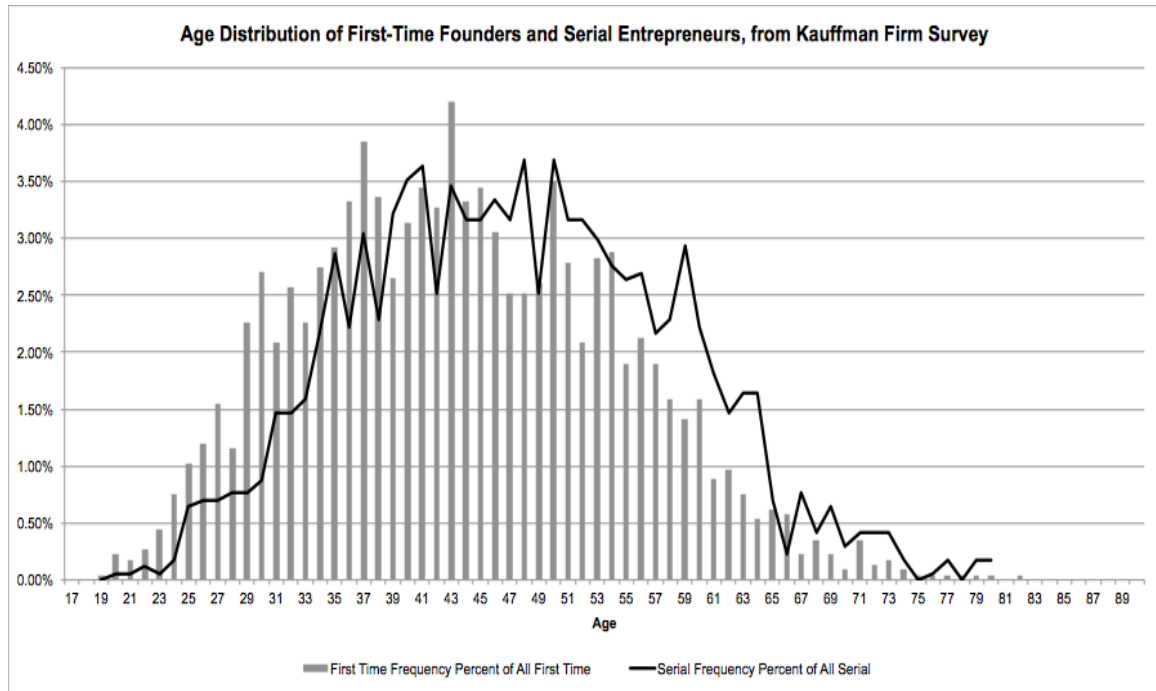
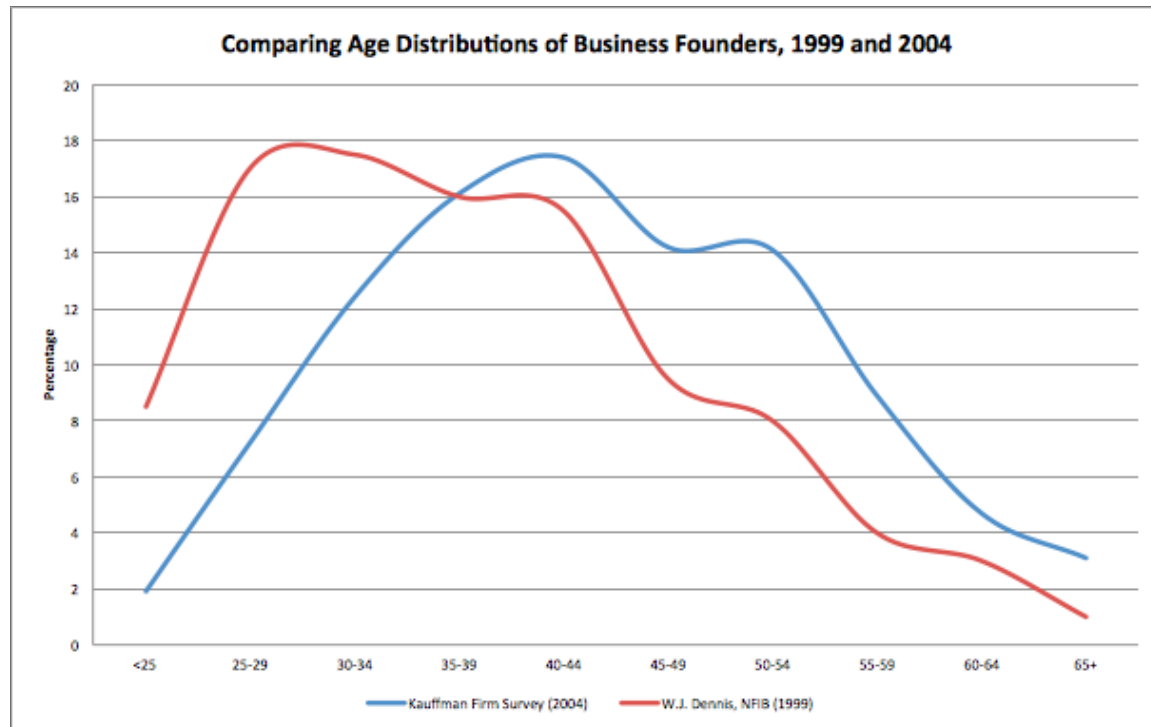


Figure 3. Source: Kauffman Firm Survey.

Interestingly, and keeping in mind that the samples are not necessarily comparable, the age distribution of KFS founders is older than that of companies described in a 1999 study.

<sup>14</sup> The relative shares among KFS founders were as follows:

- <24 = 1.5%
- 25-34 = 17.5%
- 35-44 = 33.8
- 45-54 = 28.9
- 55+ = 18.3



**Figure 4.** Source: Kauffman Firm Survey and Ron Botham and Andrew Graves, “The grey economy: How third age entrepreneurs are contributing to growth,” Nesta, August 2009.

The Anatomy of an Entrepreneur studies found the average and median age of entrepreneurs to be 40.<sup>15</sup> In 2005, the Panel Study of Entrepreneurial Dynamics (PSED) looked at “nascent” entrepreneurs—individuals who are interested and are taking steps, but have not yet formally started a business. The peak age group in that sample was 25-34, although there was substantial representation in the 18-24 and 35-44 groups. Because these PSED data capture nascent entrepreneurs, the slightly younger skew may illustrate somewhat of an age pipeline for entrepreneurs. We know, from several sources, that entrepreneurs spend varying amounts of time either considering starting a business or working on an idea but stopping short of incorporation.<sup>16</sup> It could be the case that entrepreneurs spend a good deal of time building up human capital while consistently weighing the opportunity cost of entrepreneurship.

Across the entire age distribution, business formation and age follow an inverted U “with the probability of setting up a business initially increasing with age, before declining after the age of 50. However, that probability remains relatively high until age 60, after which the decline is rapid.”<sup>17</sup> This persistence across age, followed by a rather steep fall-off after age 55, is also confirmed by the KFS data. Additionally, several studies find that entrepreneurial activity over age 50 is concentrated in the 51-55 age group, slightly lower in the 56-60 range, followed by a rather steep drop.

<sup>15</sup> See <http://www.kauffman.org/research-and-policy/the-anatomy-of-an-entrepreneur.aspx>.

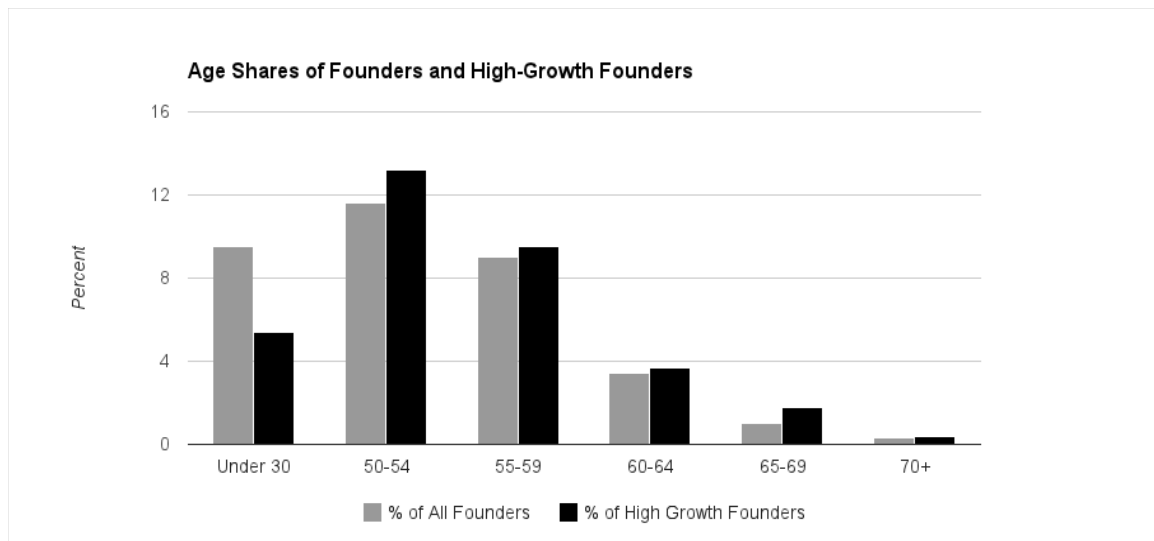
<sup>16</sup> LegalZoom and Kauffman Foundation, *Startup Environment Index*, February 2013, at: <http://www.kauffman.org/newsroom/new-kauffman-foundation-legalzoom-survey-captures-rare-picture-of-americas-startups.aspx>.

<sup>17</sup> Ron Botham and Andrew Graves, “The grey economy: How third age entrepreneurs are contributing to growth,” Nesta, August 2009.



What about sector-specific ages? In particular, many people believe that, while the general age distribution of entrepreneurs may be rather wide with peaks in the thirties and forties, it must be younger for innovative companies. This is important especially for high-tech, since those are the types of businesses that will presumably have the greatest impact in terms of innovation and job creation.<sup>18</sup> Here, the evidence is more mixed.

In a sample of technology and engineering companies founded between 1996 and 2005, the age distribution followed the foregoing findings, with 26% of founders in the 25-34 age group, 45% in the 35-44 age group, and 18% in the 45-54 age group.<sup>19</sup> In the United Kingdom, the research organization Nesta conducted a large-scale study of low-growth and high-growth companies and found substantial shares of “third age” entrepreneurs among both kinds.<sup>20</sup>



**Figure 5.** Because the 30-49 category comprises the largest share, at 65%, we excluded it so that the smaller age groups could be better compared. Source: Ron Botham and Andrew Graves, “The grey economy: How third age entrepreneurs are contributing to growth,” Nesta, August 2009.

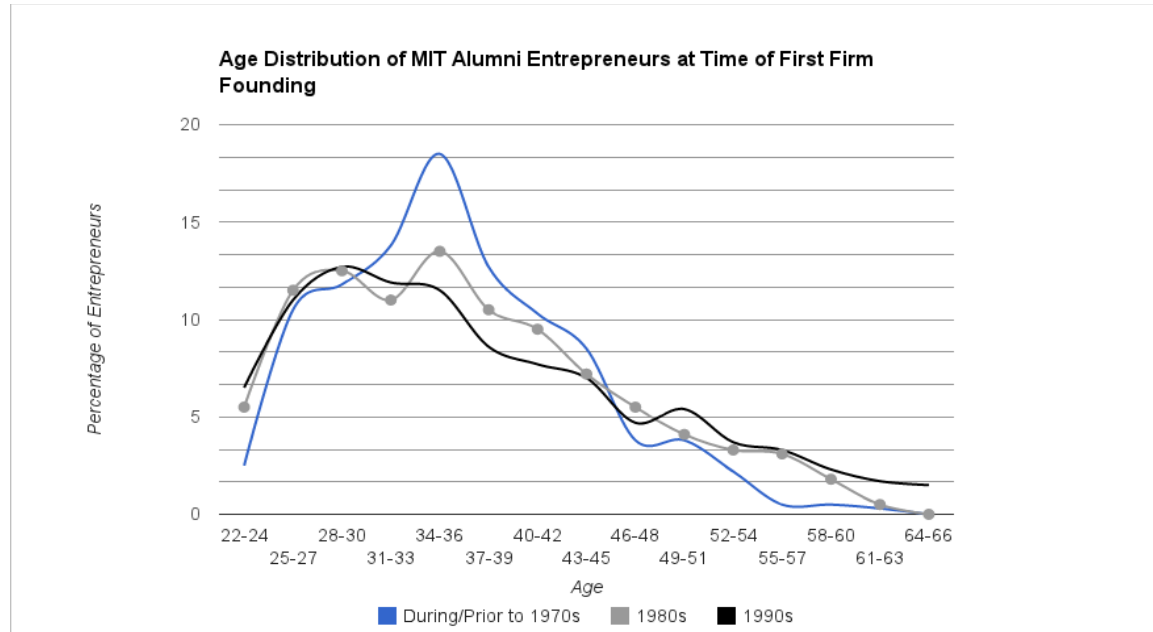
By contrast, a study of entrepreneurs, mostly in technology businesses, who attended MIT found a steady change over time in the age of founders.

<sup>18</sup> Bill Aulet and Fiona Murray, “Job Growth Malarkey: Avoid the Mermaid Strategy,” *Xconomy*, October 22, 2012, at:

<http://www.xconomy.com/boston/2012/10/22/job-growth-malarkey-avoid-the-mermaid-strategy/>.

<sup>19</sup> Vivek Wadhwa, et al, “Education and Tech Entrepreneurship,” Kauffman Foundation, May 2008, at: [http://www.kauffman.org/uploadedfiles/Education\\_Tech\\_Ent\\_061108.pdf](http://www.kauffman.org/uploadedfiles/Education_Tech_Ent_061108.pdf).

<sup>20</sup> Ron Botham and Andrew Graves, “The grey economy: How third age entrepreneurs are contributing to growth,” Nesta, August 2009. This sample includes management buyouts, which were predominantly led by older individuals, and which come into existence at higher levels of employment than brand-new companies, and so tend to show up as high-growth companies in the sample.



**Figure 6.** Source: Edward B. Roberts and Charles Eesley, “Entrepreneurial Impact: The Role of MIT,” Massachusetts Institute of Technology and Kauffman Foundation, February 2009, at: [http://www.kauffman.org/uploadedfiles/mit\\_impact\\_full\\_report.pdf](http://www.kauffman.org/uploadedfiles/mit_impact_full_report.pdf).

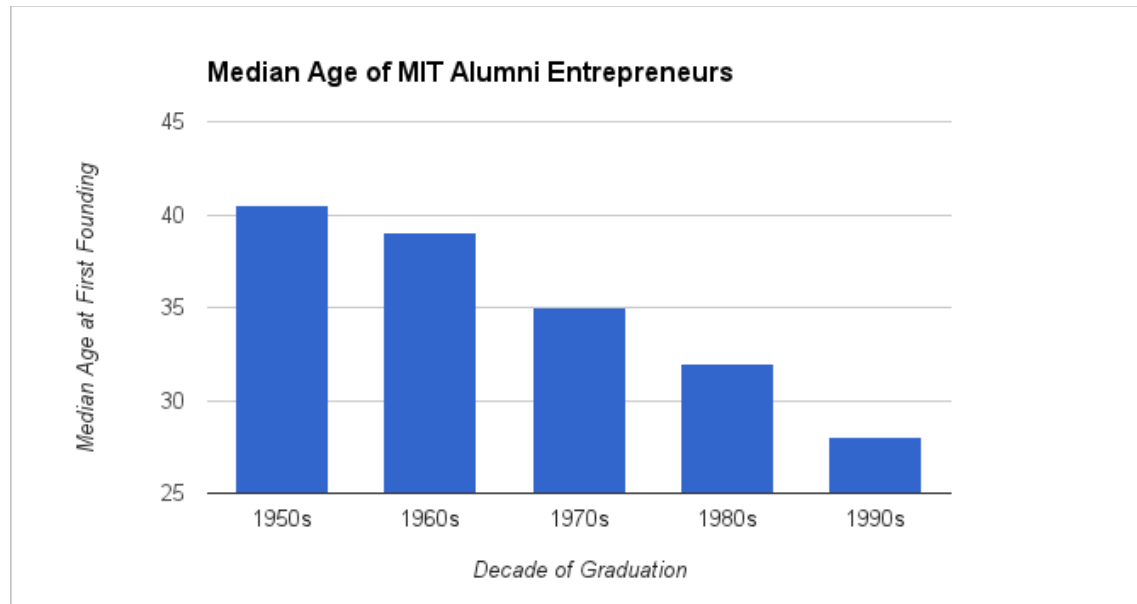
We can see three developments in this chart. For ages 22 to 30, there was a larger share in the 1990s than in earlier decades. Second, there was a higher middle bulge (ages 31 to 45) in the 1980s and during and prior to the 1970s. Finally, there is a fatter age tail for firms founded in the 1990s, especially over age 48. MIT alumni entrepreneurs became simultaneously younger and older. (Nb: this chart shows only age at *first-time* founding.)<sup>21</sup> Regarding specific types of companies, the authors found: “the majority of software founders over all the decades of our study are age thirty or younger and the majority of non-software industry founders are below age thirty-five the year they found their first firms.”<sup>22</sup>

Additionally, “the ages of first-time MIT alumni entrepreneurs have been getting younger each decade.”<sup>23</sup>

<sup>21</sup> Edward B. Roberts and Charles Eesley, “Entrepreneurial Impact: The Role of MIT,” Massachusetts Institute of Technology and Kauffman Foundation, February 2009, at: [http://www.kauffman.org/uploadedfiles/mit\\_impact\\_full\\_report.pdf](http://www.kauffman.org/uploadedfiles/mit_impact_full_report.pdf). This chart, in contrast to the next one from MIT data, is categorized by the decade in which the firm was founded, not the graduation decade of the entrepreneur.

<sup>22</sup> Edward B. Roberts and Charles Eesley, “Entrepreneurial Impact: The Role of MIT,” Massachusetts Institute of Technology and Kauffman Foundation, February 2009, at: [http://www.kauffman.org/uploadedfiles/mit\\_impact\\_full\\_report.pdf](http://www.kauffman.org/uploadedfiles/mit_impact_full_report.pdf).

<sup>23</sup> Edward B. Roberts and Charles Eesley, “Entrepreneurial Impact: The Role of MIT,” Massachusetts Institute of Technology and Kauffman Foundation, February 2009, at: [http://www.kauffman.org/uploadedfiles/mit\\_impact\\_full\\_report.pdf](http://www.kauffman.org/uploadedfiles/mit_impact_full_report.pdf).



**Figure 7.** Edward B. Roberts and Charles Eesley, “Entrepreneurial Impact: The Role of MIT,” Massachusetts Institute of Technology and Kauffman Foundation, February 2009, at: [http://www.kauffman.org/uploadedfiles/mit\\_impact\\_full\\_report.pdf](http://www.kauffman.org/uploadedfiles/mit_impact_full_report.pdf).

Other studies of high-technology industries have found a decided young-age bias among founders.<sup>24</sup> And Nesta found that, in terms of performance, “businesses set up by older founders employ marginally fewer people and have an average [sales] turnover some 30 percent lower than businesses set up by younger entrepreneurs.”<sup>25</sup>

In some sense, these age distributions of entrepreneurs are not entirely surprising, as they generally follow the age distribution of the overall population. In terms of relative shares, the biggest age group bulge in the United States in 2000 and 2010 was the 25 to 44 age group.<sup>26</sup> The notion and apparent empirical existence of a “peak age” for entrepreneurship also helps tie entrepreneurship trends to demographics. The United States has since 1980 enjoyed a growing labor force, a stable working-age population, steady volumes of business creation, and falling rates of business creation. A population with large and steady numbers of individuals in their thirties and forties would thus be expected to churn out steady numbers of new businesses. Simultaneously, as those age bulges moved through the population, we might not be surprised by a falling per capita rate of new business creation.

<sup>24</sup> Ron Botham and Andrew Graves, “The grey economy: How third age entrepreneurs are contributing to growth,” Nesta, August 2009. “Evidence from high tech start-up case studies suggests that, at least in the US, the vast majority of high tech firms are set up by relatively young entrepreneurs.” In the 270 case studies of Ed Roberts, only 10 percent were over age 48. The older founders in those samples “were either serial entrepreneurs ... or they were university lecturers who believed they still had much to offer.” See also Edward B. Roberts, *Entrepreneurs in High Technology* (Oxford, 1991).

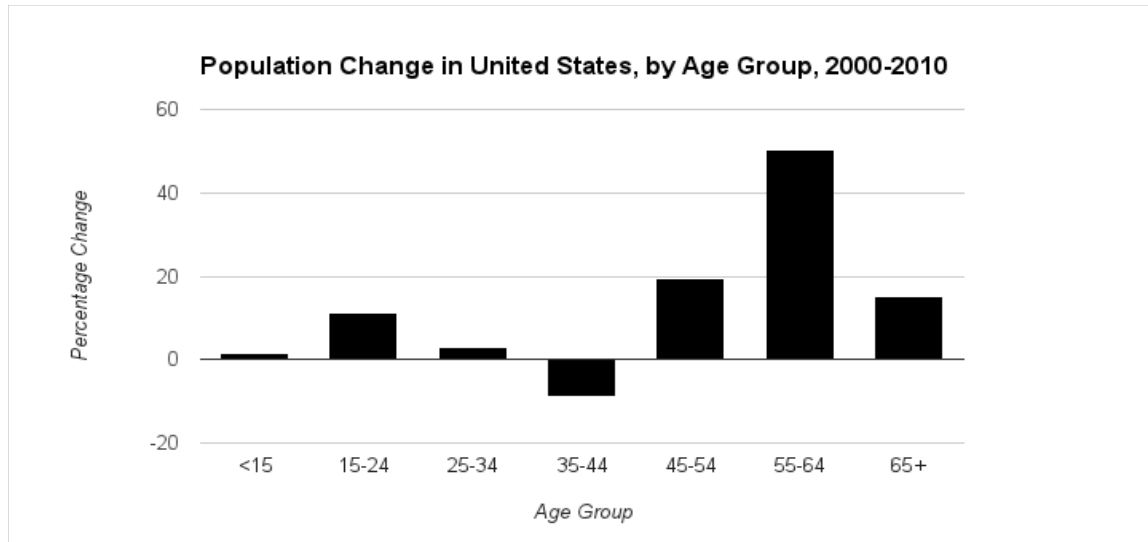
<sup>25</sup> Ron Botham and Andrew Graves, “The grey economy: How third age entrepreneurs are contributing to growth,” Nesta, August 2009.

<sup>26</sup> Lindsay M. Howden and Julie A. Meyer, “Age and Sex Composition: 2010,” 2010 Census Briefs, U.S. Census Bureau, May 2011.

## 2(c). Future demographic trends in US

Now that we have looked at past trends in demographics and entrepreneurship, as well as different findings on the age distribution of entrepreneurs, we can look at some demographic projections for the United States over the next few decades. The general trend, as most everyone knows, is that America is aging. The median age of the population is projected to hit 40.2 in 2020, the highest level since 1960, and the working-age share of the population is set to fall steadily.

Since 2000, in fact, the fastest population growth in the United States has been in the 55-64-year-old age group.



**Figure 8.** Recreated from: William H. Frey, "The Uneven Aging and 'Younging' of America: State and Metropolitan Trends in the 2010 Census," Brookings Institution, June 2011.

The best way to sum up the United States' medium-term demographic future is using shapes: we are moving from a triangular shape (more younger people) to a rectangular shape (more even distribution across the ages).<sup>27</sup> Because of gains made against mortality and in extending life expectancy, there will be more people living longer.<sup>28</sup>

<sup>27</sup> Nicole Maestas and Julie Zissimopoulos, "How Longer Work Lives Ease the Crunch of Population Aging," *Journal of Economic Perspectives*, Winter 2010. "The primary force behind this structural change is fertility behavior."

<sup>28</sup> Methodological disputes have provoked fierce disagreement over the utility of forecasts from the Social Security Administration regarding life expectancy and future age-of-death distributions and their implications for fiscal solvency. Samir Soneji and Gary King, "Statistical Security for Social Security," *Demography*, May 2012.

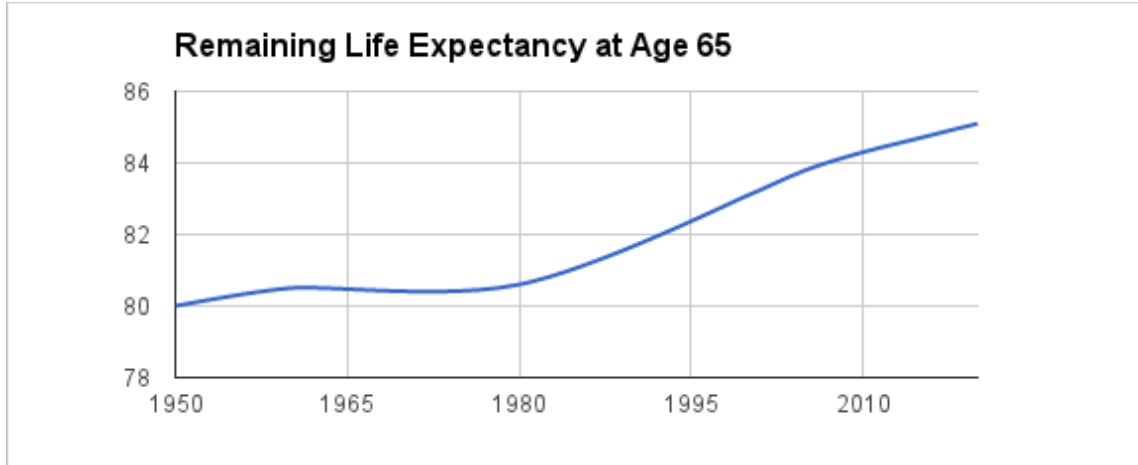


Figure 9. Source: Centers for Disease Control, Vital Statistics.

This general aging trend has dramatic consequences for the labor force, as seen in the chart below.

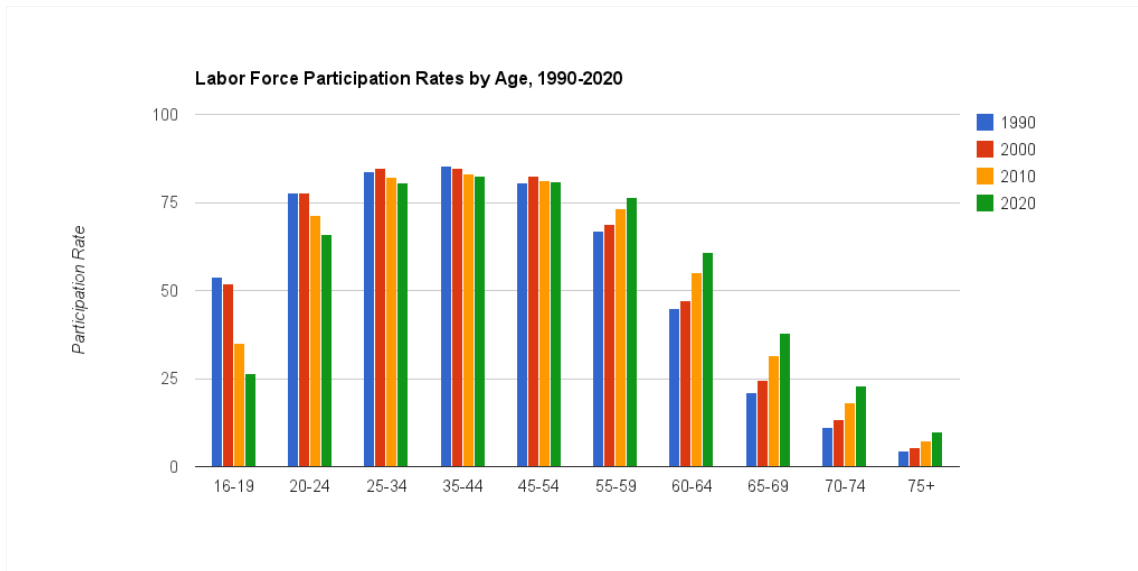


Figure 10. Source: Mitra Toossi, “Labor force projections to 2020: a more slowly growing workforce,” *Monthly Labor Review*, January 2012.

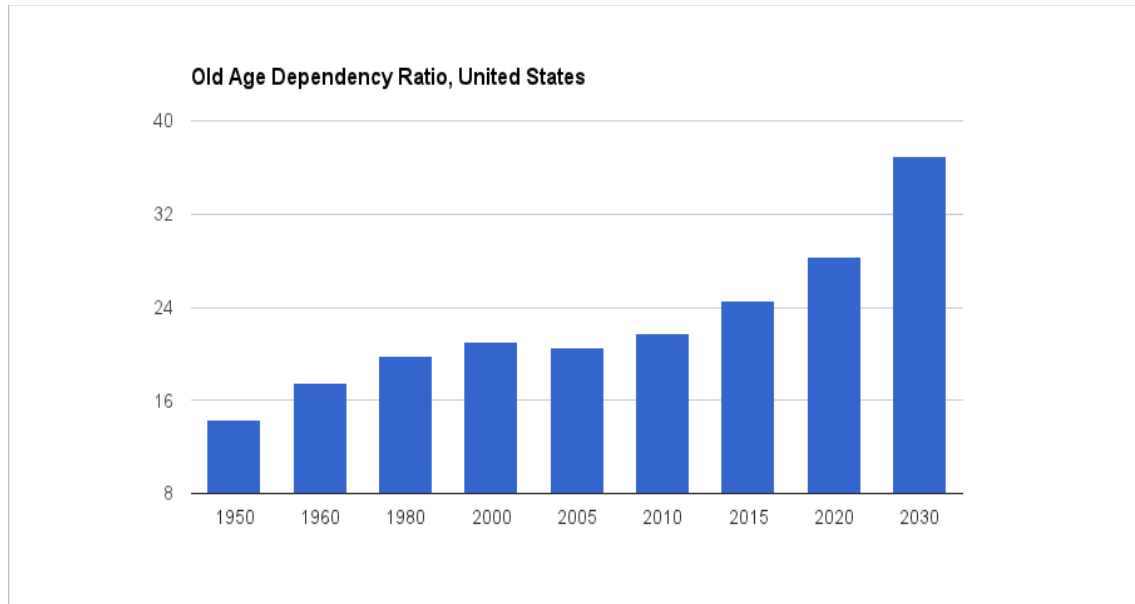
There are two starkly opposed trends here. First, the steady fall in youth labor force participation (ages 16 to 24) from 1990 to 2010, and projected to continue to 2020. Second, the rise in labor force participation among older age groups, especially for individuals over age 60.<sup>29</sup> This trend is pronounced for both men and women. In general, the United States can expect slowing labor force growth the next few decades, to less than half of what it was from 1950 to 2000.<sup>30</sup> It will trail population growth for most of the next few decades.<sup>31</sup>

<sup>29</sup> Nicole Maestas and Julie Zissimopoulos, “How Longer Work Lives Ease the Crunch of Population Aging,” *Journal of Economic Perspectives*, Winter 2010.

<sup>30</sup> Mitra Toossi, “A century of change: the U.S. labor force, 1950-2050,” *Monthly Labor Review*, May 2002.

<sup>31</sup> Nicole Maestas and Julie Zissimopoulos, “How Longer Work Lives Ease the Crunch of

The major consequence of these trends in the labor force and general population will be an increase in the dependency ratio, which gauges the burden of dependent support (both children and the elderly) on the working-age population. The turning point for a rapid escalation in the American old age dependency ratio (looking only at the elderly) looks to be around 2020.<sup>32</sup>



**Figure 11.** Source: United Nations, Population Division, at: [http://esa.un.org/unpd/wpp/unpp/panel\\_population.htm](http://esa.un.org/unpd/wpp/unpp/panel_population.htm).

It should certainly be expected that these demographic trends will affect entrepreneurship.

### 3. Reasons Why Entrepreneurship Will Increase

The consensus of the research literature seems to be that a slow-growing and aging population will suppress entrepreneurship. For older individuals, of which there will be a growing number, the opportunity cost of entrepreneurship is higher, despite also having higher levels of human capital and (presumably) greater wealth with age.<sup>33</sup> As a Nesta report concluded: “Put simply, the financial incentive to become a business founder falls as people approach the end of their working lives.”<sup>34</sup> Older age groups will steadily comprise a growing share of the American population over the next

Population Aging,” *Journal of Economic Perspectives*, Winter 2010.

<sup>32</sup> Gary King & Samir Soneji, “The Future of Death in America,” *Demographic Research*, Vol. 25, July 2011.

<sup>33</sup> “A further reason why entrepreneurs’ labour supply may decline with age is that entrepreneurs’ returns from expending costly effort decreases over time if effort reveals valuable information about innate ability. ... [A]s an entrepreneur approaches retirement, the value of their information about future returns in entrepreneurship declines to zero. This gives entrepreneurs weaker incentive to supply costly effort which reveals information as they age.” Simon Parker, *The Economics of Entrepreneurship* 351 (Cambridge, 2009).

<sup>34</sup> Ron Botham and Andrew Graves, “The grey economy: How third age entrepreneurs are contributing to growth,” Nesta, August 2009.

few decades, and an aging population is expected to dampen aggregate entrepreneurship in the United States.<sup>35</sup>

For several reasons, in the face of population aging, it is conceivable that the United States could be entering a period of entrepreneurial rebirth. There are basically three potential sources of entrepreneurship for individuals over age 55 (after which, as we have seen, the probability of business creation falls rather steeply): first, continued business ownership from younger ages; second, serial entrepreneurship, the formation of a new company, but not for the first time; and third, new entry—individuals who become first-time entrepreneurs after age 55.

### 3(a). Older Entrepreneurs

Research has established that older (“third age”) entrepreneurs tend not to start companies or become self-employed out of retirement or unemployment; they are much more likely to do so if moving from a job. Rising labor force participation among older Americans could conceivably mitigate the effect of overall population aging if many of them become entrepreneurs. But, older workers are still less likely than younger cohorts to become first-time entrepreneurs. It is somewhat easy, conceptually, to think of reasons why an aging population might bring higher levels of entrepreneurship:

The most obvious potential advantage of older founders is their greater experience. ... Substantially more have previous entrepreneurial experience. ... A second advantage of third age founders is that they have fewer concerns about setting up in business ... older founders were less likely to worry about risks, experience or family life than younger founders. ... A third advantage is that rather more third age founders have an alternative source of income.<sup>36</sup>

Individuals are not only living longer—and will continue to live longer—we are living *healthier* longer. A 65-year-old today can expect to live two more decades, as shown in a previous chart. It is possible that this will shift the curve of entrepreneurship, as it has been elongating the labor force distribution over the past two decades.

As noted, self-employment rates rise sharply with age—an older population, and an older population that remains in the labor force longer, should produce higher overall rates of self-employment in the United States.<sup>37</sup> This observation must also be tempered because, while economists like to use self-employment as a statistical proxy for entrepreneurship, it is not necessarily an economic proxy. There is also some evidence that companies started by older entrepreneurs do not fare as well in terms of employment growth.<sup>38</sup> Thus, while an older population may bring more

<sup>35</sup> “Individuals’ age is negatively related to entrepreneurial intention, having thus younger individuals showing higher intention.” Giuseppe Criaco, “The Role of Age as a Determinant of Entrepreneurial Intention: Direct and Indirect Effects,” Autonomous University of Barcelona, September 2012.

<sup>36</sup> Ron Botham and Andrew Graves, “The grey economy: How third age entrepreneurs are contributing to growth,” Nesta, August 2009.

<sup>37</sup> A “substantial minority (approximately 10 percent) of individuals with wage-and-salary career jobs move into self-employment later in life.” Kevin E. Cahill et al, “Older workers and short-term jobs: patterns and determinants,” *Monthly Labor Review*, May 2012.

<sup>38</sup> “Assuming that, with the ageing workforce, the share of older people starting up their own

self-employment, that need not boost job creation and economic growth.

### 3(b). Serial Entrepreneurs

Serial entrepreneurship may be a promising source of older-age business establishment that contributes to job creation and innovation. Not surprisingly, the incidence of serial entrepreneurship rises with age: “compared with 21 percent of those under 50, 55 percent of the over 50s had previous entrepreneurial experience.”<sup>39</sup> Of the high-growth founders examined by Nesta in its “Third Age” entrepreneur report, two-thirds had previously started a company: “relatively few of the more successful entrepreneurs are new to enterprise later in life.”<sup>40</sup> In a survey of over 1,400 business owners who incorporated their businesses through LegalZoom in 2012, two-thirds of respondents over age 60 had previously started a company.<sup>41</sup> Perhaps we should expect that many of the thirty- and forty-something baby boom entrepreneurs of the past two decades will become serial entrepreneurs (if they aren’t already) over the next two decades, thus maintaining a steady supply of entrepreneurship.<sup>42</sup>

### 3(c). Geography

A shifting age distribution will not take place in a vacuum. One important but not yet fully understood factor will be geography. The United States is undoubtedly aging, but there is considerable unevenness in aging patterns across the country. Some American states with already-high shares of older age groups have experienced slow growth in that population. Meanwhile, several states have seen rapid growth in the 55-64 age group. Of these, some—such as Utah, Colorado, Washington, and Nevada—are identified with high levels of entrepreneurship.<sup>43</sup> Indeed, the Brookings Institution has noted that “a selective youth movement is also taking place in some parts of the country.” They dub this a “young-ing” of some areas of the United States.<sup>44</sup> We should certainly expect that as different areas of the country diverge demographically, they will further diverge economically and in terms of entrepreneurship. It could be the case that the

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business increases, the findings of our study suggest that an ageing population is expected to negatively affect employment creation by newly started enterprises. Not only does the age of the entrepreneur at start-up indirectly lower the probability to become an employer, it also appears to reduce the number of employees hired three years after start-up.” De Kok, et al, “New Firm Performance: Does the Age of Founders Affect Employment Creation?” EIM Research Report, April 2010.

<sup>39</sup> Ron Botham and Andrew Graves, “The grey economy: How third age entrepreneurs are contributing to growth,” Nesta, August 2009.

<sup>40</sup> Ron Botham and Andrew Graves, “The grey economy: How third age entrepreneurs are contributing to growth,” Nesta, August 2009. “There are relatively few first time older founders who set up a completely new business that achieves high growth status.”

<sup>41</sup> LegalZoom and Kauffman Foundation, *Startup Environment Index*, February 2013, at: <http://www.kauffman.org/newsroom/new-kauffman-foundation-legalzoom-survey-captures-rare-picture-of-americas-startups.aspx>. Of the over-60 business owners, ten percent had started 5 prior companies.

<sup>42</sup> As should be clear by now, we refrain from using terms like “boomer-preneur.”

<sup>43</sup> William Frey, “The 2010 Census: America on the Cusp,” *The Milken Institute Review*, Second Quarter 2012.

<sup>44</sup> Brookings Institution, *State of Metropolitan America*, 2010, at: <http://www.brookings.edu/about/programs/metro/stateofmetroamerica>.

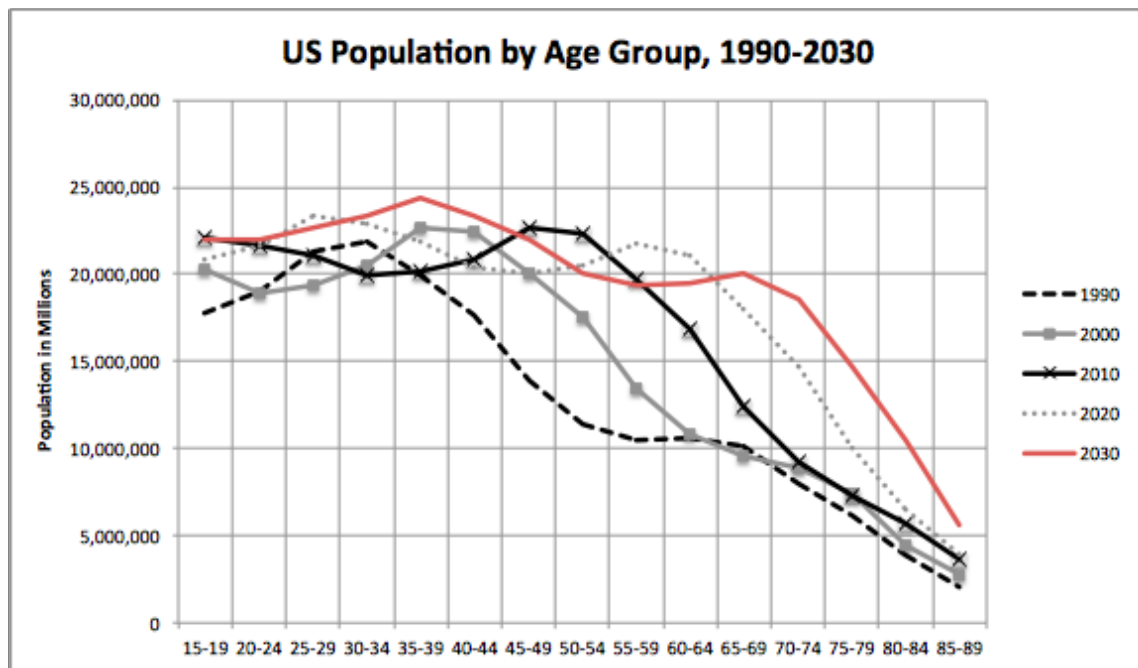


increasing concentration of younger populations generates not only high levels of entrepreneurship but also greater innovation and economic growth.<sup>45</sup>

### 3(d). Relative v. Absolute

The United States is aging in both relative and absolute terms: more individuals of older ages, and older age groups accounting for growing shares of the population. Yet while the relative shares of people in their thirties and forties (the peak ages for entrepreneurship) must therefore fall, the absolute numbers of these age groups will still grow, at least for the foreseeable future. The “baby echo boom,” those born from the early 1980s through the mid-1990s, will reach peak entrepreneurship ages from today through the 2030s.<sup>46</sup> Reprising our imperfect sample from above, the founders of Dropbox, Facebook, and Pinterest are all members of this echo boom generation.

The numbers present this issue quite clearly.



**Figure 12.** Source: Julie Meyer, “Age: 2000,” Census 2000 Brief, U.S. Census Bureau, October 2001; Lindsay M. Howden and Julie A. Meyer, “Age and Sex Composition: 2010,” 2010 Census Briefs, U.S. Census Bureau, May 2011.

The “peak” entrepreneurship ages in this chart actually see the highest absolute populations in 2020 and 2030—in part because of continuing births, despite a low fertility rate, and continued immigration. Somewhat remarkably, the United States in 2010 had lower numbers of people in their early and mid-thirties than in 1990 and 2000. Despite the older overall skew of the population over the next two decades—seen in the steady rightward expansion movement of the distribution lines—will entrepreneurship rates be sustained because of the larger population of individuals in their thirties and forties? Together with serial entrepreneurship among individuals in their fifties and

<sup>45</sup> Santa Fe Institute, “Why New York City is About Average,” at: <http://www.santafe.edu/news/item/city-ranking-bettencourt/>.

<sup>46</sup> Mitra Toossi, “A century of change: the U.S. labor force, 1950-2050,” *Monthly Labor Review*, May 2002.

sixties, this is certainly possible. While the lines denoting the number of people in their sixties and seventies will steady move outward, the lines running through the thirties and forties will actually move *upward*. This distribution of absolute rather than relative population perhaps provides a very good reason for thinking that entrepreneurship levels will not fall dramatically in the face of an aging population in the next twenty years.

### 3(e). Entrepreneurial Opportunities

Finally, demographic changes will open many new entrepreneurial opportunities—the most obvious is in health and medicine, but this also includes education (continuing, and new models for different career stages), construction (new living arrangements), finance, and transportation. Not to mention the greater human capital that will be available to the American economy:

On the one hand, the rapid aging of the population and the continued extension of life may lead to catastrophic economic and health conditions in the United States ... On the other hand, the extension of life increases one of the most valued of all commodities: human capital. Longer lives will surely create new and expanding markets in health care and leisure, and they also will produce a more experienced workforce.<sup>47</sup>

One anticipated development over the next few decades will be a closing of the intergenerational education gap. In 1990, the schooling-years gap between a 25-year-old and 65-year-old was 2.6 years, in favor of the 25-year-old. This gap has been closing and by 2030 is expected to be only 0.5 years.<sup>48</sup> This is not an entirely sanguine development, of course, as it indicates slowing educational attainment by younger generations, but it highlights the human capital potential of older age groups, including entrepreneurship.

Taking advantage of these opportunities is easier said than done, and will require action by policymakers and private actors.

## 4. Reasons Why Entrepreneurship Will Fall

Despite the optimism expressed above, there are, in addition to overall population aging and slower growth, reasons to think an alternative future for American entrepreneurship is one of steady decline.

### 4(a). Falling Fertility

The optimistic chart above, showing rising numbers of individuals in the peak entrepreneurship ages, does not include another demographic trend that confronts the United States: falling fertility rates. The general fertility rate, after reaching a high in 2007, has since fallen to the lowest since 1920, altering the Census Bureau's population projections.<sup>49</sup> The effects of this decline will be felt in 20 to 30 years, precisely when the expected demographic boon from the baby echo boom will be moving into older age groups. The combination, notable after 2030, of an aging population and shrinking

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<sup>47</sup> Olshansky et al, "Aging in America in the Twenty-first Century: Demographic Forecasts from the MacArthur Foundation Research Network on an Aging Society," *The Milbank Quarterly*, vol. 87, No. 4, 2009.

<sup>48</sup> Nicole Maestas and Julie Zissimopoulos, "How Longer Work Lives Ease the Crunch of Population Aging," *Journal of Economic Perspectives*, Winter 2010.

<sup>49</sup> "Double Bind: America's Demographic Squeeze," *The Economist*, December 15, 2012.

population, will have considerable economic effect and, if we expect entrepreneurship to either be stable or falling for the next few decades, then business creation will likely decline at that point.

#### 4(b). Future of Immigration

In general, immigrants have a higher entrepreneurial propensity than native-born Americans.<sup>50</sup> Immigrants are also seen as a way to mitigate America's demographic challenges, particularly the fiscal burdens that an aging population is likely to bring. If immigrants continue to come to the United States at a steady pace and also maintain their historical rate of new business creation, then perhaps entrepreneurship levels can be sustained. There are, however, reasons to think that immigration will not be our demographic salvation.

First, the pace has been slowing in recent years, in part because of the recession. This may rebound: immigrants arriving since 2005 and their descendants are projected to account for 80 percent of U.S. population growth to 2050.<sup>51</sup> Second, immigrant women in the United States have experienced falling fertility rates, something that is also expected to continue, although they remain higher than native-born women.<sup>52</sup> Finally, changing circumstances in countries of origin will likely alter the calculus for potential immigrants. In particular, Latin American countries have aging populations, too, and as labor markets shift in response, staying home may be a wiser and more lucrative choice.

#### 4(c). Intergenerational Inequality

Serious headwinds confront the echo boomers. The most severe is a widening gap in wealth between older and younger households in the past thirty years, which was exacerbated by the financial crisis and Great Recession. Since 1984, the median net worth of households headed by individuals younger than 44 has plummeted, while the net worth of older households has grown. Today's younger households are poorer relative to both their 1984 counterparts and older households today.<sup>53</sup> This divergence is mostly driven by housing, with home equity falling as a share of household wealth for younger households and increasing for older households.

Housing is highly significant for entrepreneurship because home equity has long been an important source of financing for new companies. Older households, those headed by individuals over age 60, have over the past three to four decades expanded the labor force, bought houses, accumulated home equity, started companies—albeit at a slowing pace—using their home equity to finance those companies. Today's younger households face a very different situation: “For households headed by adults younger than 35, an owned home accounted for 31% of mean net worth in 2009,

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<sup>50</sup> See Kauffman Index of Entrepreneurial Activity, <http://www.kauffman.org/research-and-policy/kauffman-index-of-entrepreneurial-activity.aspx>; Vivek Wadhwa, *The Immigrant Exodus* (Wharton Digital, 2012); Robert W. Fairlie, “Immigrant Entrepreneurs and Small Business Owners, and Their Access to Capital,” Small Business Administration, Office of Advocacy, May 2012, at: <http://www.sba.gov/sites/default/files/rs396tot.pdf>.

<sup>51</sup> Gretchen Livingston and D’Vera Cohn, “U.S. Birth Rate Falls to a Record Low; Decline is Greatest Among Immigrants,” Pew Research Center, November 29, 2012.

<sup>52</sup> Gretchen Livingston and D’Vera Cohn, “U.S. Birth Rate Falls to a Record Low; Decline is Greatest Among Immigrants,” Pew Research Center, November 29, 2012.

<sup>53</sup> Paul Taylor et al, “The Rising Age Gap in Economic Well-being: The Old Prosper Relative to the Young,” Pew Research Center on Social & Demographic Trends, November 2011.

down from 46% in 1984. The share of mean total net worth accounted for by home equity among these young adults had been 52% in 2005, before the national fall in housing prices.<sup>54</sup> Barring a huge run-up in home prices (hopefully unlikely), this situation will not change rapidly. As David Robinson of Duke University observed in a recent Brookings Institution presentation: “the housing crisis is essentially an entrepreneurship crisis.”<sup>55</sup>

Add to this the falling labor force participation rates of Americans ages 16-24—those individuals who will be forming households over the next ten to twenty years—and the situation looks gloomier. Lower labor force participation rates impact the accumulation of savings and home equity that could be used to fund entrepreneurship. Lower labor force participation rates among the young also reduce the accumulation of human capital, which could have been useful in establishing new businesses.

## 5. So What Can be Done?

Entrepreneurship is not merely a numbers game. Demographic trends do not create, one-for-one, changes in aggregate entrepreneurship. And we do not recommend that the United States pursue a high-entrepreneurship-at-all-costs policy strategy. An innovative company that grows rapidly and creates thousands of jobs has a greater economic effect than a dozen firms that never grow. Simply maintaining a historical level of entrepreneurship will not necessarily bring economic benefits.

Many ideas have been proposed for how to deal with an aging population, from somehow promoting greater fertility, to raising the age of eligibility for Social Security and Medicare. We deal here only with actions aimed at boosting entrepreneurship. While it is obvious that little can (or should) be done to alter demographic paths already set in motion, there are several things that can be done, in both public and private spheres, to ensure that entrepreneurship continues to be a source of economic dynamism.

First, numerous barriers continue to exist to entrepreneurial entry in many sectors and geographic areas of the U.S. economy. An aging population will present numerous problems to be solved and turned into opportunities (after all, entrepreneurs are essentially problem-discoverers and solvers). But we must unleash the ability of entrepreneurs to address them. There is not enough space here to explore these in-depth but several policy recommendations could be helpful. Reducing entry barriers from professional and occupational licensing could promote self-employment and entrepreneurship in many areas of the economy.<sup>56</sup> In some sectors, too, government regulation needs to be made smarter—too often, it becomes a protective barrier for established incumbents and excludes new entrants. Reducing taxes (certain types and the sheer complexity) and

<sup>54</sup> Paul Taylor et al, “The Rising Age Gap in Economic Well-being: The Old Prosper Relative to the Young,” Pew Research Center on Social & Demographic Trends, November 2011.

<sup>55</sup> David Robinson, “The Financing Choices of Young Firms,” Presentation at Brookings Institution, December 2012.

<sup>56</sup> Kauffman Foundation, *A License to Grow* (January 2012), at:

[http://www.kauffman.org/uploadedfiles/a\\_license\\_to\\_grow.pdf](http://www.kauffman.org/uploadedfiles/a_license_to_grow.pdf); Dane Stangler, “Occupational Licensing: How a New Guild Mentality Thwarts Innovation,” Progressive Policy Institute, March 2012, at:

[http://progressivepolicy.org/wp-content/uploads/2012/04/03.2012-Stangler\\_Occupational-Licensing\\_How-A-New-Guild-Mentality-Thwarts-Innovation1.pdf](http://progressivepolicy.org/wp-content/uploads/2012/04/03.2012-Stangler_Occupational-Licensing_How-A-New-Guild-Mentality-Thwarts-Innovation1.pdf).

regulations that fall harder on small businesses than on incumbents will also reduce barriers to entry of entrepreneurs. Geographically, local zoning codes can often be overly cumbersome for new and young businesses.

Second, flexibility must be the watchword of labor markets, both in terms of public policy and private action. Rising labor force participation among older Americans is already changing behavior and attitudes. The ability of individuals of all ages to move between entrepreneurship and wage-and-salary employment must be as smooth as possible.

Third, the United States should explore expansion of legal immigration, in part because immigrants have greater rates of entrepreneurship. Immigrant entrepreneurs have always been major contributors to the American economy in terms of job creation and innovation. Also, greater promotion of immigration for those with needed human capital will stimulate entrepreneurship driven by particular skills. It may be useful to adopt some form of a startup visa or entrepreneur's visa that establishes a simple, common pathway for those individuals seeking to start a business in the United States. Expansion of legal immigration also can be a means of increasing population growth, which can stimulate entrepreneurship through the life-cycle effects described here. Immigration reform should reflect these critical economic concerns.

Fourth, we know that communities and networks are essential resources for entrepreneurs. Interaction with others, either those going through the entrepreneurial process or those who help connect entrepreneurs with resources, is vital. Importantly, these networks often arise organically and spread through informal channels, with the usual result that many entrepreneurial networks can be insular—helpful, but nonetheless insular. Nesta's research on high-growth firms found that 57 percent of companies in their sample had a "mixed-age team," and those mixed-age teams tended to be more successful than companies with either all young or all older founders.<sup>57</sup>

It may thus be wise for various organizations and programs to maintain flexibility in attempting to bridge these networks and connect older and younger entrepreneurs. Many programs, such as Startup Weekend, provide open forums for individuals of all ages and backgrounds to come together and work intensely on entrepreneurial ideas.<sup>58</sup> Entrepreneurship training and education programs could also incorporate such matching into their offerings.<sup>59</sup>

Fifth, it is absolutely critical that entrepreneurship be introduced at young ages and that awareness is built about entrepreneurship as a viable career path. Not everyone will be an entrepreneur, of

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<sup>57</sup> Ron Botham and Andrew Graves, "The grey economy: How third age entrepreneurs are contributing to growth," Nesta, August 2009.

<sup>58</sup> The age distribution of a population also interacts with the perception of the desirability and feasibility of becoming an entrepreneur. Giuseppe Criaco, "The Role of Age as a Determinant of Entrepreneurial Intention: Direct and Indirect Effects," Autonomous University of Barcelona, September 2012.

<sup>59</sup> The effect of aging and productivity also comes in play here. Research has found that the productivity of specific firms and establishments *increases* with the share of workers of older ages until the 50-55 age group, with no meaningful decline in productivity until past age 60. Not surprisingly, firms differ considerably. Christian Gobel and Thomas Zwick, "Age and Productivity--Evidence from Linked Employer-Employee Data," ZEW Discussion Paper No. 09-020, April 2009.

course, but fostering interest and awareness at young ages will help ensure that future generations are alive to the entrepreneurial opportunities presented by an aging population. This doesn't mean that K-12 education should be supplemented by courses on writing business plans. But the core activity of creating a startup and moving to establish a firm—discovering and solving a problem with limited resources—is an important part of education and preparing people to participate in the economy.

Finally, it seems reasonably clear that intergenerational inequality, particularly in the housing market, could weigh on potential entrepreneurs, particularly if the entrepreneurial decision is, as in the life-cycle theory, intimately wrapped up with personal characteristics, including financial characteristics. Without a healthy housing market and home ownership that is not significantly delayed in the life-cycle of many individuals, it is unclear if home equity will again be a large and reliable source of new business finance. This suggests the need for the financial sector to explore new mechanisms for funding entrepreneurs.

While there will likely be little appetite among politicians and the public at large for anything involving financial innovation in the near future, new financial innovations are precisely what is needed. The sources of finance for new businesses that have predominated over the past few decades include home equity, credit cards, bank loans, and, for a sliver of companies, venture capital and angel investors. The venture capital industry is going through rather far-reaching changes, and bank loans to small businesses are only slowly recovering since the recession. We cannot know how available these various sources will be to potential entrepreneurs in the future.

But, we can attempt to open up new sources.<sup>60</sup> A promising alternative is crowdfunding and federal regulators need to take care not to prematurely quash this new source. An older population of potential entrepreneurs will also need other sources of finance, and just as the United States as a country must reduce barriers to entrepreneurial entry overall, we need to swallow our trepidation about financial innovation in general and welcome new entry in this sector as well.

We must keep in mind that what we know about the past empirical relationship between demographics and entrepreneurship is limited. The best available data, the Business Dynamics Statistics series from the Census Bureau, go back to 1977; while we can say that aggregate entrepreneurship has been mostly stable since then (narrow fluctuations, with a falling overall rate), we do not know how that compares to prior periods. The American working-age population—as a share of total population—happened to enter a period of remarkable stability at the same time as the date the business formation dataset begins. Was stable entrepreneurship (at least, in the aggregate and at least in these data) partly a function of demographic stability? This was also the period of the Great Moderation—historically unprecedented macroeconomic stability. As the baby boomers reached “peak age” for entrepreneurship, from the mid-1970s through the 2000s, did the United States experience a historically high period of entrepreneurship? Why did the rate fall steadily during the reaping of this demographic dividend?

## 6. Conclusion

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<sup>60</sup> Kauffman Foundation, *State of Entrepreneurship: Financing Entrepreneurial Growth*, February 2013, at:

[http://www.kauffman.org/uploadedFiles/DownloadableResources/SOE%20Report\\_2013pdf.pdf](http://www.kauffman.org/uploadedFiles/DownloadableResources/SOE%20Report_2013pdf.pdf).

Overall, there are reasons to be fearful about the future of American entrepreneurship. The phrases that will mark our demographic future—aging population, rising dependency ratio—don't exactly call to mind images of swashbuckling entrepreneurs. The United States certainly faces challenges, though ours are not yet as worrying as those in other countries, particularly Europe.

Yet demography is not destiny and the economic responses to demographic change will need to be nuanced and creative. As detailed in this essay, there are certainly reasons to be hopeful that entrepreneurs will find ways to take advantage of demographic trends despite the problems that result from slowing population growth. Whether innovative entrepreneurs can respond to these challenges depends on the height of barriers to entrepreneurship and the flexibility of educational, financial, and market institutions.

## Appendix: Lifecycle Theory and Entrepreneurship

The lifecycle theory of entrepreneurship suggests that potential entrepreneurs view establishing a firm as a form of asset accumulation.<sup>61</sup> This means that the decision to become an entrepreneur is part of the life-cycle consumption-saving decisions of individuals, including human capital investment, occupational choice, and asset accumulation. Broadly speaking, the lifecycle framework suggests that individuals accumulate assets as a means of saving for consumption during the period of retirement.<sup>62</sup> Because an individual's age is a critical aspect of consumption-saving decisions, the lifecycle framework implies that demographic trends such as population growth can affect aggregate asset accumulation. Applying these ideas, the life-cycle theory of entrepreneurship then suggests that demographic trends affect aggregate rates of entrepreneurship because the age distribution of the population affects individual entrepreneurship decisions.

The individual entrepreneur makes a decision whether or not to establish a firm.<sup>63</sup> Because entrepreneurs usually face financing constraints, their business decisions in creating a startup and in converting the startup to a firm are typically intertwined with their personal consumption-saving decisions.<sup>64</sup> In the early stages, the entrepreneur and the company are unified. As a result, the potential entrepreneur does not separate his or her own personal characteristics and the prospects for the business.

The entrepreneurial decision is in part an occupational choice. The occupational alternatives to entrepreneurship include other forms of self-employment, employment by others, education, and leisure.<sup>65</sup> As with any other occupational choice, the decision to start a company carries an

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<sup>61</sup> Spulber (2013), *supra* note 2.

<sup>62</sup> See Modigliani, F., 1976, "Life-Cycle, Individual Thrift, and the Wealth of Nations," *American Economic Review*, 76, 3, pp. 297-313; Modigliani, F., 1998, "The Role of Intergenerational Transfers and Life-Cycle Saving in the Accumulation of Wealth," *Journal of Economic Perspectives*, 2, 2, pp. 15-20; and Modigliani, F., and R. H. Brumberg, 1954, "Utility Analysis and the Consumption Function: An Interpretation of Cross-Section Data," in K. K. Kurihara, ed., *Post-Keynesian Economics*, New Brunswick, NJ: Rutgers University Press, pp. 388-436.

<sup>63</sup> For a formal economic definition of the firm and the relationship of the theory of the firm to the entrepreneurship decision, see Daniel F. Spulber, *The Theory of the Firm* (Cambridge, 2009).

<sup>64</sup> Daniel F. Spulber, *The Innovative Entrepreneur* (2013, forthcoming). The "foundational shift" of financial separation occurs when the entrepreneur obtains sufficient resources that allow the conversion of the startup into a profit-maximizing firm. See also Daniel F. Spulber, *The Theory of the Firm* (Cambridge, 2009).

<sup>65</sup> Many studies of entrepreneurship use self-employment as a proxy measure, including studies that look at the relationship between age and entrepreneurship. As Simon Parker has pointed out, there is no generally accepted way to measure or define entrepreneurship in the research literature: "We have seen that there is no common definition of entrepreneurship... Although this might seem to be unsatisfactory or even problematic at first blush, Baumol (1993b) argues that ... [it] scarcely matters in practice. Many of the definitions are 'complementary rather than competitive... claims that the field cannot progress without resolving this issue in a single agreed definition seems to be a counsel of despair. It is unlikely if not impossible that any single measure of entrepreneurship could or even should ever be regarded as portraying all the nuances of entrepreneurship. One could



opportunity cost. This opportunity cost has been shown to shape entrepreneurship trends in logical but surprising ways.<sup>66</sup> As a result, the entrepreneurial decision depends on the individual's consumption preferences, human capital, wealth, and income. The occupational choice decision is further shaped by external factors: prevailing job market conditions such as wages and unemployment, as well as the demand for different skills.<sup>67</sup>

In contrast to this straightforward approach, many analyses of entrepreneurship treat it as a phenomenon to be explained away, rather than understood as a decision. Some critics suggest that entrepreneurs behave “irrationally” and are subject to “unrealistic optimism.”<sup>68</sup> Researchers who compare the financial gains made from entrepreneurship with those available in wage-and-salary employment default to these descriptions when they find, as they frequently do, that entrepreneurship does not necessarily pay. Such findings “pose something of a puzzle, since they suggest that entrepreneurs do not respond robustly to pecuniary incentives.”<sup>69</sup>

Consider that, on average, there are just shy of half a million new employer firms started each year; let's assume an average founding team size of two, for a total of about one million people. Further, there are roughly 1.5 million young businesses—those one to five years old. In 2010, those early stage companies employed 11 million people. Add to this the millions of self-employed, the millions starting non-employer companies that may or may not become employer firms, and the millions of business owners of older but small businesses that started them at younger ages. This is a fairly large population people on which to hang the label of irrational, let alone the assumption of weak or nonexistent pecuniary motivations. What is more likely is that this large set of economic actors is primarily engaged in economic optimization.

But the occupational choice decision of potential entrepreneurs involves more than weighing of various employment opportunities—it also involves considering the potential returns to assets such as human capital, financial assets, and real estate. Because the entrepreneur's identity is one and the same with the business in the “startup” phase, the entrepreneur's journey and business decisions are interdependent with individual consumption and savings decisions.<sup>70</sup>

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certainly argue that the existence of more than one practical entrepreneurship measure is a positive advantage rather than a drawback... Different measures contain different information, which make them complements rather than substitutes... it is more likely in practice, however, that researchers will either take an agnostic approach and use whatever measure is available, flying as it were under a flag of convenience; or that they will remain wedded to their own strict disciplinary paradigms and continue doggedly to use only one type of measure.” Simon Parker, *The Economics of Entrepreneurship* (Cambridge, 2009).

<sup>66</sup> Robert W. Fairlie and Aaron Chatterji, “High-Technology Entrepreneurship in Silicon Valley: Opportunities and Opportunity Costs,” NET Institute Working Paper No. 08-04, September 2008, at: [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1285712](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1285712).

<sup>67</sup> Robert W. Fairlie, “Entrepreneurship, Economic Conditions, and the Great Recession,” Kauffman-RAND Institute for Entrepreneurship Public Policy, May 2011, at: <http://economics.ucsc.edu/research/downloads/recessionentrep-v14.pdf>.

<sup>68</sup> Simon Parker, *The Economics of Entrepreneurship* (Cambridge, 2009).

<sup>69</sup> Simon Parker, *The Economics of Entrepreneurship* (Cambridge, 2009).

<sup>70</sup> See Daniel F. Spulber, *The Theory of the Firm* (Cambridge, 2009) and Daniel F. Spulber, *The Innovative Entrepreneur* (2013, forthcoming).

Thus, entrepreneurship—the creation of startups with the intent to establish firms—is a means of creating a financial asset. The entrepreneur initiates a “startup” as a “search vehicle” looking for a sustainable and repeatable business model.<sup>71</sup> Second, the entrepreneur converts the startup to a firm, which creates a financial asset that generates a basis for securing additional external sources of finance. The entrepreneur obtains assets through ownership of a share of the newly established firm and through divesting shares of the newly established firm.

This implies, logically, that the entrepreneurial decision is made in the context of other lifecycle choices regarding occupation, education, housing, insurance, and savings. The entrepreneur’s personal characteristics affect the startup’s business decisions and development, and those in turn affect the entrepreneur’s consumption and savings decisions.<sup>72</sup>

Empirical support for this rather straightforward notion can be found in the capital structure of the 5,000 firms followed in the Kauffman Firm Survey (KFS).<sup>73</sup> The hierarchy of funding sources for KFS business owners by frequency of use was: owner equity, owner debt, and outsider debt. Here, owner debt includes personal loans for the business, and outsider debt includes credit lines, bank loans, and credit cards (business and personal). By the amount of money used, the hierarchy shifts, with outsider debt the largest category, ahead of owner equity. Home equity falls into both owner debt and outsider debt, thus further blurring the personal/startup lines for financing. Capital structure (a business decision by startup) is shaped by personal characteristics of the entrepreneur.

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Conceptually, the idea of entrepreneurship as asset accumulation suggests a “peak age” for entrepreneurship: individuals acquire education and experience early on and face decisions on whether to enter employment or entrepreneurship as means for creating financial assets. At some point, asset accumulation becomes less of a priority and so we might expect the probability of entrepreneurship to fall as well. We might, in fact, speculate as to two different consequences. One is that there would be more entrepreneurship when there are more young people—asset accumulation implies a young-age bias to entrepreneurship. So does the notion of opportunity cost, which presumably rises with age because as experience and education increase, individuals would experience greater returns to paid employment, also favoring younger entrepreneurs.

At the same time, however, increases in the individual’s experience, education, and wealth could also raise the returns to entrepreneurship, which might favor entrepreneurship at older ages. So, the opportunity cost of the entrepreneurial decision might fall with age if higher levels of human capital and wealth rise with age.<sup>75</sup> It could also be the case, following this logic and prior research findings, that greater entrepreneurial experience, increasing with age, boosts the performance of

<sup>71</sup> Steve Blank and Bob Dorf, *The Startup Owner’s Manual* (K&S Ranch, 2012).

<sup>72</sup> Daniel F. Spulber, *The Innovative Entrepreneur* (2013, forthcoming).

<sup>73</sup> The Kauffman Firm Survey is a longitudinal survey of nearly 5,000 companies founded in 2004.

See <http://www.kauffman.org/kfs/>.

<sup>74</sup> Alicia M. Robb and David T. Robinson, “The Capital Structure Decisions of New Firms,” Kauffman Foundation, November 2008, at:

[http://www.kauffman.org/uploadedfiles/Capital\\_Structure\\_Decisions\\_New\\_Firms.pdf](http://www.kauffman.org/uploadedfiles/Capital_Structure_Decisions_New_Firms.pdf).

<sup>75</sup> Parker finds that research evidence “points to a consistent positive relationship between experience (defined quite broadly) and entrepreneurship.” Parker, *The Economics of Entrepreneurship*, 115.

entrepreneurs at older ages.<sup>76</sup>

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<sup>76</sup> “Previous entrepreneurship experience has stronger effects on propensities to try entrepreneurship again in the future, where it is associated with superior sales, profitability and growth performance on average. These particular findings are suggestive of productive effects of entrepreneurial experience, rather than just a taste for entrepreneurship.” Parker, *The Economics of Entrepreneurship*, 116-7.