Center for American Progress

# How Does Middle-Class Financial Health Affect Entrepreneurship in America?

By Camilo Mondragón-Vélez,
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# Contents

# Introduction and summary

Entrepreneurs play a critical role in the U.S. economy, and America's middle class plays a critical role in nurturing the people and social environment that create successful entrepreneurs. In other words, the dynamics of business creation and consolidation are interlinked with those of overall economic growth and the financial health of middle-class families.

To become an entrepreneur, after all, is often a family decision—weighing the potential risks against the probable rewards and dedicating significant portions of a family's income, wealth, human capital, and effort into a business venture. Analysis in this report shows that middle-class families account for 60 percent of new business ventures. According to the U.S. Small Business Administration, small firms—defined as those with up to 500 employees—represent more than 99 percent of employer firms, generate half of non-farm private goods and services in the U.S. economy, employ about half of all private-sector workers, and have created around two-thirds of net new jobs in the past two decades.[3]

It is worth noting, however, that there is an active debate about the relationship between job creation and firm size. Professor John Haltiwanger and the co-authors of the 2013 study "Who Creates Jobs? Small vs. Large vs. Young" show that when firm age is included in the analysis of job creation and firm size, it is not possible to draw any definite conclusion about the relationship between firm size and employment growth. More importantly for the purpose of this study, their findings suggest that "business startups contribute substantially to both gross and net job creation," and they find "an 'up or out' dynamic of young firms"—that is, young firms either grow to survive or are out of business.[4]

Increased financial stress on middle-class families—related to rising income and wealth inequality—is unfortunately constraining the creation of new businesses in the U.S. economy and therefore hurting overall economic growth and job

This report analyzes data from the Panel Study of Income Dynamics to understand the effects of inequality and the financial health of the middle class on the dynamics of business creation by entrepreneurs in the United States.[1] For the purposes of analysis in this report, "middle class" is defined as households with total family income between $41,000 and $151,000, or between the 40th percentile and 90th percentile of the income distribution.[2]

creation. Economic expansion in the medium and long run should be reflected in increasing numbers of consolidated and growing private-sector firms, which is supported by a dynamic process of business creation.[5] This was the case for the U.S. economy from the 1970s through the 1990s, a period when gross domestic product—the measure of all goods and services produced by an economy's workers and equipment—grew by more than 80 percent in real terms, while the percentage of business-owner families—defined as those where at least one family member is a business owner—increased from less than 10 percent to about 13.5 percent, according to analysis presented in this report.[6] But as middle-class families' income stagnated, especially in the business-cycle expansion of the 2000s, the average percentage of business-owner households dropped to 12.4 percent from 2002 to 2008 and again to 11.8 percent in 2010. The net effect is equivalent to a loss of more than 1 million business-owner households in the United States compared to the previous decade.[7]

The decline in business ownership from 2002 to the financial crisis in 2010 resulted from stalling business creation rates—the percentage of households becoming business owners within one data collection period—and increasing rates of business failure.[8] The rate of new business ownership among American families increased from 3 percent in the 1970s to 5 percent in the late 1990s but remained below this level in the 2000s. In contrast, business failure—that is, the rate at which business-owner families close their businesses within one data collection period—inched toward 30 percent since the late 1990s after fluctuating between 20 percent and 25 percent for most of the previous three decades, according to data presented in this report.

A more qualitative view of the middle class includes those with sufficient incomes and insulation from economic risks and the ability and means to make long-sighted decisions to invest in opportunities for themselves and for the next generation. Regardless of how one delineates "middle class," the evidence indicates that as the United States has grown more unequal, the opportunity to become an entrepreneur has moved farther out of reach for many people. The analysis presented in this report finds:

- Middle-class families account for 60 percent of new business-owner households in the United States in the past four decades, and their increasing financial stress partly explains the stagnation of business-creation rates in the 2000s compared to the late 1990s.

- Before starting their businesses, new business owners in the 2000s had two to three times more wealth than their median worker peers. In the 1980s and 1990s, however, new business owners only had 1.7 to 2 times more wealth than their median worker peers.

- New entrepreneurs in the 2000s on average waited an additional seven years before becoming business owners, compared to the 1980s.

Moreover, through the well-known effects of inequality on opportunities for quality education in the United States, the abilities and talents of many potential entrepreneurs remain undeveloped. Education not only plays a critical role in the development of productive people—workers and entrepreneurs alike—but also plays a role in reducing the inequality of income and opportunities, which can be transmitted through time to subsequent generations of descendants.[9] In fact, this report shows that the fraction of new business owners with more than a high school education increased from 50 percent in the 1970s to 67 percent in the 2000s and 75 percent in 2010. Overall, about two-thirds of new business owners in the past decade have some college education, relative to less than 60 percent between the 1970s and the mid-1980s and around 60 percent during the 1990s and the early 2000s.

The link between entrepreneurship and education implies that the opportunity of entrepreneurship has become more concentrated among those with higher education at a time when rising inequality tightens educational constraints, thereby putting the choice of entrepreneurship out of some people's reach. Furthermore, restricted access to entrepreneurship constrains upward social mobility opportunities for middle-class families across the United States.[10]

Business creation is therefore closely related to the financial health of the middle class. In this regard, the facts documented in this report suggest that the structural policies that have led to unequal economic outcomes and opportunities for American families over the past decades are in fact inhibiting the development of the critical entrepreneurial sector of the U.S. economy. Furthermore, the evidence presented below suggests that macroeconomic and structural policies directed toward increasing education opportunities, as well as income adjusted for inflation, to broaden and strengthen the U.S. middle class will allow these households to make better choices about starting new businesses. This will result in a more efficient and innovative population of entrepreneurs. In sum, policies focused on strengthening the financial health of the middle class will ultimately foster a vibrant and dynamic entrepreneurial economy in the United States.[11]

# Why inequality matters for the entrepreneur economy

A number of factors influence an individual's decision to become an entrepreneur. One might think that it all starts from having or coming up with a business idea that could be developed into a financially attractive—or at least sustainable—operation. Along these lines, the expected financial returns of the new venture would be basically driven by various elements inherent to the particular business project, including market size, competition, and expected revenues over time; operational costs and technology; firm size and required investments; as well as the risks and uncertainties related to each of these. Even before a business idea starts to be developed or the actual decision to start a new firm is made, however, there are idiosyncratic characteristics that will determine if some individuals will even consider looking for business ideas; the industry sectors, business lines, and technologies they will consider; the investment program they will be able to fund; as well as the decision of directly managing the new business or hiring others to do so. Some of the key individual characteristics studied in the academic literature are:

- Unobservable entrepreneurial verve and ability
- Tolerance for risk taking
- Observable human capital
- Accumulated wealth

The remainder of this section briefly discusses the role or roles that each of these characteristics plays in the individual's decision to become an entrepreneur.

## Unobservable entrepreneurial verve and ability

Not everyone has the desire or willingness to become an entrepreneur. While for some individuals, the real deterrent might be the fear to take risks, others are not willing to go through the struggles of business ownership aside from risk and uncertainty, which include dealing with clients, suppliers, and employees, and in many cases, working long hours. Hence, there is a fraction of the population that will never become entrepreneurs, no matter how good their business idea seems.

Furthermore, the degree of entrepreneurial verve of those willing to consider business ownership serves as a filter on the types of business ventures in which specific individuals are either willing or unwilling to engage. In many cases, this degree of willingness is related to the expected financial benefits associated with the business, although panel data studies show that financial rewards are one among a range of leading motives expressed by nascent entrepreneurs. Business scholar Nancy Carter and co-authors found that entrepreneurs expressed values for the self-realization, identity roles, innovation, recognition, and independence associated with entrepreneurship—in addition to financial success—in making their career choice. In other words, two individuals with different degrees of entrepreneurial spirit may make a different decision about the same business opportunity.

On the other hand, one can distinguish entrepreneurial verve, such as desire, spirit, or willingness, from ability, such as management, marketing, operational, and commercial skills. While high willingness to start a business does not necessarily improve the chances of success, entrepreneurial abilities are a critical component of business success and growth. In fact, management scholars highlight the importance of social capital—abilities reflecting interpersonal and emotional intelligence—for entrepreneurial success. As with entrepreneurial verve, business skills are distributed throughout the population at varying degrees. Therefore, two individuals with different entrepreneurial skill sets will most likely have different results starting the same kind of business under similar market and economic conditions. Moreover, a potential entrepreneur with high business ability will most likely come up with better and more attractive business opportunities.[12]

Entrepreneurial spirit and ability are difficult to assess. While the former can be surveyed ex-ante, it is only when individuals make the decision to become entrepreneurs that it is effectively revealed.[13] With regard to the latter, there is extensive literature in economics and psychology that tries to establish the characteristics that drive successful entrepreneurship. All in all, there is not a generalized consensus in this regard.[14]

## Tolerance for risk taking

Starting a firm involves taking risks. Entrepreneurs can not only lose the financial capital invested in the new business but can also lose the personal effort and hard work they put into the business as well. On the other hand, the degree of risk tolerance varies with each individual, just as entrepreneurial verve and ability varies. Some people will therefore be comfortable investing in certain types of high-risk propositions, while other people simply will not consider them.

Economists have long studied the role that attitudes toward risk have in economic decisions. This literature is built on the premise that risk tolerance is a critical element that shapes individuals' preferences when facing a decision, such as consuming more today versus tomorrow, buying insurance, and investing in the stock market.[15]

Risk tolerance—as entrepreneurial verve and ability—is not easy to measure. Economic models that investigate individual behavior usually assess how people's willingness to take on financial risks differs across the population, including whether to undertake the risks of self-employment. Many recent advances in economic and interdisciplinary behavioral research lend insight to researchers' ability to observe and measure individuals' decision-making and tolerance for risk in experimental settings.[16] Although a number of observable economic and demographic characteristics—such as wealth, education, age, race and ethnicity, and access to health insurance—can predict someone's choice to become an entrepreneur, the more difficult-to-observe individual preference for a particular level of risk is also a significant determinant of whether someone starts a business.[17]

## Observable human capital

The main components of observable human capital are an individual's level of formal education and years of working experience. More disaggregated definitions could also consider the quality and line of education acquired—business versus law versus medicine, for example—as well as the years of experience as a paid worker versus those as an entrepreneur, the lines of business, and the type of occupation held in each of these. To keep the analysis simple, I will briefly discuss the role of education and experience on a more generic basis.

Education plays a crucial role in entrepreneurship. Most empirical studies show that a majority of entrepreneurs have higher levels of education, meaning at least some college.[18] In other words, higher education increases the chances of becoming an entrepreneur. This may be due to the fact that education provides a broader scope for individuals with regard to their options or because education provides better networks to come up with ideas, as well as potential business partners. In addition, education plays a role in the type of business that entrepreneurs start and run. It is, for example, hard to find a medical practice business not owned by doctors and a law firm run by an individual without a law degree.[19] The empirical evidence for the United States also shows how business income from entrepreneurs with higher education is on average higher than business income from those with lower levels of education.[20]

Experience—usually measured by years of work experience or proxied by age—is also thought to increase one's chances of becoming an entrepreneur. The most common view is that acquired knowledge of specific markets and sectors provide potential entrepreneurs with strong tools to identify business opportunities, as well as networks to start their business in a specific industry.[21]

Moreover, both education and experience play a role in determining paid work wages, which are a critical benchmark to which potential entrepreneurs compare their expected financial benefits of becoming business owners. In other words, highly paid salaried workers will require a much better business prospect to enter entrepreneurship. Given its double role on the benefits, as well as the opportunity cost side within the decision to start a business, the net effect of human capital cannot be easily pinned down.[22]

## Accumulated wealth

An important strand of the academic literature on entrepreneurship and occupational choice focuses on access to finance for existing and potential entrepreneurs. In this regard, the early consensus around the active role of financial constraints in determining occupational choice was built upon the seminal studies of Professors David Evans, Linda Leighton, and Boyan Jovanovich, who documented a positive relationship between wealth and the probability of becoming an entrepreneur. This linkage implies that potential entrepreneurs increase their chances of starting new businesses when they have more wealth, which can be used as seed capital or loan collateral to start their new venture.[23]

This result was challenged by Professors Erik Hurst and Annamaria Lusardi, who showed that the aggregate probability of starting a business in the United States is flat up to the 90th percentile of the wealth distribution, after which it increases with wealth. In other words, the chance to become a business owner is basically the same for the majority of salaried workers, regardless of their accumulated wealth. Along these lines, Hurst and Lusardi interpreted this finding as evidence of the lack of strong liquidity or financing constraints for most Americans to start their own business, which would ultimately imply that the lack of seed capital is not a significant deterrent for potential entrepreneurs to start new firms in the United States.[24]

Economists Francisco Buera and I both provided an alternative framework to understand the results in Hurst and Lusardi's study.[25] By including entrepreneurial ability in his analysis, Buera showed that the relationship between wealth and the probability of becoming an entrepreneur—at the individual level—is hump shaped. In other words, this implies that for a group of individuals with the same education, age, and experience, the chances of becoming an entrepreneur increase with the availability of capital to start a business up to a point, after which entrepreneurial ability among those with high net worth diminishes.

In a related study, I showed that the so-called aggregate transition probability profile relative to wealth—which indicates the average fraction of workers becoming entrepreneurs at each level of net worth—documented in Hurst and Lusardi's study is not representative at the individual level. The profile instead tends to be an inverted U shape, as in Buera's article, for groups with similar observable human-capital characteristics such as education and age. This finding implies that most potential entrepreneurs in the economy—and especially those below the top of the wealth distribution—face capital constraints when making the decision to start a business.[26] These studies reaffirm the early consensus that the availability of financial capital for individuals plays a critical role in fostering the creation of new firms in the economy.

In sum, individuals decide between salaried work and opening their own business by comparing the benefits, costs, and risks of each alternative. Therefore, when making the decision to start a business, each person takes into account their own abilities, knowledge, experience, as well as the level of uncertainty and their willingness to take risk, in addition to the availability of financial resources to fund the investments and costs required to set up the new venture. In this regard, it is worth noting that even in highly developed financial systems—such as the United States' system—the financial market often excludes people from borrowing and increases the financing costs based on people's wealth and other demographic characteristics.

The evidence presented in this section includes a combination of some of these elements—observable human capital, income, and accumulated wealth—to explain the main drivers of and barriers to the creation of new firms in the economy. The facts presented in the remainder of this report will explore business creation trends in the United States, in relation to the evolution of some of these elements. The analysis will use my theoretical framework (described in Appendix A) as a reference, which includes observable characteristics—wealth, education, and age—and unobservable characteristics such as entrepreneurial ability and risk aversion.[27]

# How business ownership in the United States has evolved since the late 1960s

The Panel Study of Income Dynamics, or PSID, is the largest longitudinal survey of a representative sample of U.S. individuals and families. It began collecting information annually from 1968 to 1997 and has collected information biannually since then. The survey is conducted by the Institute of Social Research of the University of Michigan and sponsored by several government agencies and other organizations.

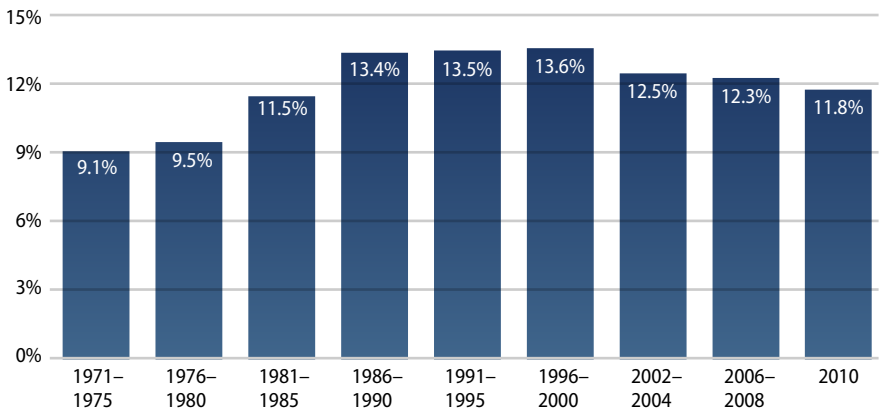
Academics from many different disciplines use the PSID for research, given the wide range of topics covered in the questionnaire: housing, health, income, employment, wealth, and savings, among others. The survey collects data on the household and on individual family members. Business ownership and wealth are measured at the household level, while occupation is determined at the individual level. Thus, there are alternative ways to define who is considered an entrepreneur when using this data. The survey is a useful indicator of the evolution of entrepreneurship in the United States over the past few decades, as each survey wave since its inception contains data on the number of U.S. business-owner households—defined as those who declare that someone in the family owns at least one business.

Figure 1 below details these data.[28] On average 9 percent of households were business owners in the 1970s, and the number peaked at 13.6 percent at the end of the late 1990s dot-com boom and bubble. But after 2000, the share of families engaging in entrepreneurial businesses fell steadily to 12.3 percent of households by 2008 and falling further to 11.8 percent by 2010 in the aftermath of the Great Recession. Taking the PSID data analyzed here as a benchmark for the overall population implies that the U.S. economy produced 1 million fewer business-owner households in the 2000s relative to the 1990s.[29]

The puzzling finding that economic growth in the 2000s was accompanied by a reduction in business creation by American families provides the main motivation for this report, which offers an alternative explanation of this phenomenon based on the observed deterioration of the financial health for middle-class households and their diminished wealth accumulation capacity to finance entrepreneurial endeavors over time.

FIGURE 1

**Average percentage of business-owner households in the United States, 1971–2010**




Source: Author's analysis of Panel Study of Income Dynamics data.

Appendix B describes the differences in the rate of business ownership when using the PSID and the Survey of Consumer Finances, or SCF, run by the Federal Reserve. In short, the SCF data show that the rate of business ownership in the United States stalled in the 2000s, following an increasing trend in the 1990s.

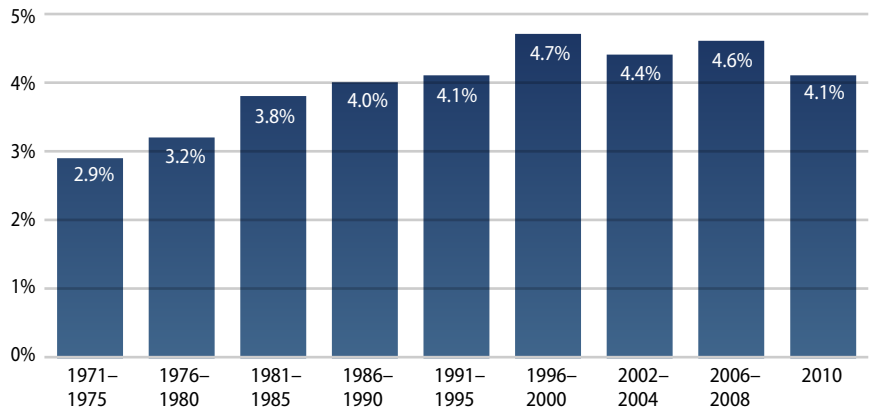
To unveil the dynamics behind the number of entrepreneurs in the United States, one can use the PSID data to look at flows into and out of business ownership. Figure 2 shows the five-year average fraction of new business-owner households each year, as a percent of the total number of households that did not own a business in the previous PSID survey year.[30] This measure of business creation showed steady increases from 2.9 percent in the early 1970s to a peak of 4.7 percent from 1996 to 2000. New business creation never recovered to the 1990s economy peak and then fell further to 4.1 percent in 2010.

Not only have the 2000s been associated with slower growth in business ownership in the United States, but the decade also saw higher rates of entrepreneurs giving up their business in favor of other wage-work employment. Figure 3 shows the average percentage of households that no longer own a business as a percentage of households that previously reported owning a business. The data show that the percentage of business-owner households closing or selling their businesses each year fell and then rose steadily after 1980. After exiting stagflation in the 1970s into the twin recessions spanning 1980 to 1982, business exit rates for U.S.

households rose from 23 percent in 1980 to an average of 30 percent over the first decade of the 2000s. In sum, the upward trend in business ownership during the 1990s—observed in both the Panel Study of Income Dynamics and the Survey of Consumer Finances—is the result of increasing rates of business creation and stable rates of business closures, while the drop in the business-ownership rate for the 2000s in the PSID is the result of increasing closures and stagnant rates of business creation.

FIGURE 2

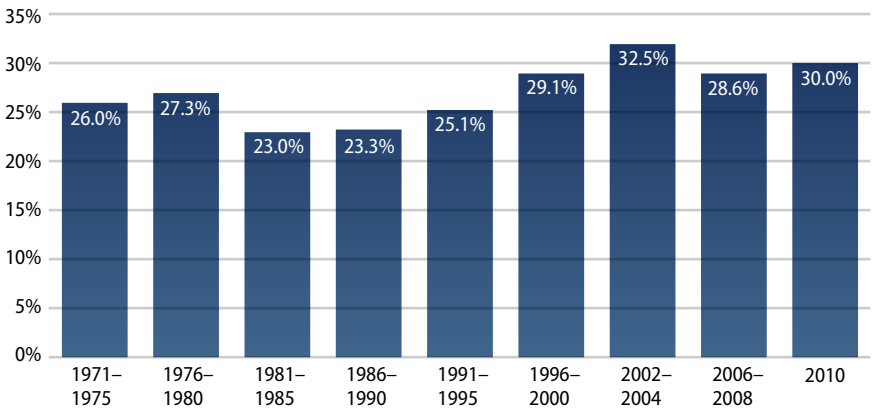
**Average percentage of new business-owner households in the United States, 1971–2010**




Source: Author's analysis of Panel Study of Income Dynamics data.

FIGURE 3

**Average percentage of entrepreneur households exiting from business, 1971–2010**




Source: Author's analysis of Panel Study of Income Dynamics data.

Under the assumption that preferences toward risk-taking and willingness to start businesses among the American population have not changed significantly, such a pattern of slowing growth of entrants and accelerating rates of exits from entrepreneurship suggests that some other structural changes in the economy have set the bar higher for who can become an entrepreneur in the United States.

Table 1 below shows the percentage of new business owners by different groups along the income distribution. The majority of new business owners are, unsurprisingly, concentrated within the middle and upper ranges of the income distribution, though the two quintiles of families with incomes below $41,000 exhibit notable levels, although lower, of entrepreneurship. What's more, these activities tend to be self-employment in trades or other small enterprises with very limited survival, growth, and job creation potential, given the significant financial constraints to which these families are subject.[31]

Families comprising a broad middle class—from the 40th percentile to the 90th percentile of the distribution—or those with incomes between $41,000 and $151,000, according to the PSID data—comprise on average 60 percent of total new entrepreneurship in the United States.[32] Middle class businesses run the gamut from mom-and-pop shops to large-growth-potential startups, across all sectors of the economy. Families at the top 5 percent of incomes also account for a disproportionately large share of new entrepreneurs, but this group's contribution to entrepreneurship fell markedly to 8 percent in the 2000s from 12 percent in the 1970s; entrepreneurship by those in the top 10 percent fell from 20 percent to 17 percent in the same time period.

**TABLE 1**

**Fraction of new business owners by income distribution quintile**

| | Income percentiles | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0–20 | 21–40 | 41–60 | 61–80 | 81–100 | Top 10 percent | Top 5 percent | 41st–90th |
| 1971–1979 | 6.8 | 13.3 | 18.2 | 25.2 | 36.6 | 20.0 | 12.3 | 59.9 |
| 1980–1989 | 9.1 | 14.1 | 20.6 | 24.3 | 31.9 | 16.8 | 9.0 | 60.0 |
| 1990–1999 | 9.5 | 15.0 | 19.6 | 26.2 | 29.7 | 16.1 | 8.3 | 59.5 |
| 2000–2010 | 9.2 | 13.8 | 19.8 | 24.3 | 32.8 | 16.6 | 8.1 | 60.4 |

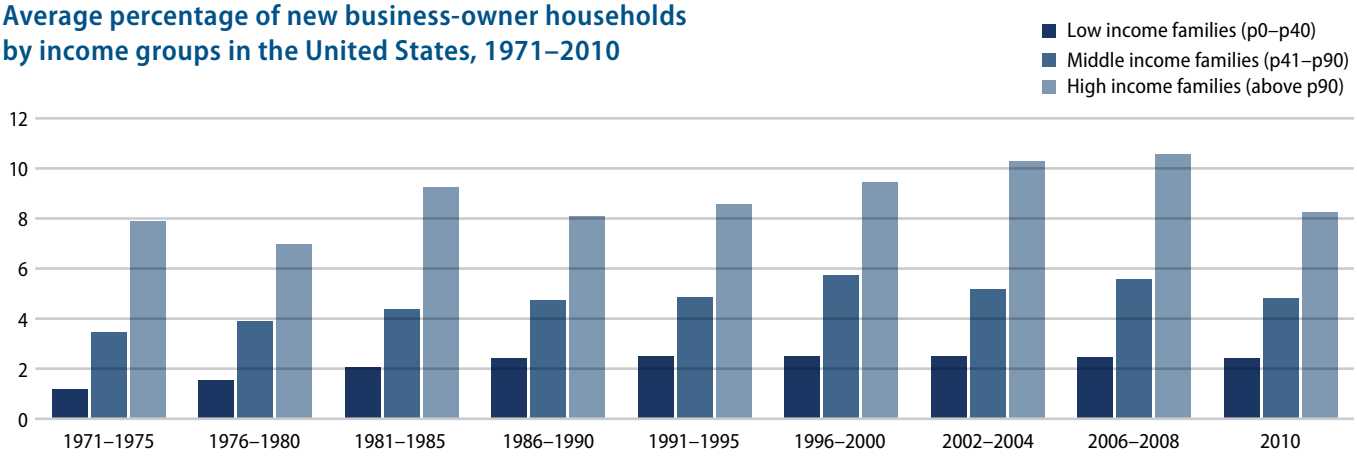
Source: Author's analysis of Panel Study of Income Dynamics data.

Furthermore, Figure 4 compares the different business-creation rates in each of these income groups: that is, low-income families up to the 40th income percentile, middle-class families between the 41st income percentile and 90th income percentile, and high-income families at the top 10 percent of the income distribution. First, note that the stagnation of business creation in the 2000s documented in Figure 2 is mainly due to the dynamics for families below the 90th income percentile—low-income and middle-class families. While business creation growth among low-income families stagnated after the 1990s, business creation rates increased steadily until 2000 for middle-class families and decreased since then relative to the level observed in the late 1990s. On the other hand, the rate of business creation among the top-income families continued growing in the 2000s.

Therefore, not only do middle-class families account for 60 percent of business creation in the United States, but they also explain the stagnation of business-ownership growth rates in the 2000s compared to the late 1990s. In contrast, the pace of business creation among top-income families continued unabated until the Great Recession.

FIGURE 4

**Average percentage of new business-owner households by income groups in the United States, 1971–2010**




Source: Author's analysis of Panel Study of Income Dynamics data.

# The financial health of the middle class and inequality in the United States

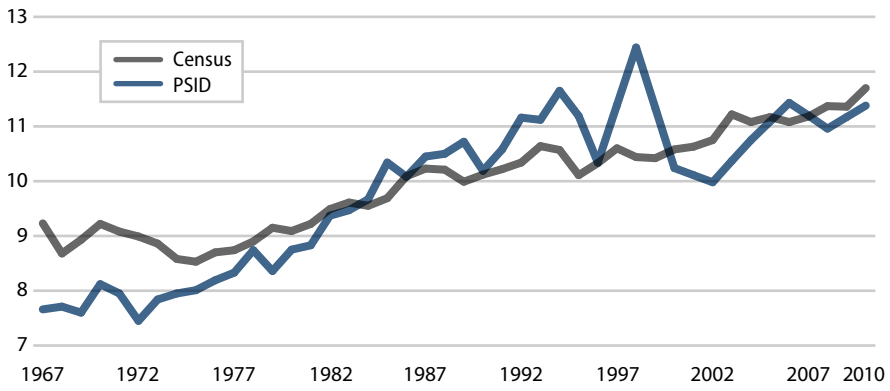
Since the late 1960s, in general, the income for families higher up the income distribution—relative to income for those families toward the bottom—has steadily trended upward. Both PSID and Census data show that income dispersion has continuously and gradually increased in the past four decades. Families at the 90th percentile of the income distribution earned eight to nine times more than families at the 10th percentile in the 1970s; since 2005, families at the 90th percentile have earned more than 11 times that of those at the 10th percentile.[33] (see Figure 5)

There is a stark contrast, however, between levels of dispersion of income and wealth. Analysis of PSID data in Figure 6 shows the net worth for families at the 90th percentile of the wealth distribution was about 50 times that of families at the 25th percentile from the mid-1980s to the mid-1990s. This ratio increased to 70-to-1 by the end of the 1990s and up to almost 97-to-1 in 2005. The growth then became exponential, tripling to 301-to-1 by 2009, and continued growing toward 317-to-1 in 2011.[34]

This extraordinary growth in wealth dispersion can be partly explained by the housing bubble burst beginning in 2005 and ensuing financial crisis and recession through the summer of 2009. Housing demand and prices in the United States grew steadily since the early 2000s until 2008, fueled by historically low interest rates and unprecedented growth in the market for mortgage-backed securities—thanks to lack of proper regulation. Ample and easy mortgage credit increased the risk profile of homebuyers, while banks and rating agencies did not properly recognize such risks on the related securities. Once these higher risks started to materialize in the form of loan defaults, the process unraveled. Credit froze, defaults cascaded, and home prices plummeted due to the resulting oversupply of homes.[35] The financial collapse had a heavier impact on middle-class families around or below the median wealth level, which are families that typically hold a majority of their net worth in their homes. Wealthier families, on the other hand, tend to have a much larger and more diversified portfolio of assets.[36]

FIGURE 5

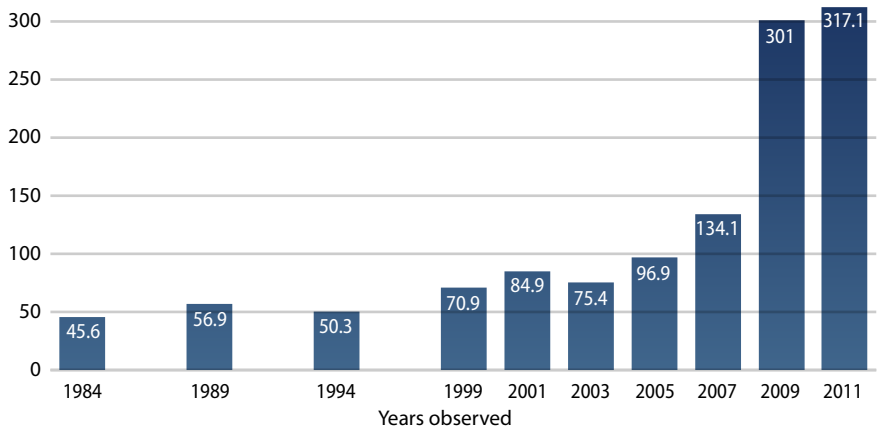
## Income-level ratio of 90th percentile to 10th percentile of the U.S. income distribution, 1967–2010




Source: U.S. Census Bureau; author's analysis of Panel Study of Income Dynamics data.

FIGURE 6

## Wealth level ratio of 90th percentile to 25th percentile of the U.S. income distribution, 1984–2011

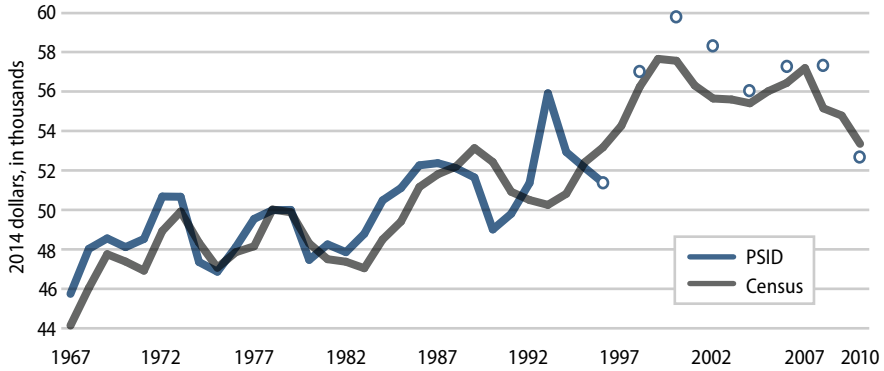



Source: Author's analysis of Panel Study of Income Dynamics data.

Increasing inequality does not necessarily mean that those at the middle or the bottom are doing very badly. It could be the case that the middle class is doing very well, but inequality increases just because the top 10 percent or 5 percent are doing much better than the rest of the population. This has not been the case in the United States in the past decade, however. In a growing economy, for example, the consumption and wealth accumulation of the middle class may increase despite increasing inequality driven by the extreme success of a small group of individuals—most likely entrepreneurs. Therefore, rather than focusing on relative measures of inequality to assess the financial health of the middle class, it is more adequate to look at the evolution of income and wealth—in real terms—over time.

FIGURE 7

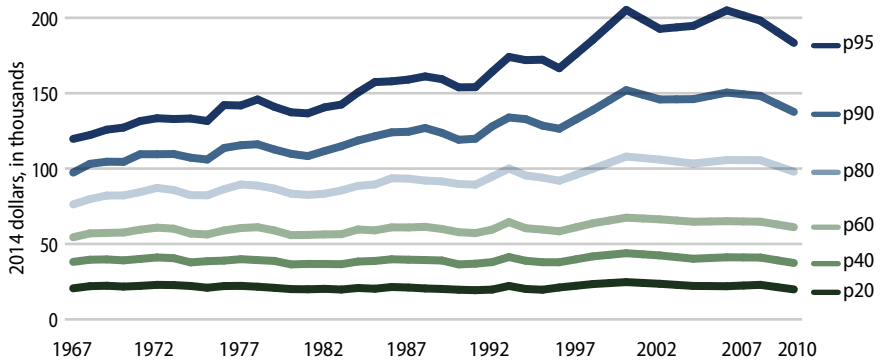
## Median real family income, 1967–2010




Source: Author's analysis of Panel Study of Income Dynamics data.

FIGURE 8

## Real family income by percentile, 1967–2010




Source: Author's analysis of Panel Study of Income Dynamics data.

Figure 7 shows the evolution of real median family income since the late 1960s, based on PSID and Census data. Both series show an upward long-term trend up to year 2000, with real median income growing between 3 percent and 22 percent in the 1980s and 1990s—between 8 percent and 10 percent from the Census series and between 3 percent and 22 percent from the PSID series. After reaching its highest level between 1999 and 2000—above $57,500 in the two series—real median income declined and stagnated at the level observed in the late 1990s, which was between $54,200 and $57,650 from 1997 to 1999, according to Census data.[37]

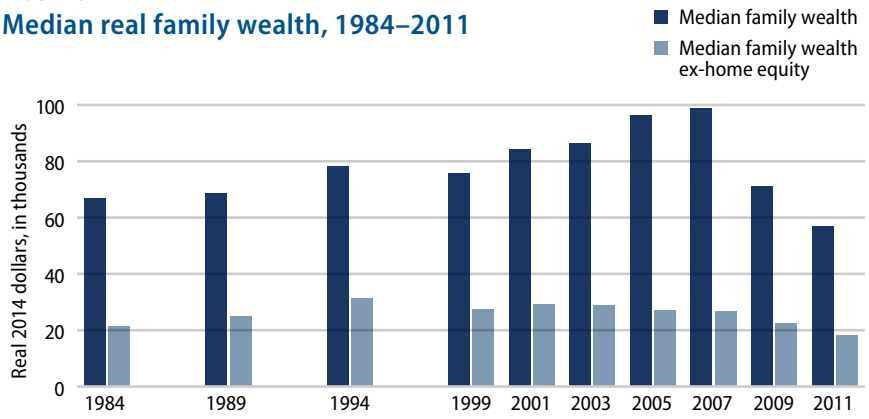
Wealth inequality has been rising since the early 1980s through the 1990s and 2000s; the richest 1 percent of households received 38 percent of the total gain in wealth from 1983 to 2010, while the bottom 80 percent saw virtually no increase.[38]

Figure 8, on the other hand, looks at the evolution of real income, by income levels. The lack of real income growth in the 2000s documented for the median family in Figure 7 is also shared by families at the 20th income percentile up to middle-class families at the 60th income percentile—that is, families in the first, second, and third income quintiles. When using year 1998 as the benchmark—the final survey of the 1990s for which the PSID captures income data—real income changed marginally for middle-class families up to the third quintile, while families between the 80th percentile and 95th percentile saw an increase of 6 percent to 7 percent between 1998 and 2008. Following the Great Recession, real income in 2010 declined between 9 percent and 13 percent for families below the 40th income percentile and around 7 percent for families above the 40th income percentile.

It is clear from Figure 8 that the growth trend in real income since the early 1990s is flatter for middle-class families below the 80th income percentile and steeper for those with higher incomes. Thus, the ability to save and accumulate wealth in the past decade was significantly constrained for the former group, which, according to Table 1, originates almost half of all business creation in the U.S. economy.

**FIGURE 9**

**Median real family wealth, 1984–2011**




Source: Author's analysis of Panel Study of Income Dynamics data.
Note: No data available for intervening years.

Figure 9 shows the evolution of median family wealth and the role of home prices in the total net worth of middle-class households. Total median wealth increased from $67,000 to about $77,000 from the second half of the 1980s to the 1990s (in 2014 dollars). It continued increasing steadily up to $99,000 in 2007 and then by 2011, dropped dramatically—with the 2009 crisis—significantly below the levels observed back in the 1980s.

The second (lower) set of bars in Figure 9 shows median net worth from sources other than home equity. The trend of these alternative sources of wealth is quite different than that of the total, as it shows an increasing pattern from the mid-1980s to the mid-1990s, followed by a decrease in 1999—most likely related to the Internet bubble—and a continued decreasing trend during the 2000s. Aside from potential collateralized loans—which are guaranteed by an asset the borrower already owns, such as real estate—these alternative sources of wealth usually become the seed capital for potential entrepreneur households.

With regard to other wealth groups, wealth declined by more than 30 percent between 1999 and 2009 for middle-class families at the 40th wealth percentile, whereas median family wealth declined by 6 percent over the same time period. Families between the 80th percentile and 90th percentile of wealth, meanwhile, saw increases in real wealth of 24 percent to 30 percent, respectively, during the 10-year period.

Figure 7 shows that the period between the mid-1980s and the mid-1990s was characterized by rising median income—continuing an upward trend since the 1970s—which led to wealth accumulation for all middle-class families. But following the Internet bubble of the late 1990s and the recession of the early 2000s, income and wealth dispersion increased to historically high levels. More importantly, the trends for the last decade show stagnant middle-class incomes at a time of rising home prices—constituting the main driver of wealth growth for most families through to 2007. Wealth lost by families in the housing bubble burst, the financial crisis, and the Great Recession plunged the median family's wealth below 1980s levels—about $68,000 in 2014 dollars—by year 2011 following the housing bubble burst. This stagnant median income and ephemeral paper gains in household net worth were accompanied by a continued decrease in the accumulation of non-real-estate sources of wealth.

In other words, flat income for the majority of families deterred the American middle class from accumulating much in the form of non-real-estate wealth during the 2000s. This ultimately translated into lower possibilities to save and accumulate financial capital in order to overcome potential liquidity and credit constraints for many of those willing to start new businesses.

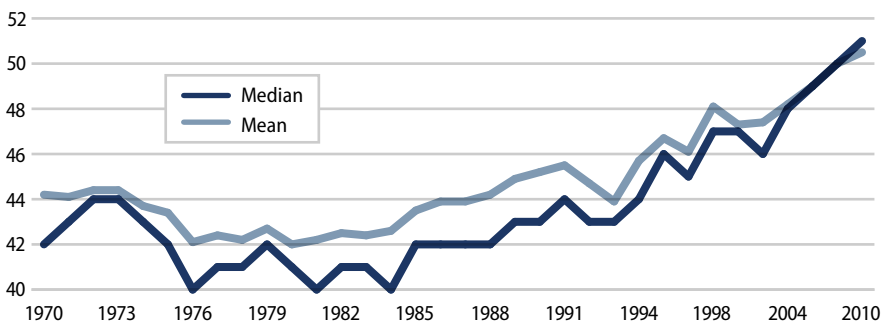
# Entrepreneurship trends in the United States

As mentioned before, one's occupational choice is at least partly conditional on individual characteristics such as wealth and human capital. Given the broad scope that the latter concept entails, this section focuses on observable dimensions of human capital—mainly education and age—among U.S. households.[39] These are captured through the household head's reported level of education and years of age, which is a proxy for years of working experience.

Let's start by looking at age. Figure 10 shows the mean and median age of the heads of business-owner households per year since the 1970s. The mean and median age remained between 40 and 45 years of age during the 1970s and 1980s, with a decline for most of the 1970s and then an increase in the second half of the 1980s. This increasing trend continued throughout the 1990s and 2000s for both mean and median age and has seemingly accelerated its pace since the mid-1990s. Since 2008, the mean and median age of the heads of business-owner households reached 50. Hence, the average business owner has continuously aged since the early 1980s, with average age annually increasing by 0.28 years over the past 30 years.[40]

**FIGURE 10**

**Mean and median age of the heads of business-owner households, 1970–2010**



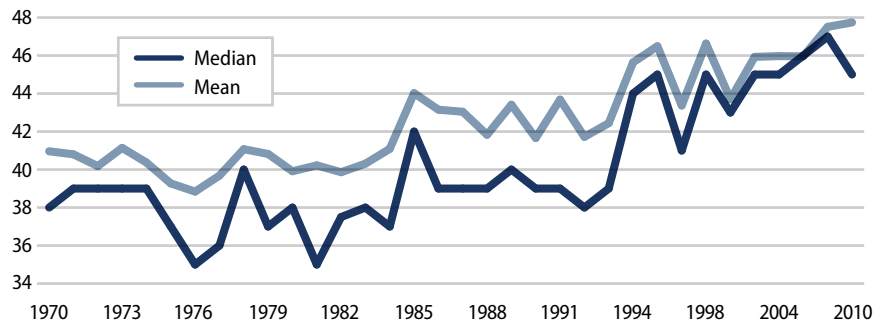

Source: Author's analysis of Panel Study of Income Dynamics data.

These data imply that either new entrepreneurs are delaying their decisions to start businesses, or that the number of new young entrepreneurs is not large enough to offset the aging profile of the business owner population, or both. While the trend of business ownership documented in Figure 1 supports the second argument, Figure 11 looks at the first alternative by showing the mean and median age of the heads of new business-owner households in the PSID survey.

From the 1970s to the early 1980s, the average age of a new entrepreneur hovered around 41 years old, but after the 1980s--as inequality across the U.S. economy rose--so too did the average age for a new business owner. By 2010, the average age climbed to almost 48, an additional 7 years. Similar upward trends shown in both the average and median age shows that the phenomenon of people waiting until later in life to start businesses is rising over the past 30 years.

FIGURE 11

**Mean and median age of heads of new business-owner households, 1970–2010**




Source: Author's analysis of Panel Study of Income Dynamics data.

This phenomenon is consistent with the theoretical framework described in Appendix A and the facts regarding business creation and wealth accumulation capacity for middle-class families in Figures 2 and 9. Under the theory described in Appendix A, there exists a minimum level of capital for each individual to start a business, determined by its own characteristics. Thus, if a broad percentage of the population has a lower capacity of wealth accumulation, as suggested by the analysis of Figures 8 and 9, families will require more time to save before making the decision to start a business.

Education, along with years of working experience, is the other main observable driver of human capital. Figure 12 shows the fraction of heads of new business-owner families with either some or completed college education.[41] On average, about half of new entrepreneurs had up to high school education in the 1970s, of which 40 percent did not complete high school.

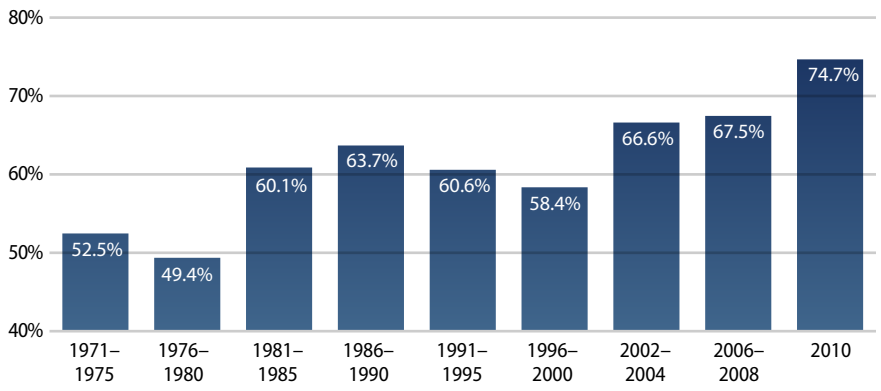
During the 1980s and 1990s, the composition of new business owners tilted toward higher education, with around 60 percent of incoming entrepreneurs having at least some college education. While almost three-quarters of the increased share for this group was driven by college graduates, about two-thirds of the decreased share for new business-owner household heads with up to a high school education came from those at the lowest level—that is, those who did not complete high school. During the 2000s, the average share of new entrepreneurs with at least some college education increased further—close to 67 percent—with most of the increase coming again from college graduates. These data show that the creation of new businesses in the United States has been increasingly concentrating among those with higher educational attainment in the past four decades. Moreover, this concentration increased further from 2000 to 2010.

Although the theoretical framework in Appendix A does not provide any particular prediction about the educational composition of current or new business owners, the evidence in Figure 12 may be related to the facts presented in Figures 2 and 8. Those with high educational attainment tend to be located at the highest income percentiles, which among middle-class families tend to be the ones less affected by constraints to capital accumulation. Along these lines, the recent changes in the composition of business owners toward higher educational attainment could be generated by larger capital accumulation constraints for those with low education levels. Therefore, stagnant incomes for households closer to the middle of the income distribution would imply a higher concentration of business ownership among those with higher education levels.

Having explored the changes in the composition of new entrepreneurs with regard to human capital, the remainder of the analysis focuses on the relative level of income and wealth for incoming business owners. The main issues are how income and wealth levels of incoming entrepreneurs compare to those of their peer workers and how this relationship has changed over time.

FIGURE 12

**Fraction of heads of new business-owner households with some or completed college education, 1971–2010**



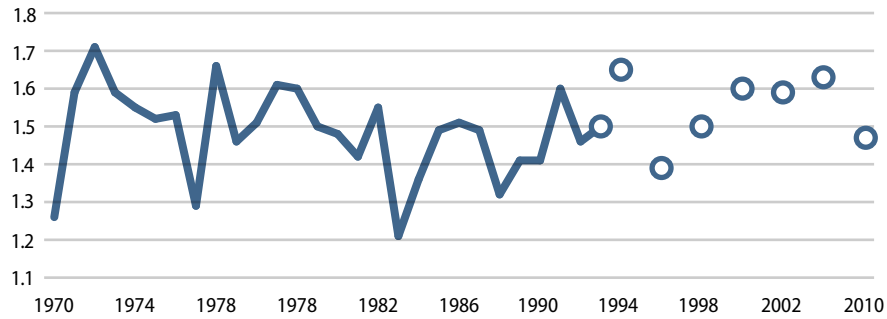

Source: Author's analysis of Panel Study of Income Dynamics data.

To answer these questions, Figure 13 shows the ratio of median real incomes for non-business-owner households that became entrepreneurs—by the next survey wave—to non-business-owner households that remained as workers.[42] The ratio fluctuated around an average level of 1.5-to-1 in the past 40 years. It decreased slightly to an average of 1.48-to-1 in the 1980s and 1990s from 1.52-to-1 in the 1970s but increased toward 1.6-to-1 in the pre-crisis years of the 2000s. Figure 13 suggests a U-shaped trend over time. In other words, the income level of potential entrepreneur families increased in relation to that of their peer workers in the past decade, before the Great Recession.

Figure 14 replicates the previous analysis for wealth. The U-shaped pattern over time is similar to the one in Figure 13. While the ratio fluctuated around 1.9-to-1 from the mid-1980s through the mid-1990s, it increased to 2.06-to-1 in 2006, 2.76-to-1 in 2008, and dropped to 1.96-to-1 in 2010. In other words, the net worth of the median incoming entrepreneur used to be almost two times that of the median worker in the year before starting his or her business during the second half of the 1980s and throughout the 1990s. Furthermore, families that were new business owners in 2009—given they did not own a business during the previous PSID survey in 2007—had almost three times more wealth than the median family not starting a business, when both groups were still not business owners.

FIGURE 13

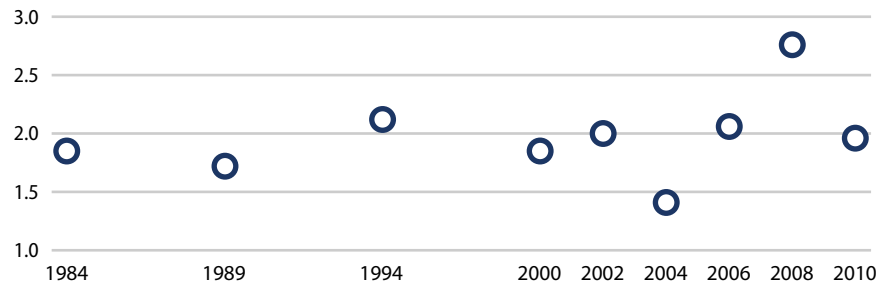
**Median real family income of new business-owner households before becoming entrepreneurs relative to non-business-owner households, 1969–2010**




Source: Author's analysis of Panel Study of Income Dynamics data. The solid line indicates a one-year period between the observations to determine households' business-ownership status change. Beginning in 1997, this period is two years, given the changes in the PSID data collection schedule.

FIGURE 14

**Median real family wealth of new business-owner households before becoming entrepreneurs relative to non-business-owner households, 1984–2010**




Source: Author's analysis of Panel Study of Income Dynamics data. The PSID started collecting wealth information every five years in 1984. Beginning in 1999, the wealth information started to be collected every two years.

These comparative analyses of income and wealth ratios for incoming business-owner households and non-business-owner households—before the former became entrepreneurs, at a time where both groups did not own a business—are additional evidence supporting the idea that middle-class families have been subject to increasing wealth accumulation constraints. This is especially true for those close to the median of the income distribution, and it has made entrepreneurship a viable option only for those with higher income and wealth levels.

# Conclusion

This report explores the dynamics of business ownership and firm creation in the United States in the past four decades, particularly focusing on what the characteristics of incoming entrepreneurs reveal about the startup process over that time period.

The first and main finding of this report is that business ownership declined during the pre-crisis years of 2002 to 2008—a period of low interest rates, high economic growth, and extraordinary availability of credit for American families—to 12.4 percent, compared to 13.6 percent in the 1990s. This is equivalent to a loss of about 1 million businesses, on average, in the 2000s relative to the 1990s. The data show that the decline in business ownership resulted from stalling business creation rates—the percentage of households within the PSID becoming business owners within one data collection period, either one year from 1968 to 1997 or two years since—and increasing rates of business closings.

The remainder of this report focused, therefore, on the potential factors behind the lack of continued growth in business creation during the expansionary pre-crisis years of the past decade. The factors explored are based on a theoretical framework used in recent studies of entrepreneurship and occupational choice. According to this theory, the decision to become a business owner is influenced by various idiosyncratic characteristics, in addition to the availability of enough financial capital to start the new business. These factors include observable characteristics such as education and age, as well as unobservable ones such as entrepreneurial ability and risk tolerance.

On the one hand, one's level of education and age—as an approximation of work experience—can open access to certain industries and occupations, which ultimately provide a different set of business opportunities, market experience, and industry networks. On the other hand, education and age are also critical drivers of labor income, which becomes the benchmark that potential entrepreneurs use to balance the costs and benefits of choosing between occupations—which are

partly determined by entrepreneurial ability and risk. Furthermore, education and age are important determinants of total income, which is the main vehicle to accumulate the financial capital required to eventually open a new business.

The data also support the fact that the middle class—defined in this report as families between the 40th percentile and 90th percentile of the income distribution—has been the main driver of business creation in the United States, accounting for 60 percent of new business ownership since the 1970s. As such, business creation in the United States is closely related to the financial health, dynamics, and characteristics of the middle class.

Consistent with other studies, the facts in this report show that real income for the majority of middle-class families—those closer to the median and more generally those below the 80th percentile of the income distribution—stagnated in the 2000s, while real income for families in the top 10 percent of the income distribution saw substantial growth in the same period. Moreover, while total wealth for middle-class families grew in the 2000s, it was mainly driven by the housing bubble that burst in 2009; non-real-estate wealth actually declined in the 2000s.

Recent studies on occupational choice reaffirm the consensus about how wealth and liquidity constraints can be a key barrier to business creation. In short, if these constraints are binding, households will tend to delay the decision to start a business. The findings documented in this report provide evidence in support of this idea. The results show that the median and average age of new business-owner household heads increased significantly since the late 1990s.

Furthermore, the report finds that the median income and wealth of households that became business owners—just before starting their business—was much higher than the median income and wealth of those that remained as workers in the 2000s relative to the 1980s and 1990s. In addition, the data in this report show a gradually increasing trend in the percentage of new business owners with more than a high school education. All of this reinforces the idea that capital constraints for middle-class families are concentrating entrepreneurship among the older, better-educated, and higher-earning households. In other words, limited wealth accumulation capacity has been gradually making entrepreneurship in America a luxury type of good, mainly available to individuals with high incomes and a high net worth.

In sum, the evidence documented in this report suggests that the deterioration in the financial health of the middle class restricts these families to more open access to entrepreneurship. This has in turn resulted in a declining rate of business ownership in America, which will negatively impact innovation and growth in the medium and long term. Thus, structural policies focused on increasing access to education and strengthening financial health—real income and savings capacity—of middle-class families will ultimately help foster a vibrant and dynamic entrepreneurial economy in America.

# Appendix A: Methodology

The theoretical-numerical framework used to interpret and benchmark the facts documented in this report is that of Mondragon-Velez. This is a partial equilibrium model in which agents are heterogeneous in wealth, education, age, and entrepreneurial ability. Each period, agents decide their occupation by comparing future expected earnings in risky entrepreneurship, relative to paid work. Entrepreneurial earnings are a function of human capital—education and age—the financial capital invested in the firm, entrepreneurial ability, and unobservable risk; paid work earnings mainly depend on human capital. Potential entrepreneurs can borrow funds against their wealth as collateral. The model is estimated so as to match the long-term average—from 1968 to 1992—earnings profiles and fraction of entrepreneurs by education and age for the United States. The estimated model is a set of minimum capital requirements to start a business by age, education, and entrepreneurial ability. These estimated *decision rules*, along with initial distributions of wealth and education, are used to generate profiles of transition to entrepreneurship relative to wealth for the U.S. economy.

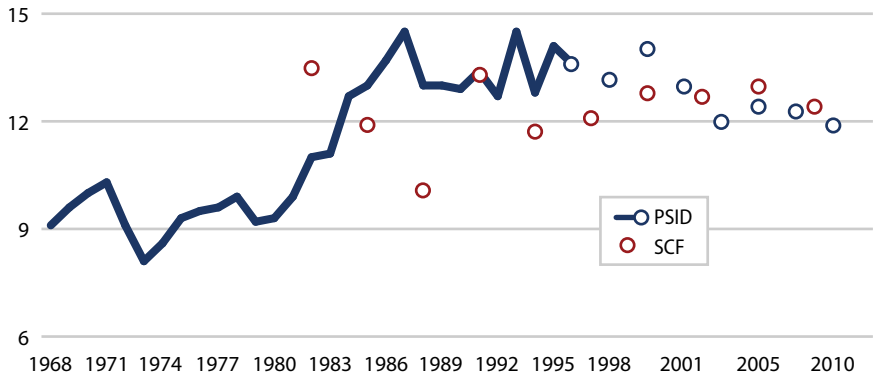
In this setting, individuals with some level of entrepreneurial ability—spirit or willingness—start businesses if their wealth holdings are at least as large as the minimum capital requirement level for their specific age and education. Those individuals who want to start firms but do not have enough wealth to do so in a particular year will save more in the near future to overcome their wealth constraints. Therefore, this theory predicts that individuals will delay their decision to become business owners when wealth constraints are tighter. This implies not only that potential entrepreneurs start their businesses at an older age but also that they will need to accumulate higher levels of wealth than their typical peer worker not interested in starting a firm.

# Appendix B: Comparing the Panel Study of Income Dynamics and the Survey of Consumer Finances

When comparing the PSID business ownership rates with those available from the FED's Survey of Consumer Finances, or SCF, levels and trends differ from those presented in Figure 1.[43] While the fraction of entrepreneur households increased steadily in the 1980s, according to the PSID survey, SCF data show a sharp decline between 1981 and 1987 and a strong recovery by 1990 to a level above 13 percent, similar to the one obtained from PSID data. In addition, the percentages of business-owner households in the SCF remained below those obtained from the PSID survey for the 1990s, but both series show an upward trend for the decade. Finally, SCF entrepreneurship rates for the 2000s are of the same order of magnitude as those from the PSID; but they remained at the observed level in the late 1990s instead of declining. Overall, both PSID and SCF data show an increasing trend for business ownership in the 1990s. While the PSID survey suggests a decline in the fraction of entrepreneur households for the 2000s, the SCF survey shows no growth in the rate of business ownership, relative to the dynamics of the prior decade.

FIGURE 15

**Percentage of business-owner households in the United States, 1968–2010, based on PSID and SCF data**




Source: Author's analysis of Panel Study of Income Dynamics and Survey of Consumer Finances data.

It is important to note that although both surveys' sample weights are representative of the U.S. economy, the SCF survey oversamples households at the top income brackets, while the PSID survey oversamples households at lower income brackets. This could explain, at least in part, differences in the resulting rate of business ownership based on these datasets. Along these lines, it could be argued that PSID figures are more representative of the vast majority of middle-class families in the economy.

## About the author

**Camilo Mondragón-Vélez** is a senior research officer at the World Bank Group's International Finance Corporation, or IFC, where he leads a team under the IFC chief economist unit–dedicated to build a modeling and research framework to measure the economic and development impact of IFC operations and link these to the World Bank Group twin goals of eliminating extreme poverty and boosting shared prosperity. Previously, he led a team focused on global investment portfolio research and analysis, stress testing and asset allocation. He holds a Ph.D. and M.A. in economics from Georgetown University. Camilo received an undergraduate degree in industrial engineering with honors in 1997 and a B.A. in economics magna cum laude in 1998, both from the Universidad de los Andes in Bogotá, Colombia. He taught intermediate macroeconomics in his native country, Colombia, from 1999 to 2001, as well as at Georgetown University from 2001 to 2006. He was a visiting professor at the Universidad de los Andes in 2005 and has been a member of the National Bureau of Economic Research, or NBER, Entrepreneurship Workgroup since 2006. Before starting his graduate studies, he worked for the Colombian state-owned oil company Ecopetrol, coordinating the exploration and production investment portfolio and implementing models for policy design of the Colombian oil and gas industry.

His research has been primarily focused on entrepreneurship; particularly on the decision to become an entrepreneur and the financial returns to entrepreneurship. His Ph.D. dissertation, "Entrepreneurship, Human Capital and Wealth," was awarded the Razin Prize by Georgetown University Economics Department in March 2007. Contributions in these areas have been published in the *Annals of Finance Special Issue on Entrepreneurship* (2009) and the *Kauffman Symposium on Entrepreneurship and Innovation Data* (2008). The extension of this research agenda for developing economies includes a contribution on "Business Ownership and Self Employment in Developing Economies" for the NBER's *International Differences on Entrepreneurship* volume; work on "Labor Market Rigidities and Informality in Colombia" published in *Economia*, the *Journal of the Latin American and the Caribbean Economic Association*; and "Labor Market Rigidities and Formal and Informal Sector Wages in Colombia" in a volume by the Colombian Central Bank. In his current and previous positions he also researches international finance, macroeconomics, industry dynamics, development economics, asset allocation, and equity markets, with special emphasis on developing economies. In these areas, his latest work includes studies in business climate reform and equity performance, private equity and venture capital, and banks' performance along the business cycle.

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## Endnotes

1 The Panel Study of Income Dynamics, or PSID, is a national panel representative survey—the longest household longitudinal household survey in the world—managed by the Institute for Social Research, or ISR, at the University of Michigan. For more information, see PSID, "The Panel Study of Income Dynamics – PSID – is the longest running longitudinal household survey in the world," available at http://psidonline.isr.umich.edu/ (last accessed December 2014).

2 This definition is somehow consistent with the class structure suggested by William Thompson and Joseph Hickey in 2005, which categorizes household with incomes between $35,000 and $75,000 as "lower middle class" and households with incomes above $100,000 as "upper middle class" while defining "upper class" as those with incomes above $500,000. The works of Dennis Gilbert in 2002 and Leonard Beeghley in 2004 include related class structure classifications for the United States. Dennis Gilbert, *The American Class Structure in an Age of Growing Inequality* (Belmont, CA: Wadsworth Publishing, 2002); William Thompson and Joseph Hickey, *Society in Focus* (Boston: Allyn and Bacon, 2005); Leonard Beeghley, *The Structure of Social Stratification in the United States* (Boston: Allyn and Bacon, 2004).

3 The Small Business Administration website cites the following as sources for these facts: U.S. Deptartment of Commerce, U.S. Census Bureau, and International Trade Administration. U.S. Small Business Administration, "Frequently Asked Questions," available at http://www.sba.gov/sites/default/files/FAQ_Sept_2012.pdf (last accessed October 2013); Kathryn Kobe, "the Small Business Share of GDP, 1998-2004" (Washington: Economic Consulting Services, 2007), available at www.sba.gov/advo/research/rs299.pdf; CHI Research, "Small Serial Innovators: The Small Firm Contribution to Technical Change" (2003), available at www.sba.gov/advo/research/rs225.pdf; Bureau of Labor Statistics, *Small Serial Innovators: The Small Firm Contribution to Technical Change* (U.S. Department of Labor, 2003).

4 John Haltiwanger, Ron S. Jarmin, and Javier Miranda, "Who Creates Jobs? Small vs. Large vs. Young," *Review of Economics and Statistics*, 95 (2) (2013).

5 Note that in order to have a growing private sector, business creation needs to offset business failure, which tends to be high given the significant risks inherent to startups and new ventures.

6 Author's analysis of see PSID, "The Panel Study of Income Dynamics."

7 A recent study by the New American Foundation titled "Out of Business: Measuring the Decline of American Entrepreneurship" shows declining trends for new firms, existing firms, and establishment entry rates—when adjusted by the size of the working-age population—since the late 1970s, using Census Bureau data. Their results about the self-employment rate—a more individual measure of entrepreneurship—show similar trends as the ones found in this report with regard to business ownership: increasing in the 1980s and 1990s and declining in the late 1990s and 2000s. The New America Foundation, "Markets, Enterprise, and Resiliency Initiative" (2012), available at http://newamerica.net/sites/newamerica.net/files/policydocs/Out%20of%20Business,%20July%202012_0.pdf.

8 The PSID collected data annually since inception and up to year 1997 and biannually since.

9 Samuel Bowles and Herbert Gintis, "The Inheritance of Inequality," *Journal of Economic Perspectives* 16 (3) (2002): 3–30.

10 For a study on social mobility and entrepreneurship, see Vincenzo Quadrini, "The Importance of Entrepreneurship for Wealth Concentration and Mobility," *Review of Income and Wealth* 45 (1) (2000).

11 It is important to note that the evidence presented in this report is agnostic about direct policy interventions to provide seed capital, services, or business education to potential or start-up business owners and entrepreneurs.

12 One way in which theoretical models of entrepreneurship include entrepreneurial ability is by including it as a driver of the output of the firm as a form of productivity factor. The theoretical study by Professor Robert Lucas in 1978 included the entrepreneur's management talent, as well as span of control to define the entrepreneurial production function. The occupational choice model by Professor Francisco Buera shows the theoretical implications of considering the distribution of ability across the population. In this model, individuals with zero ability are reflecting in some sense the fraction of the population with no entrepreneurial spirit. Through a calibrated partial equilibrium model of occupational choice, which adds human capital—as a function of education and age—to the framework proposed by Professor Buera, Mondragón-Vélez estimates empirically the fraction of the population with no entrepreneurial spirit, as well as a simplified distribution of entrepreneurial skills among the American population. Strictly speaking, entrepreneurial skill in this model should be seen as a combination of entrepreneurial spirit and skill. Given that these characteristics are not observable, they are estimated jointly in this empirical study. Camilo Mondragon-Velez, "Entrepreneurship, Human Capital and Wealth" (Washington: Georgetown University, 2007); Francisco J. Buera, "A Dynamic Model of Entrepreneurship with Borrowing Constraints: Theory and Evidence," *Annals of Finance* 5 (3) (2009): 443–464; Nancy M. Carter and others, "The career reasons of nascent entrepreneurs," Journal of Business Venturing 18 (1) (2003): 13–39; Other strands of research attempt to differentiate between entrepreneur-specific characteristics and motivations in determining the choice to become and the eventual success or failure of a venture. See Gavin Cassar, "Money, money, money? A longitudinal investigation of entrepreneur career reasons, growth preferences and achieved growth," Entrepreneurship & Regional Development (19) (1) (2007): 89–107; Robert A. Baron, and Gideon D. Markman, "Beyond social capital: the role of entrepreneurs' social competence in their financial success," Journal of Business Venturing, (18) (1) (2003): 41–60.

13 See, for instance, Global University Entrepreneurial Spirit Students' Survey, "GUESSS," available at http://www.guesssurvey.org/ (last accessed July 2013); "Monster.com," available at http://www.monster.com/ (last accessed July 2013); Dan Schawbel, "Multi-Generational Worker Attitudes Study" (Boston: Millennial Branding, 2013).

14 For a comprehensive literature review and reference list in this area, see Michael Frese, "Toward a Psychology of Entrepreneurship—An Action Theory Perspective," *Foundations and Trends in Entrepreneurship* 5 (6) (2009): 435–494.

15 Harry Markowitz, "Portfolio Selection," *The Journal of Finance* (7) (1) (1952): 77–91.

16 Charles A. Holt and Susan K. Laury, "Risk Aversion and Incentive Effects," *The American Economic Review* 92 (5) (2002): 1644–1655.

17 Heather Boushey and Adam Hersh, "The American Middle Class, Income Inequality, and the Strength of Our Economy (Washington: Center for American Progress, 2012), available at http://www.americanprogress.org/issues/economy/report/2012/05/17/11628/the-american-middle-class-income-inequality-and-the-strength-of-our-economy/.

18 The dynamics between entrepreneurship and inequality illustrate a two-way relationship: a strong middle class and social safety nets facilitate the formation of entrepreneurship; however, the success of entrepreneurs may increase overall inequality if growth is not broadly dispersed. Empirical evidence for the United States shows that entrepreneurs have higher earnings and wealth holdings than salaried workers. This group, therefore, explains important characteristics of inequality in the economy. In fact, Quadrini, Gentry and Hubbard, Boháček, and Cagetti and De Nardi show the critical role entrepreneurs have in explaining the rising inequality in the "upper tail" of the wealth distribution. For other references with regard to entrepreneurship and education, see Quadrini, "The Importance of Entrepreneurship for Wealth Concentration and Mobility."; William M. Gentry and Glenn R. Hubbars, "Entrepreneurship and Household Saving" (New York: Columbia University, 2001); Radim Boháček, "Financial Constraints and Entrepreneurial Investment" (Prague: CERGE-EI, 2003); Marco Cagetti and Mariacristina De Nardi, "Estate Taxation, Entrepreneurship and Wealth," *American Economic Review* 99 (1) (1989): 85–111; Javier Diaz-Gimenez, Vincenzo Quadrini, and José V. Ríos-Rull, "Dimensions of Inequality: Facts on the U.S. Distributions of Earnings, Income, and Wealth," *Federal Reserve Bank of Minneapolis Quarterly Review* 21 (2) (1997): 3–21; Yaz Terajima, "Education and Self-Employment: Changes in Earnings and Wealth Inequality." Working Paper 06-40 (Bank of Canada, 2006).

19 Camilo Mondragón-Vélez, "The Probability of Transition to Entrepreneurship Revisited: Wealth, Education and Age," *Annal of Finance* 5 (3) (2009): 421–441; For one of the first studies to discuss occupational choice and initial conditions in terms of education, see Oded Galor and Joseph Zeira, "Income Distribution and Macroeconomics," *Review of Economic Study* 60 (1) (1993): 35–52.

20 Yaz Terajima, "Education and Self-Employment: Changes in Earning and Wealth Inequality." Working Paper 06.40 (Bank of Canada: 2006); Mondragón-Vélez, "Entrepreneurship, Human Capital and Wealth."

21 Mondragón-Vélez used SCF 1998 data to show that the fraction of entrepreneurs within the American working population increased up to ages between the mid and late 1940s and declined thereafter. Mondragón-Vélez, "Entrepreneurship, Human Capital and Wealth."

22 Barton H. Hamilton, "Does entrepreneurship pay? An empirical analysis of the returns of self-employment," *Journal of Political Economy* 108 (1) (2000): 604–631; Thomas Åstebro and Irwin Bernhardt, "The winner's curse of human capital," *Small Business Economics* 24 (1) (2004): 63–78; Mondragón-Vélez, "Entrepreneurship, Human Capital and Wealth."

23 David S. Evans and Linda S. Leighton, "Some Empirical Aspects of Entrepreneurship," *American Economic Review* 79 (1) (1989): 519–535; David S. Evans and Boyan Jovanovich, "An estimated model of entrepreneurial choice under liquidity constraints," *Journal of Political Economy* 97 (1) (1989): 808–827. Abhijit Banerjee and Andrew Newman also study the occupational choice dependence on wealth constraints. Abhijit Banerjee and Andrew Newman, "Occupational Choice and the Process of Development," *Journal of Political Economy* 101 (1) (1993): 274–298.

24 Erik Hurst and Annamaria Lusardi, "Liquidity Constraints, Wealth Accumulation and Entrepreneurship," *Journal of Political Economy* 112 (2) (2004): 319–347.

25 Buera, "A Dynamic Model of Entrepreneurship with Borrowing Constraints: Theory and Evidence"; Mondragón-Vélez, "Entrepreneurship, Human Capital and Wealth"; Mondragón-Vélez, "The Probability of Transition to Entrepreneurship Revisited: Wealth, Education and Age."

26 Mondragón-Vélez shows that the effects of entrepreneurial ability and the opportunity costs implied by paid work offset those of wealth accumulation to overcome credit constrains for most potential entrepreneurs in the economy, which ultimately explains the flat profile obtained by Hurst and Lusardi at the aggregate level. In other words, Hurst and Lusardi's flat profile is not the result of the lack of capital and credit constraints but is precisely generated by these binding constraints at the individual level, which ultimately deter a significant fraction of those willing to start their own business from doing so. Mondragón-Vélez, "Entrepreneurship, Human Capital and Wealth"; Hurst and Lusardi, "Liquidity Constraints, Wealth Accumulation and Entrepreneurship."

27 Mondragón-Vélez, "Entrepreneurship, Human Capital and Wealth."

28 The PSID survey in year *t* contains business ownership information for year *t-1*. Thus, the time labels in Figure 1 have been adjusted accordingly. The fraction of urban business-owner households is computed using family sample weights provided by PSID and excludes families where the household head declares to be a farmer.

29 Benchmarked to the estimate of U.S. households from the U.S. Census Bureau, "American Community Survey," available at http://www.ntia.doc.gov/legacy/ntiahome/fttn00/falling.htm (last accessed October 2013) ; Nancy M. Carter and others, "The career reasons of nascent entrepreneurs," Journal of Business Venturing 18 (1) (2003): 13–39; Other strands of research attempt to differentiate between entrepreneur-specific characteristics and motivations in determining the choice to become and the eventual success or failure of a venture. See Gavin Cassar, "Money, money, money? A longitudinal investigation of entrepreneur career reasons, growth preferences and achieved growth," Entrepreneurship & Regional Development (19) (1) (2007): 89–107; Robert A. Baron, and Gideon D. Markman, "Beyond social capital: the role of entrepreneurs' social competence in their financial success," Journal of Business Venturing, (18) (1) (2003): 41–60.

30 Recall that the PSID survey in year *t* contains business ownership information for year *t-1*. Thus, Figure 2 assigns the rate to the survey year when the new business is reported. If a household, for example, did not report to own a business in year 2006—a fact observed in the 2007 PSID wave—but reported to own a business in year 2008—in the 2009 PSID wave—then a new business-owner household is shown for year 2008.

31 See the class stratification works for the United States by William Thompson and Joseph Hickey, Dennis Gilbert, and Leonard Beeghley. Gilbert, *The American Class Structure in an Age of Growing Inequality;* Thompson and Hickey, *Society in Focus;* Beeghley, *The Structure of Social Stratification in the United States*.

32 This percentage would be almost 70 percent if the definition of middle class included families up to the 95th income percentile.

33 A similar upward trend is observed when comparing incomes for families at the 95th percentile and 20th percentile—from about 6 times in the early 1970s to more than 8.5 after 2005—as well as when comparing incomes for families at the 80th percentile and 20th percentile—from 4 times in the early 1970s toward 5 times in the second half of the 2000s.

34 A similar trend is observed when comparing wealth levels for families at the 75th percentile and 25th percentile. This wealth ratio remained around 20 times from the mid-1980s through the mid-1990s, increased toward 50 times by 2007, and saw a similar exponential increase with the 2009 financial crisis, when it achieved a level above 100 times.

35 Jeff Holt, "A Summary of the Primary Causes of the Housing Bubble and the Resulting Credit Crisis: A Non-Technical Paper," *The Journal of Business Inquiry* 8 (1) (2009): 120–129.

36 When comparing the levels of income and wealth of families at the top of the distribution relative to lower middle-class families, income ratios of families at the 90th percentile of the income distribution versus families at the 10th percentile increased between 15 percent and 20 percent, while wealth ratios more than doubled from the second half of the 1980s to the second half of the 2000s.

37 Census data presented in Figure 7 is reported in 2013 Consumer Price Index Research Series Using Current Methods, or CPI-U-RS, adjusted dollars, provided by the Bureau of Labor Statistics, or BLS. Hence, it was adjusted to 2014 dollars using the historical CPI series provided by BLS. PSID data presented in Figures 7 and 8 were adjusted to 2010 CPI-U-RS dollars using the BLS CPI-U-RS series and then to 2014 end-of-year dollars using the CPI series from BLS. Since the CPI-U-RS BLS series is provided from year 1977 onward, for years 1967 to 1976, PSID data were adjusted to 1977 dollars using the historical CPI series provided by BLS. For more information on the CPI-U-RS series, see U.S. Bureau of Labor Statistics, "CPI Research Series Using Current Methods (CPI-U-RS)," available at http://www.bls.gov/cpi/cpirsdc.htm (last accessed December 2014).

38 Edward N. Wolff, "The Asset Price Meltdown and the Wealth of the Middle Class." Working Paper 18559 (National Bureau of Economic Research, 2012).

39 This excludes important unobservable characteristics that can be related to human capital such as entrepreneurial ability and entrepreneurial spirit.

40 This figure is measured for the period of 1980 to 2010. The corresponding figures for 1990 to 2010 and 2000 to 2010 are 0.26 and 0.32, respectively.

41 Four self-reported education levels are available from the PSID: less than high school, completed high school, some college, and completed college.

42 Given that the PSID was run annually up to 1997 and biannually thereafter, the time between the collection of income and wealth data for all nonbusiness-owner families and the collection of future business-ownership data is one year between 1984 and 1997 and two years between 1997 and 2010.

43 The SCF cross-sectional data in year *t* contains business ownership information for year *t*, except with regard to the business income, which refers to year *t-1*. The fraction of business-owner households is computed using family sample weights provided by the SCF and excludes families that declare to own a farm or ranch.

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