Puzzlingly Divergent Trends in Household Wealth and Business Formation

By Justin Barnette and Andrew Glover

The rate of new business formation has declined sharply in recent decades. From 1989 to 2017, the share of new businesses in total businesses fell by one-third, while new businesses' share of total employment fell from 1.5 percent to 1.0 percent. These declines have raised concerns among economists about job and productivity growth. The majority of new businesses are small businesses, which accounted for 65 percent of net job growth in the United States in 2019. In addition, new businesses are a major contributor to aggregate productivity growth, adding 0.15 percentage points annually, whereas firms older than 10 years contribute almost 0 percent on net (Alon and others 2018).

The observed decline in new businesses can be juxtaposed to an increase in household wealth (the net worth of real and financial assets less liabilities) that in theory should affect households' propensity to become entrepreneurs. Economic theories of business formation suggest that wealthier households are more likely to start a business because wealth allows them to more easily reach a profitable scale. Previous researchers have verified this effect in household data, especially for the very wealthy (Quadrini 2000; Hurst and Lusardi 2004). As a result,

*Justin Barnette is an assistant professor at Kent State University. Andrew Glover is a senior economist at the Federal Reserve Bank of Kansas City. This article is on the bank's website at **www.KansasCityFed.org***

we would expect business formation to move in the same direction as household wealth.

In this article, we use data from the Panel Study of Income Dynamics from 1989 to 2015 to estimate the effect of wealth on the probability of a household starting a business while taking other observable characteristics into account. We find a puzzling divergence: business formation declined over the past three decades even as household wealth increased. However, we find that higher wealth is associated with an increase in the probability of starting a business during any given year, consistent with economic theory. In other words, we do not find evidence that the *relationship* between business formation and household wealth has changed in the cross section. Instead, some other factor likely explains why business formation rates fell as households became wealthier.

We next assess whether other household characteristics in our sample besides wealth help explain the decline in business formation. The characteristic with the largest effect on business formation, both in the cross section and for the entire economy over time, is an indicator of previous entrepreneurial experience: the fact that fewer households have previously been entrepreneurs accounts for 85 percent of the decline in new business formation since 1989. Our findings suggest that the dynamic relationship between wealth accumulation, past experience, and new business formation deserves further study.

Section I explains the economic theory of entrepreneurship. Section II describes the data used for our empirical analysis and estimates the cross-sectional relationship between wealth and business formation, controlling for a host of household characteristics emphasized in previous studies. Section III uses this data to calculate the change in entrepreneurship expected, based on wealth trends, and to consider which non-wealth factors may have pushed the entrepreneurship rate lower.

I.   The Economic Theory of Entrepreneurship

The economic theory of entrepreneurship posits two stages of decision making. In the first stage, a potential entrepreneur forecasts their likely profits given the quality of their idea and their skills and resources and then compares the profit to their opportunity cost, which is the amount they could earn from working for an existing firm and putting their savings into the stock market rather than financing the business. If

they choose to become an entrepreneur, they enter the second stage, in which they decide the level of production that will maximize their profits, which is limited due to what Lucas (1978) coined the entrepreneur's "span of control." That is, even an entrepreneur with an excellent idea is only able to scale their business so far without incurring prohibitively high costs to maintain the same quality.

According to this theory, wealthier households are more likely both to become entrepreneurs and to have a higher level of production than less wealthy households. Buying or renting the capital and equipment required to achieve a profitable scale of operation is less burdensome for those with enough wealth to self-finance their business (Evans and Jovanavic 1989; Cagetti and De Nardi 2006; Quadrini 2000). In addition, profits are variable over time, and wealthier entrepreneurs are better equipped to weather lean periods.

Figure 1 graphically represents the two stages of decision making for entrepreneurs, showing clear advantages for wealthy households. In the first stage—deciding that starting a business is preferable to working for an existing firm—households estimate whether their profits from running a business (blue and green curves) exceed their opportunity cost (horizontal dashed line). This opportunity cost includes the earnings that a potential entrepreneur would receive working at an existing firm; any benefits, such as health insurance or a retirement plan, that they would have to self-fund if they operated their own business; and the foregone capital income from buying financial assets rather than investing in their start-up. As the figure shows, an entrepreneur who can fund their business with cash rather than taking on debt (green curve) would operate at a scale sufficient to make an economic profit. On the other hand, a debt-funded entrepreneur (blue curve) would have to rent or lease capital, which would lead them to produce at a smaller scale and profit. The debt-funded entrepreneur would not generate enough profit to cover their opportunity costs, so they would likely not choose to form a business in the first place.

The relationship illustrated in Figure 1 is theoretical and reflects only one dimension along which entrepreneurs might differ. In reality, potential entrepreneurs differ in many ways other than wealth, and even a debt-funded entrepreneur with a great idea may start a business. However, we expect wealthier households to be more likely to start businesses on average.

Figure 1
Theoretical Effect of Wealth on Business Scale and Profit
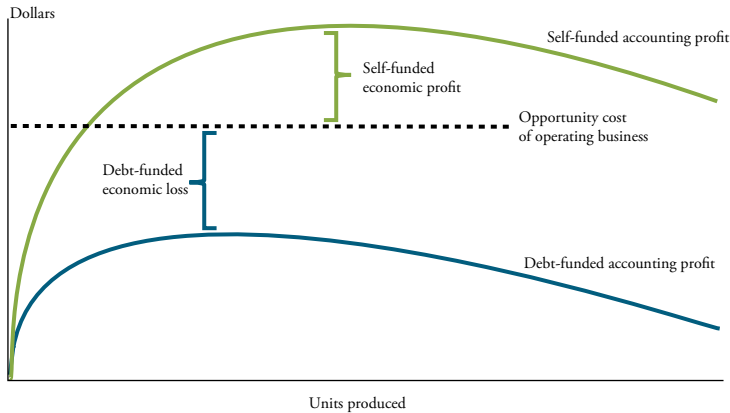
Note: Figure shows the accounting and economic profits from two hypothetical entrepreneurs increasing the number of units produced.

II. Entrepreneurship in the Panel Study of Income Dynamics

Given the theoretical relationship between wealth and entrepreneurship, we next investigate whether this relationship is detectable in household data. To do so, we use data from the Panel Study of Income Dynamics, which has tracked many socioeconomic variables for a panel of households since 1968. Two features make this study particularly useful for our purposes: first, the study asks the head of the household whether anyone in their household started a business in the last year; second, starting in 1984, the study has occasionally asked households for detailed information about their wealth.

Following Quadrini (2000) and Hurst and Lusardi (2004), we begin by using the 1989 wave to estimate the effect of wealth on the probability of starting a business over the next year and perform the same estimation using data from 2015–16.[1] We restrict the sample to households that did not operate a business when interviewed in 1989 and then check to see if they started one in 1990. We closely follow Hurst and Lusardi (2004) and Quadrini (2000) by using standard statistical techniques to estimate the effect of wealth on the probability of a household starting a business while taking other observable characteristics into account. Table 1 lists the characteristics that we hold constant when estimating

Table 1
Average Household Characteristics in 1989 and 2015

Observables	1989	2015
Household net worth (2020 U.S. dollars)	$125,448	$133,994
Age (years)	37.8	40.1
Education (percent)		
Less than high school	13	12
High school	37	25
Some college	23	26
College	28	37
White (percent)	82	74
Female (percent)	25	28
Married (percent)	60	52
Labor income (2020 U.S. dollars)	$66,944	$74,793
Unemployed last five years (percent)	38	32
Business owner last five years (percent)	15	9

Notes: Columns are weighted averages of each observable in 1989 and 2015. Dollars are in constant 2020 values and averages of indicator variables are reported as proportions.
Source: University of Michigan Institute for Social Research.

the effect of wealth on business creation, as well as summary statistics for each variable, in both 1989 and 2015. Many of the variables changed substantially over that period, underscoring the importance of estimating the effect of wealth while holding other characteristics fixed.

Chart 1 presents our estimates for how wealth affects the probability of a household starting a business in 1990, holding other characteristics constant. The blue line labeled "constant wealth effect" assumes that every $1 of wealth increases the probability of starting a business by a constant amount. The upward slope of the line indicates that households with more wealth are more likely to start a business. Specifically, every $100,000 increase in wealth, measured in 2020 dollars, is associated with a 0.6 percentage point increase in the probability of starting a business in 1990 (the average start-up rate for this sample was 7.3 percent).

As emphasized by Hurst and Lusardi (2004), the assumption of a constant marginal effect of wealth on the probability of starting a business masks the fact that very wealthy households are substantially more likely to start a business than everybody else. We therefore separately estimate the rate of very wealthy households, who we define as those with wealth that would put them in the top 5 percent in 1989. The

Chart 1
Estimates of Wealth's Effect on Household Start-Up Rate
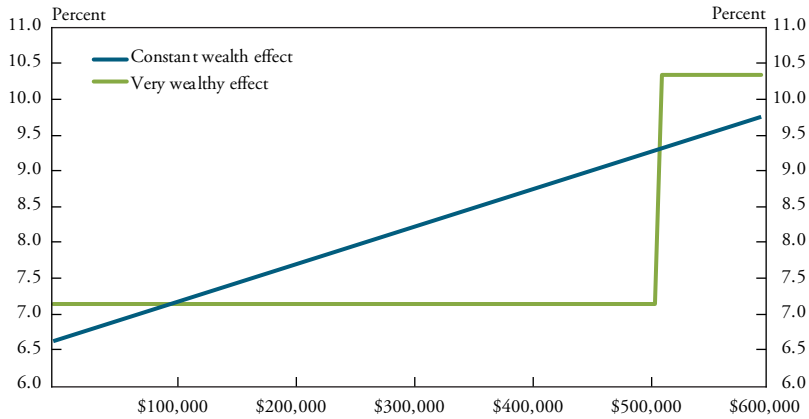
Notes: The blue line assumes that the marginal effect of wealth is constant, while the green line assumes that there is a constant start-up rate until households are above the threshold for being "very wealthy" ($515,000 in 2020 dollars, which would place them in the wealthiest 5 percent of households in 1989).
Source: University of Michigan Institute for Social Research.

green line in Chart 1, labeled "very wealthy effect," shows that households with wealth greater than $515,000 (in 2020 dollars) were 3.2 percent more likely to start a business than those with less wealth.

When we use the same statistical methods and non-wealth household characteristics with data from 2015–16, the estimates are very similar to 1989–90, so we have omitted them from Chart 1. Most importantly for our analysis, very wealthy households were 3.5 percent more likely to start a business in 2016. Therefore, by holding the effect of being very wealthy constant at 3.2 percent in the analysis below, we are being conservative and understating the divergence in observed and expected start-up rates, while avoiding the complexity of changing both the share of very wealthy households and their start-up rates at the same time.

III. Changes in Wealth and Entrepreneurship

Given the substantially higher start-up rate of very wealthy households in 1990, we next document the share of very wealthy households over time and assess how changes in this share should have affected business formation. Chart 2 displays the start-up rate from 1989 to 2015 along with the share of households with wealth greater than $515,000 in 2020 dollars. The start-up rate (blue line) has trended downward, on average, while the share of very wealthy households (green line)

Chart 2
The Divergence between Wealth and Business Formation
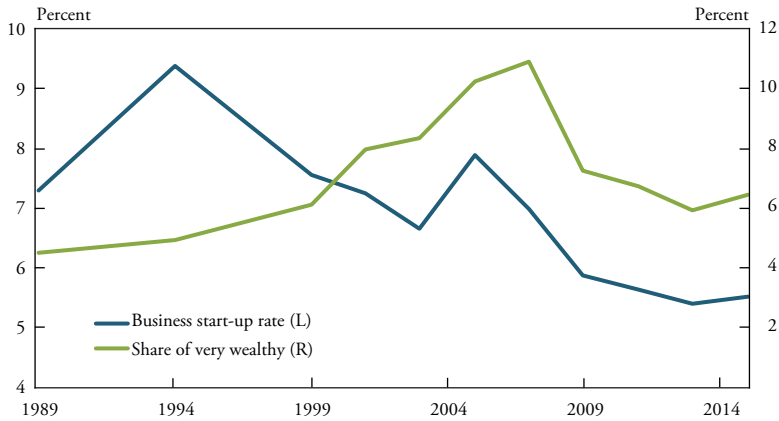
Notes: Blue line (L) presents the share of non-business operating households who start a business in the next year. Green line (R) presents the share of very wealthy households, defined as those with net worth above $515,000 in 2020 dollars (which would have put them in the wealthiest 5 percent in 1989).
Source: University of Michigan Institute for Social Research.

has risen, especially prior to the Great Recession. This divergence runs counter to what we would expect based on economic theory and our estimates of the effect of wealth on business formation. If all non-wealth household characteristics (and their effects on business formation) had remained constant from 1989 to 2015, we would expect the start-up rate to have reached a peak in 2007 of 7.5 percent, which is 0.2 percent above the 1989 rate and 0.5 percent above the realized rate in 2007. Even after the persistent shock to wealth of the 2008–09 financial crisis, we would expect the start-up rate to have been 0.1 percent higher in 2015 holding all else equal. In short, trends in wealth and business formation have diverged over the last 30 years, which is puzzling given the theoretical and empirical relationship between household wealth and business formation.

Because trends in wealth predict a counterfactual increase in the start-up rate, it is natural to ask whether changes in other household observable characteristics can account for the decline. To answer this question, we first decompose the total decline in the start-up rate into three components: the share attributable to changes in average wealth, the share attributable to changes in other observable characteristics, and the residual share attributable to neither changes in wealth nor the characteristics that

Chart 3
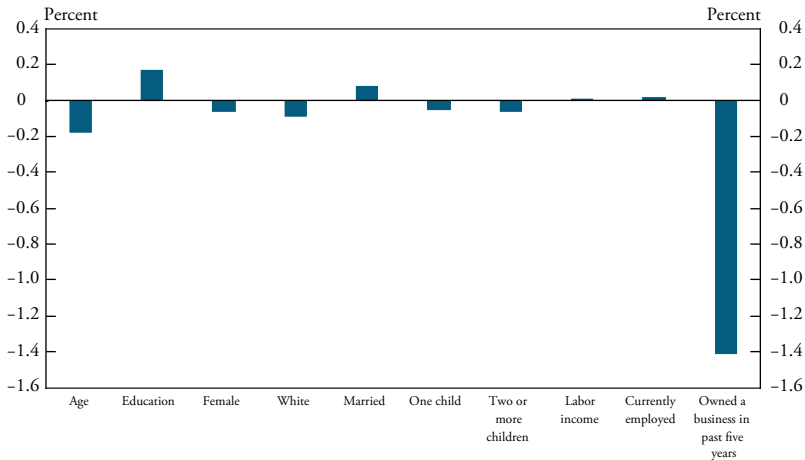## Predicted versus Actual Changes in Business Formation Rates
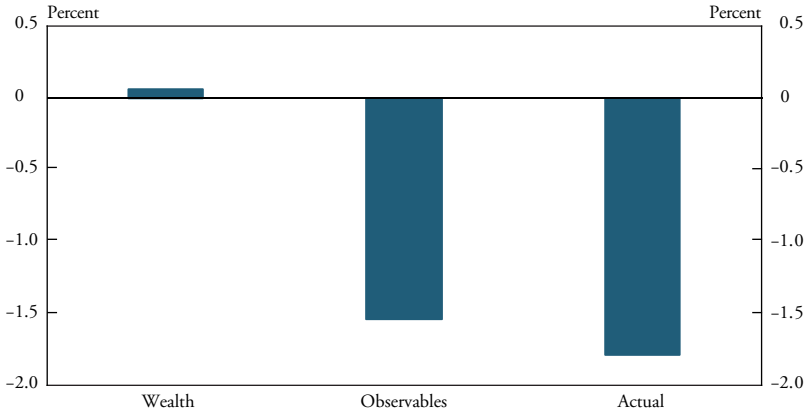
Notes: Predictions are made by averaging the estimated effects of each variable on the probability of starting a business in 1989 and 2015, then multiplying by the difference between each variable's average in 2015 and 1989. The bar labeled "wealth" is the predicted change if only the share of very wealthy households had changed. The bar labeled "observables" is the predicted change from changing all observable household characteristics. The bar labeled "actual" is the change observed in the average start-up rate.
Source: University of Michigan Institute for Social Research.

we observe. The first share represents the predicted change in business formation if only wealth had changed, the second share represents the predicted change in business formation if all observables in Table 1 had changed, and the third share represents whatever is left over. Chart 3 shows the contributions of the first two shares to the actual 1.8 percent decline from 1989 to 2015. Strikingly, changes in household characteristics, illustrated by the bar labeled "observables," contributed 1.55 percent, accounting for 85 percent of the actual decline.

Chart 4 further decomposes the 1.55 percent decline predicted by observable changes in household characteristics into the predicted change in the start-up rate if each characteristic in Table 1 had changed on its own. Changes to some characteristics help account for the downward trend in business formation. For example, the aging of the workforce alone predicts a 0.18 percent decline in entrepreneurship, which is qualitatively consistent with the negative aggregate relationships between age and business formation found by Liang, Wang, and Lazear (2018) and Karahan, Pugsley, and Sahin (2019). However, changes to other characteristics predict an *increase* in business formation. For

Chart 4
Predicted Changes in Business Formation Due to Each Characteristic

Notes: Predictions are made by averaging the estimated effects of each variable on the probability of starting a business in 1989 and 2015, then multiplying this average by the difference between each variable's average in 2015 and 1989. "Age" corresponds to the change in the average of age and the square of age. "Education" corresponds to the total effect of changes in all levels of education beyond "less than high school," each of which has a different estimated effect. "Female," "white," and "married" are indicators that correspond to the demographics of the household's head. "One child" and "two or more children" are indicators for the presence of children in the house. "Labor income" corresponds to the change in average labor income and the square of labor income. "Currently employed" is an indicator for whether the head of household had a job when interviewed, and "owned a business in past five years" is an indicator for whether the head of household operated a business in the previous five years.
Source: University of Michigan Institute for Social Research.

example, the increase in average education from 1989 to 2015 predicts a 0.17 percent increase in business formation, since more education is associated with a higher rate of entrepreneurship in the cross section and the share of college-educated households has risen.

Although changes to most household characteristics have small effects on business formation, one exception is our measure of previous entrepreneurial experience. In 1990, a person with recent entrepreneurial experience was nearly 26 percent more likely to start a business than somebody without that experience. The share of households who owned a business in the five years prior to the survey declined by over 5 percent from 1989 to 2015, generating almost all of the predicted decline in subsequent business formation. Purely from an accounting perspective, it appears that households are not starting businesses now because they did not do so in the past. As a result, low start-up rates may be self-perpetuating in that they reduce the amount of learning from experience among potential serial entrepreneurs, who have

previously been shown to account for a large share of successful businesses (Lafontaine and Shaw 2016).

Nonetheless, a declining share of households with recent entrepreneurial experience is not a fully satisfying explanation for the decline in business formation as it is the outcome of household decision making in the past. This finding instead raises new questions. If business formation today is low because it has been low in the recent past, then why did it fall in the first place? Moreover, how much of the recent decline in business formation is due to fewer people learning how to be entrepreneurs and how much is driven by forces that decreased entrepreneurship in the past persisting into the present? We leave these questions for future research.

Conclusion

The three-decade decline in business formation has raised concerns among economists and policymakers about the potential for associated declines in employment, competition, and economic growth. Because wealth is theoretically associated with entrepreneurship, we examine the relationship between wealth and new business formation over time holding other household characteristics fixed. We find that both average household wealth and the share of very wealthy households has increased over time. In addition, we demonstrate empirically that household wealth is positively associated with entrepreneurship, making the decline in household business formation even more puzzling.

To help solve this puzzle, we examine whether changes in other observable characteristics over time help explain the decline in business formation. Among observable household characteristics, previous entrepreneurial experience is the only variable that can account for a large share of the aggregate decline in the start-up rate. While this finding suggests that some part of the decline in business formation rates could be self-perpetuating, further research is needed to isolate past entrepreneurial experience from households' dynamic decision-making processes.

Endnote

[1]Data from the 2019 Panel Study of Income Dynamics were not available at the time of writing, so we could not observe businesses formed in 2018. We therefore use 2015–16 as our final years of analysis even though wealth data from 2017 are available.

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