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What's Driving the Decline in the Firm Formation Rate? A Partial Explanation

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Executive Summary

Following a number of recent reports documenting a pervasive decline in the firm formation rate across a broad range of sectors and geographic regions in the United States during the last few decades, this report takes a first step at offering a partial explanation of contributing factors. To do this, we analyze variation in startup rates across the U.S. metropolitan areas during a three-decade period. Two prominent drivers of the cross-regional patterns stand out.

Slowing population growth in the West, Southwest, and Southeast regions since the early 1980s appears to be a major factor. Firm formation rates were highest in these regions in the late-1970s, when the data begin, and appear to be driven in no small part by expanding regional population growth in the preceding decade. When the rate of population growth in these regions began to decline, so did the rates of firm formation—declining most, on average, in these previously higher-growth regions.

The relationship between regional population growth and firm formation rates is remarkably strong, even after controlling for other factors—including unobserved time and regional effects (such as industrial and labor market composition, culture, and potentially, public policies).

A second major factor is business consolidation—a measure of economic activity occurring in businesses with more than one establishment. In previous research, we documented a pervasive increase in business consolidation across geographies and sectors during the last few decades. Here, we are able to link it with declines in firm formation—especially after including time and region fixed-effects. We concede that the relationship between this measure and firm formation is hardly settled—clearly, a number of unobserved factors could affect both simultaneously or causality could partially run in the other direction. Still, we are confident that this finding is robust, and encourage other researchers to build on our work here.

Some have raised the possible link between declining shares of the population in prime-entrepreneurship age (35 to 44 years) and falling firm formation rates, but our analysis of this relationship comes to more ambiguous conclusions. On the one hand, we find that this group *is* associated with increases in firm formation. But, on the other hand, changes in this measure don't correlate with changes in the firm formation rate during the period of its observed decline. So, while an increase in this portion of the population might be a boost to startups *in the future*, we don't believe it played a role in the recent decline.

We do not directly analyze the impact of public policies—such as regulation and taxes. Though these factors likely play some role, empirical and methodological limitations prevent us from including them here. Even so, we can explain a substantial portion of the decline and variation in the firm formation rate across metros without them.

Given the central role that new firms have played in the commercialization of transformative innovations that are responsible for rising living standards and job creation, we encourage others to continue this research where we have left off. Nonetheless, we believe our results make a good start at answering the central question raised by the startup trends we and others have documented: why?

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Introduction

A flurry of research was published this summer documenting a long-term decline in American entrepreneurship and broader economic dynamism during the last three-plus decades.[1] These reports established a pervasive negative trend that was uncovered in every broad industry sector (even high-tech), each state, and nearly every metropolitan area.[2]

"High-growth" firms—the small group of (often young) companies that create the lion's share of net employment growth—have also been in decline the last decade.[3]

These factors contributed to an aging business structure—one in which the share of older firms has increased since the early-1990s, while the shares for younger firms in every other age category declined.[4] One result of shifting economic activity away from younger firms into more mature ones is that today, only about 20 percent of American workers are employed by organizations born after the mid-1990s.[5] That's a remarkable fact considering the number of household-name businesses that have been formed in the last decade alone.

Only about 20 percent of American workers are employed by organizations born after the mid-1990s.

The aging business landscape has had a noticeable effect on economic dynamism: one study finds that the former has accounted for one quarter of the drop in the latter.[6] Young businesses tend to be more dynamic than older ones; small firms more so than large ones.[7]

These findings, which seem at first blush to be so counter-intuitive, clearly touched a nerve. How could it be that the American economy, built on the sweat and ingenuity of some of history's greatest entrepreneurs, now have more businesses closing each year than new ones opening doors? And with all of the seeming technological disruption and popularity of entrepreneurship around, how could it be that mature firms are more entrenched than at any point in at least the last couple of decades?

So far, researchers have been unable to offer much of an answer. That is not surprising: untangling the multitude of factors affecting the decision to start a firm is difficult, requiring ample data on those factors, seemingly over a lengthy period of time.

In the absence of clear explanations, pundits and other observers have stepped into the vacuum by offering a range of theories from the wholly unreasonable (it's President Obama's fault; in spite of the 30-year secular decline in the startup rate long preceding him and spanning Presidents from both political parties), to more likely factors worthy of further exploration—business consolidation, globalization, technology, regulation, and other institutional and cultural factors.

In this essay, we analyze the potential contribution to the startup decline played by several broad factors on which data are available for all metros over a three-decade period: population growth, business consolidation, and age characteristics of the population. We do so fully mindful that correlations are not necessarily evidence of causation, and that where any causation between our explanatory variables and the startup rate exists, it can run in either direction. Nonetheless, we believe our statistical tests are constructed to address these challenges.

We also want to underscore that by addressing the linkages between the variables on which we have good data and grounding in theory, we are not dismissing the potential importance of policy on the startup rate. Indeed, policy factors likely play some role in the startup rate, either directly or mediated through one or more of the broad, seemingly structural factors we analyze here. Future research will be required to tease out to what extent the variations in the broad explanatory variables used in the statistical work described below are due to variations in policies at different levels of government, and to other, more basic structural forces.

1. For a summary, see Casselman (2014), "Corporate America Hasn't Been Disrupted," *FiveThirtyEight*, August 8.

2. Decker, Haltiwanger, Jarmin, and Miranda (2014), "The Secular Decline in Business Dynamism in the U.S.," *University of Maryland working paper*; Haltiwanger, Hathaway, and Miranda (2014), "Declining Business Dynamism in the U.S. High-Technology Sector," *Kauffman Foundation*; Hathaway and Litan (2014), "Declining Business Dynamism in the United States: A Look at States and Metros," *Brookings Institution*; Hathaway and Litan (2014), "Declining Business Dynamism: It's For Real," *Brookings Institution*.

3. Decker, Haltiwanger, Jarmin, and Miranda (2014), "The Role of Entrepreneurship in US Job Creation and Economic Dynamism," *Journal of Economic Perspectives*; Clayton, Sadeghi, Talan, and Spletzer (2013), "High-employment-growth firms: defining and counting them," *Bureau of Labor Statistics*.

4. Hathaway and Litan (2014), "The Other Aging of America: The Increasing Dominance of Older Firms," *Brookings Institution*.

5. Hathaway (2014), "The Aging of American Businesses," *Harvard Business Review*, August 1.

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

7. Haltiwanger, Jarmin, and Miranda (2013), "Who Creates Jobs? Small vs. Large vs. Young," *Review of Economics and Statistics*.

Population Growth and Entrepreneurship

Why should differences in population growth across regions in the United States matter for the startup rate? Previous empirical and theoretical research suggests two answers: that population growth means more potential entrepreneurs (a supply side effect) and a larger customer base (a demand side impact).[8]

A counter possibility is that entrepreneurship rates are relatively stable in the long run and/or influenced by factors other than those identified here. Thus, any increase in startup rates in one region may regress over time toward a central value, or a mean. We address this second hypothesis in the following section.

We begin our analysis of the first hypothesis—higher population growth encourages startup activity—by showing Figure 1, which compares annual population growth for the Western, Southwestern, and Southeastern states as a group, against population growth for the group of Eastern, Northeastern, and Midwestern states. Both series are plotted on the left vertical axis.

The figure also plots the annual rate of new firm formations (firms aged less than one year as a share of total firms) nationally on the right vertical axis. The data on firm entries come from the Census Bureau's Business Dynamics Statistics, which covers the entire universe of employer-firms (those with at least one employee) in the United States.[9]

Critically, the BDS distinguishes establishments (physical locations of business activity) from firms (the group of establishments under a common ownership structure). This is particularly important when analyzing new business formation because new business establishments aren't always new firms. Evidence suggests that existing firms now open 40 percent of new establishments—a percentage that has increased steadily over time.[10] Here, we focus on new firms—a better measure of entrepreneurship.

Figure 1 illustrates two key results. First, aside from a period in the 1960s, annual population growth in the West, Southwest and Southeast trended around two percent in the three decades from 1950 to 1980. Population growth then began a steady, persistent—and at times sharp—slowdown in the three-plus decades that followed. In contrast, population growth in the East, Northeast, and Midwest fell

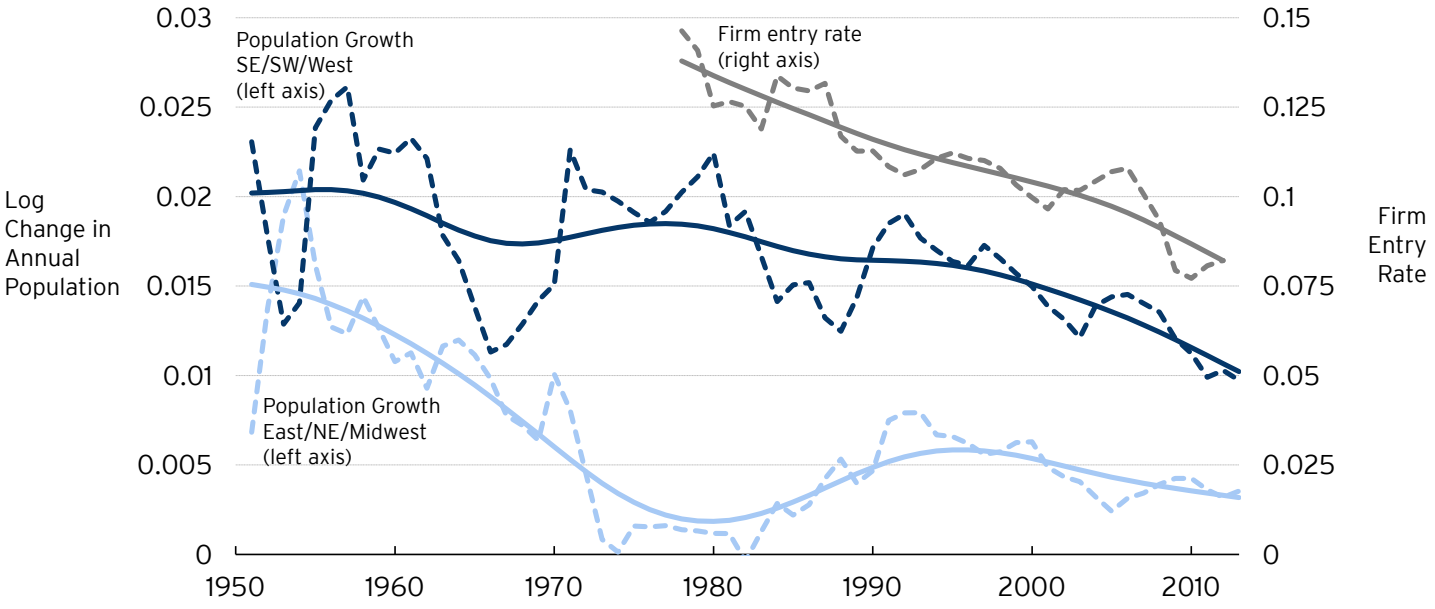
8. Armington and Acs (2006), *Entrepreneurship, Geography, and American Economic Growth*, Cambridge University Press; Krugman (1991), "Increasing Returns and Economic Geography," *Journal of Political Economy.*

9. U.S. Census Bureau, *Business Dynamics Statistics*: http://www.census.gov/ces/dataproducts/bds/

10. Hathaway, Schweitzer, and Shane (2014), "The Shifting Source of New Business Establishments," *Federal Reserve Bank of Cleveland.*

Fig. 1

Annual Population Growth (Regional) vs. Firm Entry Rate (National)



Source: U.S. Census Bureau, Bureau of Economic Analysis; author's calculations
Note: Dotted lines indicate actual growth rates; solid lines are rates that have been smoothed with an HP filter

substantially from 1950 onward, and has remained subdued since then.

Second, the annual firm formation rate also experienced a path of similar decline from 1980 onward. We don't have data on firm formations prior to the late-1970s, and that is unfortunate. Thus, we cannot resolve whether the post-1980 decline truly marked a point of departure from prior higher sustained levels, or if the pre-1980 period coincidentally had abnormally high firm formations—itself a departure from historical norms.

We do, however, have firm formation data beginning in 1978 and thus will work with it as a base year. The map in Figure 2 plots the average annual firm entry rate for the three earliest years of the available data for the 50 states (1978-1980).

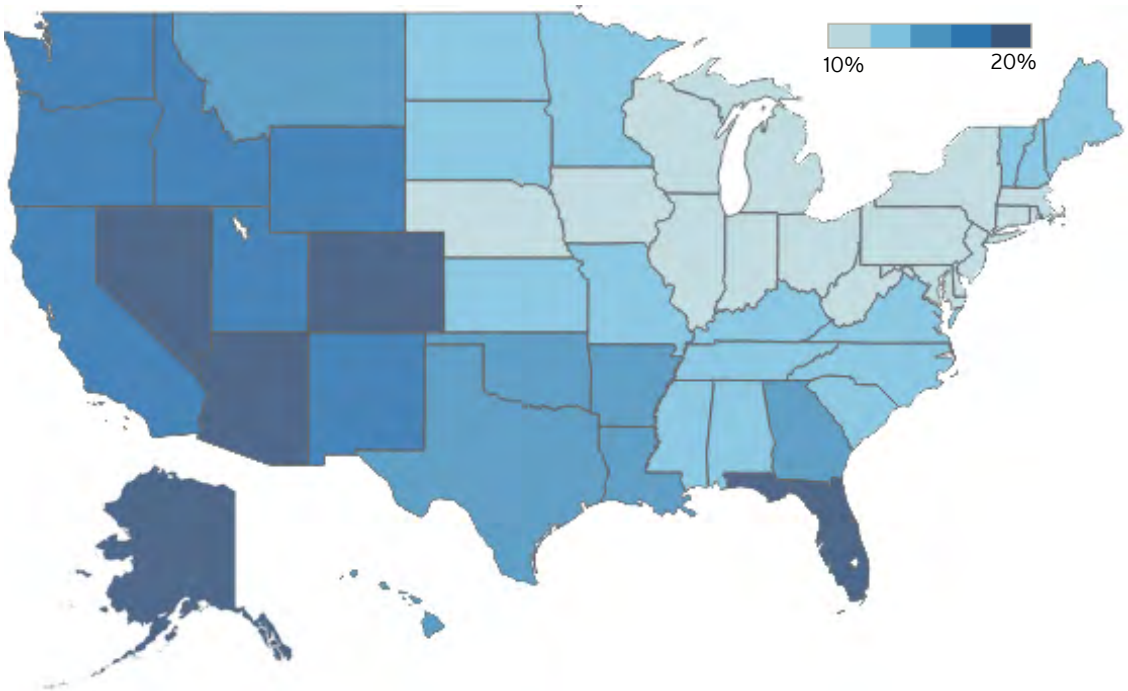
As expected, states with the highest firm formation rates are located in the highest population growth regions of the Western, Southwestern, and Southeastern United States. The exceptions to this pattern: Vermont and New Hampshire had the 24th and 25th highest firm formation rates among states in the late-1970s—making them the only states in the top 25 from outside of the West, Southwest, or Southeast.

Because state data mask a fair amount of variation in local labor markets, we also analyzed firm formation data for more than 350 metropolitan areas in the United States. The local trends mirror the state trends. In fact, it isn't until Ocean City, New Jersey, with the 84th highest firm entry rate in the 1978-1980 period that any metropolitan area outside of the three high-growth regions entered the ranking.

Since data on metropolitan areas don't illustrate well in a map format, we use a scatter plot in Figure 3 to demonstrate the relationship between firm formation rates and population growth in preceding years. Each dot in the figure represents a state or metropolitan area, and its coordinates are values for the two variables of interest—the average annual firm formation rate in 1978-1980, and the population growth occurring the decade prior. Also included are linear trend lines for both groups—establishing the average statistical relationship between these two measures across regions.

Figure 3 shows that there is a strong positive correlation between population growth in the 1970s in a region and the firm formation rate at the end of that decade. In other words, the firm formation rate tended to be higher in regions that experienced greater population growth. The opposite was true for regions with lower firm formation rates. Though other factors surely were at play, the results displayed in the figure are both striking and statistically significant. Stronger population growth is indeed associated with higher rates of startup activity.

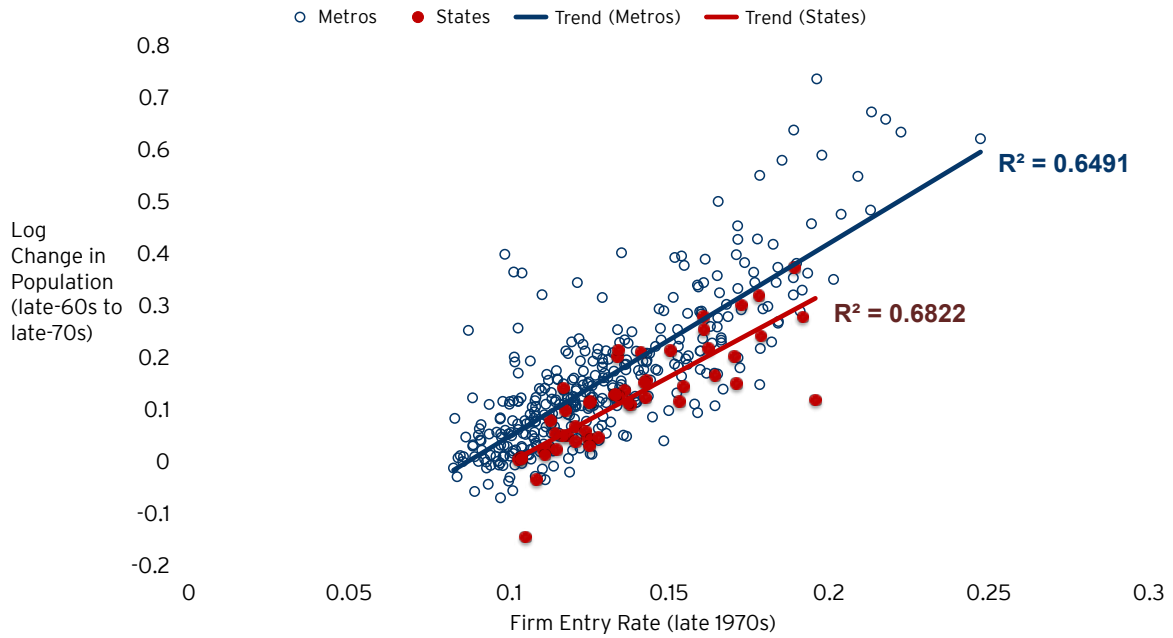
Fig. 2
Firm Entry Rate by State (1978–1980 Average)



Source: U.S. Census Bureau, author's calculations

Fig. 3

Firm Entry Rate (late-1970s) vs. Population Growth (late-1960s to late-1970s)



Source: U.S. Census Bureau, Bureau of Economic Analysis; author's calculations

Startup Rates: Regression to the Mean?

While population trends clearly seem to have an important impact on startup rates, what do past startup rates imply for future startup rates? This is important question to ask because, as just demonstrated, population growth would have influenced prior startup rates.

Figure 4 (next page) helps address the role of earlier startup rates by showing the same firm entry rate from the late-1970s on the horizontal axis, but instead subsequent startup activity on the vertical axis: the change in the firm entry rate from the base period through the three-year average of 2004 to 2006 (we stop at 2006 to avoid introducing effects from the Great Recession).

The results in Figure 4 may be surprising: higher firm entry rates in the base period were associated with larger declines in firm entry rates during the twenty-six years that followed. Though weaker than the relationship between population growth and firm formation established before, these results are also statistically significant.

Figure 4 may suggest that something like a "regression to the mean" phenomenon is evident in startup activity: higher startups rates to begin with portend somewhat lower rates in the future. Or perhaps there is some underlying structural variable that explains why this is so—such as slowing population growth. At this point, we don't have enough information to distinguish between these hypotheses other than to note that the phenomenon—that higher startup regions experienced the largest declines during this period—exists and is statistically significant.

Digging Deeper: A Simple Model of Declining Startup Activity

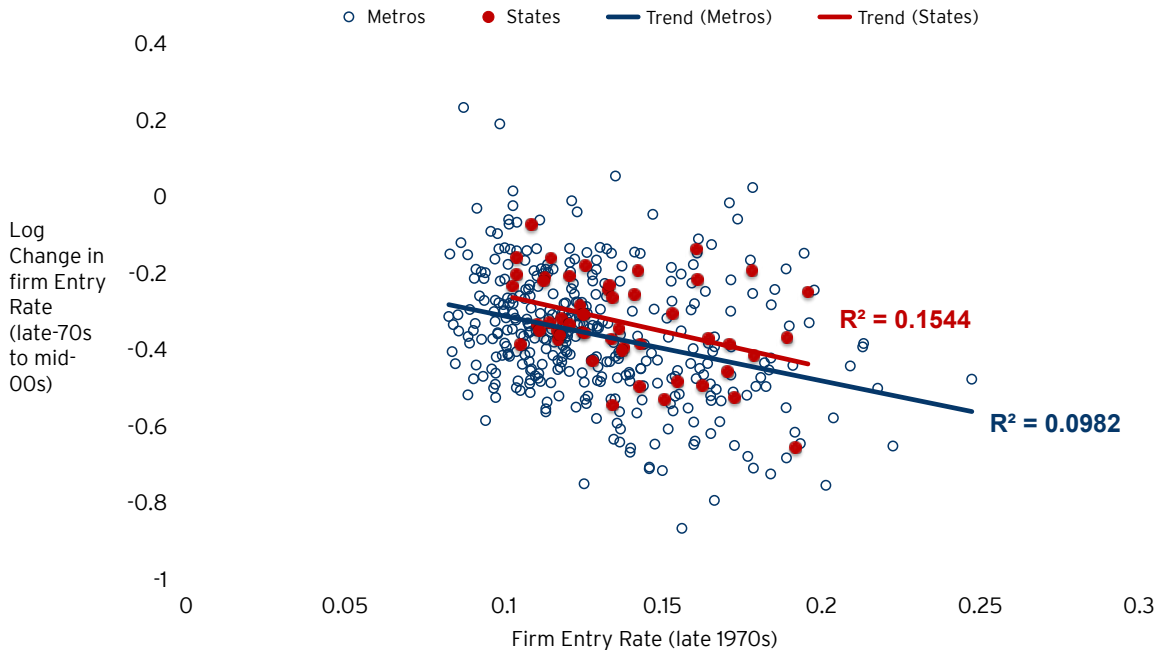
While instructive, the two correlations and single-variable regressions illustrated above mask more complex relationships. Additional factors affect levels and changes in the firm entry rate and must be properly accounted for by using more robust statistical techniques.

To do this, we first estimate a standard linear regression (OLS) model of the change in the firm birth rate on several explanatory variables across 350 metropolitan areas. The period of analysis is the average firm birth rate in 1978-1980 through the average in 2004-2006, stopping short of the years involving the Great Recession.

Building on the simple relationships established in Figures 3 and 4, one explanatory variable we test in this model is the firm birth rate in the base period—the only variable included that is not a change calculation of some other measure. Since population growth in the decade before is a strong predictor of the rate of new firm formations in the base period, this factor likely looms large. Also, because regional population growth slowed in the years that followed, one would expect declines in the firm entry rate

Fig. 4

Firm Entry Rate (late-1970s) v Firm Entry Rate Change (late-1970s to mid-2000s)



Source: U.S. Census Bureau, Bureau of Economic Analysis; author's calculations

to continue to be greatest in regions that had the highest rates of firm entry in the base period while holding all else constant.

Another potential explanatory variable we include is the change in the "business consolidation rate"—the ratio of the average firm size in a region to the average establishment size. A ratio of one implies no consolidation: each firm has only one establishment. Values moving above one indicate increasing activity in multi-establishment firms, or evidence of greater consolidation.

In previous research we documented a pervasive increase in business consolidation during the last few decades across sectors and regions.[11] Though we were unable to find a direct link between consolidation and the aging business structure, which was the focus of that particular research, we wondered if it was contributing to business aging indirectly by pushing down the firm formation rate. One would expect greater concentration to be associated with higher barriers to entry, potentially driving down the firm formation rate, holding all other factors constant.

We also include in our expanded model the share of the population aged 35 to 44—the group that prior research has established to be the prime-entrepreneurship age.[12]

Some have suggested that the decline in the firm formation rate is partially the result of an aging population, and in particular a decline in the share of individuals in the age cohort most likely to start businesses.[13] Running counter to this notion, however, is that during our period of analysis, the share of 35 to 44 year olds in the population moves around: it increases, holds steady, and decreases at various intervals.[14]

Two additional explanatory variables are included as controls: the annual change in the population and real personal income per-capita. Both factors have been found to be important drivers of new firm formations.[15] Unlike with the first two variables on initial firm birth rates and business consolidation, however, a positive relationship with the change in the startup rate is expected here—metros that had greater population and income growth likely experienced smaller declines.

11. Hathaway and Litan (2014), "The Other Aging of America: The Increasing Dominance of Older Firms," *Brookings Institution*

12. Stangler (2013), "The Age of the Entrepreneur: Demographics and Entrepreneurship," working paper

13. Stangler and Bell-Masterson (2014), "Can Millenials Reverse America's Declining Rates of Entrepreneurship?" *Washington Monthly*, August 17.

14. Casselman (2014), "Don't Blame Age For Declining U.S. Entrepreneurship," *FiveThirtyEight*, August 5.

15. Armington and Acs (2006), *Entrepreneurship, Geography, and American Economic Growth*, Cambridge University Press; Reynolds (1994), "Autonomous Firm Dynamics and Economic Growth in the United States, 1986-1990," *Regional Studies*; Audretsch and Fritsch (1994), "The Geography of Firm Births in Germany," *Regional Studies*; Keeble and Walker (1994), "New Firms, Small Firms and Dead Firms: Spatial Patterns and Determinants in the United Kingdom," *Regional Studies*.

All variables have been standardized to allow for comparison of the relative impact of each on the firm formation rate. Because some variables have different numerical magnitudes from others, standardization allows for a better comparative approach. The coefficient on each explanatory variable, therefore, indicates the standard deviation increase (or decrease) of the firm entry rate change that is associated with a one standard deviation increase of that explanatory variable. Finally, standard errors are robust and have been clustered by region.

Figure 5 provides a summary of the coefficients on each explanatory variable and some metrics on the size and fit of the model. Two iterations of the model are run to determine the sensitivity of including the variable on the prime entrepreneurship age share, which we hypothesize isn't likely to be a statistically significant factor.

Four variables are statistically significant and have the anticipated direction. The firm birth rate decreased the most in regions with higher initial startup rates, greater increases in the business consolidation rate, and greater declines in population growth and per-capita personal income growth. The variable measuring the share of the population that is in prime-entrepreneurship age is not statistically significant, and therefore isn't a factor in the decline. None of this is surprising.

What is surprising at least to us, however, is the strength of the impact that the initial firm birth rate and subsequent population change had on new firm births. These two factors were by far the most strongly associated with declines in the new firm formation rate across metros during this period, combining to explain nearly half of cross-metro variation in declining startup rates.

In short, two "population related" factors (one actual, one indirect) seem to explain a sizable portion of the decline in firm entry rates during this period.

A quick word of warning on these results: correlation does not necessarily imply causation, and some of these variables may be endogenous—that is, some factors that affect both the independent and dependent variables in the estimated equation could be missing from the model, or the independent and dependent variables may jointly determine one another. Endogeneity introduces bias in coefficients or misrepresents causality.

Explaining Startup Activity: Accounting for Region-Specific Effects

One way to partially adjust for endogeneity is to estimate what economists and statisticians call a "fixed-effects" regression. This technique controls for persistent, region-specific factors—such as culture, industry composition, weather and policies (more about this in the next section) unique to individual metros—that may affect the firm formation rate but are not explicitly included in the standard linear model. We also include control variables for each year to account for factors over time that affect all metropolitan areas.

Fig. 5
Summary of OLS Regression of the Change in the Firm Birth Rate on Explanatory Variables for 350 Metropolitan Areas (1978-80 to 2004-06)

Explanatory Variable	(1)	(2)
Firm Entry Rate (1978-1980)	-0.965**	-0.964**
Business Consolidation Rate Change (1978-80 to 2004-06)	-0.086*	-0.095*
Population Change (1978-80 to 2004-06)	0.890**	0.887**
Real Personal Income Per-Capita Change (1978-80 to 2004-06)	0.226**	0.217**
% of Population Aged 35-44 Change (1978-80 to 2004-06)		0.055
Constant	-0.078	-0.077
R^2	0.56	0.56
N	350	350

* p<0.05 ** p<0.01

Source: U.S. Census Bureau, Bureau of Economic Analysis; author's calculations

In this new set of regressions, we must slightly modify the variables, since we now seek to explain the annual firm birth rate in a given year within each metropolitan area. The three explanatory variables we test are the business consolidation rate in the same year, and the change in population and real per-capita personal income during the previous three-year period. In a second iteration of this fixed effects model, we add as a fourth potential explanatory variable the share of the population aged 35 to 44 years.

At a broad level, the fixed-effects model tells a similar story to the OLS model. The firm formation rate tends to be higher in regions with less business consolidation, and with greater population and real per-capita personal income growth. Each of these three explanatory variables has moved in the direction that would predict lower firm formation rates during the period we examine.

But the fixed-effects regression results also differ from the simple OLS results in three important ways. First, the four explanatory variables, along with the region- and time-specific controls, explain a larger portion of variation in firm birth rates (roughly three-quarters combined, compared with a little more than half before). This indicates that controlling for the metro-specific factors and across time makes a difference, and omitting them introduced bias into the initial model.

Second, the impact of business consolidation on firm entry increases by a sizable amount from the linear regression model, as does its statistical significance. This is likely at least partially the result of a wide variation in industry structure—which plays an important role in both firm birth rates and business consolidation—across regions (and that this variation doesn't change widely from year to year).

Third, the estimated impacts of both population and real income per-capita on startup rates—while still strong and statistically significant—are reduced in the fixed effects model. They may be partially influenced by the differences in observed changes (continual three-year periods versus one twenty-six year period), or some other region-specific or time-specific factors. Still, these factors remain important predictors of firm entry rates.

Finally, the impact of the share of the population in prime entrepreneurship age increases by a sizable amount and is now statistically significant in the fixed effects regressions. This suggests that once one really controls for the various factors that are unique to specific metro areas, the effects of age demographics on the startup rate are finally revealed.

Startup Rates: What Role for Policies?

The ability to explain roughly three quarters of the cross-metro variation in startup rates since the late 1970s with broad variables like population growth and business consolidation, coupled with "dummy" variables to control for metro and year-specific effects, at first blush seems to leave little explanatory room for policy-related measures like local, state and federal taxes and regulation in explaining both geographic patterns in startup rates and in national trends in startup activity.

This would be a mistake, because the regression results still leave plenty of room for policy differences to explain

Fig. 6
Summary of Fixed-Effects Regression of the Firm Birth Rate on Explanatory Variables for 350 Metropolitan Areas (1980 to 2012)

Explanatory Variable	(1)	(2)
Business Consolidation Rate	-0.205**	-0.240**
Population Change (Three-Year)	0.297**	0.293**
Real Personal Income Per-Capita Change (Three-Year)	0.102**	0.100**
% of Population Aged 35 to 44		0.181**
Constant	1.069**	1.320**
R^2	0.75	0.76
N	12,250	12,250

* p<0.05 ** p<0.01

Source: U.S. Census Bureau, Bureau of Economic Analysis; author's calculations

variation in startup rates. Moreover, policies could easily be embedded within one or more of the explanatory variables we tested. That is to say, local and state policies may have contributed to population movements, metro specific growth rates in GDP per capita and to business consolidation. A challenge confronting researchers in the future is to identify whether this is true, and if so, which policies have been most important and to estimate the magnitude of the effects.

This will not be easy. Of the two most likely policies affecting both the explanatory variables across metros, tax and regulatory policies are likely to stand out. But which taxes? Is it the top corporate tax rate, which applies only to startups organized from the outset as "C" corporations? Or is it the top marginal income tax, which applies to startups that are organized as "pass-through entities," such as individuals operating unincorporated businesses and reporting their income on Schedule C of their income tax returns, businesses organized as partnerships or limited liability corporations (LLCs)?

There are databases with such tax rates, but to our knowledge, none is publicly available for all metro and state areas that is up to date and robust for the period of analysis considered here.

Even so, it would be a surprise to us if variations in state and local taxes, which are small in magnitude relative to federal taxes, were significant contributors to cross-regional variation in startup rates. This hunch appears to be backed by evidence—a comprehensive review of the literature finds the relationship between tax rates and entrepreneurship to be ambiguous at best.[16]

Coming up with a reasonable data set on regulatory activity is even more difficult. Counting pages in the Federal Register, as a number of researchers have done, or even counting the number of regulatory edicts (through words such as "shall not" or "must not"), measures the quantity of regulatory activity without regard to which regulations are most important, and thus most costly or beneficial. Moreover, constructing even these kinds of data sets for state and local regulations, many of which are not easily accessible, has not to our knowledge been done.

In short, data that is comprehensive both to the geographies and time periods analyzed here isn't readily available. However, some progress has been made using cross-sectional data across countries. With regard to firm entry, the evidence appears to point in the direction one would expect—greater regulations on business formation results in fewer new firms being created.[17]

However, the decision to form a business would be affected by more than just entry regulations, and instead encompasses regulation in such areas as exit (bankruptcy), corporate governance, employment, and credit markets—not to mention costs for regulatory compliance.

Overall, the study of the impact of regulation and taxes on firm entry is complex, and therefore we believe is better served in isolation with highly targeted studies unlike the broad framework we use here.

Two other policy variables likely affect entrepreneurial activity, both at the national and sub-national levels: immigration and education, but both of these also have measurement issues. In addition, the lags between changes in the latter variable (education) and subsequent startup rates are likely to be quite long.

> The regression results still leave plenty of room for policy variation to explain differences in startup rates.

We know that immigrants generally have a greater propensity to launch new business—high-tech businesses in particular.[18] But there have been very few real "entrepreneur" visas over the time period examined here, and so a variable capturing this type of visa is not likely to explain much, if any, of the decline in the startup rate.[19]

In addition, there have been no real "STEM education/green card" visas (those that would staple a green card to a STEM degree earned at an American university), of the type proposed in the comprehensive immigration reform

16. Parker (2009), *The Economics of Entrepreneurship*, Cambridge University Press.

17. See, Klapper, Laeven, Rajan (2006), "Entry Regulation as a Barrier to Entrepreneurship," *Journal of Financial Economics*; Fonesca, Lopez-Garcia, and Pissarides (2001), "Entrepreneurship, Star-up Costs and Employment," *European Economic Review*; Fogel, Hawk, Morck, and Yeung (2006), "Institutional Obstacles to Entrepreneurship," in Casson, Young, Basu, and Wadeson (eds.), *The Oxford Handbook of Entrepreneurship*; Ciccone and Papioannou (2007), "Red Tape and Delayed Entry," *Journal of the European Economic Association*; Ho and Wong (2007), "Financing, Regulatory Costs, and Entrepreneurial Propensity," *Small Business Economics*. For a literature review, see Parker (2009), *The Economics of Entrepreneurship*, Cambridge University Press.

18. See generally Fairlie (2010), "Immigrant Entrepreneurs and Small Business Owners, and their Access to Financial Capital," *Small Business Administration*; and specifically for high-tech and high-skilled immigration: Wadhwa, Saxenian, Rissing, and Gereffi (2007), "America's New Immigrant Entrepreneurs: Part I," *Duke University*; and Kerr (2013), "U.S. High-Skilled Immigration, Innovation, and Entrepreneurship: Empirical Approaches and Evidence," *National Bureau of Economic Research*.

19. The EB-5 requires $1 million in investment in the United States, $500,000 in disadvantaged areas, but the annual number of these visas is capped at 10,000, and the investment requirements are poor substitutes for real entrepreneurship.

bill passed by the Senate in 2013. So, while it is very likely that creating and expanding both entrepreneur and STEM education/green card visas in the future would increase startup rates, the absence of such visas in the past, or variations in their number, cannot help explain past declines in the startup rate.

As for education, we don't really know which subjects and how they are taught, both at the K-12 level and in college, are most conducive to encouraging future entrepreneurial behavior. We have our own guesses and hypotheses, but we are confident readers have their own as well. Yet even if we could specify these hypotheses in some detail, it will be difficult and expensive to assemble the kind of data—of both entrepreneurs and non-entrepreneurs—that would not be infected with selection bias and conceivably other statistical hurdles. And even if those challenges are overcome, there is the issue of long time lags between introducing an effective educational "treatment" and a positive (or negative) outcome reflected in startup activity.

> We know that immigrants generally have a greater propensity to launch new companies—high-tech businesses in particular.

Thus, for the foreseeable future, policy makers interested in using education to promote entrepreneurial activity will have to proceed by trial and error, which is one virtue of having the state-based K-12 educational system that the United States has long had.

Conclusion

To recap, the major finding here is that the observed decline in the firm formation rate across different regions in the United States during the last three-plus decades appears to be attributable in no small measure to two broad variables—slowing population growth (particularly in the West, Southwest, and Southeast) and an increasing rate of business consolidation.

Once metro-specific effects are controlled for, movements in the share of the population that is of prime entrepreneurial age (35 to 44 years) also appears to be a statistically significant contributor to firm formation rates. However, its performance overall doesn't appear to be correlated with the decline in the startup rate that occurred in the United States during the last three decades.

It is common in empirical studies to say that future research is needed, and we conclude this essay in a similar manner. But the conclusion here should not be so easily dismissed both because of the complexity of the task and its importance. Nonetheless, we believe that our estimates go a long way toward understanding cross-regional variations in entrepreneurial activity, as well as the national decline in the startup rate over the last few decades.