

Is Entrepreneurship in Decline?

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The US economy has been one of the most dynamic economies in the world but recent research suggests that US dynamism is in decline. But what is dynamism? We may be tempted to say that we know it when we see it and, in the past, discussions of dynamism were invariably impressionistic. Pointing to Steve Jobs, Elon Musk or the upending of the taxi industry by Uber, however, isn't enough to say whether dynamism has increased or decreased or is higher or lower in the United States than say France. What makes the recent discussion different is that new, comprehensive datasets put together by the US Census Bureau and other-country statistical agencies have given us quantifiable measures of dynamism that are signaling a potential problem. Although quantifiable data is of enormous help, however, data are always subject to interpretation and questions remain as to the relationship between dynamism and entrepreneurship, flexibility and growth.

The evidence on the decline of dynamism comes from micro-data on business startups and job creation (Decker et al. 2014). Between 1980 and 2011, for example, the entry rate of new firms, fell by approximately 50% from about 15% annually to 10% annually, as shown in Figure 1. The exit rate, however, fell by much less.

Although most new firms fail, a large proportion of net job creation is created by the minority of new firms that succeed and grow (Decker et al. 2014). It's not surprising, therefore, that as shown in Figure 2 annual US job creation has also declined while job destruction has declined by much less.

Figure One

¹ Disclaimer: All views are the authors only and should not be ascribed to any organizations the authors may be affiliated with.

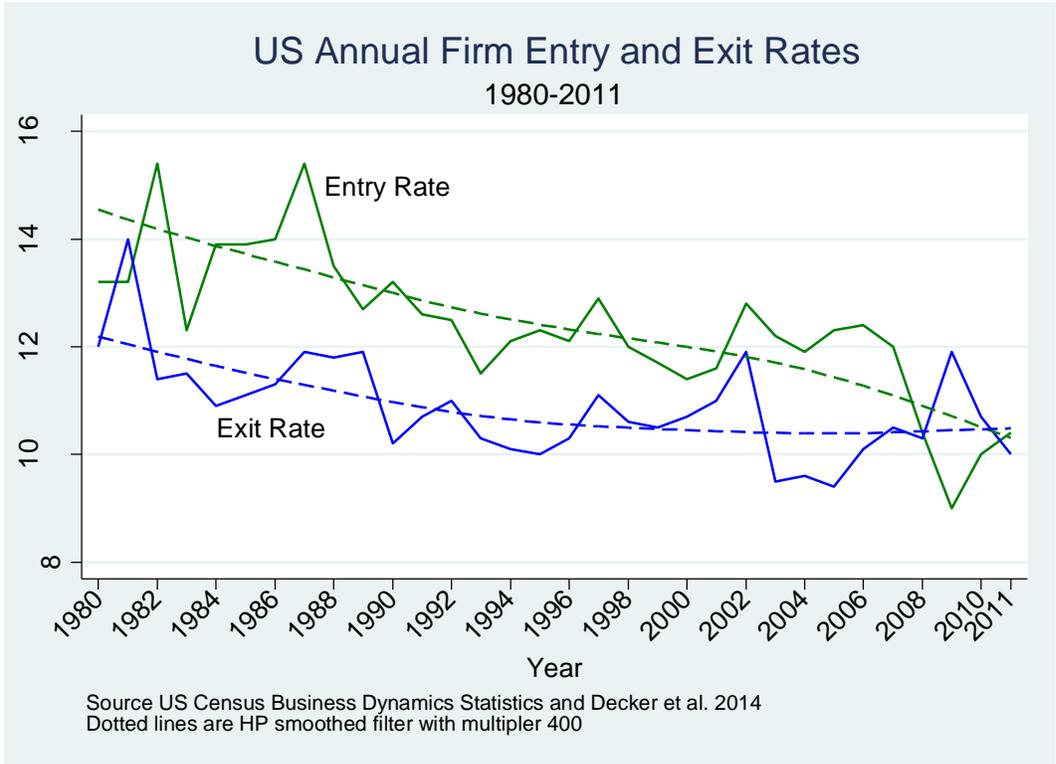
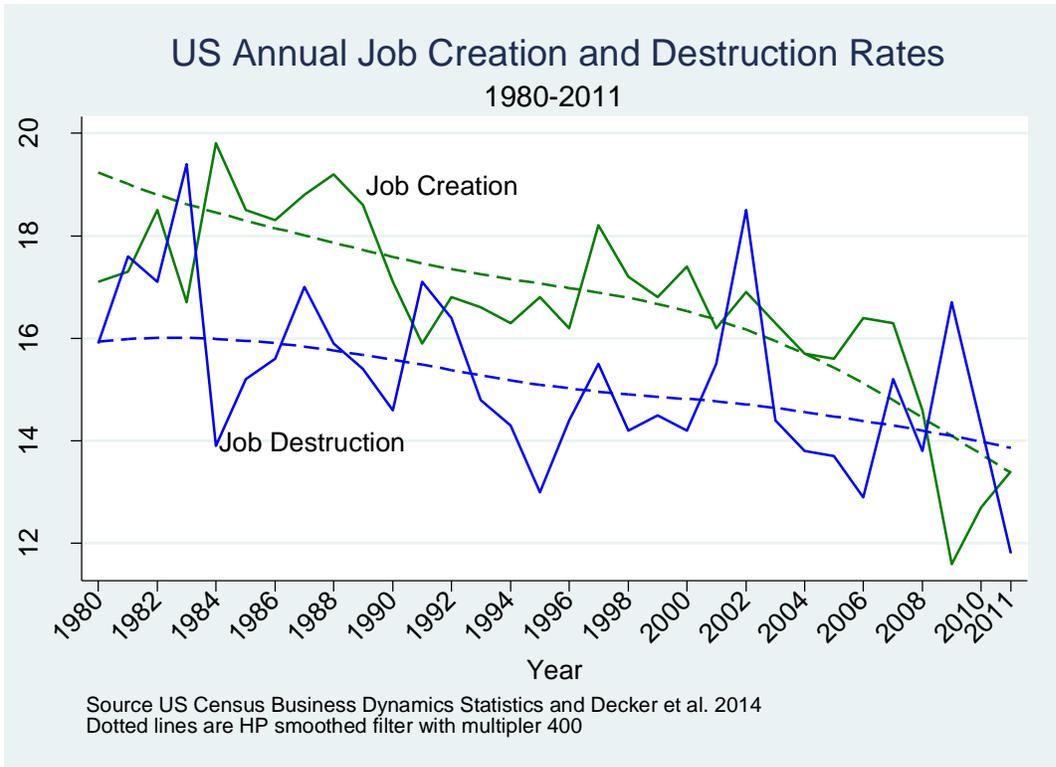
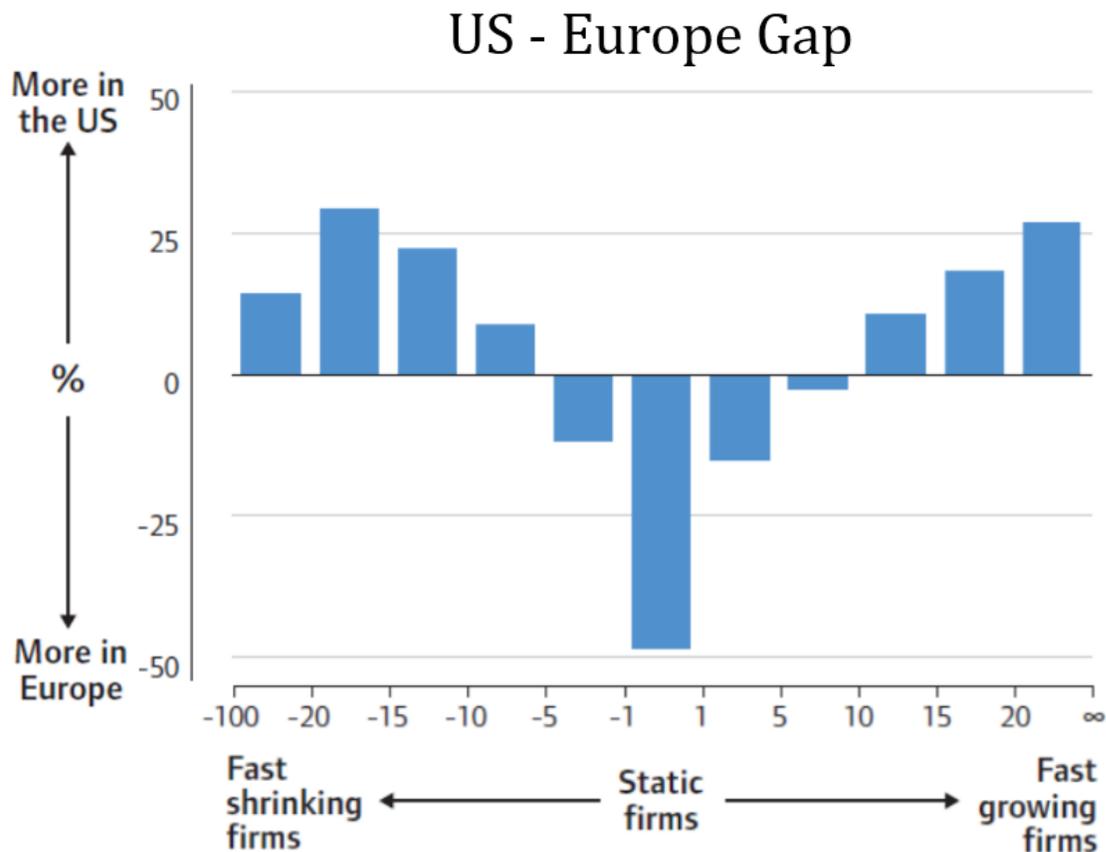


Figure Two



Other sources compare business dynamism across countries (Bravo-Biosca 2010, Criscuolo, Gal and Menon 2014). Compared to Europe, for example, the United States has traditionally been more dynamic. In particular, successful firms in the United States grow more quickly than in Europe and unsuccessful firms die more quickly in the United States than in Europe. Figure 3 shows the distribution of growth rates of firms in Europe relative to firms in the United States. In the middle of the distribution are firms that are static—both the behemoths and the small family firms that have been doing the same thing for generations. In the static category, Europe dominates. At the ends of the distribution are the fast firms, fast dying firms on the left and the fast growing firms on the right. In both of these cases, the United States dominates. It may be that the United States is becoming more like Europe.

Figure Three



Source: Bravo-Biosca (2011) with modifications.

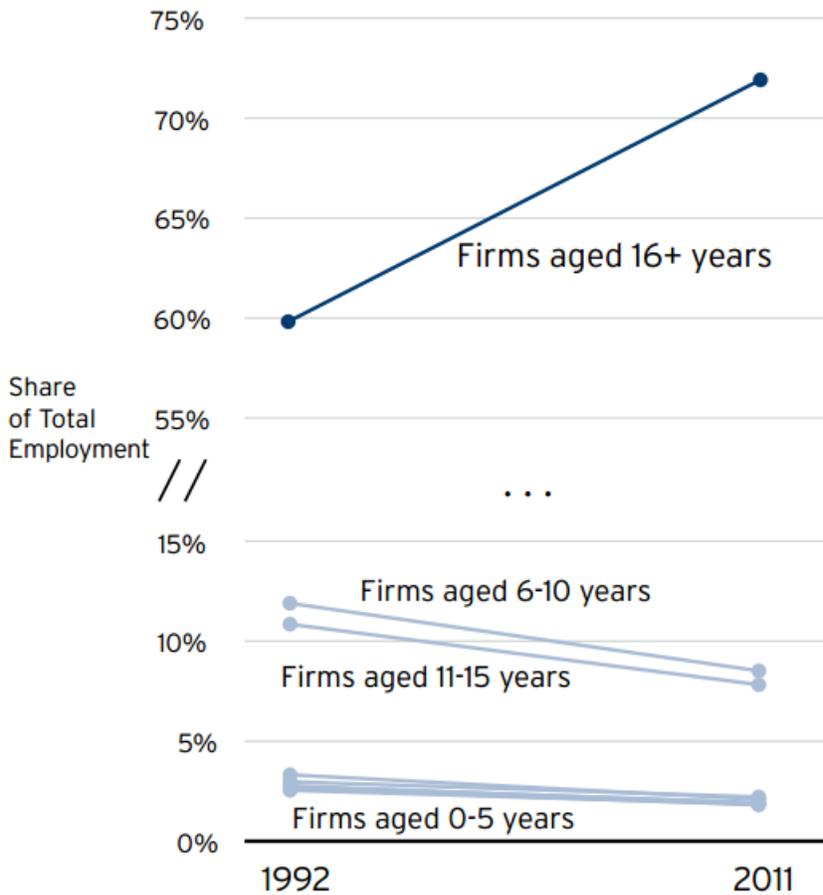
A closely related point concerns the age-distribution of firms. In all economies, young firms tend to be small but small firms are not necessarily young. The United States has historically had a relatively high share of small firms that are young and also a relatively high share of large firms that are young. The latter, of course, are relatively rare but it's in the United States that a small firm has the greatest probability of growing rapidly becoming a large. Conditional on survival, it is these young firms that account for a significant share of net job growth (Decker et al. 2014, Criscuolo, Gal and Menon 2014).

Overall, however, U.S. firms are getting older. The share of firms aged 16 years or more, for example, rose from 23 percent in 1992 to 34 percent in 2011 (Litan and Hathaway 2014b). Since older firms tend to be larger and larger firms older the share of employment in older firms has increased from 60% in 1992 to 72 percent in 2011 as shown in Figure X.

Figure Four

Source: Litan and Hathaway 2014b)

Distribution of Total Employment by Firm Age, 1992 v. 2011



Is it Regulation?

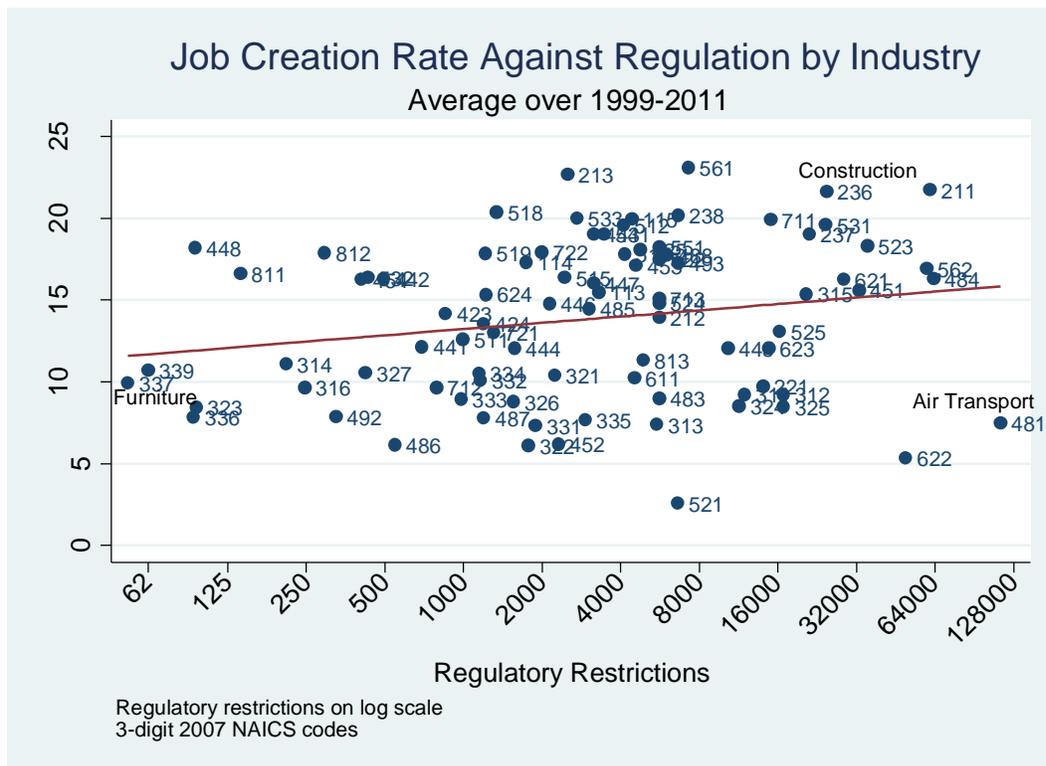
One potential explanation for the secular decline in firm dynamism is regulations that impede entry, exit, expansion, and contraction. Regulation has increased in the United States over time but it has not increased at the same rate in all industries. Thus, one test of whether increased regulation is the cause of decreased dynamism is to examine whether dynamism by industry is correlated with regulation by industry.

In preliminary work, Goldschlag and Tabarrok (2014) combine measures of industry dynamism from the Census Bureau’s Statistics of U.S. Businesses (SUSB) with measures of industry regulation from RegData, a new dataset on regulatory stringency by industry produced by Al-Ubaydli and McLaughlin (2014) to test whether increased regulation can explain reduced dynamism. Surprisingly, the answer appears to be no.

Regulatory stringency does vary greatly by industry. More than 50 percent of industries, for example, received less than 354 regulatory restrictions between 1998 and 2012, while the top 5 percent of industries were subjected to more than 16,000 restrictions. (See Al-Ubaydli and McLaughlin 2014 and Goldschlag and Tabarrok 2014 for more detail on the measure of regulatory restrictions.)

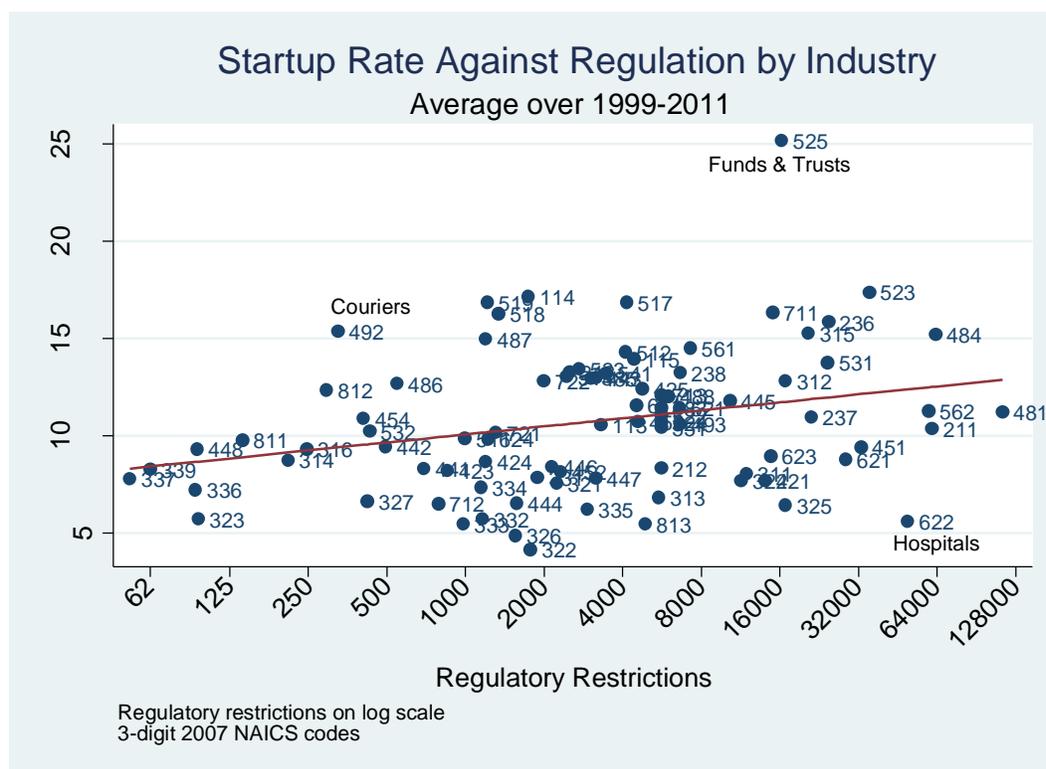
How do measures of dynamism correlate with regulatory restrictions? Figure 5 shows job creation rates against regulatory stringency (both averaged over 1999-2011) by industry (measured at the 3-digit NAICS level). The correlation between job creation rates and restrictions is weak and positive. Note that restrictions are plotted on a log-scale since they vary from a few hundred in furniture production to over a hundred thousand restrictions in the air transport industry. Despite significant variation in regulation, there is only a small change in job creation rates and it is positive not negative—that is industries with greater regulation had only slightly higher job creation rates.

Figure 5



The story for startup rates is similar. Regulation is weakly positively correlated with startup rates.

Figure 6



These simple scatter plots do not control for other factors, in particular industry effects. It could be the case that industries with a lot of job creation and startups attract more regulation than other industries and as a result of this reverse causation we find a positive correlation between dynamism and regulation. Thus, Goldschlag and Tabarrok (2014) look in more detail at within industry effects. Do industries that are regulated more over time show lower dynamism rates? Although this does happen in some industries the effect of regulation on dynamism continues to be small in more sophisticated analyses.

Thus, perhaps surprisingly, regulation does not appear to be the cause of decreased dynamism. A few other patterns in the data suggest that regulation may not be to blame for the decline in dynamism. First, as we discuss in greater length below, when looking across countries the dominant type of regulatory restriction (or other friction) is one that prevents firms from growing large. U.S. firms, however, are the largest in the world and growing larger. Moreover, on average larger firms are more productive and in the United States this correlation between size and productivity is higher than anywhere else in the world (Haltiwanger 2012). Thus, unlike in most of the world, size per se doesn't appear to be penalized in the United States.

Regulation, however, could certainly deter startups or impede small firms from growing into large firms. As already noted, preliminary results do not find a relationship between regulation and startups in the data. Moreover, if small firms were being penalized then theory suggests that when entry does occur it would be by larger firms. We do see some weak evidence for this across countries. The average entry

size for a manufacturing startup in France, for example, is more than twice as large as in the United States. In the United States, however, there is no trend towards increasing entry size (Haltiwanger, Jarvin, Miranda 2013) which is what we would expect if regulation was increasing the cost of small firms disproportionately.

Finally, it is also the case that startup growth is declining in other countries (Criscuolo, Gal and Menon 2014) and dynamism is declining across most sectors of the US economy and also across most US states (Decker et al. 2014). Since regulation varies widely across industries, countries, states and time, the consistent decline of dynamism across these factors suggests that regulation is not the cause of declining dynamism.

If regulation is not the cause of declining dynamism then there are two possible stories, one pessimistic, the other optimistic. If regulation was the cause of declining dynamism, then we would at least know how to solve the problem (it might be politically difficult to solve the problem but we would at least know what to do in principle). If regulation isn't the cause, then we have very little idea what to do. Suppose the cause is a declining spirit of entrepreneurship. If so, we have no real knowledge about how to rekindle that spirit. Or perhaps, as we discuss below, the cause is that there is less to be entrepreneurial about – a great stagnation. Once again, we don't have a surefire solution.

The optimistic story is that if regulation isn't the cause of declining dynamism then maybe declining dynamism isn't such a bad thing. We should not let words guide our normative evaluation; dynamism sounds like a good thing and decline like a bad thing but if substituted churn for dynamism we might say there has been a decline in churn. Or better yet, we might say that there has been an increase in business stability. We turn to exploring these two stories in greater depth.

A Pessimistic Story about Causality

First, a caution on causality. Productivity growth has declined as business dynamism has declined. It's even true that some productivity growth is caused by business dynamism. Even so it doesn't necessarily follow that the decline in productivity growth is due to the decline in business dynamism. The causality, for example, could be the other way—from a decline in productivity growth to a decline in business dynamism. One reason that entrepreneurs start new firms is precisely that they believe that new ideas and technological developments can be used profitably in new business ventures. If productivity growth has declined for primarily exogenous reasons—as argued, for example, by Cowen 2011 and Gordon 2012—then we may expect fewer new business startups as a result. The direction of causality is important as the policy levers that we do have may vary in effectiveness depending on the cause. If business dynamism is primary, for example, then we may look for direct levers such as regulation of new businesses (contrary to our preliminary results) or an increase entrepreneurial immigration. If deeper technological change is at work, then our options are more limited, but perhaps policy could be more focused on improving science and math education, investing in knowledge production and fostering creativity.

Alternative Explanations

The standard explanation of the above facts is that entrepreneurship is in decline with negative consequences for efficiency and growth. We propose several other interpretations with less dire

conclusions. We do not dispute that the standard interpretation *may* be correct. Our proposals should be taken as hypotheses.

Firm Size and Entrepreneurship

The literature takes for granted that entrepreneurship is about the growth of young, small firms. The identification is problematic for three reasons. First, when looking across countries it's larger firms that are associated with greater development. Second, entrepreneurship occurs within firms--even large firms--as well as between firms. Third there is a great deal of excess reallocation and churn and declines in these magnitudes represent gains not declines. We examine each of these in turn.

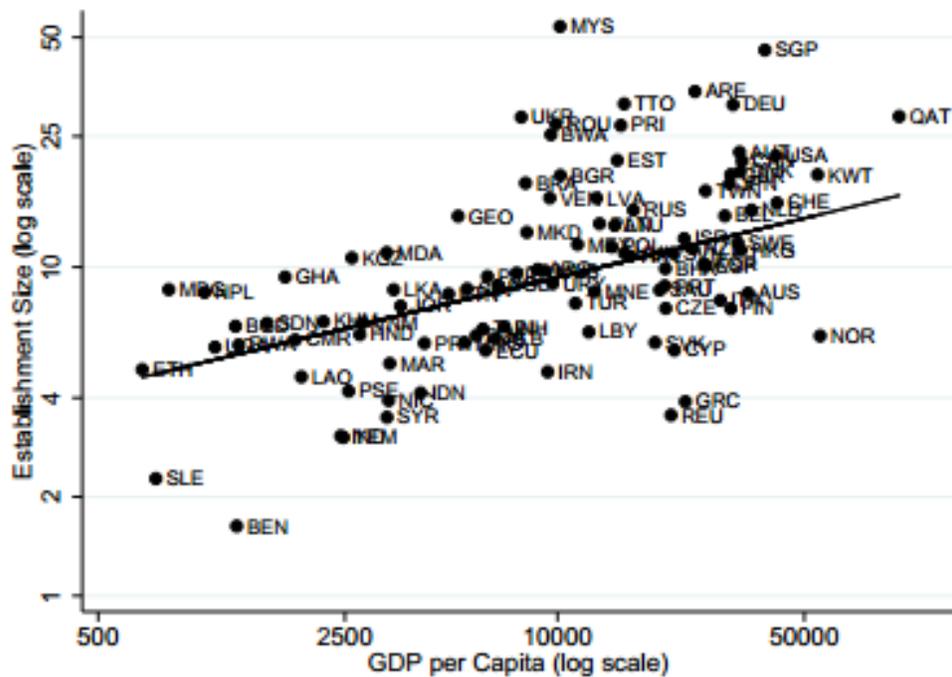
The most developed economies have the largest firms. The least developed economies have the most entrepreneurs. One might imagine that the least developed economies are dominated by inefficient, lumbering behemoths while the more developed economies are characterized by smaller, nimble entrepreneurial firms. In the case of the Communist economies that characterization had some element of truth. Nevertheless, today and on average, firm size increases with GDP per Capita as illustrated in Figure 7. In the poorest 10% of countries average firm size is 6 persons, in the richest 10% it's more than three times larger, 19 persons (Bento and Restuccia 2014).²

Figure 7: Establishment Size Per Capita

Note: Countries with less than 500,000 population omitted.

Source: Bento and Restuccia (2014).

² Technically, Bento and Restuccia measure establishment size which is the number of workers at a particular location. Firm size will be somewhat larger but more so in more developed economies so this comparison somewhat understates the difference.



The second fact, that the least developed economies have the most entrepreneurs is closely related to the first. If we define entrepreneurship as self-employment then there is much more entrepreneurship in poorer countries. People in poorer countries have to be entrepreneurs because there are relatively few jobs, that is to say few employers of large numbers of workers. Moreover, although not all self-employed workers have the skills or temperament for entrepreneurship, the identification of entrepreneurship with self-employment is not a definitional sleight-of-hand. Travelers to less developed economies often are surprised at how much more market oriented, dynamic and entrepreneurial these economies appear to the naked eye. Indeed, tourists are more likely to visit an actual market in a developing economy than they are at home. The visceral hustle and bustle of the town market is a display of real entrepreneurship. The greater familiarity that people in developing countries have with entrepreneurship is likely one reason why immigrants to the US are more than twice as likely to start new firms as are natives (Fairlie 2013).

The problem with developing countries is not that they lack entrepreneurs but that entrepreneurs cannot grow their firms large enough to become major employers.³

³ In the United States, for example, firms are much more likely to increase in size as they age than firms in other economies, especially relative to developing economies. By age 35, for example, the typical firm in the United States has grown by over 700%, in Mexico a comparable firm has grown by only 100% and in India by just 40 (Hsieh and Klenow 2014).

The distribution of firm size is highly right skewed so the share of workers employed in large firms increases even more dramatically with development than does average firm size. In Ethiopia, Egypt and India, for example, more than half of all workers are employed in firms that employ fewer than 10 employees. In the United States, in contrast, more than half of all workers work for firms that employ more than 250 people, even though these firms account for less than 1% of all firms (Crisciolo, Gal and Menon 2014). Fortunately, larger firms are better managed, more productive and more innovative than are smaller firms and they pay higher wages (World Bank 2013). Indeed, the best managed firms in the world are the large multinationals (Bloom and van Reenen 2010).

Why are these cross-country findings important for understanding the development of business dynamism in the United States? The cross-country effects are also found across time—namely as economies develop, in particular as the US economy has developed, we have seen larger firms, a larger share of employment in large firms and *less* entrepreneurship (Poschke 2014). The fact that these correlations are seen widely in both cross-sectional and time-series data suggests that they have some causal basis (see Lucas (1978) and Poschke (2014) for models of the possible causality).

In short, some of the measures of declining business dynamism which on the surface appear unambiguously negative are in fact associated with greater GDP per capita. Thus, we should be presumptively cautious about making normative conclusions from declining business dynamism.

Entrepreneurship in large firms

The annals of entrepreneurship are replete with David versus Goliath stories, but entrepreneurship is not limited to startups. In 2006 when Allan Mulally became chief executive Ford Motor Company, Ford was losing billions, product quality was declining, inefficiencies were tremendous, union contracts were rigid, and Ford's credit rating had been downgraded to junk. And that was in a growing economy! When the financial crisis hit in 2008-2009 Ford's seemingly stronger competitors GM and Chrysler filed for bankruptcy and were kept afloat only through a government bailout. In one of the great turnarounds in business history, however, Mulally guided Ford through the crisis without bankruptcy or bailout and returned the firm to profitability by 2010 with record profits by 2014 (Hoffman 2013, Reuters 2014).

Mulally's turnaround of Ford illustrates two propositions. First, entrepreneurship is not limited to small firms. Indeed, because of scale, entrepreneurship at large firms is much more important than at small firms. Moreover, there is some evidence that CEO's have become less managerial and more entrepreneurial over time. CEO turnover, for example, has increased over time and the turnover-performance gradient has become more steep; that is, CEOs whose firms perform poorly are increasingly likely to be fired (Murphy and Zabojsnik 2007, Kaplan and Minton 2006). CEOs are also less likely to be insiders than in the past. In the 1970s only 15% of the CEOs in S&P 500 firms were outside appointments but by 2000-2005 32.7% were outside appointments (Murphy and Zabojsnik 2007). The decrease in the appointment of insiders and increase in the appointment of outside, suggests that basic "managerial" knowledge and skills—How does this firm work? What do we do? What relationships need to be managed?—became less important and more general managerial or entrepreneurial ability became more important in managing US corporations.

Allan Mulally's career is a case in point. He rose not through the ranks of Ford but came to Ford from Boeing where he had been president of Boeing Commercial Airplanes and was credited with a successful competition against Airbus. After retiring from Ford in 2014, he was appointed to Google's board of

directors—further illustrating the importance of general entrepreneurial ability rather than firm specific knowledge.

Second, by all accounts Mulally remade Ford into a different firm—not just a different set of products—although there were innovative new designs and building methods—but also a new corporate culture (Hoffman 2013).

What then is a startup? We measure startups as firms that yesterday had zero workers and today have one or more workers. We say startups are born. The metaphor may constrain. Philosophers wrestle with the problem of identity even for persons (Parfit 1986). The problem is more severe for objects and organizations. The Ise Grand Shrine, Japan's most sacred shrine, was first built around 686. Every 20 years since that time the entire shrine complex, some 62 buildings, have been dismantled and removed and an entirely new structure rebuilt in exactly the same place in exactly the same way with exactly the same 16,000 artifacts put back in place. This has been going on for over 1000 years. Is the Ise Grand Shrine an old building or a new one?

The problem is not merely philosophical. We measure new firms as firms which go from zero employment to one or more employed but restructuring and remaking old firms is not counted. If Ford can be said to have been reborn in the ashes of the financial crisis, then innovation, entrepreneurship and reallocation may be larger than we measure.

Can this perspective be reconciled with the time trends? It's plausible that information technology has made older and larger firms more flexible, nimble and capable of change. Consider Zara, the world's largest fashion retailer founded by Amancio Ortega, the third or fourth richest person in the world, depending on the day one counts. In the past, a fashion retailer would have one line per season planned well in advance based mostly on trends and guesswork about consumer demand. In contrast, twice a week the manager of each of Zara's 6,500 stores examine sales data and also feedback from shoppers and they order product from headquarters. At the Spanish headquarters, trends are identified and designers are charged with creating new product. Within weeks, Zara stores have new product on the shelves. At Zara, turnover over a season is five or six new lines (Ruddick 2014).

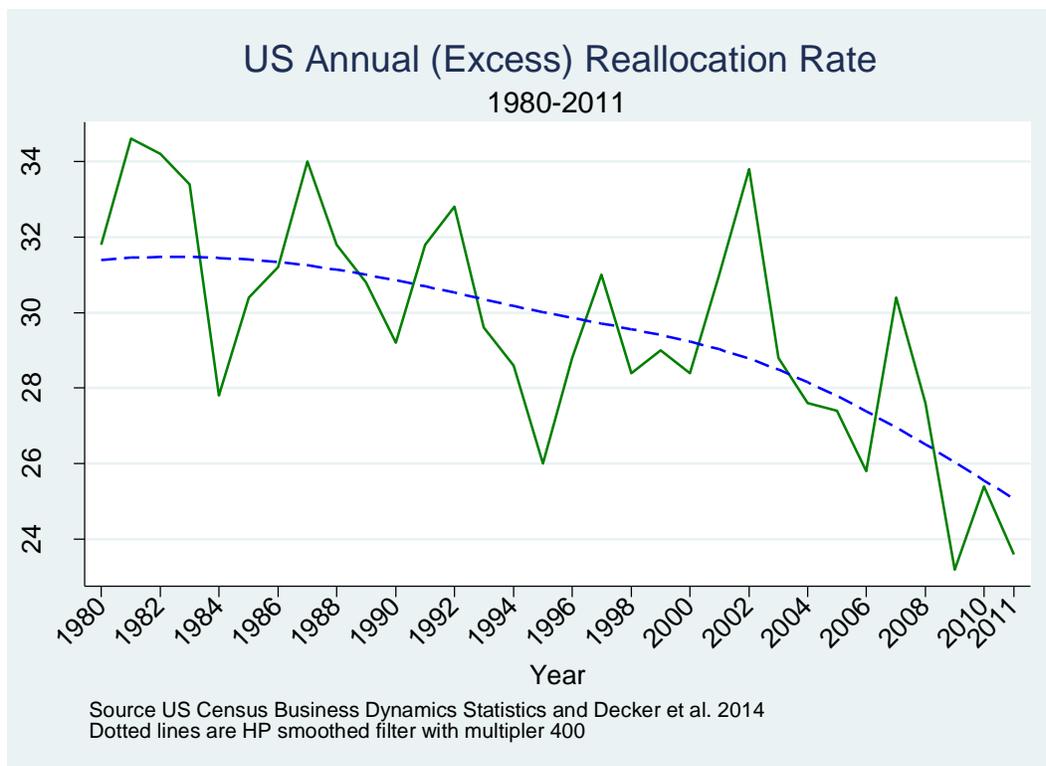
In the past, a fashion retailer that did a poor job of predicting fashion trends for one or two seasons might have found itself vulnerable to an upstart startup. Today, the same fashion retailer can turn on a dime and correct its fashion faux pas before a startup has a chance to grab market share. Business dynamism as measured by entry and reallocation will decline but measured by the *goals* of business dynamism, the movement of resources to their highest valued uses and the satisfaction of consumer demand, the decline has been an improvement.

Excess Reallocation and Churn

By focusing on the goals of business dynamism it becomes clear that startups are not necessarily a sign of vigor, growth and efficiency but instead can signal inefficiency. Why should firms have to die for the economy to grow? Death and birth are painful processes. Bankruptcy wastes resources, reallocation takes time and most startups fail. High job creation and job destruction rates speak to dynamism but also to churn. Reallocation rates are down in the economy but so are excess reallocation rates, the rate of reallocation above that necessary for net job creation and that can be a positive development.

Walmart, the world’s largest firm by employment, has revolutionized the retail sector in the process driving out many so-called Mom and Pop’s. The Walmart vs. Mom and Pop story that’s commonly told paints a picture of a bucolic time in which family-run firms that had been around for generations are driven out in a giant speciation event by the arrival of asteroid Walmart. The truth, however, is that like other small firms the Moms and Pops rarely lasted for very long. Mom and Pop churned, with Mom and Pop Jones being replaced by Mom and Pop Smith and then Mom and Pop Garcia on a recurring basis (Haltiwanger 2012). Walmart and other big box retailers greatly increased productivity in the retail sector—Walmart alone was responsible for a measurable share of US productivity growth in the mid-1990s—and, in addition, the big box retailers have been more stable. As a result dynamism, as measured by reallocation has declined but the efficiency by which consumer demand is satisfied has greatly improved.

Figure 8



Death and birth are redeemed if necessary to improve productivity and innovation but it would be preferable if older and larger firms can instead become more flexible, nimble and capable of change. Information technology may have made that the case, allowing firms to be reborn from within rather than the normal process of exit and entry.

National and International Entrepreneurship

The US economy is very large and therefore largely internally driven. Nevertheless, imports of goods and services have risen from approximately 10% of GDP in 1990 to 17% today. The more internationalized the economy the less national statistics on business dynamism may reflect reality. In 2013, Apple had 748 suppliers only 81 of which were in the United States while over 600 were located in Asia (Barreda

2013). Most importantly, Apple is an exacting customer and they can and do hire and fire suppliers on the basis of slim price differences and quality improvements (Satariano 2014). Firms live and die in anticipation and fear of a call from Cupertino. Like the Ise Grand Shrine, Apple continues even as its component parts are dismantled and rebuilt with every iPhone iteration. The underlying flux in suppliers, however, is invisible to the customer and to the US business dynamics statistics.

Entrepreneurship, Globalization and the Future

William Gibson famously said that “The future is already here — it's just not very evenly distributed.” That, however, was in 1992. Today, the future is much more evenly distributed. Consider mobile phones. Almost 5 billion people today have a mobile phone and nearly 2 billion people have a smartphone. Today’s smartphone is more powerful than a Cray Supercomputer was when Gibson spoke and when Gibson spoke there were just a few hundred Crays in the world. Two billion Crays is a lot more evenly distributed. Not only does today’s smartphone have more memory and processing power than the supercomputers of the past, it’s also much more connected to the world with cameras, microphones, gyroscopic orientation, GPS receivers, wifi, cellular, Bluetooth connectivity and much more. Thus, nearly 2 billion people are equipped today with a supercomputer networked to the world around it and to other supercomputers. The ability of small entrepreneurs from virtually anywhere in the world to tie into this network of vast computational power must alone be a tremendous boost for entrepreneurship.

As late as 1990, just seven nations accounted for 92 percent of world research and development.⁴ Today those nations are spending more than ever before on research and development but today they account for only 56% of the total (OECD 2014). World R&D is increasing rapidly for multiple reasons. First, the capacity for research and development has increased. Not just in the spread of supercomputer-like power but also in the spread of human capital. The number of world scientists and engineers is increasing rapidly as China and India increase the percentage of their population that is highly educated. Second, the demand for R&D is increasing as world wealth increases. Greater wealth means a deeper market, which increases the incentives to invest in R&D. If China and India were as wealthy as the United States is today, the market for cancer drugs would be 8 times larger than it is now. This illustrates why we all have an interest in other countries becoming rich (Tabarrok 2011).

When we speak of globalization we often speak of exports and imports, of goods crossing borders. But in the information age globalization also means an erasing of borders. Skype was created by Estonian programmers and launched simultaneously everywhere in the world in 2003. What kind of startup is Skype? Is Skype an Estonian startup or a world startup? Today, especially in information technology, but increasingly in other areas of technology as well, the physical location of an entrepreneur doesn’t tell us much about the location of innovation or value. Chinese entrepreneurs, Indian entrepreneurs just like Estonian Entrepreneurs can also be US entrepreneurs. Thus, we remain optimistic about the global state of entrepreneurship.

⁴ UNESCO, *UNESCO Science Report 2010*, <http://www.unesco.org/new/en/natural-sciences/science-technology/prospective-studies/unesco-science-report/unesco-science-report-2010/>.

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