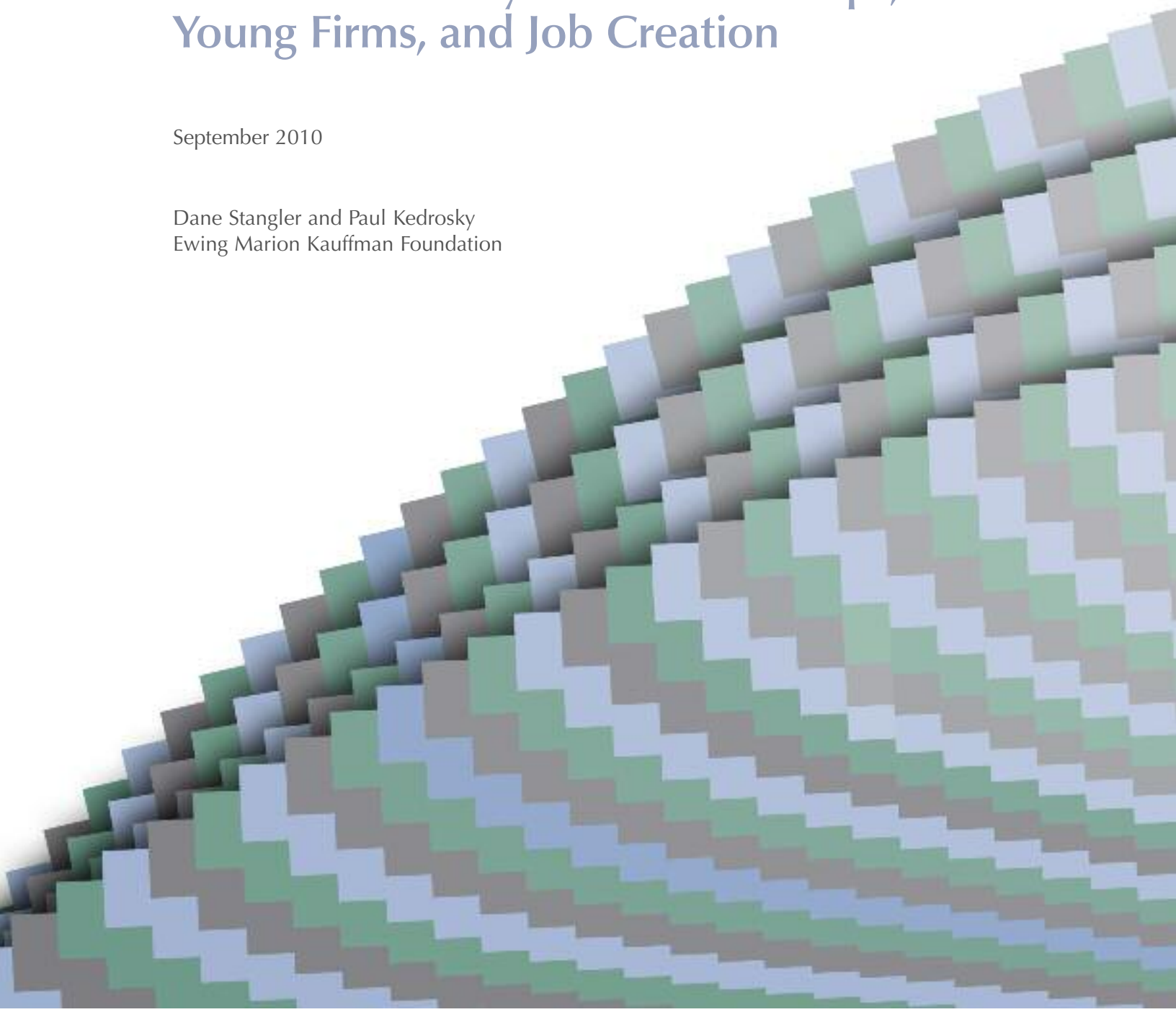
Kauffman Foundation Research Series: Firm Formation and Economic Growth

Neutralism and Entrepreneurship: The Structural Dynamics of Startups, Young Firms, and Job Creation

September 2010

Dane Stangler and Paul Kedrosky
Ewing Marion Kauffman Foundation



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The Foundation of Entrepreneurship

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Abstract

An increasing number of studies and reports have shown that new and young companies account for most net job creation in the United States. This empirically documented reality, however, is not exclusively a result of new and young companies being particularly prolific or idiosyncratically superior to other firms. Indeed, concepts such as job creation and entrepreneurship increasingly are conflated with young and small firms. Yet the age breakdown of job creation is partly a reflection of the dynamics of firm accumulation—how firms enter and exit and survive over a period of time. In any given year in the U.S. economy, new and young companies represent a plurality of all firms in the economy. That is, they make up the largest bloc of firms by age category, meaning their considerable job creation record is partly structural. This does not mitigate the contribution of these companies to job creation, but that contribution must be seen in the proper structural context.

Introduction

Over the past few years, increasing evidence has established the importance of new and young companies to the American economy. The painstaking assembly of three decades of data by economists at the U.S. Census Bureau, together with further research and analysis done by the Kauffman Foundation, has demonstrated that startups and young firms (those less than five years old) account for nearly all net job creation in the United States.[1] Indeed, the importance of these companies in creating new jobs now appears to be well-recognized in national discussions of economic policy.[2]

Nevertheless, this idea continues to surprise (and disappoint) many analysts: How can startups and young companies, conventionally understood to be the most volatile part of the economy, be the principal font of new jobs? Won't many of the jobs created by such companies subsequently disappear? And, even if new and young firms account for most net job creation, what about their effect on employment in existing companies—do they simultaneously destroy jobs elsewhere in the economy, thus nullifying the effect of their own job creation?

Such questions point toward the need for a more complete understanding of the dynamics of firm formation and job creation in the United States. Specifically, as an initial approach to these issues, this paper addresses the first-order question: Why do new and young firms create (or appear to create) nearly all net new jobs? After digging into the data on firm formation, this paper comes to the conclusion that there are distinct reasons for the patterns we see in terms of job creation and firm age. As the American economy (or any economy) moves through time, the number of firms populating it accumulates—that is, there is a progressively larger volume of firms each year. With relatively steady levels of firm entry and exit (as the American economy has experienced), in any given

1. The principal dataset for this empirically established claim, as well as the analysis in this paper, is the Business Dynamics Statistics dataset, at http://www.ces.census.gov/index.php/bds/bds_overview. *See also* John Haltiwanger, Ron Jarmin, and Javier Miranda, "Jobs Created from Business Startups in the United States," Business Dynamics Statistics Briefing, Kauffman Foundation, January 2009, at http://www.kauffman.org/uploadedFiles/BDS_Jobs_Created_011209b.pdf; John Haltiwanger, Ron Jarmin, and Javier Miranda, "High Growth and Failure of Young Firms," Business Dynamics Statistics Briefing, Kauffman Foundation, March 2009, at http://www.kauffman.org/uploadedFiles/bds_high_growth_and_failure_4-6-09.pdf; Dane Stangler and Robert E. Litan, "Where Will the Jobs Come From?," Kauffman Foundation Research Series: Firm Formation and Economic Growth, November 2009, at http://www.kauffman.org/uploadedfiles/where_will_the_jobs_come_from.pdf; and Tim Kane, "The Importance of Startups in Job Creation and Job Destruction," Kauffman Foundation Research Series: Firm Formation and Economic Growth, July 2010, at http://www.kauffman.org/uploadedFiles/firm_formation_importance_of_startups.pdf. For a deeper treatment of data collection on these topics, see John Haltiwanger, Lisa M. Lynch, and Christopher Mackie (eds.), "Understanding Business Dynamics: An Integrated Data System for America's Future," National Research Council, 2007.

2. *See*, e.g., Thomas Friedman, "Startups, Not Bailouts," *New York Times*, April 3, 2010; Vivek Wadhwa, "Why Andy Grove is Wrong About Job Growth," *Bloomberg Businessweek*, July 9, 2010.

year new and young companies will constitute the largest bloc of firms in the economy. Partly as a result—and only partly—this bloc also contributes the largest number of net new jobs to the economy.

In other words, there is a structural context in which firm formation and job creation occur that helps explain why new and young companies dominate net job creation. This in no way diminishes the contribution of new and young companies or their economic importance—after all, it remains true that they generate most net new jobs. But by studying the economic structure, we can perhaps unearth the reasons behind that importance. Such reasons, as discussed below, cannot be taken as immutable. Without understanding the structural features of entrepreneurial capitalism—the why of firm formation and job creation—we could end up taking steps that undermine those features. The dynamics explored here, moreover, parallel prior findings of statistical regularities concerning firm development.[3]

Huge gains have been made in recent years toward fully integrating entrepreneurs and new firms into economic theory. Dan Spulber has made the simple yet profound observation that the entrepreneur's economic contribution is the creation of the firm itself: "Firms create and manage markets that enhance the efficiency of transactions … by establishing transaction institutions, firms determine the market microstructure of the economy."[4] This paper cannot hope to match the theoretical depth and insight of Spulber and Will Baumol on these topics, but we hope the analysis here of the structural dynamics of firm formation, and exit and accumulation, will make a supplemental contribution to their work.

This paper proceeds as follows: To introduce and contextualize the discussion, the next section draws a loose parallel between the analysis presented here and the neutral theory of evolution. Using data from the Census Bureau and prior work, Section Three constructs an imaginary economy to illustrate the structural context of job creation. Section Four then builds on that imaginary economy and looks at the actual experience of the American economy to see the breakdown of firm age and job creation over time. Section Five briefly raises potential avenues of research, and the concluding section discusses what it means in terms of economic change.[5]

A Neutral Theory of Entrepreneurship?

Since 1977, the level and rate of firm formation in the United States have been relatively constant. Firm formation fluctuates from year to year, of course, but the band of variance within which it fluctuates is remarkably narrow. A previous paper in this Kauffman Foundation Research Series briefly suggested a similarity between this state of affairs and the neutral theory of evolution promulgated by biologist Motoo Kimura in the late 1960s.[6] Kimura, building on prior research in population genetics and molecular evolution, posited a baseline rate of mutation-driven change that, from the standpoint of genetic and physiological evolution, is largely

3. The "role played by these regularities has been to stimulate interest in the possibility that there may be some systematic economic mechanisms at work." John Sutton, "Gibrat's Legacy," *Journal of Economic Literature*, vol. 35, 40 (March 1997). *See also* Dongfeng Fu, et al., "The Growth of Business Firms: Theoretical Framework and Empirical Evidence," *Proceedings of the National Academy of Sciences*, December 27, 2005; L.A.N. Amaral, et al., "A Model for the Growth Dynamics of Economic Organizations," *Physica A 299* 127 (2001) ("the range of systems that apparently display power law and, hence, scale-invariant correlations has increased dramatically in recent years … to [include] complex systems involving large numbers [with] interacting subunits that display 'free will' … We have recently shown that scale invariance holds for economic organizations.").

4. Daniel F. Spulber, *The Theory of the Firm: Microeconomics with Endogenous Entrepreneurs, Firms, Markets, and Organizations* 367 (Cambridge, 2009). *See also* William J. Baumol, *The Microtheory of Innovative Entrepreneurship* (Princeton, 2010).

5. Some parts of this paper are based on previous work. *See* Dane Stangler, "From a Drunkard's Walk to a Pile of Drunks," April 9, 2010, at http://www.growthology.org/growthology/2010/04/from-a-drunkards-walk-to-a-pile-of-drunks.html; Dane Stangler, "The Accumulation of Firms and the Predominance of New and Young Companies," April 13, 2010, at http://www.growthology.org/growthology/2010/04/the-accumulation-of-firms-and-the-predominance-of-new-and-young-companies.html; and Dane Stangler, "The Neutralist View of Entrepreneurship," Keynote Address at Conference on the Law and Economics of the Entrepreneur, Northwestern Law School, June 17, 2010.

6. Dane Stangler and Paul Kedrosky, "Exploring Firm Formation: Why is the Number of New Firms Constant?" Kauffman Foundation Research Series: Firm Formation and Economic Growth, January 2010, at http://www.kauffman.org/uploadedFiles/exploring_firm_formation_1-13-10.pdf.

neutral.[7] The forces of selection thus act against this background; rather than seeing evolution as a process of ceaseless upheaval, it now can be seen, in part, as something more, well, selective: "Natural selection is a conservative force. It spends more of its time keeping species the same than changing them."[8]

This paper takes the posited parallel a bit further. Once upon a time in economic thought, it was seemingly well-established that the economy either didn't change much or had matured to a point at which change was no longer necessary. John Kenneth Galbraith, for example, excised the entrepreneur from economic progress in his 1967 book, *The New Industrial State*. No longer would new firms and innovations create waves in the economy; rather, the "technostructure" of big companies and big government successfully managed both demand and supply and, thereafter, innovations would emerge from that structure.[9]

Clearly, such an observation either never reflected economic reality (Intel was founded the year after Galbraith's declaration of stasis) or was quickly overtaken by events. The most perceptive economist of the past century was Joseph Schumpeter, who observed: "Capitalism, then, is by nature a form or method of economic change and not only never is, but never can be, stationary."[10] No one can step back and compare the march of capitalism over the past 200 years with the hundreds of millennia preceding it and not observe that change is indeed the hallmark of capitalism. Given this, however, the relatively constant level of firm formation in the United States throws up something of a dilemma. Some may say that we have reached a state in economic history in which there is a steady level of annual turmoil and turnover: firms entering, exiting, growing, shrinking, and so on, each year. This would make for a rather unsettling economic existence, but there is little doubt that such turnover has characterized some sectors of the American economy.

Yet there is also another way to perceive this state of affairs, somewhat akin to the neutral theory of evolution. The best dataset available on firm formation in the United States, the Business Dynamics Statistics, extends back only to 1977. For prior years, data either are incomplete or incomparable or both. If we momentarily suspend concerns of comparability, however, and examine a variety of studies and datasets from the past several decades, it actually appears as if firm formation in the United States may have been more or less constant for the past century.[11] Similar to what Kimura did with molecular change and natural selection, we can actually turn around the idea of firm formation and job creation, and see it as perhaps a force for stability in the American economy. Just as selection in evolutionary biology now is seen as a combination of change, adaptive fit, and certain structural constraints,[12] the analysis here suggests that firm formation and job creation are embedded in a structure that shapes firm formation and the contribution of new and young firms to job creation.

An Imaginary Economy

We start by constructing an economy that begins with an empty landscape—no preexisting businesses. Using average inputs from the American economy over the past thirty years, we will plug in an average entry of 500,000 new businesses, as well

7. This did not quite wholly contradict, but certainly qualified, much of the established wisdom in evolutionary biology at the time, although the neutral theory is today a rather well-accepted part of the field. *See, e.g.*, James F. Crow, "Motoo Kimura and the Rise of Neutralism," in Oren Harman and Michael R. Dietrich (eds.), *Rebels, Mavericks, and Heretics in Biology* (2008). *See also* Stephen Jay Gould, "Betting on Chance—and No Fair Peeking," in Eight Little Piggies: Reflections in Natural History (1993).

8. Matt Ridley, *The Rational Optimist: How Prosperity Evolves* 49 (Harper, 2010).

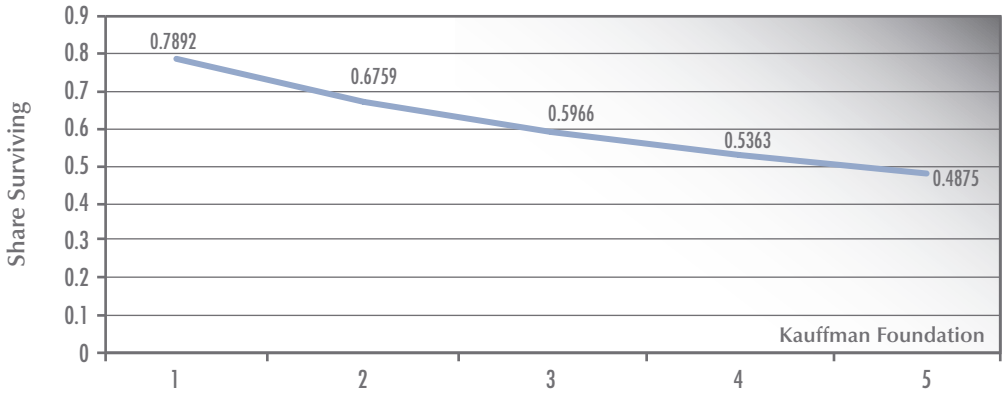
9. *See* John Kenneth Galbraith, *The New Industrial State* (1967).

10. Joseph Schumpeter, *Capitalism, Socialism and Democracy* 82 (1942) (Harper Perennial, 1962).

11. *See* Howard Aldrich and Ellen R. Auster, "Even Dwarfs Started Small: Liabilities of Age and Size and Their Strategic Implications," Research in Organizational Behavior, Vol. 8, 165–198 (1986); Brian Headd and Bruce Kirchhoff, "The Growth, Decline, and Survival of Small Businesses: An Exploratory Study of Life Cycles," *Journal of Small Business Management*, vol. 47, 531–550 (2009).

12. *See, e.g.*, Steven Rose (ed.), *The Richness of Life: The Essential Stephen Jay Gould* (Norton, 2006); David Sepkoski, "Stephen Jay Gould, Darwinian Iconoclast?" in Oren Harman and Michael R. Dietrich (eds.), *Rebels, Mavericks, and Heretics in Biology* (2008).

Figure 1:
Average Survival of New Businesses, 1977–2001



Source: Calculated from Business Dynamics Statistics (BDS).

as survival rates imputed from the Business Dynamics Statistics series. We want to see what the population of firms looks like in terms of entry and exit over an extended period of time.

For firms founded since 1977, the average survival line over five years is represented in Figure 1.

Thus, just under 80 percent of the new firms in a cohort survive to age one, two-thirds survive to age two, and so forth to age five. Because the BDS dataset aggregates firm age categories above age five (ages six to ten and eleven to fifteen, for example), for our imaginary economy we used imputed survival lines extrapolated out from age five to see the dynamics of firm entry and exit over a longer period of time. Real-world survival lines will be lumpier than simply an extrapolated line will be, but prior research seems to confirm that firm survival traces somewhat of a smooth downward slope.[13]

Using BDS data, for example, we can track the survival of the dataset's first cohort of firms, those founded in 1977. (Note that the years on the X-axis necessarily conform to the age aggregations: It moves from age six to age eleven, to age sixteen, to age twenty-one, and to age twenty-six.) So about 23 percent of firms founded in 1977 survived to age twenty-six in 2003, as shown in Figure 2.

At some point, the survival line of businesses could become fractionally asymptotic, as some organizational research does suggest that survival for several decades, beyond age 40, roughly, is exceedingly rare.[14] Conceivably, most firms die at some point.[15]

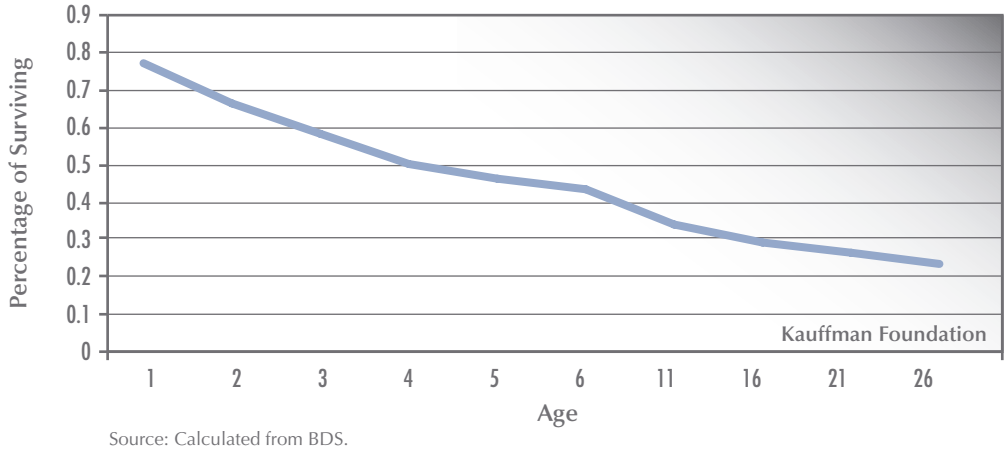
Using real and imputed survival rates, we can construct a population chart showing the entry, exit, and survival of firms each year as our imaginary economy moves forward from its inception.

13. *See, e.g.*, Amy E. Knaup, "Survival and Longevity in the Business Employment Dynamics Data," *Monthly Labor Review*, May 2005; Amy E. Knaup and Merissa C. Piazza, "Business Employment Dynamics Data: Survival and Longevity, II," *Monthly Labor Review*, September 2007; Brian Headd, "Redefining Business Success: Distinguishing Between Closure and Failure," *Small Business Economics*, vol. 21, 51–61 (August 2003); Brian Headd and Bruce Kirchhoff, "The Growth, Decline, and Survival of Small Businesses: An Exploratory Study of Life Cycles," *Journal of Small Business Management,* vol. 47, 531–550 (2009).

14. *See, e.g.*, Charles I. Stubbart and Michael B. Knight, "The Case of the Disappearing Firms: Empirical Evidence and Implications," *Journal of Organizational Behavior*, vol. 27, 79–100 (2006).

15. This observation thus highlights the extraordinary resilience of companies that have been around since the early nineteenth century, though it also suggests that studies purporting to identify a set of observable survival skills or best practices suffer from severe survivor bias. Survival over any period of years is indicative of some skills, but should not be taken as an imitative model because, in part, it may just as much reflect the *failure* of other companies in addition to one company's survival.

Figure 2:
Survival Line for Firms Founded in 1977



Source: Calculated from BDS.

This economy begins with the entry of 500,000 new businesses; in Year Two, 394,600 from this initial batch have survived, joined by the second year's round of incoming businesses, another 500,000. The economy now is populated by 894,600 businesses. If we continue this process over forty years, the organizational population of businesses classified by age looks as represented in Figure 3.

After one decade, firms aged five and younger account for more than two-thirds of all businesses in the economy. In Year Twenty-five, new and young businesses account for almost 40 percent of all businesses—as indicated on the chart. Put another way, one-quarter of the age categories (ages zero to five out of twenty-five years) make up two out of every five firms. At Year Forty, 15 percent of the age categories will account for one-third of all firms. By contrast, in Year Twenty-five, firms aged six to ten (20 percent of the age categories) will constitute 19 percent of all firms, while in Year Forty, age six to ten firms will make up 16 percent of all firms. Meanwhile, the oldest firms in Year 40 (those ages thirty-five to forty) will account for 8 percent of all firms, while in Year Twenty-five, the oldest companies (ages twenty-one to twenty-five) have a 12 percent share. (See Table 1.)

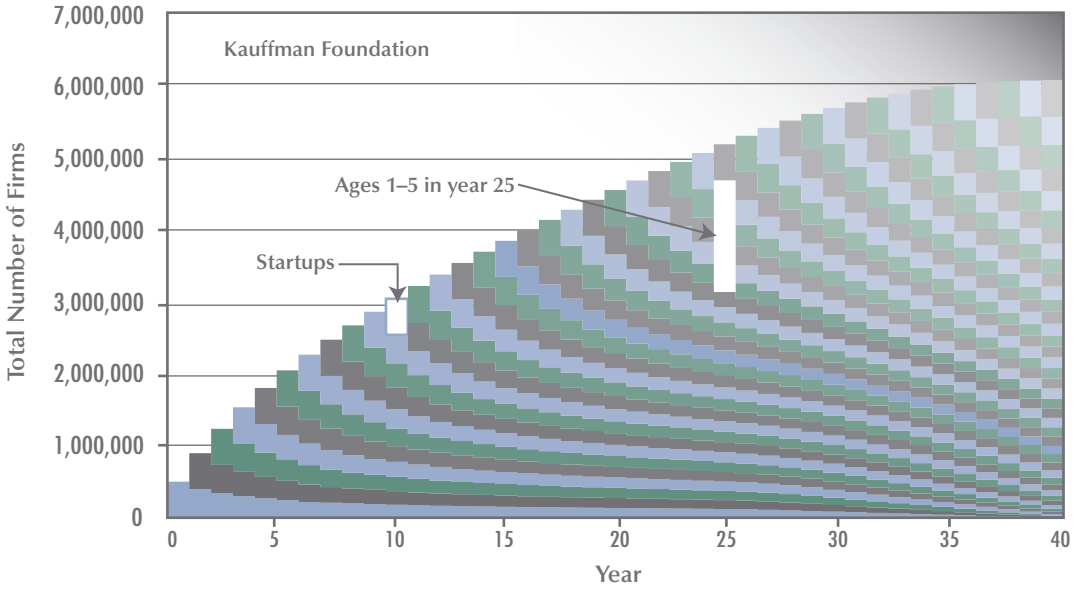
Table 1: Percentage Share of Total Number of Firms, by Age Category

Age Category	Year 10	Year 25	Year 40
0–5	67.31	39.47	33.71
6–10	32.69	19.17	16.37
21–25	n/a	12.24	10.46
35–40	n/a	n/a	8.02

With assumed constancy of startup entry and survival rates (assumptions based on real data, as we will see), the absolute number of firms younger than age five remains the same but constitutes a slightly decreasing proportion of the entire universe of firms. At the same time, however, *in any given year, young firms make up the largest cohort of all firms in the economy.* Even though, numerically, there will be a steadily greater volume of older firms, new and young firms will, proportionately, make up the largest bloc of firms. This makes no mention, too, of what we might think of as the back end of firm survival—if we added the constraint that only a few companies survive past age forty, the proportional superiority of new and young firms would be reinforced. Our imaginary economy is perpetually young.[16]

16. It also has been pointed out to us that if there were a lifetime survival cap of forty years, the average firm age in the economy likely would remain young, thus representing another pathway by which job creation emerges from younger firms. Thank you to Brink Lindsey for this observation.

Figure 3:
Accumulation of Firms through Birth, Death, and Survival



Source: Calculated from BDS.

This is all perhaps somewhat obvious: *Of course* new and young firms make up the largest chunk of companies in the economy. There are simply more of them! And this is precisely the point—with the steady entry of new firms and gradually diminishing survival rates over time the pyramid of firms in any economy will look like this.[17] This echoes, and is perhaps a corollary of, the Zipf distribution of firm size—the United States contains a handful of gigantic firms and many small companies.[18] But this is not merely a restatement of the firm-size distribution.[19] Firm age and size are related but not entirely overlapping—most young firms will be small (because a new firm necessarily begins at a small size) but not all small firms are young, and there are, in fact, some young firms that attain substantial size rather quickly. While the structure of firm size may help inform the present analysis as to subsequent selection (see below), it is not clear that the age distribution is as immutable as the size distribution seems to be. Age, moreover, also may be a function of time in a way size is not—the age distribution, in fact, could help explain the Zipf distribution of firm size.[20]

17. For a slightly related finding, albeit confined to manufacturing, *see* Timothy Dunne, Mark Roberts, and Larry Samuelson, "Patterns of Firm Entry and Exit in U.S. Manufacturing Industries," *RAND Journal of Economics*, vol. 19, 495–515 (1988).

18. *See, e.g.*, Robert L. Axtell, "Zipf Distribution of U.S. Firm Size," *Science*, vol. 293, September 7, 2001; Robert Axtell, "Firm Sizes: Facts, Formulae, Fables, and Fantasies," Brookings Institution, Center on Social and Economic Dynamics Working Paper No. 44, February 2006 ("a deep understanding of business firms will surely have as its cornerstone the notion that there are universal aspects to firm growth, just as there are universal features in tree growth").

19. For additional reading on scaling laws and the distribution of firm size and growth rates, as well as studies of entry and exit, *see* Luis A. Nunes Amaral, et al., "Scaling Behavior in Economics: I. Empirical Results for Company Growth," arXiv, February 1997, at http://arxiv.org/abs/cond-mat/9702082; Richard E. Caves, "Industrial Organization and New Findings on the Turnover and Mobility of Firms," *Journal of Economic Literature*, vol. 36, 1947–1982 (December 1998); Giulio Bottazzi and Angelo Secchi, "Explaining the Distribution of Firm Growth Rates," *RAND Journal of Economics*, vol. 37, 235–256 (Summer 2006).

20. *See also* Robert Axtell, "The Emergence of Firms in a Population of Agents: Local Increasing Returns, Unstable Nash Equilibria, and Power Law Size Distributions," Brookings Institution, Center on Social and Economic Dynamics Working Paper No. 3, June 1999, at http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.94.1964&rep=rep1&type=pdf.

The obviousness of firm accumulation and the greater proportionality of younger firms is partly the point of this analysis. But, there are profound consequences for job creation: It is embedded within this structure of firm entry and survival and accumulation. Just as every price in the economy represents a relative rather than absolute value, so too must job creation by firms of different ages be seen relative to this structure. The jobs contribution of new and young firms, that is, could be, in part, a function of the arithmetic of firm accumulation.

Of course, simply because new and young firms represent the largest cohort in terms of firm age, it doesn't automatically follow that they will or should create the largest annual number of new jobs. The calculation of net job creation includes not only those firms that survive, but also those that fail and, thus, destroy a good number of jobs. Since firms younger than age five tend to be the most volatile in terms of firm failure and job destruction, we might reasonably expect this cohort to be a disproportionately low contributor to net job creation.[21] In spite of their larger volume, then, it still could be true that new and young firms punch below their weight, as it were, in terms of job creation.

We know from Census Bureau data, however, that it is, in fact, true that new and young firms account for the lion's share of net new jobs in the United States.[22] Therefore, one way to understand this remarkable characteristic of the American economy is as a function of firm entry and survival and accumulation—as a function of the numbers. In any case, in terms of a purely hypothetical economy based on average numbers from the United States economy over the past thirty years, we can make some tentative conclusions. The dynamics behind the jobs contribution of new and young firms includes some structural features—there will always be more new and young firms, making it highly probable that more net job creation will come from these companies, rather than from their older counterparts.[23]

Firm Formation and Job Creation in the United States Since 1977

We now turn to the actual experience of the American economy over the past thirty years: On an annual basis, what has the economy's composition looked like in terms of firm age? How closely has reality tracked our imaginary extrapolation? Does this account for the large contribution of jobs from new and young firms? We begin by treating 1977, the first year in the dataset, as the *ab initio* year for the economy, including only those firms that came into existence from 1977 onward.[24] Figure 4 indicates how, over the next twenty-eight years, the accumulation of firms shaped the age composition of the economy.

We can clearly see from Figure 4 that young firms (ages one to five) comprise the largest demographic sector in any given year, consistent with our imaginary economy. Note, too, how few firms are included at the top by 2005 in the twenty-six to twenty-eight age category. These were firms founded 1977–1979 and, by 2005, 19 percent of firms founded in those three years remained. Recall that in Figure 2 the long-term survival rate for these businesses followed a steady downward slope.

So Figure 4 confirms that young firms dominate the economy in terms of volume. However, this still conveys an incomplete picture because it excludes any companies founded before 1977. While the BDS dataset only starts with 1977, it does include a "left censored" category that includes all firms founded before 1977, but with no specification as to age. In 1977, then, these firms could be anywhere from one

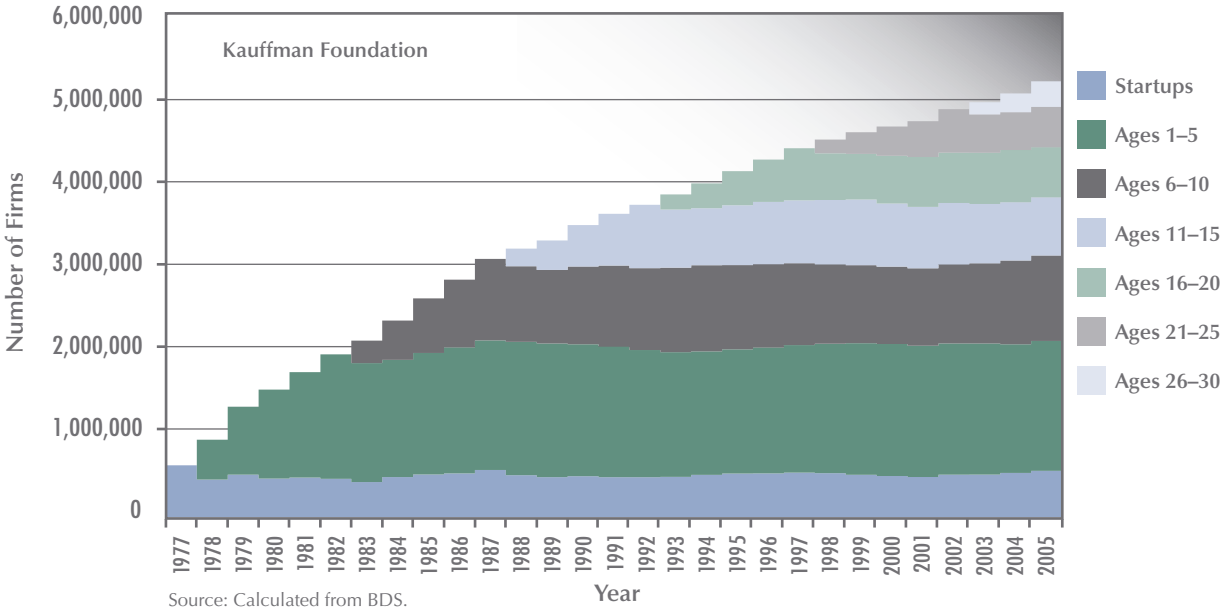
21. *See, e.g.,* John Haltiwanger, Ron Jarmin, and Javier Miranda, "Who Creates Jobs? Small vs. Large vs. Young," Working Paper, July 2009, at http://siteresources.worldbank.org/INTFR/Resources/HaltiwangerJarminMirandaWhoCreatesJobsjuly8.pdf.

22. *See* sources listed *supra* note 1.

23. When they come into existence, startups can only create jobs, not destroy them. (This says nothing of their effect on existing companies; it only refers to within-firm job creation.) Thus, at the moment of firm inception, gross job creation equals net job creation. *See, e.g.,* Paul Kedrosky, "Drunks, A Wall, Entrepreneurs, and Jobs," April 9, 2010, at http://www.growthology.org/growthology/2010/04/drunks-wall-entrepreneurs-and-jobs.html.

24. Note that the charts in this section will not follow precisely the same format as in the preceding section because the latter extrapolated out beyond age five on an annual basis, whereas the actual BDS data aggregates firms into five-year categories after the fifth year: six to ten, eleven to fifteen, sixteen to twenty, twenty-one to twenty-five, twenty-six to twenty-eight, and twenty-nine plus. Startups are defined as age zero.

Figure 4:
Age Composition of Firms in the Economy, 1977–2005



Source: Calculated from BDS.

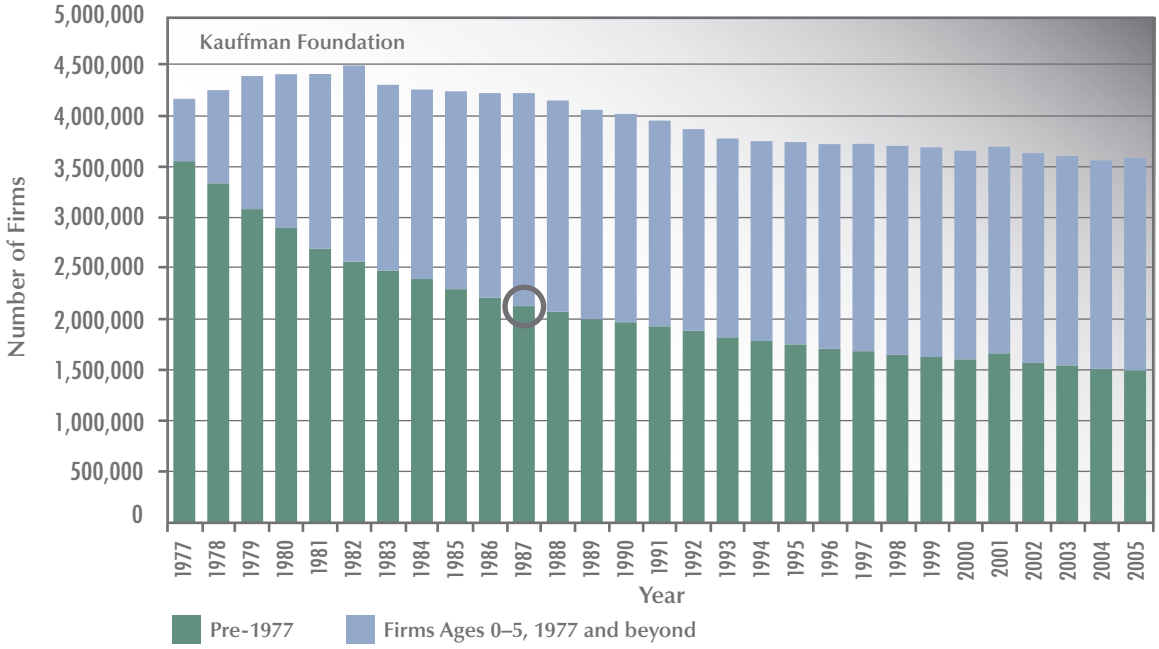
Aggregating five-year age groups of firms (except startups, which are broken out separately), this chart compares the accumulation of firms over time and how the composition changes. Firms in the one to five age group remain the largest category—not a majority, but the biggest in terms of numbers.

to 100 years old. Yet, the dataset allows us to track their post-1977 survival and compare the resulting composition of firms. We can thus compare pre-1977 firms with new and young companies in all subsequent years, as shown in Figure 5.

In this visualization, new and young firms cannot constitute the largest demographic bloc of firms in any given year because of the preponderance of older companies.[25] By 1988, new and young companies have overtaken the pre-1977 firms to become the largest group because each year the pre-1977 firms constitute a steadily smaller share of firms. This does not vitiate the point of the paper, however, because the nature of the data is such that we cannot compare pre- and post-1977 firms with any further specification. It is not the case that 1988 marked the first time in American history that new and young firms became a plurality of companies. If we knew, for example, the exact ages of pre-1977 firms, the chart would look much different, and it is likely that new and young firms would constitute a plurality in *every* year we would chart. This chart simply illustrates, within the confines of the dataset and using 1977 as the hinge year, what the U.S. economy has looked like as the undifferentiated mass of older companies has given way to annual new crops of firms. It shows, however, that the notion of turnover so often celebrated by economic analysts is partly a derivative function of embedded structure.

25. "Older," of course, is a relative term. In 1977, the pre-1977 category of "older" firms included a large number of young companies from the previous five years—likely a plurality, in fact. On the other end, the age classifications of these data mean that any company age six and older is categorized, somewhat imprecisely, as old or at least not young.

Figure 5:
Firms Founded Prior to 1977, and New/Young Firms (Ages 0–5) Founded 1977 and After



Source: Calculated from BDS.

By 1988, the young firms now have reached a steady state, and the pre-1977 firms gradually have diminished and comprise a smaller share than young firms. (So, in 1988, the firms could be age twelve and older.)

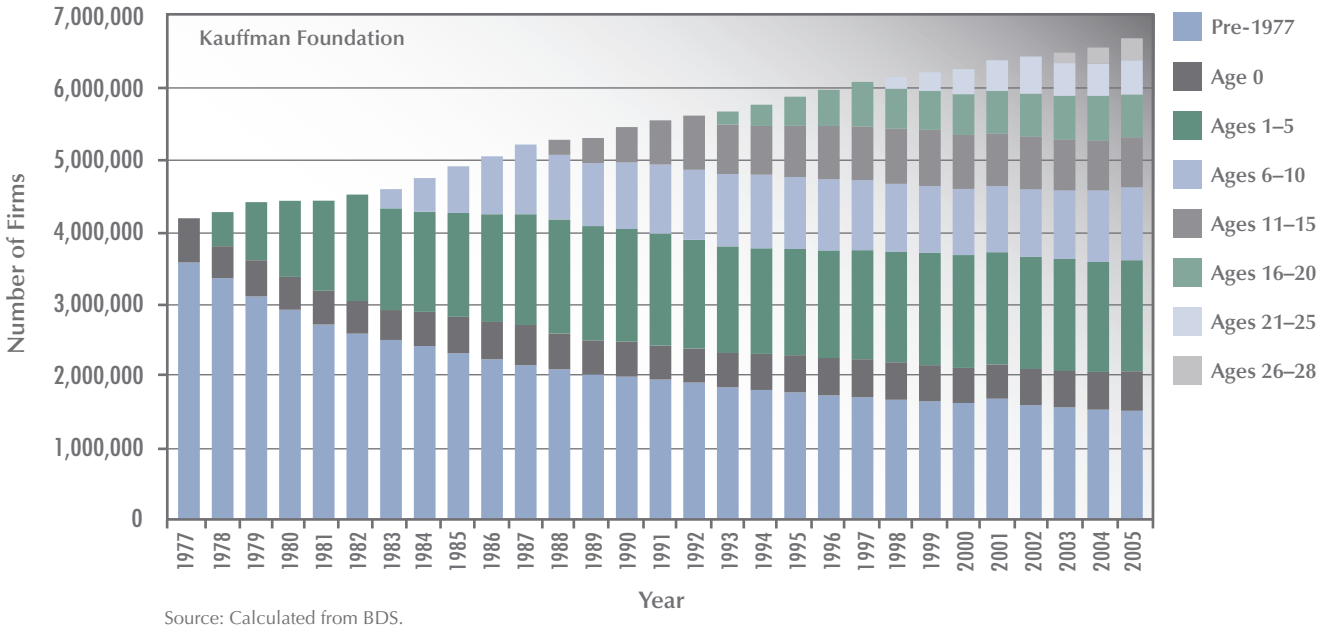
Figure 6 combines the prior two charts and includes the pre-1977 firms in an overall chart of all firm ages since 1977.

This is actually an incredibly interesting chart because it illustrates the pathways by which firm composition changes and new and young firms consistently account for the bulk of firms in the economy. In 1977, the t=0 moment in these data, the economy is composed of a class of startups (age zero) and all other existing firms that were founded before 1977. Again, these vary from age one to 100. As the economy moves through time from 1977, we actually see four things happen. First, new (age zero) and young (ages one to five) firms account for a steady slice of all firms. Second, the overall number of firms accumulates, growing by nearly two-thirds from 1977 to 2005. Third, as in Figure 4, the pre-1977 firms gradually diminish in number and share. Fourth, post-1977 firms grow older and gradually diminish in terms of their numbers as fewer survive in subsequent years—a slowing slope of failure acts upon a shrinking pool of survivors.[26]

Finally, once again excluding pre-1977 firms, the point can be illustrated by the percentage share of the total number of firms, by age category, as shown in Figure 7.

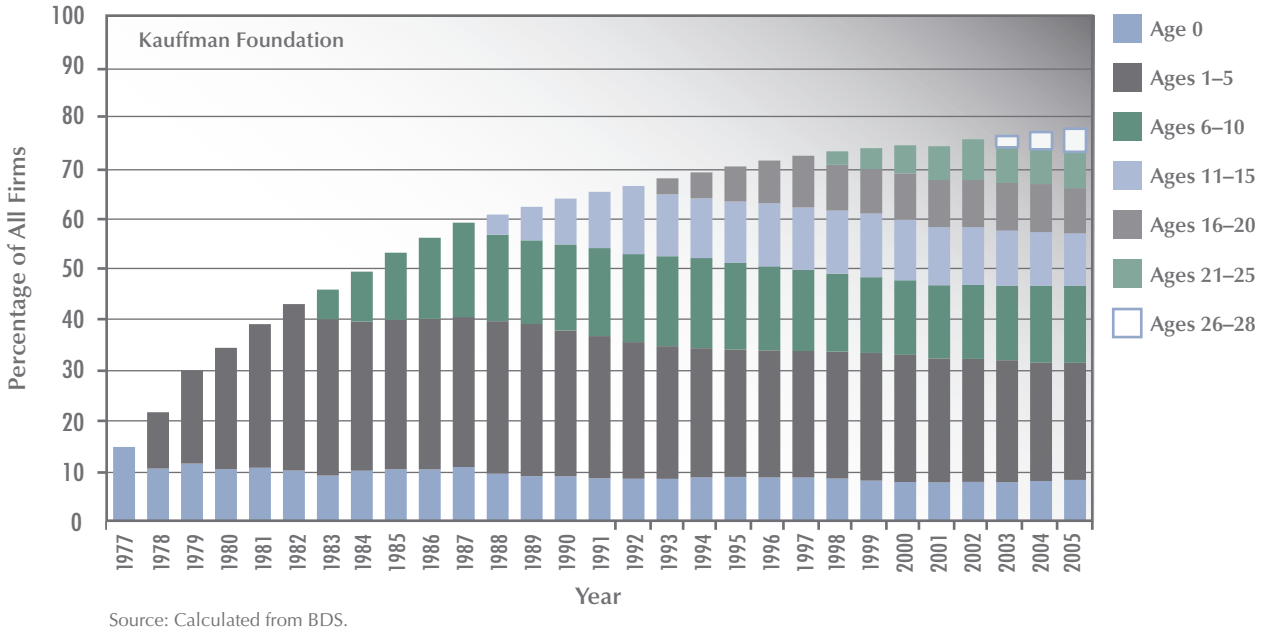
26. "[E]ntry cumulatively contributes a lot to turnover in the enterprise population." Richard E. Caves, "Industrial Organization and New Findings on the Turnover and Mobility of Firms," *Journal of Economic Literature*, vol. 36, 1947–1982 (December 1998).

Figure 6:
All Firms in the Economy, By Age, Over Time



Source: Calculated from BDS.

Figure 7:
Share of Total Number of Firms, By Age



Source: Calculated from BDS.

Firms ages zero to five account for between 30 percent and 40 percent of all firms between 1983 and 2005. This naturally falls, albeit slowly, over time as the total number of firms increases, but this age group remains a plurality in terms of five-year age categories.

Once the economy reaches a point at which it includes firms older than age six in 1983 (and remember, pre-1977 firms account for the missing shares on this chart), new and young companies account for between 30 percent and 40 percent of all firms in the economy. This percentage naturally falls over time, albeit slowly, as the overall number of firms grows, but this demographic of firms is nonetheless a plurality each year, something that would persist over time—recall the new and young company shares in Years Twenty-five and Forty of our imaginary economy. There are clearly structural dynamics at work that help explain the provenance of new jobs.[27] As Axtell observed with regard to the size distribution of firms: "The Zipf distribution is an unambiguous target that any empirically accurate theory of the firm must hit. This result … places important limits on models of firm dynamics."[28]

Likewise, the preponderance of young firms may help explain an enduring feature of employment churn in the United States. For about the past twenty years, net job creation from "continuing" companies has been greater than that from businesses opening and closing.[29] (A "continuing" company is one that is not new [age zero] and not dying—so, a company that is between age one and death [closure].) The net jobs tally from continuing businesses that expand and contract has been larger than the net tally from the combined birth and death of businesses—significantly larger, according to some datasets. Headd points out that "the bulk of [these] job flows is in small firms," (small being defined as fewer than 500 employees).[30] We can see this, for example, in Census data from 2007, as represented in Figure 8: Most net job creation emerges from "continuing" small and medium-sized firms.

Importantly, as reflected in Figure 9, looking at the same data through the lens of firm age indicates that most net job creation emerges from young firms (ages one to five), meaning most of these small and medium-sized firms are young:

Thus, the large amount of net job creation from continuing companies also appears to reflect the structural dynamics of firm accumulation. This certainly does not mean that all surviving firms in the young cohort are adding jobs—some are growing, some are declining, and a substantial number are staying still, neither adding nor shedding jobs.[31] It simply means that, as an aggregate matter, the preponderance of young firms in the economy raises the probability that a large contribution to job creation will come from these companies. Remarkably, according to OECD data, it also appears as if the share of firms accounted for by young firms is broadly similar across a wide range of countries.[32] Thus, the phenomenon discussed here should not be interpreted as strictly a feature of the American economy.

It is important to note what this analysis is *not* saying. We are not claiming that the distribution of performance indicators such as market share or innovation or growth rates also follow the shape of accumulation set forth here. This is an exploration of the structural dynamics beneath the fact that new and young firms account for so much net job creation—that is, the additional increment of net new jobs added to the economy each year.

27. "While small and large firms provide roughly equivalent shares of jobs, the major part of job generation and destruction takes place in the small-firm sector, and small firms provide the greater share of net new jobs. In some ways, this role as a major creator and destroyer of jobs is a result of being the major creator and destroyer of businesses in general." Brian Headd, "An Analysis of Small Business and Jobs," Small Business Administration, Office of Advocacy, March 2010, at http://www.sba.gov/advo/research/rs359tot.pdf.

28. Robert L. Axtell, "Zipf Distribution of U.S. Firm Size," *Science*, vol. 293, September 7, 2001.

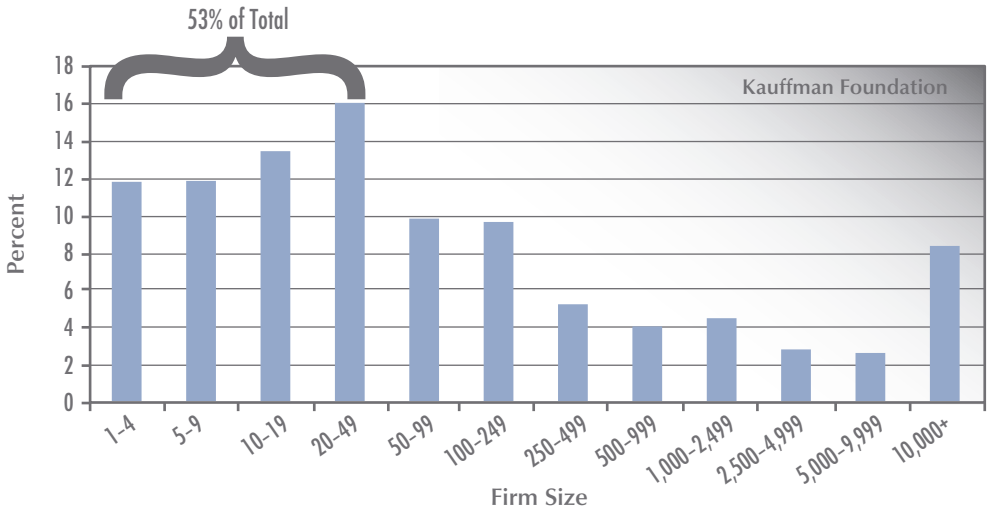
29. Brian Headd, "An Analysis of Small Business and Jobs," Small Business Administration, Office of Advocacy, March 2010, at http://www.sba.gov/advo/research/rs359tot.pdf (citing Business Employment Dynamics data).

30. Brian Headd, "An Analysis of Small Business and Jobs," Small Business Administration, Office of Advocacy, March 2010, at http://www.sba.gov/advo/research/rs359tot.pdf.

31. *See* Brian Headd and Bruce Kirchhoff, "The Growth, Decline, and Survival of Small Businesses: An Exploratory Study of Life Cycles," *Journal of Small Business Management,* vol. 47, 531–550 (2009).

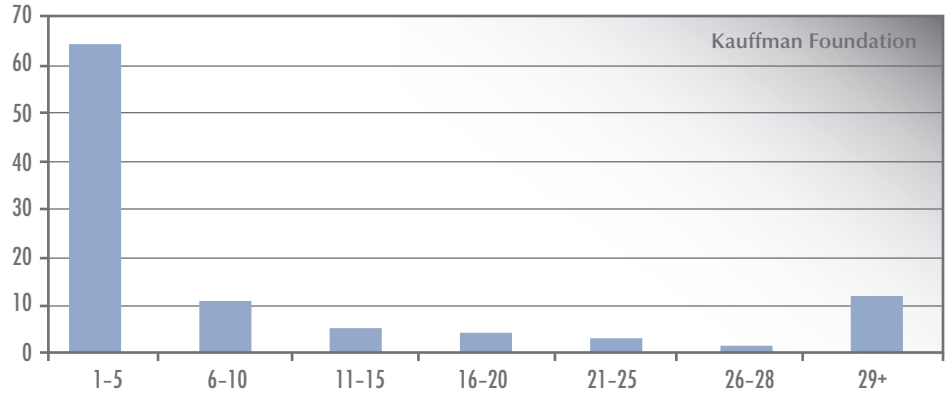
32. *See* Organisation for Economic Cooperation and Development (OECD), "Measuring Entrepreneurship: A Collection of Indicators, 2009 Edition," OECD-Eurostat Entrepreneurship Indicators Programme (2009), at http://www.oecd.org/dataoecd/43/50/44068449.pdf

Figure 8:
Net Job Creation in Continuing Firms by Size, 2007



Source: Calculated from Percent of Annualized Lifetime Net Job Creation for Firms in 2007. Source: Special Tabulation performed by U.S. Census Bureau from Business Dynamics Statistics. See also Dane Stangler and Robert E. Litan, "Where Will the Jobs Come From?" Kauffman Foundation Research Series: Firm Formation and Economic Growth, November 2009.

Figure 9:
Net Job Creation in Continuing Firms by Firm Age, 2007



Annualized Lifetime Net Job Creation for Firms in 2007. Source: Special Tabulation performed by U.S. Census Bureau from Business Dynamics Statistics. See also Dane Stangler and Robert E. Litan, "Where Will the Jobs Come From?" Kauffman Foundation Research Series: Firm Formation and Economic Growth, November 2009.

Related Research Questions

One logical follow-on question to this discussion is the extent to which firms survive over a longer period of time. As noted earlier, only the tiniest fraction of companies appears to survive for longer than forty years. Of the companies listed in the *Fortune* 500, forty were founded before 1855, and the decades in which the highest number of current *Fortune* 500 companies was founded are the first decade of the 1900s, the 1920s, and the 1980s.[33] Clearly, a healthy economy requires some admixture of young and old, small and large.[34] Four-fifths of the companies on the list came into existence before 1970, which means these firms have managed to survive past age forty. But this represents a sliver of the more than six million firms in the U.S. economy, and such long survival requires merging with and acquiring other companies. The steady share of new and young companies in the economy thus represents not only a source of new job creation but also a supply of sustenance for the oldest and largest companies.[35] Additionally, some degree of firm entry likely induces the demise of older firms, helping to account for the shrinking share of those companies.

The preceding charts and discussion also raise the question of turnover—there has been much made of the churn of companies on lists such as the *Fortune* 500 and in the economy as a whole. Breathless analysis often holds that our era is one of unprecedentedly rapid change, driven in large part by "armies" of startups that create most new jobs in the economy.[36] The fact that so many companies on today's *Fortune* list were not on the list in, say, 1980, is asserted as prima facie evidence for economic upheaval. Turnover, turmoil, and churn, however, cannot be analyzed apart from the structural perspective presented here. Imagine we had a lifetime cap of forty years on how long a firm could survive, a law of perpetuity applied to for-profit companies. As long as new firms continued entering, this economy could not help but experience constant turnover. This, in fact, appears to closely resemble the reality of the American economy—the line of survival slopes steadily downward for any cohort of firms and likely approaches zero at some age.

At the same time, we have experienced a steady flow of firm entry and exit. Substantial turnover, then, is to be expected as a function of firm formation and accumulation: the *Fortune* 500 turnover is less remarkable than it appears.[37] Imagine, conversely, that the pace of firm formation dwindled but that survival expectations remained the same—the accumulation of firms gradually would come to be dominated by older companies. Such an economy might quickly lose any semblance of vitality.[38] We also should be careful in how we interpret survival—longevity of survival is not always a sign of productivity, and the fact that half of new firms fail to survive to age five should not automatically be taken as a bad thing. The alternative, however, is not a Panglossian interpretation of the contemporary American

33. Dane Stangler, "The Economic Future Just Happened," Kauffman Foundation, June 2009, at http://www.kauffman.org/uploadedFiles/the-economic-future-just-happened.pdf.

34. *See* William J. Baumol, Robert E. Litan, and Carl J. Schramm, *Good Capitalism, Bad Capitalism, and the Economics of Growth and Prosperity* (Yale, 2007).

35. Some of the "exits" observed in the data, particularly between older companies, and between the oldest and youngest companies, likely represent mergers and acquisitions.

36. *See* David B. Audretsch, *Innovation and Industry Evolution* (MIT, 1995); John Micklethwait and Adrian Wooldridge, *The Company: A Short History of a Revolutionary Idea* (Modern Library, 2003).

37. Indeed, prior studies of turnover among the largest companies have found persistent turnover—it is a feature of capitalism, notwithstanding retrospective narratives we wish to impose. *See, e.g.*, Leslie Hannah, "Marshall's 'Trees' and the Global 'Forest': Were 'Giant Redwoods' Different?" in Naomi R. Lamoreaux, Daniel M.G. Raff, and Peter Temin (eds.), *Learning by Doing in Markets, Firms, and Countries* (NBER, 1999); Neil Fligstein, *The Transformation of Corporate Control* (Harvard, 1990).

38. *See, e.g.,* Carl J. Schramm, "Making the Turn: Entrepreneurial Capitalism and its European Promise," Speech to the European Union Finance Ministers, April 8, 2006; OECD, *The Sources of Economic Growth in OECD Countries* (2003).

economy. If we were somehow able to raise survival rates, it is unclear whether this would boost economic growth.[39] In fact, from a policy standpoint, if barriers to firm entry were lowered and we had a corresponding increase in new-business creation, we might actually need *lower* survival rates (higher failure, greater turnover) for the selection process to function commensurately and enhance productivity.[40] Indeed, a higher volume of new business entry might automatically lead to lower survival rates as a function of the "easy-to-start, easy-to-close" phenomenon identified by some studies.[41]

This further raises the question of the relationship between market selection and economic growth. If firms that eventually survive are better endowed from the beginning (larger initial size, deeper-sunk costs, better access to financing), then perhaps part of what is perceived as an "up or out" dynamic among any given cohort of companies—as well as the number of jobs retained in surviving firms—merely reflects the disappearance of originally weaker (and smaller) firms.[42] Those left standing, that is, might have been better off and bigger to begin with, as economic growth results from the discovery and winnowing process. As Caves observes, "the new evidence imputes more rationality to entrants' decisions than has generally been assigned to them."[43] A new company that starts out small (whether in employment size or capital commitments) may have a lower expectation of survival than one that starts out larger. Subsequent survival rates thus may reflect this initial calculus. At the same time, the rapid growth seen in some groups of surviving firms may reflect a rational decision to start small and "discover" the firm's competence—rapid growth thus would represent a response to feedback that the firm was competent to compete, with heavier investment on a smaller starting base constituting the rapid growth.

Additionally, this analysis raises the interesting and essential question of the role of firm exit or failure in economic performance. (We are mindful that the exit of a firm from a database should not necessarily be equated with failure in the sense that the founders are disappointed. Research indicates that, in many cases, the closure of a firm is perceived as a successful outcome.)[44] The observation that "when firms grow, the economy grows" can be true only if accompanied by the corollary of firm exit and decline—sectors of the economy that are populated by rapidly growing companies also tend to have a good number of declining companies.[45] During the 1990s expansion, for example, the torrid pace of job creation enjoyed by the U.S. economy was

39. *See, e.g.,* Erzo G.J. Luttmer, "Selection, Growth, and the Size Distribution of Firms," Working Paper, August 2006.

40. The regularity of firm entry and exit might seem to suggest either persistent "excess" entry (since a similar portion fail), or high barriers to entry, over which only a certain number of firms can make it. Of course, lack of knowledge as to which firms will survive means policy likely can do little to encourage the "right" firms to enter.

41. *See, e.g.,* Brian Headd, "Redefining Business Success: Distinguishing Between Closure and Failure," *Small Business Economics*, vol. 21, 51–61 (August 2003). This, of course, would depend on the sectoral mix of the additional increment of startups.

42. *See, e.g.,* John C. Haltiwanger, Ron S. Jarmin, and Javier Miranda, "Who Creates Jobs? Small vs. Large vs. Young," NBER Working Paper No. 16300, August 2010.

43. Richard E. Caves, "Industrial Organization and New Findings on the Turnover and Mobility of Firms," *Journal of Economic Literature*, vol. 36, 1947–1982 (December 1998). Farther afield, these studies and observations should call into question the conventional definition of economic growth as simply more products or services or revenues.

44. *See* Brian Headd, "Redefining Business Success: Distinguishing Between Closure and Failure," *Small Business Economics*, vol. 21, 51–61 (August 2003).

45. *See* Brian Headd and Bruce Kirchhoff, "The Growth, Decline, and Survival of Small Businesses: An Exploratory Study of Life Cycles," *Journal of Small Business Management,* vol. 47, 531–550 (2009); Richard E. Caves, "Industrial Organization and New Findings on the Turnover and Mobility of Firms," *Journal of Economic Literature*, vol. 36, 1947–1982 (December 1998). These and other studies also raise the question of the relationship between market selection and economic growth. If firms that eventually survive are better endowed from the beginning (larger initial size, deeper sunk costs, better access to financing), then perhaps part of what is perceived as an "up or out" dynamic among any given cohort of companies—as well as the number of jobs retained in surviving firms—merely reflects the disappearance of originally weaker (and smaller) firms. Those left standing, that is, might have been better off and bigger to begin with, and economic growth results from the discovery and winnowing process. As Caves observes, "the new evidence imputes more rationality to entrants' decisions than has generally been assigned to them." Caves, *supra* at 1961. A new company that starts out small (whether in employment size or capital commitments) may have a lower *expectation* of survival than one that starts out larger. Subsequent survival rates may thus reflect this initial calculus. At the same time, the rapid growth seen in some groups of surviving firms may reflect a rational decision to start small and "discover" the firm's competence—rapid growth would thus represent a response to feedback that the firm was competent to compete, with heavier investment on a smaller starting base constituting the rapid growth. Farther afield, these studies and observations should call into question the conventional definition of economic growth as simply more products or services or revenues.

constituted by simultaneously rising gross job gains and rising gross job losses, particularly in large batches.[46] As we have seen, over a long enough period of time, most companies do not survive; this holds equally true for various other economic components, such as industries and individual products.[47] No analysis of economic dynamics, including job creation, can be complete without a consideration of firm exit.

Conclusion: What Do the Underlying Dynamics Mean?

Discussions of economic policy often revolve around idiosyncratic factors, such as changes in tax rates or breakthrough innovations. Often neglected are the structural features of an economy that help shape the world in which such idiosyncratic factors operate. This is not to say that the American economy or any economy operates in a deterministic fashion, and it is understandable that structural features go overlooked. By virtue of being structurally embedded, they can be easily overlooked. But if we are to understand the reasons behind certain economic phenomena—and if we would like those phenomena to persist—we would do well to pay attention to these structural features.[48] Without understanding them, we could very well undermine them and thus lose the job-creating benefits of new and young companies.

New and young companies do indeed account for most net job creation in the U.S. economy, but this is due, in part, to their status as the largest demographic category of companies. This paper has, in part, removed any bias in either direction surrounding new and young companies, and has treated their role as a feature of a functioning economy. It also means that job creation actually may be a *secondary* story in the American economy because it reflects underlying dynamics that have been remarkably persistent for three decades (and, if prior studies are accepted as comparable, nearly a century). We should not accept or try to understand this reality in terms of a "just so" narrative—as if it is perfectly natural that new and young firms contribute most net new jobs because they are seen as somehow superior to older and larger companies. Just as Kimura's work did, this should raise the issue of causality in economic change. It is nearly impossible to reconstruct the causal chain of most economic developments. There is simply too much variability, too many unseen factors that play a part. The structural dimension presented here allows us to see some measure of order in the process of firm formation and job creation. At the same time, however, that structural order should not be overplayed and may actually point in a direction away from the firm as the analytical locus of job creation.[49] The fact that any particular firm or class of firms can be said to create X number of jobs also reflects a host of factors aside from the firm itself.[50]

Still, this should not denigrate the importance of new and young companies and the jobs they create. After all, the reality of firm dynamics presented here is premised on certain truths that are not immutable: a more or less steady inflow of startups; more or less consistent survival rates from year to year; and roughly equal levels of gross job creation and destruction in older companies that tend to cancel each other out on a net basis. These should not be seen as functions of mathematical inevitability—they are the *reasons behind* the mathematical probabilities described here. This is

46. *See* Sheryl L. Konigsberg, James R. Spletzer, and David M. Talan, "Business Employment Dynamics: Tabulations by Size of Employment Change," *Monthly Labor Review*, April 2009, at http://www.bls.gov/opub/mlr/2009/04/art2full.pdf.

47. *See*, e.g., Paul Ormerod, *Why Most Things Fail: Evolution, Extinction, and Economics* (Pantheon, 2005).

48. "In general, incorporating turnover into traditional industrial organization clarifies how underlying structure shapes the environment in which market outcomes are determined." Richard E. Caves, "Industrial Organization and New Findings on the Turnover and Mobility of Firms," *Journal of Economic Literature*, vol. 36, 1947–1982 (December 1998).

49. *See* Arnold Kling, "What is Job Creation?" July 15, 2010, at http://econlog.econlib.org/archives/2010/07/what_is_job_cre.html.

50. This is, perhaps, a suggestive line of future research that falls out of this paper. *See, supra* note 43.

similar to the research on the distribution of firm size, where the power law distribution is not random, but is the result of "purposive behavior on the part of the individual agents in the market."[51] There are reasons behind the regularity, just as with the age distribution here.

If the level of firm formation were more volatile, if older companies created more jobs than they destroyed, if young firms were somehow suppressed in their hiring and growth, the dynamics of firm accumulation and subsequent job creation would be dramatically different. But, over the past three decades in the United States (and perhaps the last century), these variables have held true and have come together to create something that does resemble a mathematical function, or at least a matter of higher probability. In any given year, new and young companies constitute the largest demographic bloc of firms in the United States. We should expect, therefore, that they will create the largest number of new jobs.[52]

One upshot is that the dynamics of firm accumulation underscore the overriding importance of firm formation to economic growth—not in any revolutionary sense, but in the neutralist sense of a steady baseline beat of firm entry and exit, a structural premise of which other economic phenomena are incidents. Take, for example, the relationship between firm formation and accumulation, and the disproportionate contributions of high-growth firms. Prior research has highlighted the importance of high-growth firms, but we have yet to consider their importance in any sort of structural context.[53] Aggregate job creation, whether by firm age or firm size, is not the whole story. Beneath the surface, together with the employment churn already discussed, is a relatively small number of growing businesses that account for a disproportionate share of new jobs.[54] While we might be able to say, therefore, that young firms dominate job creation in part because of sheer volume, it does not settle the overall question of job creation, because within the various age cohorts of firms are these high-growth firms. Even here, however, there would seem to be a relationship between the a *priori* level of firm formation, the ensuing structural dynamics, and the subsequent emergence of high-growth firms. In fact, this perspective might make high-growth firms seem less interesting than they are thought to be: In an economy with healthy levels of firm entry, exit, and inter-firm productivity reallocation, we should expect that the resulting picture of firm performance follows a Pareto distribution. Such a distribution can be seen to be premised on the structure of firm formation, exit, and accumulation.[55]

This way of looking at high-growth firms takes us back to the neutralist view with which this paper began—if high-growth firms and the job creation record of new and young companies are partly incidents of these underlying dynamics, then we can see the process of economic selection and propagation acting upon this important baseline of firms being created and accumulating over time. When they come into existence, for example, startup firms create, on average, three millions jobs per year. Many of these jobs are lost and new ones are created, but employment at the moment of startup is not reached again in subsequent years.[56]

51. Philip Ball, *Critical Mass: How One Thing Leads to Another* 266 (FSG, 2004). For a brief look at the distribution of firm exits, *see* William Cook and Paul Ormerod, "Power Law Distribution of the Frequency of Demises of U.S. Firms," Volterra Consulting, April 2002.

52. This says nothing, of course, of economic contributions such as innovation and productivity.

53. *See* Sheryl L. Konigsberg, James R. Spletzer, and David M. Talan, "Business Employment Dynamics: Tabulations by Size of Employment Change," *Monthly Labor Review*, April 2009, at http://www.bls.gov/opub/mlr/2009/04/art2full.pdf; and Dane Stangler, "High-Growth Firms and the Future of the American Economy," Kauffman Foundation Research Series: Firm Formation and Economic Growth, March 2010, at http://www.kauffman.org/uploadedfiles/high-growth-firms-study.pdf.

54. Additionally, beneath the aggregate surface are a number of factors that seem to be shared among new businesses that survive and those that do not. *See* Brian Headd, "Redefining Business Success: Distinguishing Between Closure and Failure," *Small Business Economics*, vol. 21, 51–61 (August 2003).

55. *See, e.g.*, L.A.N. Amaral, et al., "A Model for the Growth Dynamics of Economic Organizations," Physica A 299 127 (2001) (finding consistent scaling results across various industries and measures of firm size; "These two points suggest that universality is present in the growth dynamics of business firms.").

56. Michael Horrell and Robert Litan, "After Inception: How Enduring is Job Creation by Startups?" Kauffman Foundation Research Series: Firm Formation and Economic Growth, July 2010, at http://www.kauffman.org/uploadedFiles/firm-formation-inception-8-2-10.pdf. *See also* Brian Headd, "An Analysis of Small Business and Jobs," Small Business Administration, Office of Advocacy, March 2010, at http://www.sba.gov/advo/research/rs359tot.pdf. ("In short, the employment effect of a cohort of businesses is greater at birth than in any subsequent year.")

New and young firms immediately are subject to the world of selective winnowing, throwing the importance of these structural dynamics into especially high relief.

An unavoidable question, however, is how and when the equilibria—relatively steady levels of firm entry and exit—discussed here might change. What endogenous factors could, for example, cause the rate at which companies are created to increase? To approach the question from a cost perspective, many argue persuasively that the cost of company creation has declined (in some cases precipitously) in recent years. In information technology, a combination of decreasing infrastructure costs, lower distribution costs, and widespread open source means that what a decade ago cost $2 million to $3 million now often costs a fraction of that, perhaps as little as $100,000. While cost declines in other sectors are not as sharp, they often are still meaningful. The result is a declining cost of company creation, one that has lowered the barriers to growth entrepreneurship, especially for younger people with limited or no access to capital.

At the same time, there is an evolution underway in risk capital markets. The emergence of professional, seed-centric acceleration programs (e.g., TechStars, Y Combinator, Betaworks, etc.) has made it easier for a larger amount of company creation experimentation to take place. Rather than requiring $3 million to $5 million in investment, and then $100 million and larger exits, these smaller funding groups will invest as little $50,000, thus requiring much smaller exits for profitable returns, all predicated on the costs of company creation and initial customer acquisition having declined sufficiently to make a smaller risk capital infusion productive.

What do these changes in company creation dynamics mean? They suggest that it is possible that there is a structural change underway in the rate at which new companies are created in the United States. While information technology companies represent only a small subset of all companies being created, the effects being felt there are being felt elsewhere. For example, new service companies increasingly find customers through online rating services, lowering their marketing costs and increasing their reach. Similarly, it has become much easier for researchers to share information on difficult problems in areas like biology and clean tech, thus facilitating sharing and collaboration, with a corresponding impact on costs and the likelihood of commercialization. Recall, too, that a higher level of firm creation should bring with it a higher level of failure—and this will be a good thing. Greater volumes of experimentation promise higher probabilities of success (and, thus, economic growth), but also bring, naturally, greater volumes of failure. In one sense, then, we could be moving from one neutral state to another. The effect, in total, is that there are reasons to imagine that company creation dynamics, while neutral and surprisingly static over time, traverse an economic landscape driven by more than entrepreneurial opportunity recognition. The structural dynamics analyzed here represent only one dimension of that economic landscape.

The analogy drawn here between the neutral theory of evolutionary change, and firm formation and accumulation is, of course, imprecise. There is still considerable heterogeneity within the structure presented here; what this analysis seems to suggest is the existence of a dual microeconomic structure beneath the aggregate picture of job creation. The first is the structure outlined here; the second is the dynamic of churn among firms and individuals across all sectors. But this, too, echoes the role of neutralism in evolutionary theory. Part of what Kimura achieved was to establish a baseline of genetic change for assessing adaptation and selection processes, and to show that there is an orderly dimension to selection. Startups represent the raw material of economic selection but, from an aggregate perspective, they are also much more than that. The twin forces of a constant level of firm formation and steady survival rates together constitute a structure that exerts a shaping influence on subsequent economic developments. New and young companies are not merely passive targets of economic selection—they help set the terms, particularly the pace, for that selection.

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