Kauffman Foundation Research Series: Firm Formation and Economic Growth

Financialization and Its Entrepreneurial Consequences

March 2011

Paul Kedrosky and Dane Stangler
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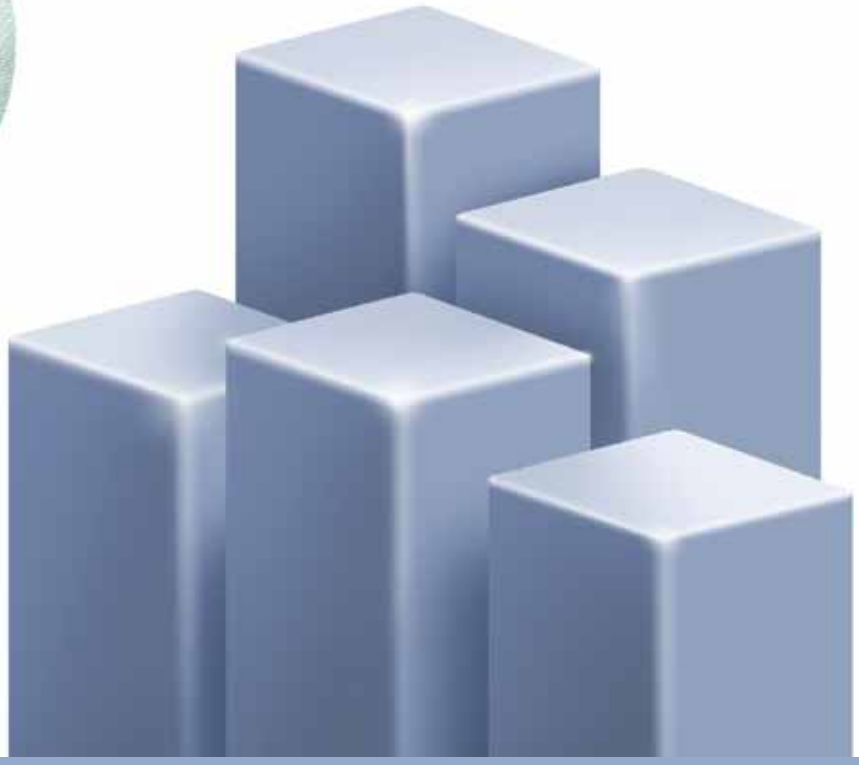

KAUFFMAN
The Foundation of Entrepreneurship

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Overview

The U.S. financial sector expanded dramatically over the last hundred years in both relative and absolute terms. This expansion has had a number of causes and consequences, most of which can be lumped broadly under the heading of increased "financialization" of the economy. This led, in part, to the financial crisis of 2008/2009. In this paper, however, we consider the implications of financialization for the structure of the U.S. economy, in particular for entrepreneurship.

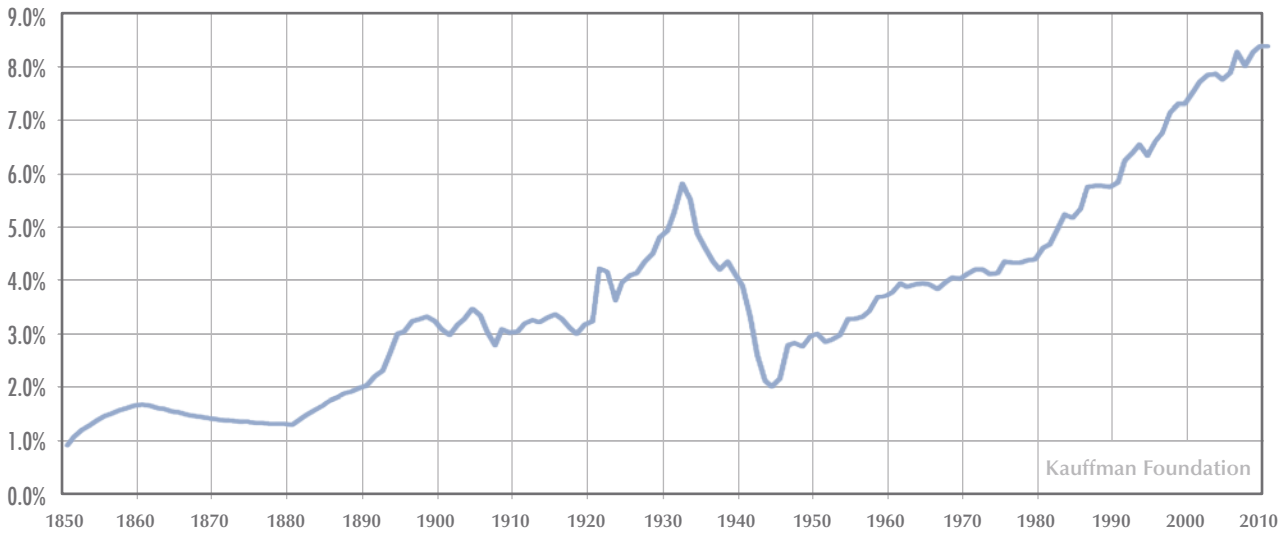
A Historical Overview

A financial industry plays an important role in any modern economy. It provides widely varying principal and intermediation services to households and corporations—services that sometimes are simple, but often complex. The services range from lending, to stock brokerage, to complex securities, to real estate and insurance, among many others.

The industry has changed considerably in its importance over the last 160 years.[1] As Figure 1 shows, the U.S. industry's share of domestic GDP was at its lowest during the mid-nineteenth century, when it hovered between 1 percent and 2.5 percent. From 1900 to 1930, however, it rose steadily, before peaking at approximately 6 percent of GDP at the beginning of the Great Depression. It then fell sharply in importance over the next fifteen years. The industry resumed its rise in 1945 and has yet to peak, having touched 8.4 percent of U.S. GDP in the last two years.

Why the industry has changed in relative importance over time is a crucial question. After all, unlike other sectors, in a true Arrow-Dubreu economy, the financial services industry would not exist in

Figure 1: Financial Sector as Percentage of U.S. GDP: 1850–2009



Source: The Evolution of the US Financial Industry from 1860 to 2007: Theory and Evidence. NBER.

1. In this paper, we use "financial services" in reference to the Finance and Insurance sector, NAICS sectoral code 52. Many commentators often discuss "FIRE:" Finance, Insurance, and Real Estate, adding NAICS sectoral code 53. While there is clearly an intimate (and lately damaging) relationship between finance and real estate, for our purposes here we exclude real estate—thus sadly depriving ourselves of clever wordplay on the "FIRE economy."

anything like its present form.[2] Its intermediating functions would be simple and, thus, readily provided by a much smaller and less-profitable sector. Such is demonstrably not the case, however, so it is worth considering why the industry has grown to be as large and systemically important as it has become.

Across its history, the financial services industry's periods of more-rapid growth have generally been tied to periods during economic history when the need for financial intermediation was growing sharply. For example, the financial services industry's rise in the late nineteenth and early twentieth centuries corresponded to the appearance of railroads and early, large-scale manufacturing. Its next sharp rise, in the 1930s, corresponded to the build-out of the U.S. electrical grid, as well as rapid growth in the automobile and pharmaceutical industries.[3] We subsequently can see a sharp increase in financial services as a percentage of GDP from 1980 to the late 1990s, with a proximate cause this time being the financing of waves of information technology, culminating in the Internet boom.[4]

Not all periods of more-rapid U.S. economic growth have, however, coincided with a significant increase in financial services' relative role in the economy. For example, as the above figure shows, the 1960s were a period of substantial economic growth, but were accompanied by only a tiny increase in financial services' growth as a percentage of GDP.

In general, however, and most importantly for this paper, there should be no question that the financial services sector plays a key role for entrepreneurs. It helps reduce moral hazard, while mitigating adverse selection problems that otherwise might exist for young companies that lack long track records or significant collateral. To pretend otherwise—to pretend that we can have widespread entrepreneurial capitalism in the absence of a significant and active financial services sector—is to be fanciful.[5] At the same time, however, financial services and entrepreneurial ventures compete in the economy for many of the same employees. Given that the social returns from entrepreneurial efforts generally are higher than the private ones, this can be a source of allocative inefficiency in the economy, one with potentially material consequences.[6]

Having said the preceding, all observers of the U.S. economy should be concerned when the financial sector's activities increasingly feed back on the sector, rather than on the "real" economy. We have recently seen a consequence of the 2008 financial crisis. There are more and other consequences, and we focus on some of them in this paper—in particular, the effect of financial services growth and capital misallocation on young, growth companies. As John Maynard Keynes memorably said, "When the capital development of a country becomes the byproduct of the activities of a casino, the job is not likely to be well done."[7]

Financialization and the Economy

The U.S. financial sector's rise to relative economic importance is historically unprecedented. Even during the peak years leading up to the Great Depression, the U.S. financial services industry never rose above 6 percent of GDP, a figure that took until 1990 for it to regain. Since then, the industry has continued to carve out an ever-larger position for itself in the economy, to the point that it now employs 6.5 million people and accounts for 8.3 percent of GDP. This share of the economy quadrupled since the end of World War II, and gross output of finance and insurance rose by 97 percent

2. Philippon, T. 2008. The Evolution of the US Financial Industry from 1860 to 2007: Theory and Evidence. NBER.

3. Ibid.

4. On the relationship between technological breakthroughs and their cause-and-effect correspondence with finance, see generally Carlota Perez, *Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages* (Edward Elgar, 2002).

5. This has been recognized by economists for at least a century. See Joseph A. Schumpeter, *The Theory of Economic Development* (first published in German in 1911).

6. Philippon, T. (2007). Financiers vs. Engineers: Should the Financial Sector be Taxed or Subsidized? *NBER Working Paper.* 2007:(October):1–27. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1024974.

7. Keynes, J.M. *The General Theory of Employment, Interest and Money*. Atlantic Publishers & Distributors. 2006:400:140.

from 1997 to 2007, outpacing the 70 percent rise in gross output across all American sectors.[8]

Some recent changes have been a function of the information technology industry's appearance and growth. This industry has required immense investment, from new companies receiving venture capital to larger companies requiring banking services for public offerings, mergers, and other transactions.

It is not clear, however, that the increasing share of U.S. GDP accounted for by financial services is entirely a function of the growth of new, capital-intensive sectors like information technology. That industry is maturing rapidly, while newer variants, like "Web 2.0," are less capital intensive; at the same time, funding is flat or even declining in other sectors, like life sciences. With fewer initial public offerings being conducted, and with rapid consolidation in financial services (especially since the 2008 crisis), instead it seems that the finance economy's rise largely has been a function of the financial economy detaching from the real economy. Thinking of it in flow terms, consumers and businesses increasingly have used debt to fuel asset purchases that, in turn, became collateral for additional debt and asset purchases. This was not a productive capital allocation in the broader economy, but it did generate higher returns in the short run.

Innovation has driven some of the increased size of the financial sector. Developments in technology have greatly increased the nature, flow, and scope of financial products, thus increasing the size of the sector in both relative and absolute terms. In particular, the rapid expansion of financial services over the past few decades has been directly tied to continued advances in information technology. As a result, there are new and growing pressures to increase the size of the sector and increase the financial-centricity of modern economies.

We investigate the effects of this misallocation in the following section.

Financialization's Consequences

Capital increasingly flows toward financial assets and in service of the further financialization of the economy, which has many consequences. The main characteristics of this change are summarized usefully by Dore (2008)[9] as follows:

1. An increase in the proportion of the income generated by the industrial/post-industrial economies, which accrues to those engaged in the finance industry, as a consequence of three things:
    a. The growth in and increasing complexity of intermediating activities, very largely of a speculative kind, between savers and the users of capital in the real economy.
    b. The increasingly strident assertion of owners' property rights as transcending all other forms of social accountability for business corporations.
    c. Increasing efforts on the government's part to promote an "equity culture" in the belief that it will enhance the ability of its own nationals to compete internationally.

We are focused on the first of these financialization characteristics. In particular, we want to understand their consequences for the non-financial economy. Given the larger income share accounted for by the financial sector, and given the increasingly speculative activities taken on by the financial sector, what have been the effects in the real economy? How, for example, has financialization increased (decreased) the number of entrepreneurs in the economy? How has it been made easier (harder) for companies to be created, or to raise money? Given that one function of finance in a capitalist economy is to help fund new business ventures, what effect has financialization had on entrepreneurship in the United States? While we have no base case, so we cannot know precisely how the economy would look in the absence of financialization, we can characterize

8. Bureau of Economic Analysis.

9. Dore, R. Financialization of the global economy. *Industrial and Corporate Change*. 2008:17(6):1097–1112. Available at http://icc.oxfordjournals.org/cgi/doi/10.1093/icc/dtn041.

its size and nature, thus permitting some sense of financialization's consequences.

The Increasing Size of the Financial Sector

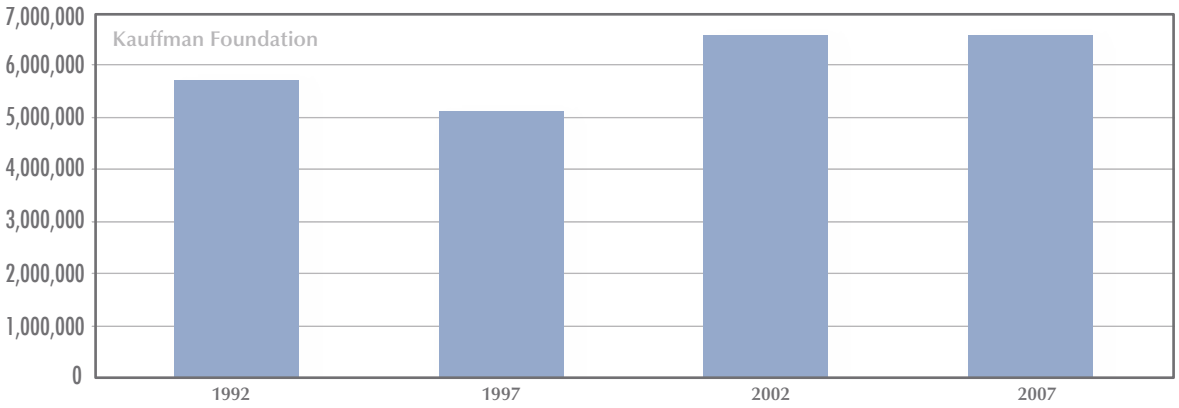
Capital flows to where it earns the highest risk-adjusted returns. Recent decades have seen very large swings in capital allocation in the economy as returns have shifted and capital followed. In the 1980s and 1990s, for example, information technology was a significant capital consumer, with many important companies being created, financed, and eventually going public or being acquired.

The returns generated on capital invested in these companies attracted more capital in a virtuous cycle. This new capital, in turn, was allocated by new financial services firms, ranging from brokerage firms to, and in particular, venture capital and private equity partnerships, both of which saw massive expansion in assets under management in the period. This process, despite its defensible origins, eventually broke down during the late 1990s' dot-com bubble, when the financial economy "detached" from the real one, making the financing and initial public offerings of unprofitable young companies an end in itself. Over the subsequent decade leading to 2010, the venture capital industry saw its returns go into a tailspin, with, eventually, negative internal rate of return (IRR).[10] While there was much job destruction at the end of this period, most studies show that, overall, the dot-com bubble produced net new jobs. Further, we can even argue that the incredible entrepreneurial speciation that occurred during the period was not historically unprecedented, with prior waves of new technology adoption being accompanied by financial booms and busts.[11]

At the same time, the financial services sector itself has been a significant capital consumer. The growth in venture capital and private equity firms is just one example. The hedge fund industry has soared in size during the last three decades, with it now managing more than a trillion dollars. Similarly, the fund management industry—with mutual funds and exchange-traded funds being the largest parts—has grown tremendously in assets under management and employment.

We also must consider the brokerage industry's changes. Its importance to various regional economies is well known, especially to New York, where it is far and away the largest employer. Having said the preceding, Figure 2 reveals that the

Figure 2: Employment in Finance and Insurance



Source: Economic Census

10. *See, e.g.,* Paul Kedrosky, "Right-Sizing the U.S. Venture Capital Industry," Kauffman Foundation, June 2009, at http://www.kauffman.org/uploadedFiles/USVentCap061009r1.pdf.

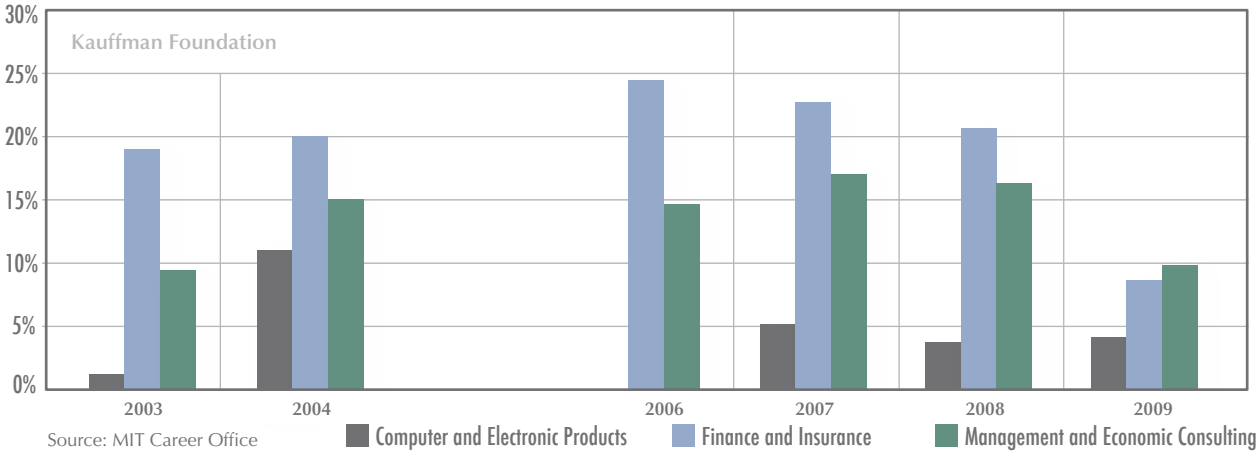
11. Perez, C. Technological roots and structural implications of the double bubble at the turn of the century. 2009:(31):1–31. Available at http://www.dspace.cam.ac.uk/handle/1810/225149.

financial services industry's employment growth in the last twenty years, especially since the dot-com collapse, does not seem striking, at least at first glance.

What this time-series analysis misses, however, is the changing makeup of Wall Street's hiring. Fewer people are being added to industry employment, but they are coming from new and narrower places. The financial services industry used to consider it a point of pride to hire hungry and eager young high school and college graduates, planning to train them on the job in sales, trading, research, and investment banking. While that practice continues, even if in smaller numbers, the difference now is that most of the industry's profits come from the creation, sales, and trading of complex products, like the collateralized debt obligations (CDOs) that played a central role in the recent financial crisis. These new products require significant financial engineering, often entailing the recruitment of master's- and doctoral-level new graduates of science, engineering, math, and physics programs. Their talents have made them well-suited to the design of these complex instruments, in return for which they often make starting salaries five times or more what their salaries would have been had they stayed in their own fields and pursued employment with more tangible societal benefits.

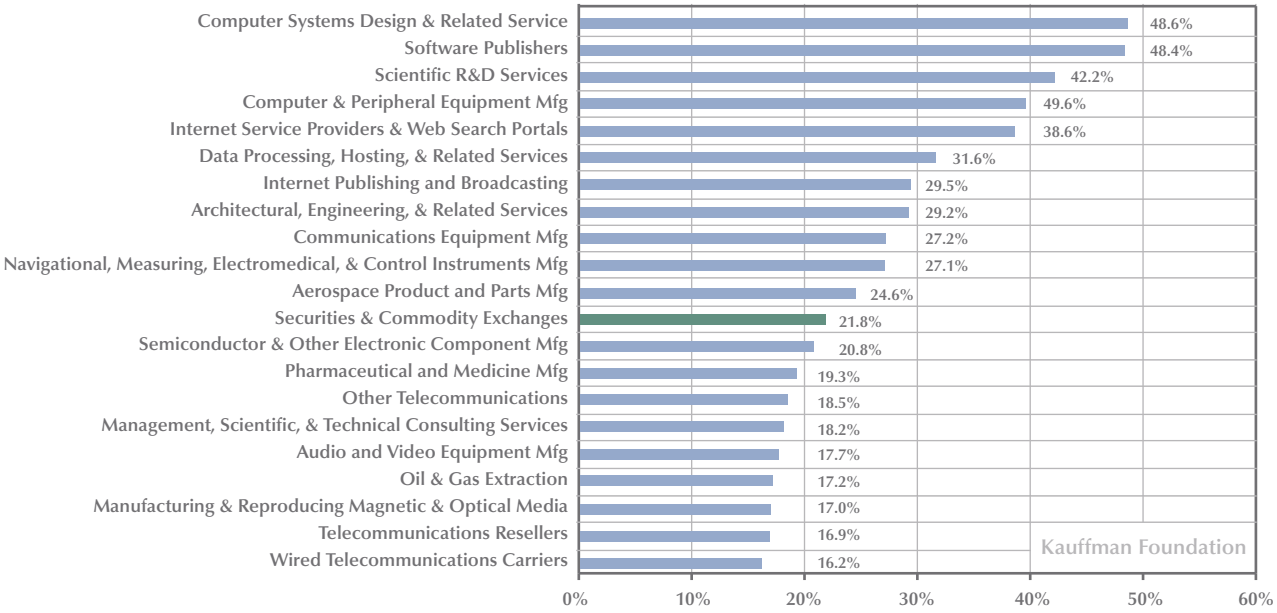
Figure 3 uses MIT data to demonstrate this trend. It shows that the financial sector, while long a significant recruiter of new graduates in technical disciplines, saw serious gains in the early part of the last decade, going from 18 percent of all graduates in 2003 to almost 25 percent in 2006. Claudia Goldin and Lawrence Katz similarly found that Harvard graduates in the early 1990s entered financial occupations at a far higher pace than Harvard graduates did in the 1970s.[12] The 2008 crisis has caused a sharp decline in technical recruiting by the financial services industry, with, for the first time in more than a decade, financial services no longer acting as the largest recruiter of new technical graduates. We return shortly to the consequences of this change. Likewise, researchers have found that, while the science, math, engineering, and technology fields successfully retained students at an increasing rate from the 1970s to the 1990s, retention rates of the highest-

Figure 3: Fields of Entry for Graduates of Massachusetts Institute of Technology



12. *See* Claudia Goldin and Lawrence F. Katz, "Transitions: Career and Family Life Cycles of the Educational Elite," *American Economic Review: Papers and Proceedings*. 2008:98(2):363.

Figure 4: Science and Engineering Employment by Sector, 2006 (average across all sectors: 4.6 percent)



Source: National Science Foundation

performing students fell steeply in the 1990s and early 2000s:

> [T]op STEM majors may be responding to market forces and incentives … Highly qualified students may be choosing a non-STEM job because these other occupations are higher paying, offering better career prospects, such as advancement, employment stability, and/or prestige, as well as less-susceptible to offshoring. There are numerous accounts of financial firms hiring top-performing STEM graduates at much higher salaries than those offered by STEM employers.[13]

This shift is borne out, at least partially, by data on where in the economy scientists and engineers can be found. Indeed, by 2006, the Securities and Commodities Exchanges sub-sector accounted for the twelfth-highest share of science and engineering employment by sub-sector, ahead of semiconductor manufacturing, pharmaceuticals, and telecommunications (Figure 4). This sub-sector's share was more than four times the average.

This distribution of human capital and, accordingly, wages falls into a long historical pattern: "The relative skill intensity and relative wages of the financial sector exhibit a U-shaped pattern from 1909 to 2006." Prior to the 1930s,

13. Lowell, B. Lindsay, et al., "Steady as She Goes? Three Generations of Students through the Science and Engineering Pipeline." Paper presented at the Association for Public Policy Analysis and Management, November 2009, at http://policy.rutgers.edu/faculty/salzman/SteadyAsSheGoes.pdf.

the American financial sector was a "high-skill, high-wage industry." A variety of factors, including technology and regulation, dampened the human capital and wage premiums for the subsequent half-century. Around 1980, however, the situation reversed and finance once again became a high-skill and high-wage sector, thus attracting people from a wide range of financial and non-financial backgrounds.[14]

Capital, including human capital, flows to the opportunities with the highest risk-adjusted returns, but those opportunities' perceived merits are subject to distortions. Regulations can change capital allocations, as can feed processes. In the latter case, capital can begin to feed on itself, with higher asset prices inducing more investments, and thus generating still higher prices, a misallocating process that continually feeds on itself—until it stops, often unhappily and expensively.[15] The subject of capital misallocation is much broader than this paper, but suffice it to say that capital misallocation happens, and has consequences.

What are the consequences of capital misallocation? Fundamentally, it means that capital—both human and financial—is being inefficiently allocated in the economy, with the result being that some sectors and opportunities are being starved, relatively speaking, while other sectors see a flood of capital, potentially producing a positive feedback cycle that exacerbates one or both of the preceding effects. In particular, capital misallocation can lead to inflated (deflated) asset prices, lower productivity, less innovation, less entrepreneurship, and, thereby, lowered job creation and overall economic growth. The mechanism that creates each of these effects is, of course, the flow of capital in the economy as exacerbated and distorted by financialization.

Entrepreneurship without Financialization

Having recognized the consequences of financialization and capital misallocation, it is now time to consider the direct effects of these distortions on entrepreneurship in the United States. If we consider financial services firms' percentage of U.S. GDP and, then, as a counterfactual, model a return to historical norms, we can begin to tentatively assess financialization's consequences.

Financial services peaked at almost 9 percent of U.S. GDP in its most recent upswing. In the preceding decades, its share had been volatile, but it had averaged roughly four percentage points lower, or approximately 5 percent of GDP. Were that to be the case again, what might the consequences be to entrepreneurship? To answer this question, we first must look at potential consequences the financial sector's explosive growth had on entrepreneurship over the past several decades. In terms of an aggregate picture, Figure 5 compares the economic value that finance and insurance have added since 1947 to varying measurements of new business formation. Financial services have been on a steady upward march since the end of World War II. Since 1980, firm formation rates in the United States have fallen slightly and then hit a plateau, with only minor fluctuations from year to year (Figure 5).

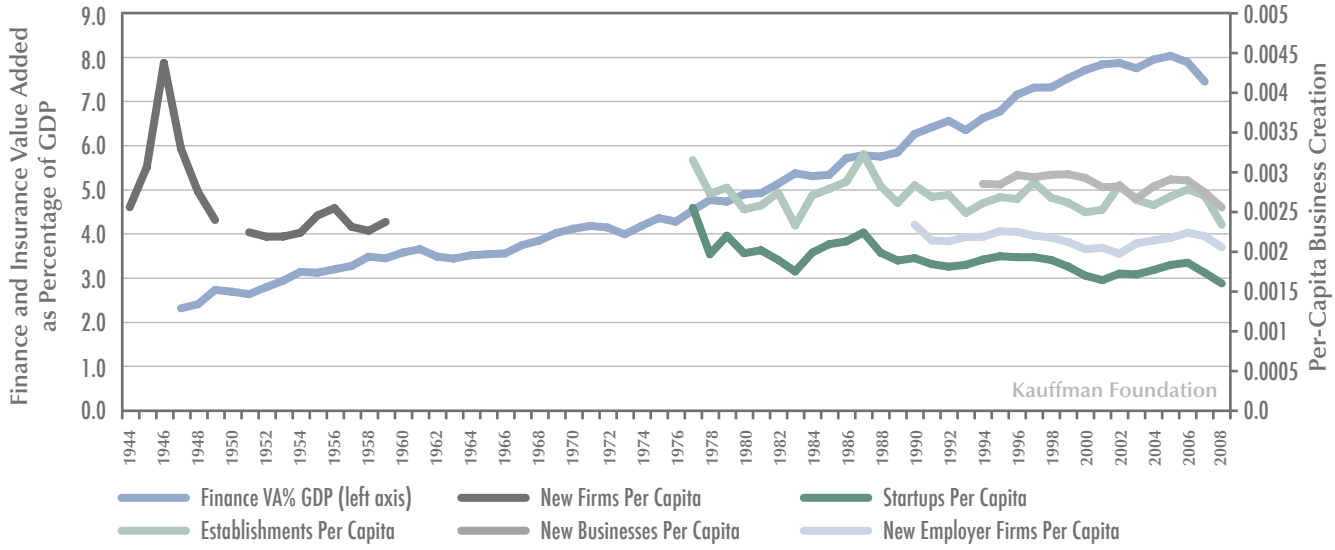
The financial services sector's increasing growth is not the sole or necessarily the largest cause of falling and flattening new business formation rates, but it does appear to have a role. As the chart illustrates, per-capita rates of new business formation in the 1980s and 1990s were not much different from those in the 1940s and 1950s and, in fact, recent rates are lower than they were in the early 1980s. The reasons behind this stagnation in entrepreneurship (or, more positively, its steady maintenance and non-decline) are a persistent puzzle.[16] The discussion in this paper so far suggests one potential culprit: the metastasizing financial

14. Philippon, T., and Ariell Reshef, "Wages and Human Capital in the U.S. Financial Industry: 1909–2006," December 2008. The authors also showed the rising disparity between the wages of "financiers" and engineers working in non-financial sectors, particularly after 1980.

15. *See, e.g.*, Hyman Minsky, *Stabilizing an Unstable Economy* (McGraw-Hill, 1986).

16. *See, e.g.*, Dane Stangler and Paul Kedrosky, "Exploring Firm Formation: Why is the Number of New Firms Constant?" Kauffman Foundation Research Series on Firm Formation and Economic Growth, Paper No. 2, January 2010, at http://www.kauffman.org/uploadedFiles/exploring_firm_formation_1-13-10.pdf.

Figure 5: Finance and Entrepreneurship



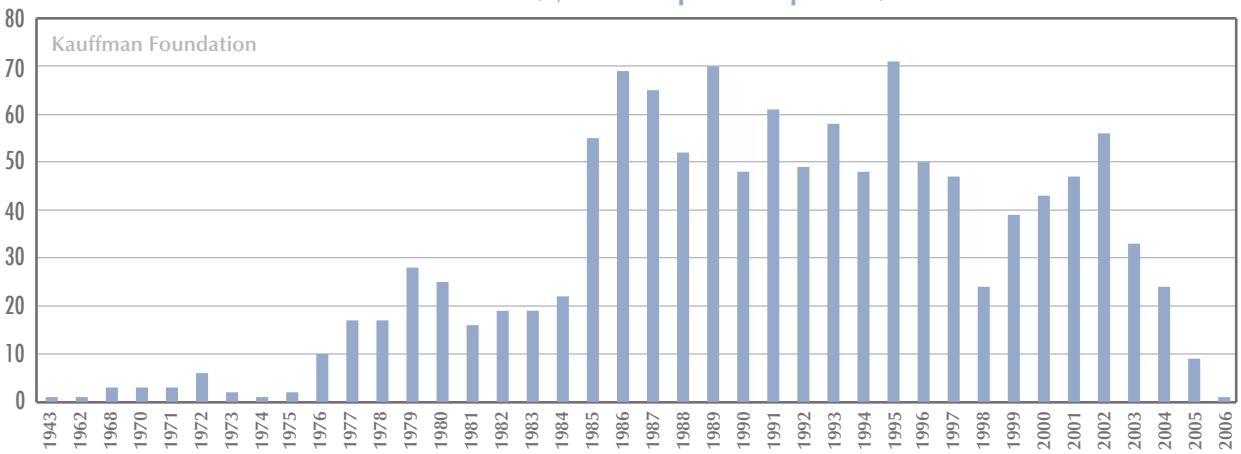
Sources: BEA, BDS, BLS, Census Bureau, SBA

sector, which potentially could have affected the flow of entrepreneurial talent.

As the data on MIT graduates and the sectoral share of science and engineering employment suggest, it is conceivable that some degree of talent allocation between entrepreneurship and employment was affected by the rise of finance. Recall Figure 3: If we presuppose that some fraction of those scientists and engineers working in the financial sector would otherwise have started companies, we can imagine perhaps a slight effect of financialization on potential entrepreneurship. This also points to a question of the quality of companies being started, which we discuss below. It is difficult, again, to make firm statements as to causation, but the historical data seem to suggest that a two-way feedback effect exists. Financialization could have a suppressive effect on potential entrepreneurship by draining away human capital. Conversely, an underlying decrease (or, at least, not an increase) in entrepreneurship creates a shortage of new financing opportunities for the financial sector, meaning the sector must find other outlets in which to be innovative and make money from money—causing the sector to expand.

Entrepreneurship volume, of course, provides an incomplete picture of the effect of new companies on the economy. And, as we've seen, the level of firm formation in the United States apparently has not changed much over the past thirty, and perhaps sixty, years, even as the economy as a whole has undergone various frissons and comedowns. Just because the aggregate velocity of firm formation has not changed even as finance has exploded in size does not mean that finance has suppressed entrepreneurship or had no effect on the types

Figure 6: Year Founded: Inc. 500 companies ranked 1 through 65 1982–2010 (1,214 unique companies)



Source: Inc.com

of firms founded and their performance. Two indicators that offer a better window inside the volume of entrepreneurship are the numbers of fast-growing firms and initial public offerings (IPOs). As Figure 6 indicates, the birth of high-growth firms in the United States displays much more periodicity than either the volume of firm formation or the steady march of finance.

So, even if the financial sector's incessant growth overall had no apparent impact on the velocity of firm formation, it still may have contributed to a larger number of high-growth firms.[17] It is plainly evident that the eventual emergence of high-growth firms is the result of numerous factors beyond merely the volume of entrepreneurship. As we argue elsewhere, however, a large denominator of new firms is a necessary condition for fast-growing companies to emerge.[18] A growing, and presumably more sophisticated, financial sector is likely to be one of those factors.

A second "inside entrepreneurship" indicator is the level of IPOs. As measured by Philippon and Reshef, "IPO intensity" increased markedly from the mid-1980s to the end of the century.[19] This is an indicator of the effect of a growing financial sector on entrepreneurship and, indeed, Philippon and Reshef depict it as such. Technological developments in the 1960s and 1970s leading to

17. Because of holes in the data collected by *Inc.* magazine on the companies it features on its Inc. 500/5,000 lists, annual totals in Figure 6 are not precisely comparable. Founding year data was not widely collected prior to 1985, and some subsequent years, such as 2003 and 2004, had little information on the years in which companies were founded. (The latter lacuna explains why 1998 appears to have an abnormally low number of companies—the average age of *Inc.* firms is about five to six years.)

18. See Dane Stangler and Paul Kedrosky, "Neutralism and Entrepreneurship: The Structural Dynamics of Startups, Young Firms, and Job Creation," Kauffman Foundation Research Series on Firm Formation and Economic Growth, Paper No. 6, September 2010, at http://www.kauffman.org/uploadedFiles/firm-formation-neutralism.pdf.

19. Philippon, T., and Ariell Reshef, "Wages and Human Capital in the U.S. Financial Industry: 1909–2006," December 2008.

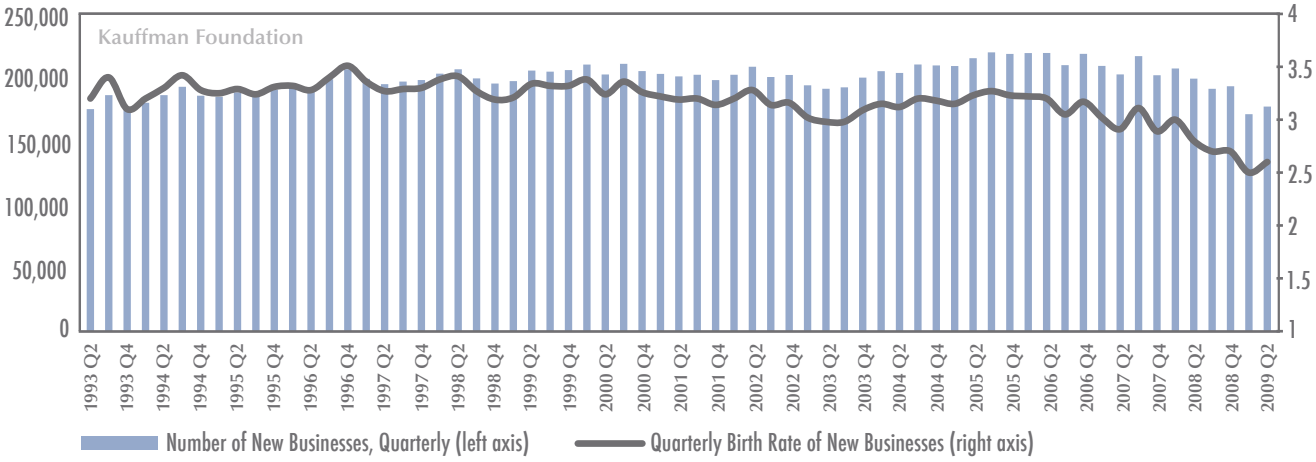
a boom in computer-related companies, together with financial developments in the 1970s, principally junk bonds and other higher-risk financing activities, precipitated rising IPO intensity that helped to call forth a growing financial sector in terms of size, relative wages, and human capital levels. The annual number of newly listed firms more than tripled, rising from 156 per year in the 1970s to 549 per year from 1980 to 2001.[20]

Thus, multiple potential mechanisms are at work in terms of capital allocation and the consequences for entrepreneurship. We have seen that, contrary to the standard model of finance, the financial sector's size—presumably a proxy for its activity level—is not driving firm formation in the American economy. Yet, there may be two additional mechanisms at work, which together comprise what we might think of as a cannibalization effect. These are the distortions introduced by financialization's pull on human capital, particularly entrepreneurial talent, and the resulting effect in the types of companies that are formed and their performance. It seems certain that financialization, an effect and cause of entrepreneurial capitalism, subsequently cannibalized entrepreneurship in the U.S. economy.

The growing wage and skill premiums in finance attracted individuals who might otherwise have started companies. Why, then, wouldn't the overall level of entrepreneurship have fallen? Well, while it had mostly stayed flat for the past thirty years, closer examination reveals a decline through the 1980s and then a plateau since 1990. From 1978 to 1987, the average annual startup rate was 10.4, while the average annual establishment entry rate was 13.8. Over the subsequent two decades, these two rates averaged, respectively, 8.4 and 12.2. Importantly, too, the rate has fallen across numerous entrepreneurship indicators, even as the absolute number of new businesses has remained fairly steady, as Figure 7 indicates.

More worrisome is the drop in entrepreneurial intention among certain cohorts of high-skilled workers in the United States: middle managers and executives.

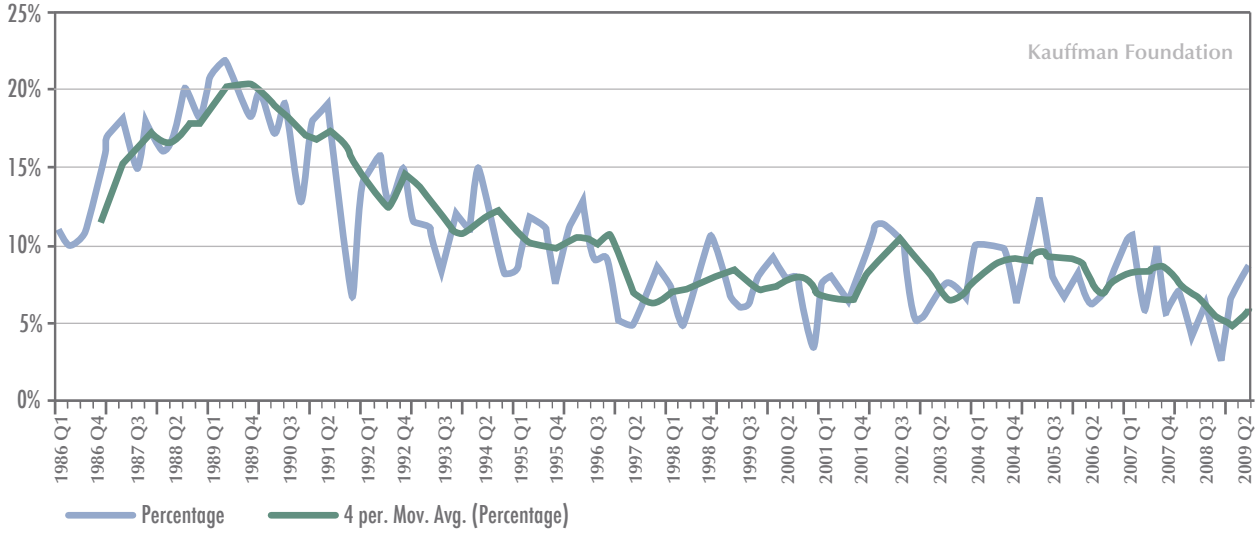
Figure 7: New Businesses Formed Quarterly, 1993–2009



Source: Bureau of Labor Statistics

20. Fama, Eugene F., and Kenneth R. French, "New Lists: Fundamentals and Survival Rates," *Journal of Financial Economics*. 2004:73(2):229.

Figure 8: Entrepreneurship Participation Rates, 1986–2009



Source: Challenger, Gray & Christmas, Inc.

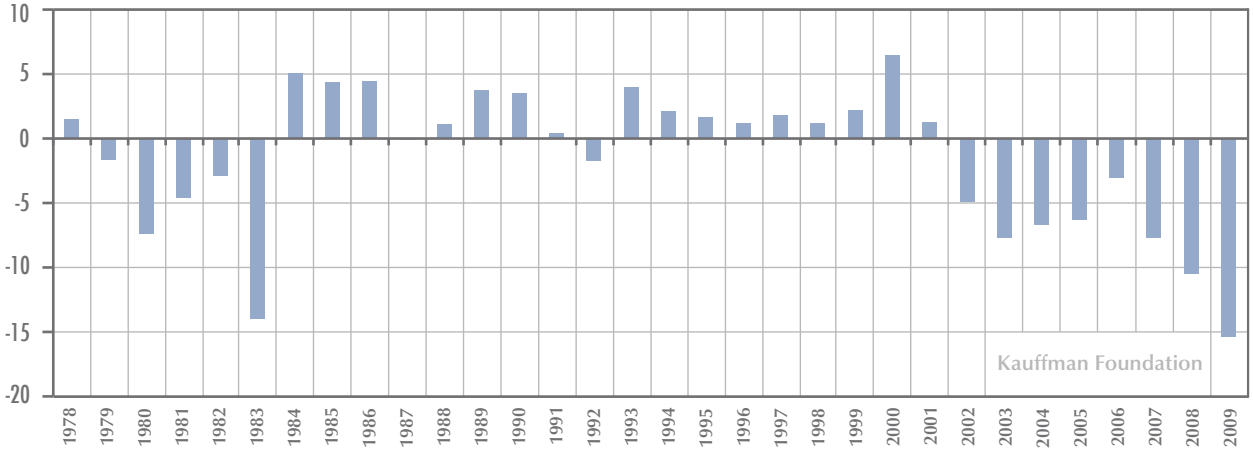
Thus, we have experienced a falling rate of new business creation and falling intention among cohorts of workers with presumable entrepreneurial talent, as Figure 8 shows. Why, then, has the overall volume of entrepreneurship in terms of absolute numbers remained steady? One answer could be that the quality mix of new companies shifted over the past ten to fifteen years. Here we return to finance as a potential cause of this shift.

If democratized finance made it easier for weaker (or prospectively weaker) firms to obtain financing, then a growing finance sector would have helped both to maintain a steady rate of entrepreneurship and contributed to the declining quality of new companies started. This is difficult to prove, especially since survival rates of new firms have not changed much since 1977. One indicator we can examine is the employment performance of young firms—have they performed better, worse, or the same over time?

As shown in Figure 9, the net job-creation rates of one-year-old companies closely track the overall health of the economy: The recessionary years of 1980, 1981, 1982, and 1992 saw negative net job creation among companies started one year prior, as did 1983, when this would have captured firms started in the rough year of 1982. The only other string of consecutive negative years was 2002 to 2009; this period includes both the "jobless recovery" following the 2001 recession and the most recent recession of 2008 and 2009. Companies founded in 2002 through 2006 performed just as poorly as those founded during recessions. This period also happened to coincide with poor performance in terms of initial public offerings.

This could have nothing to do with finance, of course, but it is difficult to resist making some connection, particularly since these were precisely the years during which the financial services industry reached its peak in terms of economic share. The effect of democratized financing, too, has been found to have other consequences. While volatility among privately held firms has fallen dramatically in the past three decades, the volatility among publicly traded firms has risen just as dramatically.

Figure 9: Net Job-Creation Rate of One-Year-Old Firms



Source: BDS

One reason appears to be easier access to finance and, thus, a higher number of IPOs, but without a corresponding increase in the quality of those companies. Thus, the universe of public firms experienced an influx of more volatile firms than in years past.[21] Financialization boosted volatility among publicly traded firms—without raising either the number or quality of new companies.

We might then imagine a cannibalization effect at work: Shifts in underlying entrepreneurial activity, whether measured by a burst of companies at the technological frontier or "IPO intensity," precipitate an increase in financial services. Subsequent financialization makes it easier to start companies, but, by drawing potential entrepreneurial talent into finance while continuing to fund new companies, it could suppress both the potential rate of new business creation and the quality of businesses started.[22]

We now can turn to the question of what the American economy might look like once the financial sector shrinks as a share of GDP, as it seems likely to do. This probably will not entail a dramatic decline to 1960s levels, but perhaps a decline to the levels we saw in the 1980s. We think there would be several effects. First, we should not expect a smaller financial sector to cause a rise or fall in new business creation, although we might anticipate higher social value from new companies. We have seen that rising financialization bore little apparent relationship to the volume of firm formation in the United States. So, while no one can predict the trend, we should not expect an impact either way from a smaller financial services sector. There are, in fact, other reasons to expect a possible increase in new business creation and, should we enter such an era with a smaller financial sector, we might experience a happy concordance between a

21. Davis, Steven J., et al., "Volatility and Dispersion in Business Growth Rates: Publicly Traded versus Privately Held Firms," *NBER Macroeconomics Annual 2006* (National Bureau of Economic Research, 2007).

22. The quality issue might be related particularly to branch-banking deregulation in the 1970s and 1980s. *See, e.g.*, William R. Kerr and Ramana Nanda, "Democratizing Entry: Banking Deregulations, Financing Constraints, and Entrepreneurship," Harvard Business School, Working Paper 07–033, December 2008.

financial sector focused on "real" wealth creation and a steady supply of companies seeking financial services. Such a state of affairs would produce more economic and social value than would a situation with an explosively growing finance sector but diminished entrepreneurship. A "smaller" financial services sector will be smaller relative to recent history—it most likely still will be larger than in prior decades and, so, financial intermediaries will not lose the ability to provide services important to new and young companies.

Given the distortions on talent allocation across sectors and occupations, we should expect improvements in allocative efficiency among technical graduates. This does not mean that the rise of finance is the primary culprit behind the perceived crisis in science and engineering talent in the United States. As with entrepreneurship, numerous factors lurk beneath human capital problems in those areas, and a smaller finance sector actually might have a small negative impact in terms of reducing one dimension of requisite demand for science and engineering talent.[23] In particular, falling demand in the labor market has contributed to rising unemployment (prior to the Great Recession) among scientists and engineers. More people in science and engineering programs should consider entrepreneurship as a career option: New sources of talent demand evidently need to be created, and the best way to do so is to send entrepreneurs off to the frontier to open new paths of economic exploration.

Conclusions and Discussion

In this paper, we tried to re-imagine the U.S. economy in the absence of a financial services sector larger than its historical role. We consider the effects, both positive and negative, of a smaller sector, with a particular focus on young and fast-growing companies, and on the entrepreneurs who create those companies.

The conclusions we reach bear directly on the future of the economy. First, a smaller financial services sector might not create many more companies, but the companies it creates might have higher social value. Second, a smaller financial services sector still could provide the financial intermediation services that are most important to young companies. Third, a U.S. economy with a smaller financial sector would cause fewer distortions in capital allocation.

What might we expect in terms of a boost to business creation? Were the finance sector to shrink in terms of its GDP share back to the levels of the 1980s, say, we might expect an increase of two or three percentage points in the entrepreneurship rate—back to where it stood through the 1980s, as well. This obviously is not as precise as we would like it to be, but, given the allocation and financing issues discussed here, it seems likely that we could see several thousand new businesses formed each year, to say nothing of the quality of those companies.

The financial sector shrinkage in the coming years also will coincide with other trends that, independent of the retreat of financialization, should provide a boost to American entrepreneurship. Together with a contracting financial sector, however, these emerging trends should be amplified and contribute to a substantial increase in firm formation. Such trends include the falling cost of starting a company, largely as the result of technological change. This decline does not apply exclusively to the information technology sector,

23. Lowell, B. Lindsay, and Harold Salzman, "Into the Eye of the Storm: Assessing the Evidence on Science and Engineering Education, Quality, and Workforce Demand," Urban Institute, October 2007, at http://www.urban.org/publications/411562.html.

as many might say. Indeed, the emergence of organizations and phenomena such as TechShop and Maker Faire have lowered the barriers to entry even in sectors such as advanced manufacturing. The continuing integration, too, between cyberspace and the "real" economy means that it has become easier to start physically based companies with greater reach.[24] Additionally, U.S. demographic trends, while often presented in universally negative fashion, have the potential to boost entrepreneurship.[25] In short, the reversal of financialization and the flowering of parallel trends could work to substantially increase firm formation.

What will be—or what could be—the impact of these companies? Every generation claims, tiresomely, that in its particular era the country faces serious challenges on a different order from any prior age. Some of today's challenges—such as energy, infrastructure, and health care—were familiar to foregoing generations. What sets them apart in the contemporary context is their sheer economic, and political, and social complexity. Saying that the United States, indeed the globe, faces an energy challenge implies a host of issues: climate change, regulatory barriers, infrastructure shortcomings, national security issues, developing alternative sources to fossil fuels, and so on. The same could be said of other areas. But it is their very complexity that, perhaps ironically, makes them perfect areas for entrepreneurship, new ideas, and new entrants. Startup firms specialize—in a way that larger and more-established companies can barely contemplate—in attacking complex problems in cheaper and more efficient ways. For the leading areas in need of entrepreneurship today, scientists and engineers are essential to start firms or join new companies.

A reversal of financialization might act as one mechanism in pushing this along. Without being Panglossian about the contraction in the financial services sector, we think there are important consequences in the industry's restructuring toward a smaller size. There will be job losses in financial services, some of which will be counterbalanced by job creation by young companies that otherwise might not have existed. Given our need for entrepreneurs to bring products and services to market that help us with some of the most difficult and complex societal problems we have ever faced, there could not be a more auspicious time for the change.

24. For additional discussion of these trends, *see* Dane Stangler and Paul Kedrosky, "Neutralism and Entrepreneurship: The Structural Dynamics of Startups, Young Firms, and Job Creation," Kauffman Foundation Research Series on Firm Formation and Economic Growth, Paper No. 6, September 2010, at http://www.kauffman.org/research-and-policy/neutralism-and-entrepreneurship.aspx.

25. *See, e.g.,* Dane Stangler, "The Coming Entrepreneurship Boom," Kauffman Foundation, June 2009.

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