

Understanding Entrepreneurship

A Research and Policy Report

2005

Ewing Marion
KAUFFMAN
Foundation

Table of Contents

Research: Key to Our Entrepreneurial Future	
CARL J. SCHRAMM	4
What We Know	
ROBERT E. LITAN	8
 THE THEORY OF ENTREPRENEURSHIP	
Economic Experiments	
The Role of Entrepreneurship in Economic Prosperity	
SCOTT STERN	16
Entrepreneurship and the Economy	
AN INTERVIEW WITH WILLIAM J. BAUMOL	22
Entrepreneurship and Innovation in Capitalist Systems	
EDMUND S. PHELPS	26
 APPLICATIONS OF ENTREPRENEURSHIP RESEARCH	
Understanding U.S. Business Dynamics	
What Can Young, Small Firms Add?	
STEVEN J. DAVIS, JOHN HALTIWANGER, AND RON S. JARMIN	34
Teaming with Entrepreneurs	
A LOOK AT THE RESEARCH OF HOWARD ALDRICH	40
The Entrepreneurial University?	
AN INTERVIEW WITH MARIE THURSBY	44
Does Science Chase Money?	
WAVERLY W. DING	48
A Trip to the “Boot Camp”	
Advancing Research in Minority and Women’s Entrepreneurship	
ROBERT STROM AND E.J. REEDY	52

POLICY FOR THE ENTREPRENEUR

The Globalization of Venture Finance CATHERINE L. MANN	58
Understanding the Regulatory Climate for Entrepreneurship AN INTERVIEW WITH SUSAN B. GATES	64
The Entrepreneurial Path for Residents of Disadvantaged Communities TIMOTHY BATES	68

LOOKING FORWARD

Building on Today's Research Strategic Grants Fiscal Year 2004–2005 ROBERT E. LITAN	72
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NOTES

Endnotes	78
Works Cited	82

Research: Key to Our Entrepreneurial Future

CARL J. SCHRAMM

President and CEO
Ewing Marion Kauffman Foundation

Entrepreneurs create. They innovate. They employ. They are vital to the success of every economy. Ewing Marion Kauffman wanted his foundation to advance entrepreneurship and, in doing so, enhance living standards for all Americans.

It's easy to forget that virtually all of the foundations operating in this country were established by self-made entrepreneurs—individuals who later had the generosity and wisdom to know that their success would not have been possible without the assistance of many people and institutions along their way. Like Ewing Kauffman, they created foundations to “give something back” to the society that helped them to be so successful. Mr. Kauffman was unique, however, in that he directed his foundation to focus on the very thing that enabled him to create his wealth: entrepreneurship.

While entrepreneurship's importance to the business and economic landscape seems abundantly clear—responsible for new products and services, job creation, and economic vitality—it is, ironically, often taken for granted. One can thumb through the pages of most introductory college textbooks in economics, for

example, and find barely a mention of entrepreneurs—other than, perhaps, an assumption that they exist. Indeed, we are only just beginning to engage in broad debate about the impacts of public policy on the entrepreneur and are in need of improved research to meet the needs of informed discourse and decision-making.

The U.S. economy faces many challenges in the years ahead, perhaps none more important than continuing, and ideally accelerating, the pace of innovation that has improved the lives of all Americans. Since entrepreneurs have been critical to the commercialization of major innovations in the past century—think the automobile, the airplane, air conditioning, and personal computing, for starters—it is only natural to ask: what can be done to maximize the chance that innovations of equal or even greater importance will emerge in this century?

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History reminds us that we must continue to embrace change as a society; we cannot be rooted in our existing world position. Societies that have become “comfortable,” that have resisted the urge to change, have inevitably experienced disappointment. Facilitating change is at the core of entrepreneurial action. The extent to which we can be open to and adapt to change—and in doing so, continuously reinvigorate entrepreneurial environments—will be the true mark of America's future success. As the Austrian economist Joseph Schumpeter noted, in capitalism, there can be no progress unless firms that are no longer delivering what consumers want either change, merge, or fail. Entrepreneurs help us to continue to ride the waves of innovation in a positive direction.

When I became president of the Kauffman Foundation in 2002, with the support of the Board, I made a commitment to deepen our understanding of how entrepreneurs impact the ways we operate as a country and world, and what we as a foundation can and should do to support and encourage entrepreneurial activity. As part of this process, we have identified some of the very best minds and engaged them in research and dialogue about entrepreneurship and innovation. We have committed and will continue to

commit substantial resources toward this effort by funding the creation of new data sets (the basic ingredients for any successful research program) and by supporting analysis of emerging topics of importance.

We realize that research results are often slow in coming and then surprising when they do arrive. But we are committed to the endeavor because of its importance to our economy and to our citizens, and because it fulfills Ewing Kauffman's unique vision.

This publication contains the thoughts of some of the leading researchers of entrepreneurship. We have prepared it so that policy makers, the research community, and the public at large (in the United States and in the rest of world) can understand what we know and do not know about what makes the U.S. entrepreneurial economy tick.

Which institutions and policies are most important for encouraging entrepreneurship? How can society Americans from all walks of life, and from all backgrounds, have a fair shot at being the entrepreneurs of the future? Some answers to these and other critical questions relating to entrepreneurship can be found in the pages that follow.

As part of our ongoing commitment to better understand entrepreneurship, the Kauffman Foundation will continue to promote a greater quantity and quality of these much-needed answers to guide us in the years ahead.

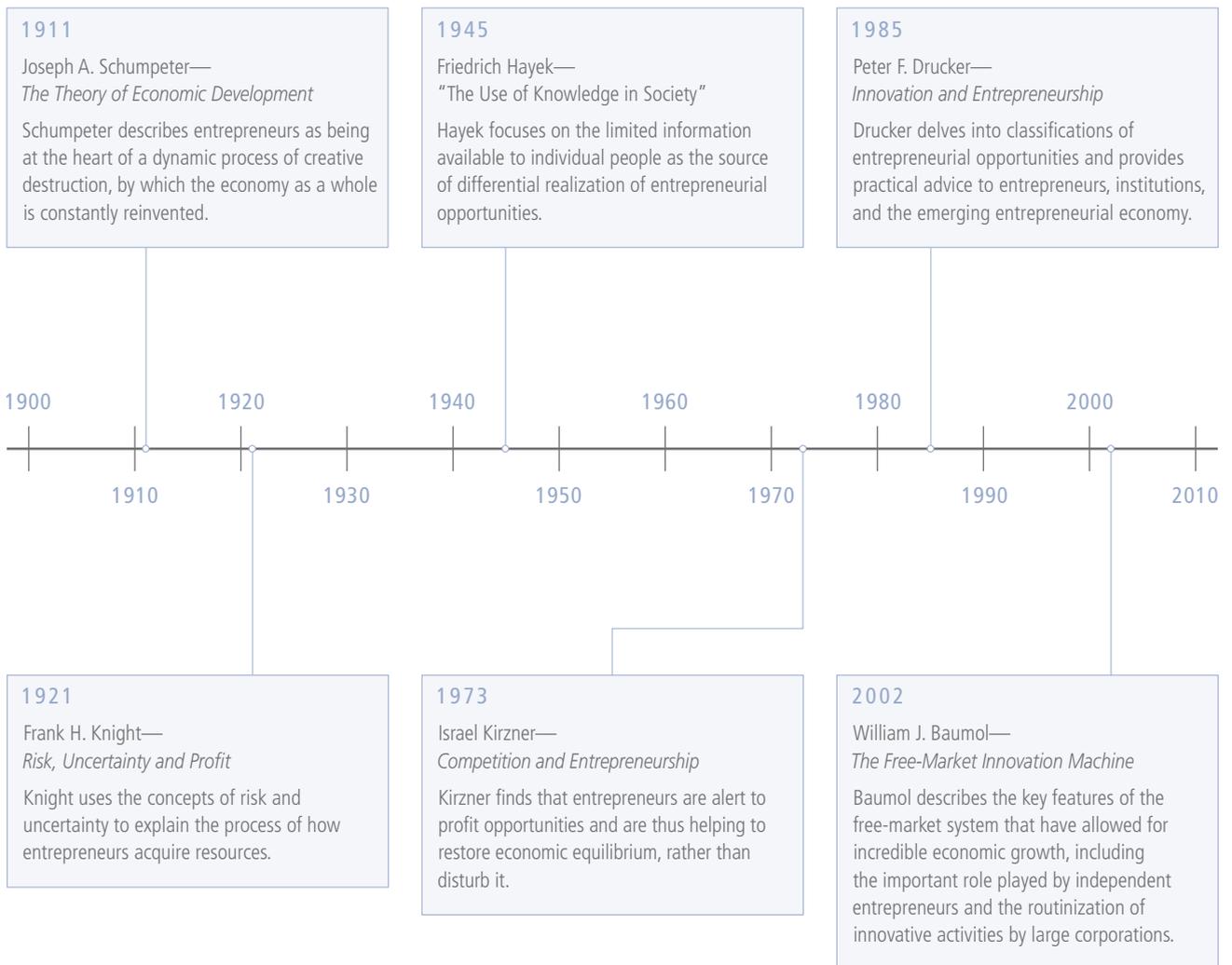


INITIATIVES FOR CHANGE

The Kauffman Foundation supports high-quality research that puts entrepreneurship “on the map” for scholars and policy makers. Our multi-pronged strategy to bring about this result includes:

- grants to top scholars at some of America’s leading universities;
- construction of new, more complete data sets for these researchers to analyze;
- creation of a new “Kauffman Prize” awarded to an academic researcher under the age of forty who, in the judgment of an independent board of researchers, has published the best work in entrepreneurship (the prize and its first recipient, Professor Scott Stern of Northwestern University, are described in greater detail on page 20);
- funding of doctoral dissertations in entrepreneurship and research training seminars to help encourage a new generation of entrepreneurship researchers;
- creation of the Entrepreneurship Research Portal (www.kauffman.org/research) to link social networks and serve as a “commons” for locating relevant studies, and posting events and deadlines; and
- hosting “scholars in residence” at the Kauffman Foundation, who will pursue their own work while helping us guide research dollars where they will be most productive.

Highlights in the Study of Entrepreneurship: An Illustrative Timeline¹



What We Know

ROBERT E. LITAN

Vice President, Research and Policy
Ewing Marion Kauffman Foundation

By its nature, research is designed to produce answers to what we do not know. In the pages that follow, leading experts will identify some of what they know from their past research and what questions they believe still require answers. To provide some context for what they say, it is useful first to identify certain facts about entrepreneurship that the research community already has broadly established.

The Entrepreneur

What is an entrepreneur? Researchers have provided many answers to this question, with a variety of definitions used. Rather than attempt to settle the matter here, it is useful at the very least to consider what we know about entrepreneurship using two common descriptions of the term and for which there are extensive data collected by the federal government: self-employed individuals and employer business owners.

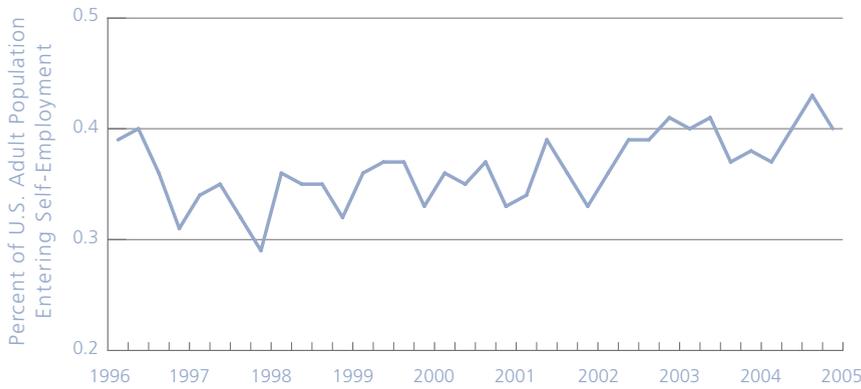
Data on the newly self-employed provide an early glimpse at the creation of new businesses. The Kauffman Index of Entrepreneurial Activity, shown in Figure 1, identifies the percentage of the U.S. adult population who start a business and have at least fifteen hours per week of self-employment each month. These

data indicate that the share of the adult population starting new businesses has been surprisingly stable between 1996 and 2004, with an average of 0.36 percent entering self-employment monthly, which translates to roughly 550,000 new businesses started each month. While this rate was fairly constant in the late 1990s, it has increased somewhat in recent years (Fairlie 2005).

What do we know about the demographic composition of existing business owners in the United States? Table 1 presents federal data on employer businesses, those that have at least one employee, for 2002, the most recent year for which data are available. While individuals of both genders, all backgrounds, all ethnicities, and all ages own

FIGURE 1:

Kauffman Index of Entrepreneurial Activity, 1996–2004²



businesses, employer businesses in the United States continue to be disproportionately owned by white men. The number of businesses owned by women has increased in recent years, but women still trail men by a significant margin in entrepreneurial activity. And African Americans and Latinos continue to be under-represented among the business-owner populations.

TABLE 1:

Employer Business Owners, 2002³

GENDER, ETHNICITY, AND RACE	PERCENT OF EMPLOYER BUSINESS OWNERS	PERCENT OF U.S. RESIDENT POPULATION (age 25 and over)
GENDER		
Male	70.7	48.0
Female	26.5	52.0
Not reported	2.8	(NA)
ETHNICITY		
Hispanic	3.9	11.1
Non-Hispanic	93.0	88.9
Not reported	3.1	(NA)
RACE		
White	88.3	83.5
Black or African American	1.6	11.6
American Indian and Alaska Native	0.5	1.3
Asian	5.9	4.4
Native Hawaiian and Other Pacific Islander	0.1	0.3
Not reported	4.1	(NA)

While federal data and other sources offer great insight into entrepreneurs in the United States, significant gaps in our understanding remain. In particular, we lack data on those we call “high-impact” or “high-growth” entrepreneurs—individuals who are starting and growing firms that generate benefits to the economy and to society beyond the monetary profits earned by the entrepreneur. These entrepreneurs, in particular, help drive growth in productivity and living standards and, thus, are of special interest and importance.

In order to rectify this shortcoming, as well as others, the Kauffman Foundation is funding a study by the National Academy of Sciences (NAS) to determine how the federal government can improve its collection of data on all new firms—not only when they are launched, but also as they mature

...“high-impact” or “high-growth” entrepreneurs ... in particular, help drive growth in productivity and living standards and, thus, are of special interest and importance.

and potentially grow. In addition, the Foundation has funded the creation of several data sets on businesses and entrepreneurs that will be available in coming years.

The Benefits of Entrepreneurship

Looking strictly at the economic returns to entrepreneurship, on average, it does not seem to pay: the average entrepreneur actually earns less than the typical wage earner, with comparable educational background or skills (Hamilton 2000). The averages, however, conceal the outstanding performance of many very successful entrepreneurs. Furthermore, the numbers may be clouded by entrepreneurs who started businesses not because they had an innovative idea for a high-growth business, but, rather, because they had no better employment opportunities available. Regardless, earnings data have their limits because the rewards to entrepreneurship are never strictly economic. Many choose to be entrepreneurs because they want to be “their own boss”—even though they often work harder than they would in a salaried position. Other entrepreneurs, especially older self-employed individuals, value the flexibility in working hours (Zissimopoulos and Karoly 2003).

New Business Formation

While, as previously noted, new businesses form at a surprisingly stable pace, the process of becoming a business is much more uncertain. According to the best available data, after a year of pre-start-up activity, only about 20 percent of businesses have successfully begun, 47 percent are still in the process of formation, and 20 percent either already have gone out of business or suspended start-up activities (Parker 2004).

There is also much volatility within the ranks of existing businesses. As the essay in this volume by John Haltiwanger and his colleagues demonstrates, young businesses in the aggregate tend to lose jobs, though many new businesses later grow into much larger ones. Furthermore, at least in the 1990s, new retail businesses in particular were more productive than exiting retail firms, pushing up productivity in this sector (Haltiwanger 2004). The Foundation is supporting more research to better understand this apparent link between new business formation and productivity growth.

KAUFFMAN RESEARCH AT A GLANCE

- Strategic Research and Policy grant commitments for FY04 and FY05 totaled \$14.5 million.
- The Kauffman Foundation is funding research in 24 different academic disciplines.
- The average length of a Research and Policy grant commitment is 2.4 years.

The Entrepreneurial Environment

Variation in entrepreneurial success across regions suggests that the entrepreneurial environment may play a significant role. Research so far suggests that several factors are at work: differences in educational levels of local populations, prior industry concentrations (it helps if the region already is host to firms in a fast-growing industry), and regional income growth (Acs and Armington 2005). Whether and to what extent local policies make a difference is an important area for future research.

Financing Entrepreneurship

Finally, successful entrepreneurs require good ideas, good networks, and of course, access to capital (although the required amounts can vary significantly by type of activity). Many businesses are financed, at least in part, by family and friends. Additionally, angel investors appear to be an emerging funding source for seed-stage businesses, filling a gap left by formal venture capital firms that have shifted to investing in later-stage businesses (Wiltbank 2005). While funding does not appear to affect the probability of starting a

business across all industries, it may affect the chances that the business will survive once started (Hurst and Lusardi 2004).

Looking Ahead

Most studies of entrepreneurship concentrate on the individual entrepreneur, his or her business, and the environment in which the entrepreneurial activity takes place. In the pages that follow, thought leaders in the field shed further light on what we know and do not know about this fascinating and important subject.



RESEARCH PORTAL

Because the study of entrepreneurship reaches across many academic disciplines (business, management, economics, sociology, and geography—just to name a few), it can be difficult for researchers and policy makers to access new research on the subject. To address this challenge, the Kauffman Foundation recently created the Entrepreneurship Research Portal, a Web site that aggregates research, events, and data related to entrepreneurship. We intend for the Entrepreneurship Research Portal to link social networks and serve as a "commons" for idea and information exchange.



The Entrepreneurship Research Portal: www.kauffman.org/research

The Theory of Entrepreneurship



8

The percent of U.S. employment coming from Fortune 500 industrial companies in 1995.⁴

So What?

The Fortune 500's share of total employment in the United States has declined steadily since 1969, falling below 15 percent in 1982 and 10 percent in 1992. This fall mirrors a recognition in the academic community of the important role that new, small, and growing businesses play in the economy and the need for increased research on them.

Economic Experiments

The Role of Entrepreneurship in Economic Prosperity

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Entrepreneurship is a central ingredient in economic growth.

It serves as a critical spur for the commercial introduction of new goods and services, as well as the opening of new markets to innovations. While few would deny the crucial role entrepreneurship plays in the process of growth, academic researchers are currently grappling with fundamental questions about exactly why the entrepreneurship process plays such a fundamental role in capitalist economies, and how policy and institutions can be designed to ensure long-term prosperity.

Increasingly, entrepreneurship researchers have focused on the role played by “economic experiments” (Rosenberg 1994). An economic experiment is a novel approach to value creation in the pursuit of economic gain. While economic experiments can be (and are) implemented in established companies (and can even be found in the public sector), economic experimentation is at the heart of the entrepreneurial process. Simply put, a favorable environment for entrepreneurship and a high level of economic experimentation go hand in hand.

Entrepreneurship plays two special roles in the process of economic experimentation. First, entrepreneurs engage in “extreme” experiments. Start-up businesses are not constrained by the limits of old technologies, traditional ways of organizing production, or the need to serve established markets. Instead, entrepreneurs can be more aggressive than established organizations in pursuing radical approaches to the creation of economic value. Second, in contrast to purely scientific experiments, economic experiments compete with one another, with entrepreneurs once again playing a crucial role. The value of start-up activity is not limited to the (substantial) value created by new businesses, but also

includes the benefits from increased competitive pressure on established firms. By playing a fundamental role in the process of economic experimentation, entrepreneurship contributes decisively to the range and diversity of economically useful knowledge, which is at the base of economic prosperity.

Over the past decade, entrepreneurship researchers have taken an increasingly rigorous look at why economic experimentation matters, and the role of entrepreneurship in different types of economic experiments. While there are still many unanswered questions, current research has focused on three distinct “types” of experiments—technological experiments, market experiments, and organizational experiments—as key drivers of economic growth and prosperity.

Consider first the role of technological experiments, perhaps the most familiar type. A technological experiment is an attempt to exploit a scientific discovery (e.g., a promising cancer treatment) or engineering opportunity (e.g., a novel software algorithm) for economic gain. In most cases, technological experimentation involves combining several known technologies in novel ways, with significant uncertainty concerning the performance and operation of

the novel combination. Though the probability of a technical breakthrough associated with any one combination is low, the power of combinatorial problem-solving emerges when a diverse range of such experiments is attempted. For example, in the earliest years of the biotechnology industry, different research groups (some located in universities, some located in start-up firms) pursued distinctly different approaches to producing human hormones (such as insulin and human growth hormone) in bacteria. In contrast to several university groups pursuing a method based on cDNA cloning, the start-up firm Genentech pursued experiments based on the idea of chemical synthesis. This alternative problem-solving approach by Genentech was crucial in determining Genentech’s earliest success and its establishment as a vanguard company in the biotechnology industry (Stern 1995). More recently, Lee Fleming of the Harvard Business School has completed large-scale empirical studies (based on patent data) of the process of combinatorial search and has provided evidence that the overall impact of experimentation in a given area depends on the ability to support a wide range of technological experiments (Fleming

THREE TYPES OF ECONOMIC EXPERIMENTS

- 1 Technological Experiments—an attempt to exploit a scientific discovery or engineering opportunity for economic gain.
- 2 Market Experiments—an attempt to identify and exploit the market applications where the technology may be most valuable.
- 3 Organizational Experiments—an attempt to link together individuals and organizations in the pursuit of exploiting the interaction between market and technical opportunities.

... when each individual entrepreneur focuses on an idiosyncratic approach to a potential technology, the possibility of achieving a true technological breakthrough is enhanced significantly.

2001; Fleming and Sorenson 2003). Relative to the types of experimentation supported in a single established firm, technology entrepreneurs collectively are often able to pursue a more diverse range of technical approaches, and so are able to explore a wider set of potential solutions. In other words, when each individual entrepreneur focuses on an idiosyncratic approach to a potential technology, the possibility of achieving a true technological breakthrough is enhanced significantly.

A similar principle informs market experimentation. Even when the technical feasibility of a new product has been established, significant experimentation is usually required to identify the market applications where the technology may be most valuable. In many, if not most, cases, the most appropriate market for a technology is very far removed from the vision of the initial inventor. As emphasized by Massachusetts Institute of Technology's (MIT's) Eric von Hippel, it is often users rather than manufacturers who have the knowledge and incentives required to identify the most important applications of an emerging technology. In a very careful study of the relationship between

technology entrepreneurship and market experimentation, Scott Shane of Case Western Reserve University investigated how multiple technology entrepreneurs pursued a single discovery—a three-dimensional printing technology developed and licensed by MIT. Shane found that each potential licensee pursued a different potential market application for the technology, and that these very different proposals were rooted in the background and prior experience of each entrepreneur (Shane 2000). The value from new technologies (or even old technologies) relies on the ability to apply that technology to new markets in new ways; one of the key contributions from entrepreneurial activity is to significantly enhance the range of potential market applications for technologies and so facilitate that process.

Finally, researchers have only recently begun to grapple with the most subtle but perhaps also most important type of economic experiment—organizational experimentation. An organizational experiment is the development and implementation of a novel value-creation and value-capture system. Organizational experimentation links individuals and organizations

For policy purposes, it is important to emphasize that the benefits from programs and policies that support entrepreneurial ventures cannot be counted simply by examining the success stories.

in the pursuit of exploiting the interaction between market and technical opportunities. In sharp contrast to the canonical image of a lone inventor single-mindedly pursuing a technical vision, entrepreneurs pursuing organizational experiments must assemble and provide appropriate incentives and coordination for a larger team.

Consider entrepreneurs and managers in the biotechnology industry. In contrast to established pharmaceutical firms or even university laboratories, biotechnology firms possess a cluster of rather distinctive organizational characteristics, including (among other factors) active participation by firm researchers in the “public” scientific community and extensive partnerships with the pharmaceutical industry in the context of downstream commercialization. In a number of related projects over the last several years, I have linked these rather nuanced organizational experiments to distinctive features of the competitive and strategic environment that surrounds biotechnology firms, including the importance of attracting the most qualified scientists to the firm and the subtle role played by intellectual property in helping to

facilitate trading in the “market for ideas” between biotechnology and pharmaceutical firms (Gans and Stern 2003; Stern 2004). Indeed, even in a technologically dynamic setting such as biotechnology, the most important experimental challenges for entrepreneurs seem to be how to develop an organization to best take advantage of specific technical and market opportunities.

By focusing on the three types of experimentation inherent in the entrepreneurial process—technological, market, and organizational—academic researchers have begun establishing a more rigorous foundation for evaluating the role of entrepreneurship in the process of economic growth and prosperity. However, this is more than an academic exercise. This emerging perspective provides useful guidance for both policy makers and practitioners going forward. For policy purposes, it is important to emphasize that the benefits from programs and policies supporting entrepreneurial ventures cannot be counted simply by examining the success stories. An equally important contribution arises from the experimental process itself—by learning about the constraints and challenges in a particular environment, and by placing pressure on more established firms to improve

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from how you set yourself
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their technology, market position, and organization. For practitioners, I close by highlighting perhaps the most fundamental insight from the economic experiments approach: the true value of entrepreneurship arises more from how you set yourself apart from the norm than how you conform to it.



THE KAUFFMAN PRIZE WINNER

The Ewing Marion Kauffman Prize Medal for Distinguished Research in Entrepreneurship (Kauffman Prize) recognizes the individual under the age of forty who has made the most significant contributions to research in the field of entrepreneurship.

Scott Stern is the first recipient of the Kauffman Prize. After receiving his B.A. degree in economics from New York University and his Ph.D. in economics from Stanford University, Stern was an assistant professor of management at the Sloan School of Management at Massachusetts Institute of Technology from 1995–2001. More recently, he has served as an associate professor in the Kellogg School of Management at Northwestern University and a faculty research fellow of the National Bureau of Economic Research, where he is a co-organizer of the Innovation Policy and the Economy Program. He was also a non-resident senior fellow at the Brookings Institution from 2001–2003.

Stern's research explores how innovation (the production and distribution of ideas) differs from more traditional economic goods, and the implications of these differences for both business and public policy. This research, which often focuses on the pharmaceutical and biotechnology industries, is at the intersection of industrial organization and the economics of technological innovation. Recent studies have examined the determination of R&D productivity, the impact of incentives on R&D organizations, the mechanisms by which firms earn economic returns from innovation, and the consequences of technological innovation on product market competition.

Airplane Microprocessor Zipper

Three of the many important inventions by small businesses in the United States during the twentieth century.⁵

So What?

Small businesses are the breeding ground for many of the world's most impactful inventions, while large businesses tend to provide more incremental improvements to existing technologies and processes.

Entrepreneurship and the Economy

An Interview with William J. Baumol

William J. Baumol is a professor of economics at New York University and senior research economist and professor emeritus at Princeton University. Baumol has served as president of the American Economic Association, the Association of Environmental and Resource Economists, the Eastern Economic Association, and the Atlantic Economic Society. He is also an elected member of the U.S. National Academy of Sciences and the American Philosophical Society, and recently received the prestigious 2005 International Antonio Feltrinelli Prize for Physical, Mathematical and Natural Sciences by the Accademia Nazionale dei Lincei in Rome.

When one types “entrepreneurship” into the new Google Scholar search engine (<http://scholar.google.com>), it is not Joseph Schumpeter, the influential Austrian scholar, who comes to the top of the list. The first two authors, in fact, are Israel M. Kirzner and William J. Baumol, both pioneers in modern research on entrepreneurship. Baumol, a noted researcher on a variety of topics, including entrepreneurship and education, has become a close advisor to the Ewing Marion Kauffman Foundation and recently answered a few questions about his research.

How did you become interested in the topic of entrepreneurship?

From the beginning of my study of economics I was focused on economic growth. One of my first two books (the two were almost simultaneous) was *Economic Dynamics*, and growth was one of the central foci. But soon after I began to delve into the literature, a mystery became apparent. Many of the writers emphasized the important role of the entrepreneur as a key agent of growth. But as one looked further, it was clear that, Schumpeter excepted, there

was no substantive discussion of who the entrepreneurs are and exactly what they do. In earlier theoretical writings, a few descriptive pages of entrepreneurial activities appeared, but since the onset of the neoclassical era, with its mathematical models, the entrepreneur had totally disappeared, at least from the theory. Many years ago I wrote a paper (that still seems to be cited) that attempted to explain the invisibility of the entrepreneur in these models. But while that evidently sought to explain what was missing, it did nothing to fill the gap. Then, when

I resumed my work on productivity and economic growth, my attention was again drawn to this curious situation, and I was driven to devote effort to the issue. That is, I was led to seek ways to reintroduce the entrepreneur into the theory.

What are the most important policy implications that come from your work in this area?

The most important policy implication to me is that stimulation of productive entrepreneurship is a much more straightforward and feasible undertaking than previously recognized. Previously, where entrepreneurial activity was abundant, it was ascribed to influences such as cultural change and religious reorientation, neither of which is readily achieved by an act of Congress. But if entrepreneurs do not suddenly and mysteriously appear and disappear, but rather reorient their activities in response to changes in the current structure of payoffs (as in the move from innovative tactics for private armies to the construction of canals), then we do know ways of modifying the incentives to move the entrepreneurs into productive activities.

An implication of my current work that may prove important is related to education. Why have so many successful entrepreneurs been school dropouts? Is education, as currently carried out, an impediment to initiative and imagination? If so, how can this be improved? One of the Kauffman Foundation studies in which I am currently engaged should shed light on this important issue.

Why have you chosen to serve as an advisor to the Kauffman Foundation?

The reasons are straightforward. First, the goals pursued at the Kauffman Foundation, encouragement of entrepreneurship, and its employment as an avenue for escape from poverty, and improvement of educational achievement, are very similar to the objectives I hope my own work will help to promote. Second, I have found it very stimulating and pleasant to work with my colleagues among the Kauffman staff. I think that, together, we will be able to produce ideas and writings that are exciting, illuminating, and useful. And, as an advisor to the Kauffman Foundation, I am able to provide suggestions for further directions for its work that I believe are promising.

...stimulation of productive entrepreneurship is a much more straightforward and feasible undertaking than previously recognized.

You are coordinating a conference and research publication around economic history and entrepreneurship in 2006. What more do you think there is to learn about entrepreneurship from the past? Have we missed significant historical interpretations?

Today, when the growth theory focuses on entrepreneurship, it deals primarily with innovating entrepreneurs whose firms feature new products and processes. But in the past, apparently most entrepreneurs were replicators who created enterprises very much like others already extant. The two questions this immediately suggests are:

- Why, if that is true, was this their primary orientation?; and
- Is that a major element in explaining the far lower growth rates of the past and, if so, should one seek to orient prospective entrepreneurs in an innovation direction?

Moreover, the explanation of the growth in number of innovative entrepreneurs may help to indicate steps that can be taken to improve their performance and to encourage others in that direction.

INCLUDING ENTREPRENEURS IN THEORY

Many economists and other researchers are working to come up with theories of the economy that are inclusive of entrepreneurs and begin to model entrepreneurial behavior accurately. Good theory is the first step toward improving what is taught in schools around the world and can influence the ways in which policy makers intervene to assist entrepreneurs in the economy.

1836

The year in which the modern patent system was codified in the United States.⁶

So What?

When people think of the Constitution, they don't usually think of patent law and legal protections for inventions. But the institutions and structures that have contributed to America's success as an entrepreneurial haven have deep roots and are often invisible to us.

Entrepreneurship and Innovation in Capitalist Systems

EDMUND S. PHELPS

*McVickar Professor of Political Economy
Columbia University*

Increasingly, economists see the need to return to the subject of economic institutions, especially those in the predominantly capitalist systems—a subject promisingly explored in the first half of the twentieth century, then put aside.

A grasp of the role played by the economic institutions making up an economy's operating system is essential for adequate understanding of their main effects on people's lives—on their job satisfaction, their advancement and personal growth, and on other concerns like national productivity, wage levels, and unemployment. It isn't just intellectually necessary, but is also vital for informed political debate and policy consideration. Until economists have far more knowledge, there will continue to be a plethora of disagreements about the ways by which the performance of the American economy could be improved. The balance of legal, economic, and political institutions will continue to change with little understanding of the exact consequences. And until such rudimentary models are available, capitalism will not make it into the classroom and the corridors of science.

Additionally, the choice of a country's economic system, including the detailed make-up of the economic institutions that constitute it, is critical to major economic policy issues. In the past dozen years, we have seen the following:

- the “transition” in the eastern European countries raised the question of whether it was Anglo-Saxon capitalism or Continental corporatism to which they should “transit;”
- the ongoing and worsening slowdown in western continental Europe has led to disagreement about the needed reform of lingering “corporatism” in many economic institutions and the countries’ overall public-policy mentality; and

Until economists have far more knowledge, there will continue to be a plethora of disagreements about the ways by which the performance of the American economy could be improved.

- the accounting and corporate scandals in the United States have raised questions about the effectiveness and reliability of America's corporate governance in driving entrepreneurs to innovate, and the damage to entrepreneurship that might result from some of the corporate reforms enacted in response to these scandals.

To help with these issues of analysis and policy, economists have to study the mechanisms of entrepreneurship and innovation in capitalist economies: the role of entrepreneurs in seeing commercial possibilities for developing and adopting products that exploit new technologies; the role of entrepreneurs in conceiving and developing new products and methods; the role of financiers in identifying entrepreneurs to back and to advise; and the incentives and disincentives for entrepreneurship inside established corporations. This means studying both the entrepreneur as a micro actor and the entrepreneurial economy as an interactive system.

Such research presents capitalism as a system of economic institutions relatively well suited to engender economic dynamism—that is, a

flow of innovative ideas from the economy's entrepreneurs that are ample and well conceived, that are well chosen for testing and development by the economy's financiers, well developed and well launched by its managers, and well received by prospective users. Succinctly put, capitalism is a recipe for an entrepreneurial economy—an economy generating new conceptions of what might succeed in the marketplace, which leads to novel, diverse, and, in some respects, competing commercial innovations.

The primary question is how the relatively capitalist systems function—how they work to generate their dynamism. This has to go beyond a mere inventory of the institutions involved and the players on the stage: the institutions and mechanisms that appear to support and foster a supply of innovative ideas from entrepreneurs; the financial institutions that appear to aid in the selection of entrepreneurial projects to be developed and tried out on the market; and the institutions possibly facilitating the adoption (diffusion) of newly marketed products/techniques. An inventory of a system's parts does not tell us enough about how the system works.

Focus on Capital Markets

A deterrent to progress has been the awareness that the “capital market” is not like the market for a commodity like oil or corn syrup. Of course, suppliers of finance see each entrepreneur’s project as a different good and, faced with radical uncertainty about the prospects of each, are not apt to be of like mind about the projects’ rankings. Which entrepreneurs receive funding and how much? And which project is the marginal one, with the rest going begging? Irving Fisher and James

Tobin imagined a large number of entrepreneurs (each with a project) and a large number of financiers (each with a pile of liquid capital) going to an auction-like setting. They showed that, theoretically, the capital market would first finance the project with the highest perceived value (among all bidders) per dollar of capital requirement, then finance the next-highest, and so forth until there were no more projects offering an entrepreneur the expectation of a positive rent—a perceived value-to-cost ratio (Tobin’s Q ratio) greater than one.⁷

Yet so abstract and austere a structure does not capture the richness of real-life capital markets. Typically, an entrepreneur’s idea presents some ambiguity—the financiers can see only dimly what each idea is, what it involves, and even more dimly its merits and snags. Hence, though each financier may fall into a group of like-minded financiers, each of whom views the entrepreneurs’ proposals the same way, such a group might rank the projects differently from the way the other groups do. Thus, the thinking of entrepreneurs and of financiers together shape the resultant direction of investments. In the classical theory of capitalism built by the German business-

GRANT SPOTLIGHT: NATIONAL BUREAU OF ECONOMIC RESEARCH

The past decade has seen a dramatic increase in the importance in entrepreneurial activity: the role of new businesses in fomenting innovation, stimulating employment, and creating value for investors increased dramatically. Moreover, the resources available to support young firms also increased sharply: for instance, the pool of venture capital increased by nearly ten-fold. Surprisingly, academic research—particularly in economics—has not kept pace.

The NBER Entrepreneurship Working Group, established in the spring of 2003, brings together some of the leading discipline-based researchers in the field of entrepreneurship. While the effort largely draws upon those approaching these issues from a variety of economics-based perspectives (i.e., the disciplines of corporate finance, industrial organization, and labor studies), leading researchers from other areas are also involved.

The working group has three components. First, there is a regular series of workshops where new work is presented. Second, there are special projects that look at important themes relating to the economics of entrepreneurship. Finally, there is a provision for advanced doctoral students to visit the NBER entrepreneurship meetings.

For more information, visit www.nber.org/workinggroups/ent/ent.html.

*Entrepreneurship, innovation,
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cycle school in the early twentieth century, entrepreneurs’ ideas were not seen that way. For Spiethoff and Cassell, innovations were triggered by the discovery of an inventor or navigator, and the nature and direction of the innovations made conceivable and profitable were unambiguous and understood by all—bankable propositions. Even in 1911, Schumpeter’s “entrepreneur” was portrayed as having only bankable ideas. In real-life entrepreneurial economies, though, entrepreneurs are like fighter pilots: they cannot explain completely their thinking and the decisions they make; the financiers can understand even less. In the modern theory, the entrepreneur-creators of projects and the financiers weighing the projects face radical uncertainty, and therefore do not all make the same valuations.

A usefully structured model would portray each financier as seeking to back the idea of an entrepreneur whose “thinking,” or model, seems like his—thinking with regard to which industry is the best bet, swinging for the fences or not, etc. The insight here, which originates with Hayek and M. Polanyi, is that everyone in a capitalist system carries around a sort of personal model of the economy—at any rate,

WHAT DOES ENTREPRENEURSHIP DO FOR SOCIETY?

Thoughts from Edmund Phelps

Entrepreneurship, and the economic institutions that facilitate it, ultimately affect people’s lives as well as societal concerns like national productivity, wage levels, and unemployment. We need to understand all of these areas better if we are to understand:

Job Satisfaction. Without attention to the character of business life offered by a country’s economic system (particularly the extent to which it makes business life entrepreneurial and therefore engaging and challenging), we will miss what may be the main source of the satisfaction and personal development that most people derive from their business careers in highly entrepreneurial economies, such as that of the United States. And we miss, too, the source of the dissatisfaction and under-development one sees signs of in less enterprising economies, such as many in continental western Europe.

Investment Patterns. Without some understanding of the mechanisms by which entrepreneurial visions drive the investment activities that largely govern hiring and firing, we may fail to recognize the nature and source of big swings, such as the recent investment boom in the United States.

Comparative Advantage. Without understanding how nations’ economic systems differ in the degree to which they allow and encourage the entrepreneur, and in the degree to which they provide for good selection and early adoption of entrepreneurial initiatives, we cannot have a good understanding of how much of the disparities in economic performance are a consequence of institutional differences and how much, instead, are a result of other forces.

THE FOUR-SECTOR MODEL

Carl Schramm, president and CEO of the Ewing Marion Kauffman Foundation, recently published a model of the American entrepreneurial system in *Foreign Affairs* involving four sectors of the economy: high-impact entrepreneurs, mature firms, the government, and universities (2004).

some piece of it.⁸ Thus, the “capital market” is a sort of matching process that mates a financier to an entrepreneur, whom the former sees as having a model compatible with his own model. In such a theory, the heart of the capitalist system is a profusion of ideas represented as competing models of the economy (or a piece of it).

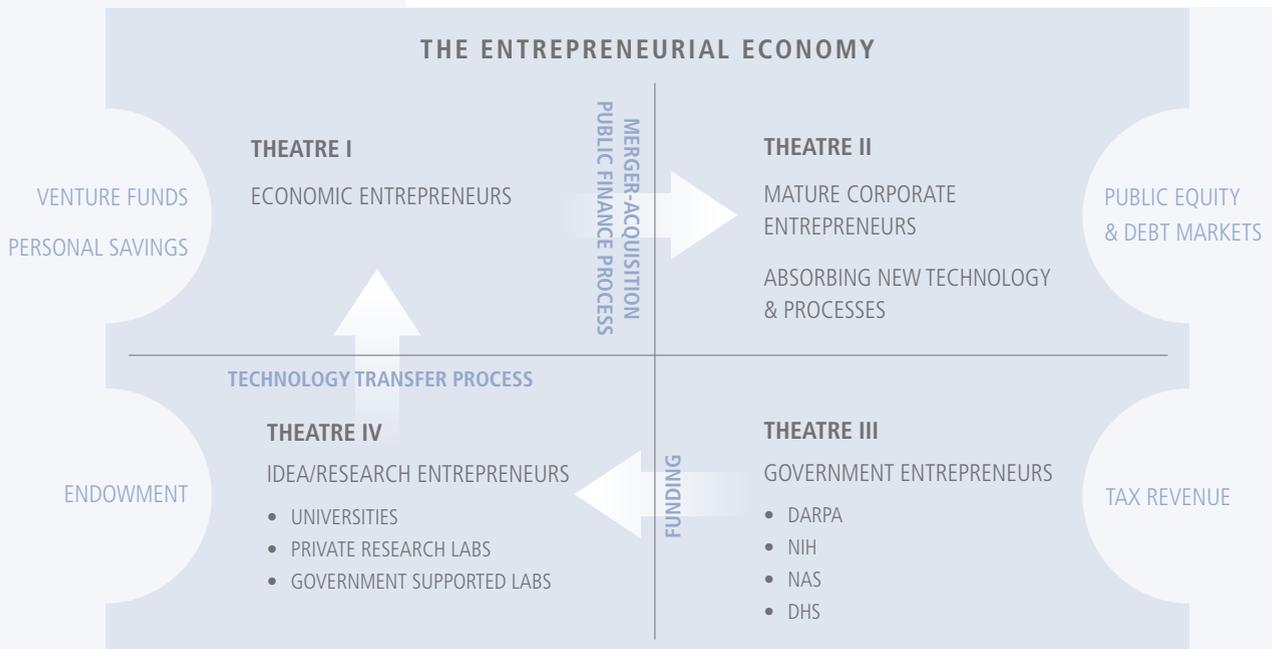
Capitalism is more than goods, which is why its study is difficult and avoided. Yet there is no reason now, with the huge armatorium of tools that economists and decision theorists have at their disposal, why

this research should not begin and why it will not succeed with time in generating rudimentary models of the capitalist economy.

Conclusion

Entrepreneurship, innovation, and capitalism will make it into economics classrooms only with the arrival of abstract, formal” representations. When those arrive, capitalism—and its entrepreneurs, etc.—will get a huge boost through better research and resulting policy.

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Applications of Entrepreneurship Research



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The statistical “gap” in millions between the number of employed persons reported in recent surveys of U.S. households versus the number reported in surveys of U.S. employers.⁹

So What?

Work by Davis, Haltiwanger, Jarmin, and others has the potential to help explain discrepancies in the government’s employment surveys by integrating surveys of employers and of households to form a more complete picture of the economy. Increased understanding of employment (including self-employment and small-business employment) will help us uncover trends in our larger economy and, we hope, better understand patterns of success and failure that may be informative to entrepreneurs.

Understanding U.S. Business Dynamics

What Can Young, Small Firms Add?¹⁰

STEVEN J. DAVIS

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University of Chicago*

*Research Associate
National Bureau of Economic Research*

JOHN HALTIWANGER

*Professor of Economics
University of Maryland*

*Research Associate
National Bureau of Economic Research*

RON S. JARMIN

*Assistant Division Chief for Research
Bureau of the Census*

The measurement of economic activity by federal statistical agencies focuses greater attention on larger, more mature business units. This data-gathering strategy has two clear advantages. First, it yields greater accuracy in estimating the level of economic activity. Second, it is easier to identify and promptly capture the activity of large, long-established business units. Further, the desire for a cost-effective approach to measuring the level of economic activity leads naturally to this focus on larger, more mature units. There are, however, drawbacks to this data-gathering strategy.

When responses to economic shocks and new developments vary systematically with business size or age, a focus on larger and more mature units can yield less accurate, potentially misleading, measures of changes in economic activity. Perhaps more important, the traditional focus on larger and more mature units limits our ability to measure and analyze the early life-cycle dynamics of businesses and to evaluate theories of business formation, selection, and growth.

Recently, U.S. statistical agencies have been working to increase data available on young and small businesses, so that a richer picture of firm, worker, and productivity

dynamics can emerge.¹¹ Much data on these young and small businesses are already in existence from Census Bureau business registers that draw on payroll tax records, corporate and individual income tax returns, applications for an Employer Identification Number (EIN), and various Census Bureau business surveys. However, the significant quantity of records, non-conforming formats of the data, and volatile nature of young and small businesses have not allowed for significant analysis, especially when trying over time to link together the two universes—the young, small businesses and the older, large businesses. In this short note, we focus on research

...the traditional focus on larger and more mature units limits our ability to measure and analyze the early life-cycle dynamics of businesses and to evaluate theories of business formation, selection, and growth.

resulting from one effort to bring together different existing data sources to create and analyze an Integrated Longitudinal Business Database (ILBD).¹² We believe the ILBD will be of great value in studying entrepreneurial activity.

The ILBD integrates federal government administrative records and survey-based data for all employer and non-employer businesses in the United States. Non-employer businesses have been neglected in most studies of business dynamics, because they are not well captured in previously available data sources.

Thus the ILBD's longitudinal data on non-employers are of considerable interest. In addition, the comprehensive business coverage of the ILBD makes it possible, for the first time, to follow businesses as they cross the threshold from non-employer to employer. This aspect of the ILBD provides a valuable new tool for the study of business start-ups and early life-cycle dynamics.

The Business Universe

There were roughly 21 million employer and non-employer businesses in the U.S. economy as of 2000. Figure 1 shows that roughly three-fourths of businesses are non-employers, and most of these are sole proprietors.¹³ Among businesses with employees, most have a single establishment.¹⁴ Thus, most businesses either have zero employees or employ workers at a single location. Figure 2 shows, however, that employer businesses, and in particular multi-establishment businesses, account for far more than half of all revenue generated by businesses in the United States in 2000. Non-employer businesses accounted for a very small share of aggregate revenue. While they are large in number, they are small in their economic output.

FIGURE 1:
Distribution of U.S. BUSINESSES by Business Type, 2000

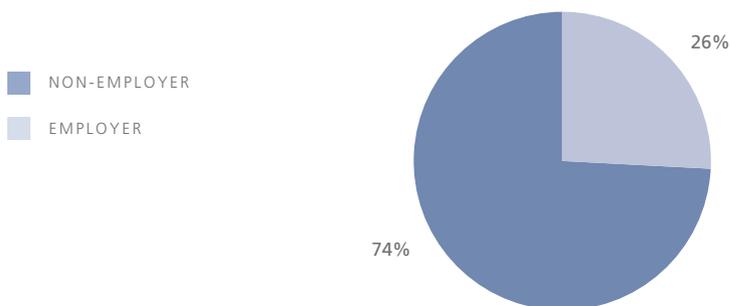


FIGURE 2:

Distribution of U.S. Business REVENUES by Business Type, 2000

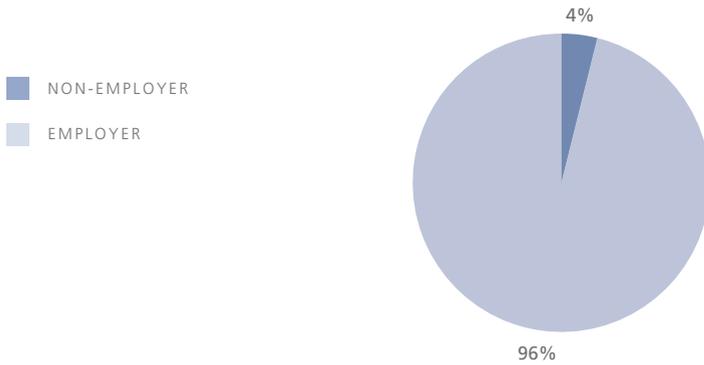


FIGURE 3:

Percent of U.S. BUSINESSES by Young and Small Business

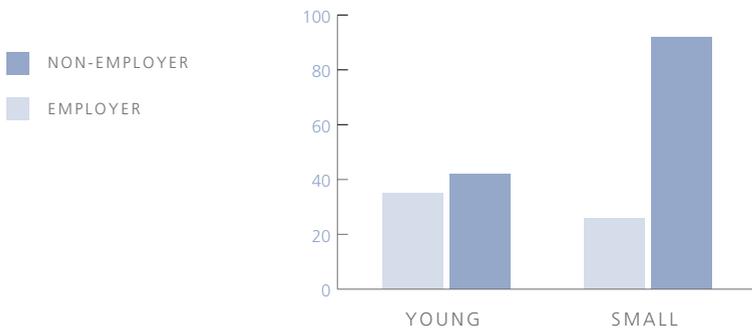
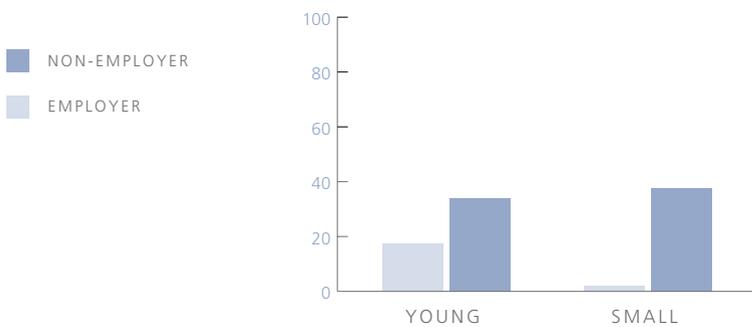


FIGURE 4:

Percent of U.S. Business REVENUES by Young and Small Business



Another closely related set of basic facts is provided in Figures 3 and 4. Figure 3 shows that a large fraction of businesses are young and small, especially among non-employers.¹⁵ However, Figure 4 makes clear that, in the employer universe in particular, the share of revenue accounted for by young and small businesses is relatively small.

The patterns in Figures 1–4 reflect the enormously skewed distribution of business activity in the U.S. economy. The vast majority of businesses are small, and many of these small businesses are also young, but most economic activity occurs within larger, more mature businesses.

Young, Small, and Still Important?

Based on the revenue shares in Figures 2 and 4, one might conclude that economic analysis should focus mainly on the role of large and mature businesses because they account for the lion's share of economic activity. That conclusion would be misleading for at least two reasons. First, non-employer businesses are central to the study of self-employment. Second, even though relatively large and mature businesses account for most economic activity, young and small businesses are

... the continual rise and fall of individual business fortunes is a ubiquitous feature of the U.S. economy and is more pronounced among younger businesses.

STUDYING THE EVOLVING BUSINESS

The Kauffman Firm Survey is a new initiative of the Kauffman Foundation that will create a data set of publicly accessible research on new businesses and their development in the United States. The Kauffman Firm Survey will focus primarily on the financial development of new businesses in their early years of existence and is being led by Principal Investigator Scott Shane of Case Western Reserve University.

More information is available at:
www.kauffman.org/research

important for understanding the dynamics and growth of the economy. Examining young and small businesses can help answer questions about the development of large, successful businesses and makes for a more complete picture of U.S. business dynamics.

Preliminary Research Findings

Our preliminary analysis of the ILBD indicates that a small but important fraction of non-employer businesses are related to employer businesses in one way or another. Over a three-year horizon, about 5 percent of non-employer businesses (accounting for about 10 percent of non-employer revenue) became employer businesses or were acquired by, or absorbed into, employer businesses. Five percent of 15 million amounts to 750,000 businesses, a large number in absolute terms and relative to the number of entrants into the employer universe over a three-year horizon. Our research has also shown that businesses that transition from non-employer to employer status grow much more rapidly prior to transition than other businesses that remain without employees. We find that mean revenue growth is strongly related to business age, as seen in Figure 5.¹⁶ Across the whole of the U.S. non-employer economy,

the only age group with positive mean growth in revenue is new businesses less than one year old. Among employers, the youngest businesses also exhibit the highest average growth rates.

Turning our focus slightly, younger businesses also have relatively volatile growth paths. We measure volatility in terms of gross business revenue expansions and contractions during the year. In particular, we calculate “excess revenue reallocation” as gross revenue gains at expanding businesses, plus gross revenue losses at shrinking businesses, less the absolute value of the aggregate revenue change. It is expressed as a rate by dividing by the level of aggregate revenue.¹⁷ Figure 6 shows that excess reallocation rates (volatility) decline as employer and non-employer businesses age. The volatility of non-employer revenue growth is much higher at all ages, and it declines more rapidly with age.

The high excess reallocation rates in Figure 6 imply a great variation in business outcomes—namely, that many businesses experience strong growth (expand) at the same time as others lose revenue (contract) sharply. This pattern is most pronounced for young non-employers, but even for mature

FIGURE 5:

Net Revenue GROWTH RATES by Firm Age

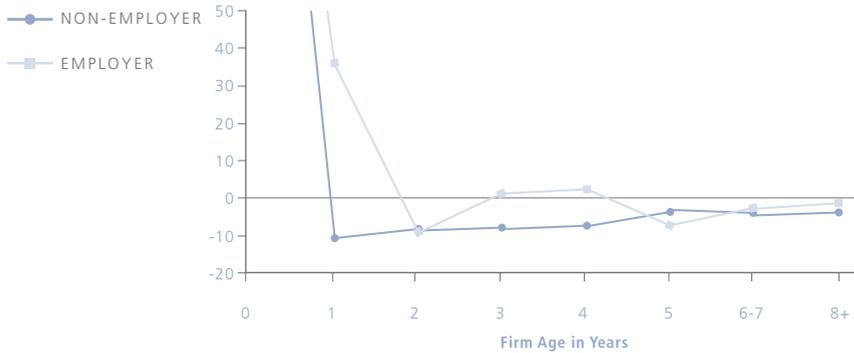
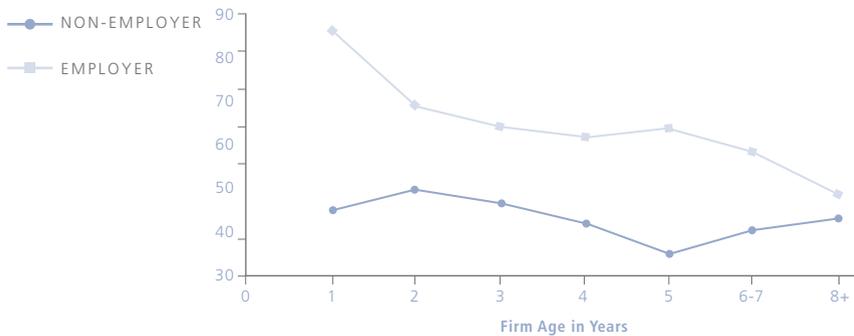


FIGURE 6:

Excess Revenue REALLOCATION RATES by Firm Age



employer businesses, we observe high excess revenue reallocation with rates over 30 percent (again reflecting high average gross expansion and gross contraction rates). These findings lead us to conclude that the continual rise and fall of individual business fortunes is a ubiquitous feature of the U.S. economy and is more pronounced among younger businesses.

Conclusion

Most non-employer businesses are young and very small, and they will never evolve into employers. However, some non-employers—a small percentage, but large in numbers—grow to the point where they hire employees. In this respect, small non-employers are something of a seedbed for future employment growth. Our preliminary analysis also suggests that many employers have no previous history as non-employers. Thus, the origin and dynamics of business development follows many paths. Exploring these issues further is clearly a rich area for future research and an important opportunity for federal statistical agencies. In developing this area of research, we anticipate that the ILBD will become a major tool for describing business dynamics, generating and testing hypotheses about business dynamics, analyzing the determinants of business outcomes, and informing entrepreneurs and policy makers in the future.

■

1 in 2

Start-up business efforts that are composed of teams of entrepreneurs.¹⁸

So What?

People are a critical factor to the success of any business. Emerging research on nascent entrepreneurship efforts indicates that the choice of team members versus the choice to be a solo entrepreneur is likely to impact the outcomes of an entrepreneurial effort.

Teaming with Entrepreneurs

A Look at the Research of Howard Aldrich

For Howard Aldrich, teams are a passion—teams of entrepreneurs, specifically. Since the 1980s, he has been studying issues of business emergence and entrepreneurial patterns. More recently, he and other colleagues have specifically focused on data from the Panel Study on Entrepreneurial Dynamics (PSED) (see sidebar, pg. 42), trying to answer a number of questions: How many new businesses are started by teams? Are these teams stable? What do these teams look like?

From Aldrich's research, we now know that more than half of all new business ventures are started by a team of entrepreneurs (Aldrich, Carter et al. 2004). Thus, for many entrepreneurs, the question of whom to pick as a partner is a pressing one. Recent research from the field of sociology about entrepreneurial teams is beginning to shed light on the ways in which teams are formed and the consequences these formation techniques could have on the overall success (or failure) of a new business.

The following are some of Aldrich's key findings from analysis of the PSED data set:

- After testing for five mechanisms that were suspected to contribute to how groups were composed, only one—homophily—had a significant impact. Homophily refers to the selection of other team members on the basis of similar ascriptive characteristics, such as gender, ethnicity, nationality, and appearance. In particular, similarities in gender, ethnicity, and occupation were found to be important characteristics by which individuals appear to choose entrepreneurial teams.

Homophily refers to the selection of other team members on the basis of similar ascriptive characteristics, such as gender, ethnicity, nationality, and appearance.

- “Strong” ties, such as romantic relationships and family ties, appeared as important as other factors by which entrepreneurs formed teams, while “weak” ties (i.e., business acquaintances) did not appear as important in the process.
- Two other factors had less impact than homophily: network constraints and ecological constraints. The “spatial proximity and environmental distribution of potential group members”—ecological constraint—were found to be a contributing factor to the disproportionate isolation of some groups such as women and blue-collar workers (Ruef, Aldrich, and Carter 2003).
- Active entrepreneurial start-up teams remained relatively stable in their gender and racial composition from one year to the next. Indeed when changes did occur, they were mostly in the direction of producing greater homophily.
- Teams that remain stable during their start-up are more likely to achieve operational status than those that have team member changes. However, Aldrich and his colleagues are still assessing this possible impact and considering what quantitative and qualitative measures of operational status are most consistent across firms and industries (Kim and Aldrich 2004).
- When turning the research focus to the impact of financial resources on becoming a nascent entrepreneur, Kim, Aldrich, and Keister found financial resources were not a good predictor of entrepreneurial action (2003).

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Howard Aldrich is professor of sociology, adjunct professor of management in the Kenan-Flagler Business School, and director of the Management and Society Curriculum at the University of North Carolina at Chapel Hill.



FINDING THE NASCENT ENTREPRENEUR

Within the last fifteen years a new classification of entrepreneur has emerged for study and understanding—the “nascent” entrepreneur. The “nascent” entrepreneur is a person who is engaged in the process of starting a new business, a business that may be so young as to not be formally recognized by the federal government or other statistical agencies that track data related to new business formation.

The Panel Study of Entrepreneurial Dynamics (PSED) is a four-year, nationally representative, longitudinal study of nascent entrepreneurs and the businesses they are attempting to form. From 64,622 individuals in the United States that were contacted by telephone, approximately one thousand were identified as being nascent entrepreneurs and were followed as they went through the process of starting a business.

For a more detailed review of research resulting from the Panel Study on Entrepreneurial Dynamics, see:

Handbook of Entrepreneurial Dynamics. Edited by William B. Gartner, Kelly G. Shaver, Nancy M. Carter and Paul D. Reynolds. Thousand Oaks, CA: Sage Publications, 2004.

Access to the data from the PSED is available at: www.kauffman.org/research.

Harry Steenbock

The first scientist at the University of Wisconsin–Madison to license a patent in 1927 when he discovered a process that could activate Vitamin D in milk.¹⁹

So What?

From humble dairy beginnings, the University of Wisconsin–Madison has emerged as one of the leaders in commercialization and licensing activities resulting from academic research, but the success of Wisconsin is more unique than common.

The Entrepreneurial University?

An Interview with Marie Thursby

Marie C. Thursby is a member of the strategic management faculty and holds the Hal and John Smith Chair in Entrepreneurship at Georgia Institute of Technology.

Some cities, such as San Diego and Austin, evoke thoughts of innovation, growth, and the promise of all things desirable for economic development. However others, like Vancouver, have vibrant commercialization networks but are not well known. To what extent should universities be a part of the economic development equation? What should be the role of licensing? We talked with Marie Thursby about the state of technology transfer and commercialization on today's college campuses.

Are universities entrepreneurial?

This is a very interesting question since the stereotype of a university is not a profit-seeking institution, nor should it be. In the mid to late nineties, there was a dramatic increase in university-industry technology transfer through licensing as universities attempted to appropriate the returns from faculty research. Based on data from sixty-four universities responding to the Association of University Technology Managers (AUTM) surveys, from 1994–1998, yearly invention disclosures increased 7.1 percent per year, while new patent applications, and licenses and options executed annually grew by 17.1 and 8.4 percent, respectively.

Jerry Thursby and I have developed a model (Thursby and Thursby 2002) to examine the extent to which this growth was due to the productivity of observable inputs (i.e., faculty in engineering and the life and physical sciences, research expenditure, technology transfer personnel) or driven by a change in the propensity of faculty and administrators to engage in commercializing university research. Indeed, our results support the view that the growth rates observed were primarily a function of an increased interest by administrators in patenting and licensing university inventions along with willingness of faculty to become involved in the process.

...from 1994–1998, yearly invention disclosures increased 7.1 percent per year, while new patent applications, and licenses and options executed annually grew by 17.1 and 8.4 percent, respectively.

While there are many advantages to technology transfer by licensing (as opposed to faculty merely publishing results),²⁰ university administrators should not participate in licensing or promoting entrepreneurial behavior for the purpose of making profits. Licensing early-stage inventions is quite risky and few universities profit from it. In 2003, Jerry and I examined licensing returns for 156 universities, as reported by AUTM, and found that while those universities reported \$1.24 billion in income, this income was less than 5 percent of their research expenditure (Thursby and Thursby 2003).

What is research telling us about the way in which entrepreneurship by university researchers has changed over the past twenty years?

Our angle on examining faculty entrepreneurship has been to look at the extent to which faculty disclose inventions to the technology transfer office (TTO). Historically, as well as today, the primary way that faculty disseminate their research is through publication and teaching. But it is also the case that in U.S. universities, university researchers

are required to disclose to the TTO if they believe their research results have commercial potential. This is hardly enforceable since it is difficult, at best, to evaluate the commercial potential of basic research (which most university research comprises).

Over the past few years, funded by the National Science Foundation, as well as the Ewing Marion Kauffman Foundation, we have assembled a data set of 3,342 faculty scientists and engineers at major U.S. universities. These data allow us to examine the research, demographic, and disclosure profiles of these faculty from 1983–1999. Early in this period, the likelihood that a faculty member would disclose an invention in any given year was roughly 1 percent. The disclosure rate rose over this period to about 10 to 11 percent in the mid-1990s (Thursby and Thursby 2005). That said, it is important to realize that the portion of faculty disclosing inventions is quite low. For the group of faculty we examined, 64 percent never disclosed inventions over the period. Only 2 percent of these faculty disclosed inventions in eight or more years over this period.

There are clear local spillovers from universities to their communities, but the strongest universities are focused on attracting and educating top students and disseminating research on a global basis.

What would you tell local and regional policy makers that want to use universities as a catalyst for economic development?

While the mission of some universities, particularly land grant universities, includes economic development, I would caution policy makers about looking at universities as a catalyst for local job creation. There are clear local spillovers from universities to their communities, but the strongest universities are focused on attracting and educating top students and disseminating research on a global basis.

Very little of my research has dealt with this directly, but a recent paper with Frank Rothaermel examining data from the Georgia Tech incubator examines knowledge spillovers and finds little evidence of localized spillovers as important determinants of firm performance (Rothaermel and Thursby 2005).

What are your current research interests?

We remain interested in issues of university–industry technology transfer, with a particular emphasis on the impact of entrepreneurial opportunities on faculty research, as well as the optimal mechanisms for licensing university inventions

and extent to which it matters that universities own faculty inventions.

Most recently, Jerry and I have conducted a survey for the U.S. National Academies’ Government University Industry Research Roundtable (GUIRR), funded by the Kauffman Foundation, looking at where multinationals are locating their R&D and the factors involved in location decisions.

Also funded by Kauffman, Frank Rothaermel, Marcia Rorke, and I are putting together a data set that will allow us to examine a variety of questions about commercialization of inventions by individual inventors outside of the university setting.

How long have you and Jerry been studying entrepreneurship?

This line of work began in the early nineties when Alan Peterson approached me regarding my interest in developing a center for research and curriculum development that focused on technology transfer. Funding from the Alan and Mildred Peterson Foundation, as well as from the National Bureau of Economic Research, allowed us to conduct our first survey of university technology transfer offices and a subsequent survey of businesses that license from universities.

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The percent of R & D expenditures in the United States in 2003 that came from industry funding sources; and the percent in 1966 that came from government funding sources.²¹

So What?

From R & D emerges scientific knowledge, which can then be translated into practical market services or products by entrepreneurs. As the lines between industry, government, and university research continue to blur, emerging research on the consequences of such partnerships is beginning to inform policy audiences.

Does Science Chase Money?

WAVERLY W. DING

Assistant Professor
Organizational Behavior and
Industrial Relations Group
Haas School of Business
University of California, Berkeley

Public trust in modern scientific institutions is due, to a large extent, to the “complex values and norms which are held to be binding on the man of science” (Merton 1968). Among them, the norm of disinterestedness, a control mechanism that helps reign in a wide range of motives of individual scientists to present a collective image of science as an independent and autonomous institution (Merton 1968), contributes greatly to the certification of and the public trust in scientific knowledge.

However, social scientists have long challenged the characterization of science as an autonomous entity. Many believe that the speed and direction of scientific development are affected considerably by social, economic, and technical factors originating outside the scientific research community (Mulkey 1979). Despite the attention to the problem of external influence on science, there is surprisingly little systematic evidence that shows the extent of such influence.

In this paper, I rely on archival research publication records of a random, stratified sample of 5,000

university scientists to empirically assess the extent to which external forces have influenced the direction of scientific research. More specifically, I focused on the influence of the biotechnology industry on the research direction of university life scientists. To this end, I used the research papers published between 1976 and 2000 by university scientists and industry researchers to examine the intensity that scientists in both environments engage in certain research topics. The growth trajectory of each of these scientific research topics is analyzed as a function of the corporate community’s involvement in these topics. The key findings include:

The influences of government

and industry reinforce each

other in shaping the research

interests of academic scientists.

- The more industry involvement in research on a topic, the higher the growth rate that research topic will enjoy in a future period.
- There is mixed evidence regarding whether the interest of financially well-performing companies in specific topical research at a given time had any impact on the topics that academic scientists studied in future periods—a research topic's commercial appeal to academic scientists is likely to be represented by a couple of top performing companies that have been working on the topic.
- The influences of government and industry reinforce each other in shaping the research interests of academic scientists.

The findings of this essay shed light on whether the institutional norms of science (e.g., disinterestedness) remained intact when confronted with industry participation in scientific research, which endorses a set of values largely contravening those cherished by the scientific community. The evidence suggests an attenuation of scientific norms in guiding university scientists' choice of research foci and to a certain extent, the convergence in public and private sector research interests.

KAUFFMAN DISSERTATION FELLOWSHIPS

To support the research of emerging thought leaders and the growth of entrepreneurship as an area of research, each year the Kauffman Foundation funds up to fifteen dissertation fellowship awards for individuals pursuing graduate research around entrepreneurship. Waverly Ding was a 2003 recipient of a Kauffman Dissertation Fellowship and is currently an assistant professor of organizational behavior and industrial relations at the Haas School of Business at the University of California at Berkeley. The above research summary is of one of four essays on the formation and evolution of U.S. biotechnology companies that comprised Ding's dissertation.



THE INNOVATION LANDSCAPE

The United States is failing to develop and commercialize much promising research. Discoveries that could lead to new therapeutic drugs, new medical devices, and other life-saving or life-enhancing technologies are being overlooked in laboratories or, in other cases, languishing in a system that is intended to speed practical applications, but is instead inhibiting success.

From a thorough review of academic literature on university innovation, interviews of faculty and practitioners from both private industry and academe, and implementation of an in-depth survey of seven U.S. universities and medical centers, several major issues were identified.

- A few research institutions (and a small portion of research faculty) account for the bulk of formal invention disclosures, patents, and licensing, while others lag. Some elite institutions' innovation "output" is not nearly commensurate with their research funding. And, a great many with smaller but still sizeable research budgets produce very little.
- Innovation activity tends to revolve around the patent-license model, thereby placing the burden within one area of the university: the technology transfer office. Few universities understand that innovations can move through multiple pathways, requiring coordination of various activities and entities across a university.
- Private-sector firms and investors trying to license university innovations report that their efforts are often hindered by bureaucratic delays and the lack of efficient and effective cultures, practices, and/or expertise within the universities.
- Efforts to advance innovation may be worsening. For instance, to avoid difficulties, some leading firms and investors now deal only with certain favored universities or only with experienced researchers—a trend that could further limit, rather than widen, the scope of activity and opportunity.

There are no simple solutions. However, the Kauffman Foundation, partner research institutions, and organizations like the Association of University Technology Managers (AUTM) are working to identify and address issues of institutional culture that get in the way of advancing innovation. We are evaluating tools that can streamline the process, reduce transaction costs for universities, and foster cross-university and university-industry collaborations.

But all this must be done in an environment where there is a sincere commitment to foster innovation and entrepreneurship. Changing the paradigms of the system can only help foster innovation, entrepreneurship, and ultimately the development of products and services that improve quality of life for all.

10

Number of endowed professorships related to entrepreneurship at the Massachusetts Institute of Technology in 2003.²²

So What?

Universities (and their patrons) are beginning to recognize the importance of the study and teaching of entrepreneurship. The number of chairs and professorships in entrepreneurship and related fields in the United States has grown 71 percent, from 237 in 1999 to 406 in 2003. Worldwide, 563 positions were endowed in 2003, up from 271 in 1999.

A Trip to the “Boot Camp”

Advancing Research in Minority and Women’s Entrepreneurship²³

ROBERT STROM

Director, Research and Policy
Ewing Marion Kauffman Foundation

E.J. REEDY

Senior Analyst, Research and Policy
Ewing Marion Kauffman Foundation

For Jeffrey Robinson, it was a chance to learn from the legends in the field of entrepreneurship research, and a key step in his journey to become one of the next generation’s leading entrepreneurship scholars. Robinson, an assistant professor at New York University’s Stern School of Business, was among twenty scholars who attended a “boot camp” for junior faculty interested in pursuing research on minority and women’s entrepreneurship in the summer of 2004. The intensive three-day training and networking program, offered at the University of North Carolina at Chapel Hill’s Kenan-Flagler Business School, put Robinson and his peers in close contact with veteran researchers who would inspire, advise, and support their research interests.

“These scholars have carried the ball for the last twenty to thirty years,” Robinson said of the leading entrepreneurial scholars he met. “We’re hoping to take the field to the next step.”

“Few scholars study minority entrepreneurship,” said James H. Johnson Jr., William Rand Kenan Jr. Distinguished Professor of Management and director of the

Kenan Institute’s Urban Investment Strategies Center at UNC’s Kenan-Flagler Business School, who conceived the boot camp with Timothy Bates, distinguished professor of labor and urban affairs at Wayne State University. “Our goal is to foster the professional growth of these talented young professionals so they will advance the knowledge of minority and women’s entrepreneurship through

Few scholars study minority entrepreneurship. Our goal is to foster the professional growth of these talented young professionals so they will advance the knowledge of minority and women's entrepreneurship through cutting-edge research.

cutting-edge research.”

Robinson, a third-generation minority entrepreneur (“fourth-generation, if you count my great-grandfather, who was a farmer and sharecropper”), says it’s an issue close to his heart. His grandmother left the rural South for the urban North in search of better opportunities. She opened an upholstery business in New York. Robinson’s father was an electrical contractor. “As an undergraduate, I co-founded an IT consulting company,” said Robinson. Now, as an academic, his entrepreneurial spirit leads him to break new ground in an under-studied area of business and management. His research focuses on African-American women’s entrepreneurship issues, church entrepreneurship, and self-employment in urban areas.

Boot camp sessions offer junior university faculty the chance to examine issues related to their research interests, such as job-creation patterns among African-American- or women-owned businesses, minority or women business promotion as an economic development strategy, and issues facing minority or women business borrowers.

“These are under-studied economic phenomena,” Candida Brush says. “We need to accelerate the research process so we can understand how these populations can create wealth and be successful.” Brush is an associate professor at the School of Management Strategy & Policy at Boston University and co-researcher on The Diana Project, a long-term research effort to examine the apparent disconnect between opportunities and resources in equity funding for high-growth, women-owned businesses.



In addition to sponsoring the boot camp again in 2005, the Kauffman Foundation provided \$125,000 in research grants, competitively awarded, to the top research proposals to come out of this program.

More information on the boot camp is available at: www.mbebootcamp.unc.edu

BOOT CAMP READING LIST

Here is a sampling of the 2005 reading list for participants in the minority and women's entrepreneurship research boot camp:

Anna, Alexandra L., and Gaylen N. Chandler. "Women Business Owners in Traditional and Non-Traditional Industries." *Journal of Business Venturing* 15, no. 3 (2000): 280-303.

Bates, Timothy. *Race, Self-Employment and Upward Mobility*. Washington, DC: The Woodrow Wilson Center Press, 1997.

Blanchflower, David G., Phillip B. Levine, and David J. Zimmerman. "Discrimination in the Small-Business Credit Market." *Review of Economics & Statistics* 85, no. 4 (2003): 930-43.

Bradford, William D. "The Wealth Dynamics of Entrepreneurship for Black and White Families in the U.S." *Review of Income and Wealth* 49, no. 1 (2003): 89-116.

Craig, Ben R., William E. Jackson, and James B. Thomson. "SBA-Loan Guarantees and Local Economic Growth." In *Federal Reserve Bank of Cleveland Working Paper Series*, 29, April 2005.

Fairlie, Robert W. "Does Business Ownership Provide a Source of Upward Mobility for Blacks and Hispanics?" In *Public Policy and the Economics of Entrepreneurship*, edited by Douglas Holtz-Eakin and Harvey S. Rosen. Cambridge: MIT Press, 2004.

Hurst, Erik, and Annamaria Lusardi. "Liquidity Constraints, Household Wealth, and Entrepreneurship." *Journal of Political Economy* 112, no. 2 (2004): 319-47.

Portes, Alejandro, William Haller, and Luis E. Guarnizo. "Transnational Entrepreneurs: The Emergence and Determinants of an Alternative Form of Immigrant Economic Adaptation." In *Transnational Communities Programme Working Paper Series*, 2001.

Robb, Alicia M. "Entrepreneurial Performance by Women and Minorities: The Case of New Firms." *Journal of Developmental Entrepreneurship* 7, no. 4 (2002): 393-97.

Ruef, Martin, Howard E. Aldrich, and Nancy M. Carter. "The Structure of Founding Teams: Homophily, Strong Ties and Isolation among U.S. Entrepreneurs." *American Sociological Review* 68, no. 2 (2003): 195-224.

Policy for the Entrepreneur



2,227

The number of businesses backed by U.S. venture capitalists in 2003.²⁴

So What?

With globalization and off-shoring of jobs, there is rising concern over the extent to which venture capital managed in the United States will continue to fund companies working within the country and the long-term impact this could have on our innovation capacity.

The Globalization of Venture Finance

CATHERINE L. MANN

Senior Fellow

Institute for International Economics

Bill Hewlett and Dave Packard started their company in a garage in 1939 with \$538 in working capital. Genentech was founded in 1976 by biochemist-entrepreneur Herbert Boyer and venture capitalist Robert Swanson. Sequoia Capital put \$2 million into Yahoo! in 1995. The dictionary definitions of innovation and venture are similar—to do something new and to take a risk. The economic dynamic of innovative ideas and venture money creates products, spawns firms, and supports workers who diffuse throughout the United States, yielding the most productive economy on the planet.

Technological innovation increasingly allows research and development and other innovative activities to be fragmented and outsourced to consultants or other firms outside the core of an enterprise. With increased education, technology savvy, and improving business climate in some foreign economies, the capability of off-shore firms to do research, innovate, and develop ideas should come as no surprise.

The question linking globalization to venture finance is whether money extended to off-shore firms to engage in innovative activities dilutes the U.S. economic dynamic, putting future U.S. prosperity at risk. Or do off-shore cost savings mean that more ideas can be developed and thus delivered to the market, thereby bolstering U.S. productivity and growth? These alternatives help to frame a research agenda and to start interpreting data.

Bill Hewlett and Dave

Packard started their

company in a garage

in 1939 with \$538 in

working capital.

Critical Questions

A first question is whether U.S. venture finance has globalized. Is venture finance supporting innovative firms abroad? Has the environment facing U.S. firms at different stages of innovation changed?

A second set of questions considers the type of activities being undertaken abroad and their potential impact on U.S. performance. For example, how might financing of technology-related work off-shore affect the speed and cost of bringing ideas to market? Interviews and articles say that venture firms encourage, even demand, that their companies do development abroad. But the type of new product at the funded company could determine the appropriateness of an on-shore versus off-shore development and implementation strategy.

For example, an idea that focuses on developing a new application or product for an existing U.S. market might warrant quick, cheap implementation off-shore in order to bring the idea to market quickly to test its acceptance. Cheaper off-shore implementation could bring a greater variety of ideas to the market, and more may survive because of reduced cost of development.

On the other hand, bringing some new ideas to fruition might require much closer interaction between innovators, financiers, and the marketplace. Evolving from blue-sky idea to business-realistic strategy may require close and active participation, iteration, and collaboration among the members of the design, development, marketing, and management team. Fragmenting this process and off-shoring key activities could discourage needed collaboration, undermine product vision, and lead to business (and idea) failure.

A third set of questions relates to how off-shoring design and development could affect the next generation of entrepreneurs. Early contributors to start-up success who later try their own hand at entrepreneurship are more likely to receive venture finance because they have had close and personal experience with the innovation-venture relationship. Off-shore development could mean that fewer of these “low-badge number” employees have the spark and experience to become the next generation of U.S. entrepreneurs. If some of these new entrepreneurs are abroad instead, what is the implication of global innovation for U.S. prosperity?

RESEARCH KINDLES POLICY DISCUSSION

November 6, 1969, could be marked in many ways as the birthdate for the minority-oriented venture-capital industry, as this was when President Nixon's Project Enterprise was launched. This resulted in the creation in 1970 of the Minority Enterprise Small Business Investment Company (MESBIC) program—privately owned investment companies chartered by the Small Business Administration (SBA) devoted to investing venture capital and long-term debt in black-owned businesses. Soon, minority-oriented venture capital funds sponsored by the SBA began to emerge.

Following recent research supported by the Kauffman Foundation that found investments in minority venture capital funds were more profitable than average returns of the S&P 500 (Bates and Bradford 2003), many policy eyes began to focus again on the minority venture capital industry and ways in which it could be assisted. In 2004, Congress passed an amendment to the tax code, which many hope will open up SBA minority venture capital funds to investments from pension-backed funds and other new capital sources, thus increasing the flow of capital into minority-owned businesses.

For more information on minority-oriented venture capital funds, see "The Viability of the Minority-Oriented Venture-Capital Industry Under Alternative Financing Arrangements" (Bates, Bradford, and Rubin, forthcoming).

These questions cannot be answered yet, as the globalization of innovation and venture finance are just beginning. Moreover, the whole relationship between innovation and venture finance is complex, even without technology-enabled fragmentation of development and globalization of innovative activities. Nevertheless, the following set of charts gives some perspective on venture finance during the last twenty-five years.

Trends in Financing

Based on the Thomson VenturExpert database, venture finance has been globalized for some time. The 1990s saw 5 to 10 percent of U.S.-raised venture finance spent on firms in foreign countries, and about 5 percent of U.S. venture funding came from foreign sources. In the first couple of years after the Internet and stock-market crash in the United States (2001–2002), foreign firms received almost 20 percent of U.S.-raised venture finance, but that share has fallen back again to under 15 percent. In the last fifteen years, firms receiving U.S.-raised venture financing have been located in more foreign countries, with firms in more than fifty countries currently receiving funds, according to this database. China has been among the top five recipient countries

in seven of the last twelve years, whereas India has appeared only once among the top five countries. Of course, these shares of total funding mask the dramatic boom and crash in venture finance, which is the overwhelming hallmark of the period (Figure 1).

Are there trends in U.S. industry sectors supported by U.S. venture finance? Waves of financing associated with information technology appear in these data, with IT firms receiving between one-quarter and three-quarters of all venture finance. There are three successive waves: In the 1980s, venture finance supported computer hardware; in the 1990s, the Internet wave dominated the data; and following the Internet crash, financing associated with software and computer services increased. Other technologies, such as those associated with biology and the life sciences, account for between 15 and 30 percent of financing, generally receiving a higher percentage when IT's fortunes wane. Communications and media firms represent a modestly increasing share to about 15 percent in the 2000s, whereas consumer-related products' share has fallen since the mid-1990s (Figure 2).

FIGURE 1:

Total VENTURE CAPITAL INVESTED in U.S.\$ millions, by Source and Destination

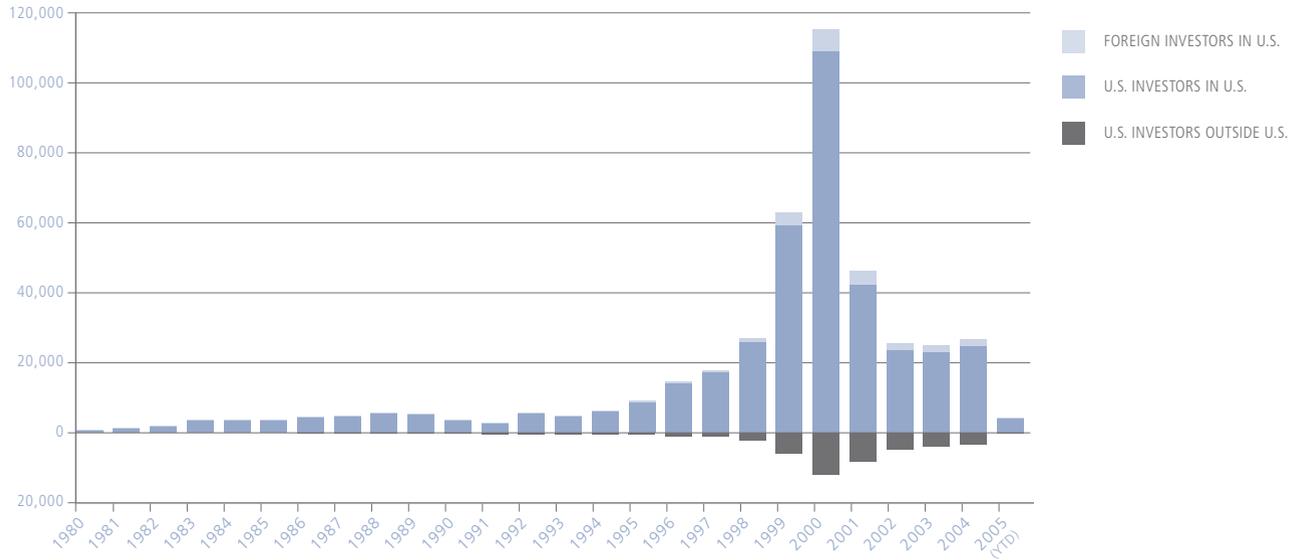
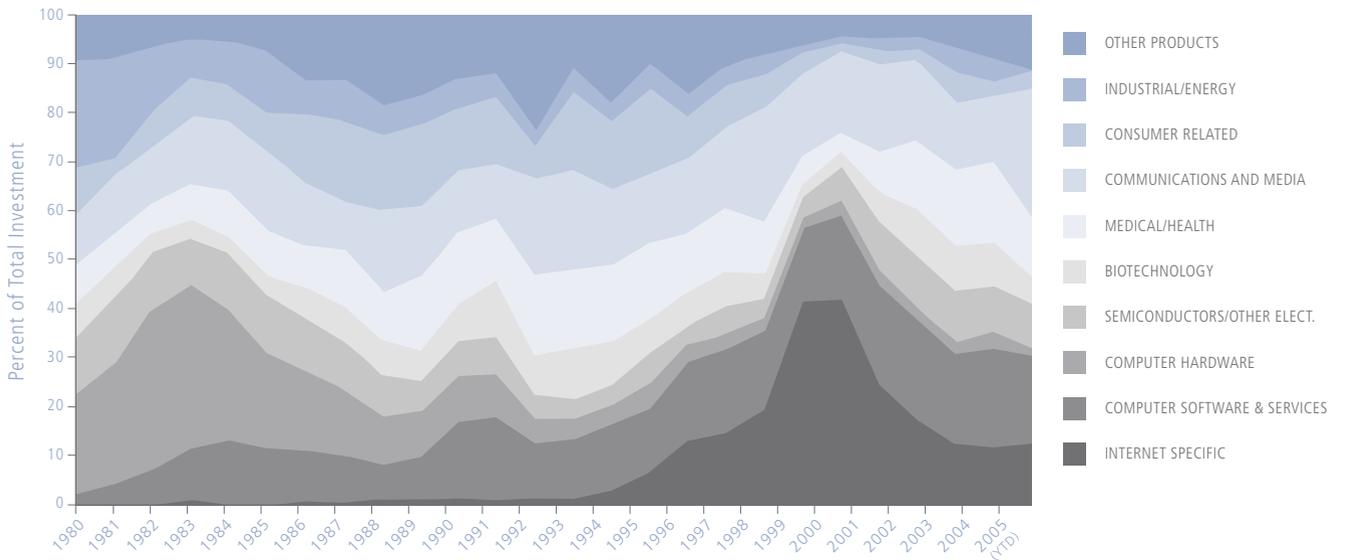


FIGURE 2:

Distribution of U.S. VENTURE CAPITAL INVESTMENTS in the U.S. by Industry



Globalization of venture finance is not a new phenomenon, although more countries are represented among recipients of venture finance now than fifteen years ago.

A clear trend emerges with respect to the stage of financing supported by venture finance. It is common to disaggregate venture finance into five categories: seed or start-up, early-stage, expansion, later-stage, and buyout or acquisition. The share of venture finance going to seed or start-up ventures in the United States has fallen throughout the period covered by this data set, with the declining share accelerating since 1995. On the other hand, against a background of much smaller dollar values and shares, the share of start-up and early-stage funding to foreign companies does not exhibit this declining trend.

Extent and Implications of Globalization

Research on the globalization of innovation and venture finance is just beginning. Do these data shed light on any of the questions posed earlier about the extent and implications of globalization of venture finance? Globalization of venture finance is not a new phenomenon, although more countries are represented among recipients of venture finance now than fifteen years ago. Venture finance in the last five years appears to focus more on expansion and

later-stage investments, rather than start-ups—although there is some evidence that foreign start-ups and early-stage companies are receiving funding through U.S. venture finance firms.

The focus on later-stage investment in the United States may imply that venture finance is more focused on firms that are beyond the concept and vision stage and are expanding in a more mature market. If so, then the globalization of venture finance may point to enhanced productivity growth in the United States coming more through ideas being implemented and brought to market, than through innovations based on the “next big thing.” On the other hand, funding of start-ups abroad may indicate a greater willingness of U.S. venture firms to take small-dollar-value risks abroad that they are not taking at home.

A key issue then becomes, what funding and support are available for the newest U.S. start-ups, which ultimately are the real source of productivity growth and emerging entrepreneurship for the United States?

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11

Chapter of the U.S. Bankruptcy Code that allows a business to file for protection from creditors while reorganizing.

So What?

The U.S. Congress recently made changes to the federal bankruptcy code that make it more “debtor-friendly.” This is raising concerns among policy analysts about the implications of such changes on entrepreneurs, as the new law has the potential to raise the cost of business failure and thus could have an anti-entrepreneurial impact. Conversely, the new law may help small business owners to collect debt that they otherwise may have had to write off.

Understanding the Regulatory Climate for Entrepreneurship

An Interview with Susan B. Gates

Susan Gates is the director of the Kauffman-RAND Center for the Study of Small Business and Regulation located at the RAND Corporation.

What makes for an entrepreneurial climate? As federal and regional policy leaders search for the answer, it is important to consider a range of policies that can directly, or indirectly, affect new and existing entrepreneurs. For an overview of entrepreneurship policy research, we turned to the Kauffman-RAND Center for the Study of Small Business and Regulation.

Is small business regulation primarily a local or a federal activity?

In examining the impact of regulation on small business, a primary concern is whether rules, regulations, and policies that are applied to businesses in general have a stronger impact on small businesses. Compliance with business regulations often requires companies to establish programs or to put certain systems in place. The implementation of such programs or systems typically has a fixed set of costs incurred for setting up and maintaining the program or system. These costs may not vary much with the size of the business. Thus, on a per-employee or a per-dollar-of-revenue basis, the cost of compliance is much larger for small businesses. Indeed, this is a primary reason why federal, state, and local legislators often exempt from specific regulations those businesses that fall below a certain size threshold.

In the United States, businesses are subject to federal, state, and local (i.e., county, municipality) regulation. There are some areas, such as workers' compensation, for which states play the primary role. There are other regulations on corporate accounting, such as the Sarbanes-Oxley Act, where the federal government plays the primary role. In other areas, such as equal opportunity or minimum-wage regulations, federal regulations exist, but state and local governments can impose regulations that are more stringent.

What are the impacts of federal regulation on small businesses that we best understand currently?

A study focusing on the burden of federal regulations on small business (Crain and Hopkins 2001) finds that environmental regulations and the burdens associated with tax

Tort reform is an area where the overall impact on small business is unclear, but vitally important.

compliance account for a large proportion of the federal regulatory burden on small business. The authors estimate that these areas account for about 40 percent of the costs imposed on small business by federal regulation.

Overall, our understanding of the impact of regulation on small business is not as nuanced as it could be. To understand the impact of regulation on small business, it is necessary to consider not only the direct impact of the regulations on small business, but also the impact of those regulations on larger businesses with which small businesses compete. It is possible that the net effect of a regulation could be positive for small businesses if that regulation imposed disproportionately larger costs on large businesses.

What federal regulation impacts on small businesses do you feel need the most research and exploration?

Tort reform is an area where the overall impact on small business is unclear, but vitally important. Proponents of tort reform argue that litigation costs are killing small business and that tort reform would help them. However, tort reform would also likely help big business. Certain proposals, such as caps on

damage awards, could benefit large businesses with deep pockets more than small businesses. The overall effect of such a reform is unclear. Other areas where the actual effect of regulation on small business is unclear include:

- health insurance mandates;
- accounting reform;
- workers compensation;
- federal contracting requirements that direct spending toward small businesses; and
- corporate law reform and general labor law, which may influence how costly it is to hire and fire workers.

What cities or states stand out for their innovative treatment of small business regulation?

Some states have regulatory review boards or other formal procedures for assessing the potential impact of state laws, policies, and regulations on small business. These boards have varying levels of authority to block the implementation of or request modifications to rules found to be particularly burdensome to small business. Arizona is a state with a particularly strong review board. Other states with such

procedures include California, Illinois, New York, and Virginia (Management Research and Planning Corporation 2002).

What resources are available from your Center for researchers looking to study small business regulation?

The Kauffman-RAND Center for the Study of Small Business and Regulation provides several resources for researchers. The Center's Web site provides access to working papers and published reports on small business regulation, and we are working to create a database on regulatory thresholds that determine whether a small business is subject to or exempt from regulation in various areas at the federal and state levels. We also are working to be a catalyst for small business research through our continued research and conferences.

More information on the Kauffman-RAND Center is available at:

www.rand.org/icj/centers/small_business



27

Percent of Black or African-American owners of businesses, with employees, who reported spending more than 60 hours per week managing or working in their businesses in 2002.²⁵

So What?

For many minority groups, long hours haven't paid off yet, as wealth accumulation statistics point to continued divergent realities for different racial and ethnic groups in the United States.

The Entrepreneurial Path for Residents of Disadvantaged Communities

TIMOTHY BATES

*Distinguished Professor of Labor,
Urban Affairs, and Economics
Wayne State University*

Former Mayor Giuliani offered this advice to residents of New York City's low-income minority communities: "If you can't get a job, start a small business. Start a little candy store; start a little newspaper stand; start a lemonade stand."

Absent appropriate skills and tools, hard work and initiative alone are often not enough to create successful businesses.

New research that I have conducted using surveys of business owners selected from Census Bureau data show that starting a business may only make sense for some members of disadvantaged communities.²⁶

The building blocks of a successful small business are the expertise, skills, and work experience of the owner. Beyond these human-capital prerequisites, most new ventures need equipment, inventory, and the like if they are to reach viability. Absent appropriate skills and tools, hard work and initiative alone are often not enough to create successful businesses. People lacking the prerequisites, who nonetheless choose to start businesses, generate high business-failure rates.

Well-educated and skilled people with lots of financial capital to invest in their ventures are indeed likely to build successful small businesses. Few of them, however, are residents of low-income, distressed, or otherwise disadvantaged communities. What about the

low-income individual who lacks a college degree, or the person with a marketable skill who lacks financial resources? Are there paths for them to follow if they are entrepreneurially inclined? Or are the barriers to success too high and the risks of failure too great to justify devoting oneself to building a business?

Among small businesses nationwide operating in 1992, 20.1 percent of all self-employed minorities in the United States had not graduated from high school. Roughly 10 percent of non-minority whites lacked high school degrees. I conducted a nationwide study of small business owners lacking high school degrees, and my findings revealed a group that had achieved mixed business success. I restricted my study to owners creating firms with no more than \$5,000 in start-up capital, including such in-kind capital as tools. Nearly half of them started out with no investment of financial capital whatsoever.

PROVIDING TRAINING, COUNSELING, FINANCING, AND OPPORTUNITIES

Turning research into action, the Kauffman Foundation recently launched the Kauffman Coaches program, a Kansas City-based initiative to provide advanced technical guidance to minority entrepreneurs looking to accelerate the growth and enhance the stability of their companies. Kauffman Coaches will focus on minority entrepreneurs with demonstrated ability and desire to become not only market leaders, but also leaders in giving back to the community as creators of jobs and role models for future generations of entrepreneurs.

Participants in the Kauffman Coaches program will be selected through a screening process and matched with both generalist and specialist entrepreneurship coaches. The program looks to enhance the infrastructure of support services and improve accessibility of capital for these entrepreneurs.

Ultimately, the Kauffman Coaches program will help to develop a new model for bridging the participation and performance gap in minority entrepreneurship. Kansas City businesses are 7 percent minority-owned, compared to a 14 percent national average.

Examining the minority-owned firms established with little capital by owners lacking high-school degrees, I found that many were generating low annual sales revenues; sales under \$20,000 were common. These tiny firms, nonetheless, were often important contributors to household income. Nearly half of the owners reported that their earnings were a major source of household income. Profits were often not high: 61 percent of the firms generated annual profits under \$10,000. Yet some did well, with 10 percent netting annual profits exceeding \$25,000.

Considering all of the firms that were run by minority owners lacking high school degrees and that were launched with financial investment, the average capitalization was under \$2,900. This low figure excludes the firms begun with no capital. The most common source used to finance business formation was the net worth of the owner. Yet, the firms using capital at start-up often relied upon borrowed funds. The most widely used debt source was small loans from family and friends. This borrowing pattern contrasts sharply with the reliance upon bank loans that typifies large-scale business start-ups. Owners lacking high school degrees did sometimes borrow from financial institutions,

but these loans were most often forms of consumer credit, not business loans.

What sort of individual, lacking a high school diploma and financial resources, does well in small business ownership? Among the high-profit owners, one clear profile of success emerged among the thousands of cases examined. The successful owner was most often a male operating a construction business.

Workers in construction are more likely to be self-employed than persons working in any other industry. The majority of those in construction work are in a specific skilled craft, such as carpentry or plumbing, and it is the skilled craftsman who is most apt to be self-employed. Skilled construction work is an occupation that is open to people having weak formal educations. Skills are often learned on the job. One's own tools are often the only capital needed to start out in business. Thus, construction typifies an industry where persons of modest means, minimal formal schooling, and entrepreneurial drive can start out with little capital and go on to build a substantial enterprise. Absent the specific skill, however, building a viable construction business is an unlikely outcome.

The skilled crafts are male-dominated occupations; of male-owned firms included in my study, more than 26 percent were in the construction industry. Among women with minimal formal education and financial capital, in contrast, 1 percent ran construction businesses. Considering all lines of business, the low education/low financial capital niche is male dominated: 78 percent of the business owners in the study were males. Further, in 1992, more than 79 percent of the owners were married and living with their spouses.

More often than not, the business owners were attached to households that had multiple income sources. The presence of other sources appeared to act as a kind of safety net, but even in cases where business profits were less than \$10,000, these earnings, in combination with other household income, often lifted the family out of poverty.

Skills, work experience, and a support infrastructure—these are critical small business building blocks. Many residents of disadvantaged communities do not have these prerequisites, but many do. Self-employment and small-business ownership are clearly best suited to a very specific population that includes some residents of distressed communities, but does not include all of them. To be successful, programs to help disadvantaged entrepreneurs should look to provide these critical pillars.



BARRIERS TO MINORITY ENTREPRENEURSHIP

Recent research suggests that significant obstacles continue to hinder the formation and growth of businesses owned by African Americans and Latinos. Even though self-employment rates for African Americans and Latinos have increased significantly during the last twenty-five years, they continue to lag significantly behind Caucasians. In addition, business survival rates for minority businesses, a measure of sustainability, fall short.

Most prominent among the roadblocks to growth and sustainability for minority businesses is the lack of human capital possessed by those who seek to become gainfully self-employed. Education significantly predicts nascent entrepreneurship, particularly for African Americans and Latinos. Yet, even for those who enter the fray with an initial educational credential in tow, future growth and success is not a guarantee. Social capital can help an entrepreneur compensate for deficiencies in training or experience, yet the true impact of network support on a firm's viability is still unclear.

Similar to human capital, financial capital is often a requirement of entrepreneurship for new and growing businesses. In fact, it is the financial capital gap more than the human capital gap that produces the lower rates of self-employment entry and higher rates of small-firm closure of African Americans relative to non-minorities (Bates 1997). Perceptions of minority businesses as being "less than" and not as profitable as their white counterparts persist even in the face of research showing that investments in minority firms by venture capital can outperform market returns and non-minority business investments.

Looking Forward



Building on Today's Research

Strategic Grants Fiscal Year 2004–2005

ROBERT E. LITAN

Vice President, Research and Policy
Ewing Marion Kauffman Foundation

One of the best parts of my job at the Kauffman Foundation is that I regularly get to talk with, to, and about entrepreneurs. I am able to see the ways in which entrepreneurship affects so many people's lives. These conversations confirm what research tells us: in the United States and throughout most of the world, entrepreneurs are both common and extraordinary, and becoming an entrepreneur has great and lasting impact, not only on the entrepreneur, but also on his or her employees, suppliers, customers, and communities.

The thought leaders in this volume have outlined ways in which entrepreneurs have even larger impacts—on our economy and society as a whole. These thoughts draw on their own past research and that of others in the field.

But much more awaits. New data sets will permit new kinds of research that will help us understand what contributes to entrepreneurial success, stagnation, or failure. These findings will be of interest to all current and would-be entrepreneurs and to policy makers at all levels of government who want to promote entrepreneurship (as we believe they should).

I want to recognize Kauffman Research and Policy associates for their work and dedication in bringing this report to fruition. We hope that, in the coming years, you will see, be interested in, and read the results of research that is now under way (highlighted on the following pages), as well as that which we support in the future.

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WANT TO KNOW MORE?

Go to:
www.kauffman.org/research

A SAMPLE OF STRATEGIC ENTREPRENEURSHIP RESEARCH AND POLICY GRANTS
Kauffman Foundation Fiscal Year 2004–2005

ORGANIZATION	PRINCIPAL INVESTIGATOR	DESCRIPTION
Case Western Reserve University	Scott Shane	Research to investigate discrimination in entrepreneurship, women entrepreneurs, and high-technology entrepreneurship.
Columbia University, Center on Capitalism and Society	Edmund Phelps	Research on how entrepreneurship contributes to a dynamic and growing economy.
Columbia University, Graduate School of Business	Ed Henry	Research on international outsourcing.
Emory University	Jerry Thursby	Collection and analysis of data surrounding R&D location decisions.
Hudson Institute	Ken Weinstein	Research and educational program on the fundamental factors of employment related to entrepreneurship.
Institute for International Economics	Fred Bergsten	Research on the impact of off-shoring on the dynamics of new business formation.
Manhattan Institute	Lawrence Mone	Research on issues in entrepreneurship and policy.
National Bureau of Economic Research	Martin Feldstein	Research by economists and other social scientists on public policy, innovation, and entrepreneurship.
New York University	Edward Wolff	Research on the effective means of preparation of prospective entrepreneurs and the convergence of the differences in orientation of educational systems.
RAND Corporation	Robert Reville	Establish Center for the Study of Small Business and Regulation designed to assess and improve policy making that affects small businesses and entrepreneurs.

(CONTINUED...)

A SAMPLE OF STRATEGIC ENTREPRENEURSHIP RESEARCH AND POLICY GRANTS
Kauffman Foundation Fiscal Year 2004–2005

ORGANIZATION	PRINCIPAL INVESTIGATOR	DESCRIPTION
Syracuse University	Timothy Smeeding	Research on entrepreneurship by an interdisciplinary team of faculty at the Maxwell School.
The National Academies	Andrew White	Evaluation of the accuracy, currency, coverage, and reliability of information available on business formation and growth, employment flow, revenue and investment, and contribution to economic growth.
University of California, Berkeley	John Freeman	Research on the drivers and consequences of entrepreneurship in the United States.
University of Chicago, Graduate School of Business	Steve Kaplan	Research on entrepreneurship by an interdisciplinary team of faculty.
University of Illinois at Urbana–Champaign	Cynthia Kehoe	Develop and maintain an entrepreneurship research database to be integrated with the Kauffman Entrepreneurship Research Portal.
University of Illinois at Urbana–Champaign	Rajshree Agarwal	Support for a series of cross-disciplinary research projects that focus on the implications of entrepreneurial initiative and technological innovation for firm and industry evolution.
University of Kansas	George Bittlingmayer	Establish a center for research on entrepreneurship among faculty from a variety of disciplines.
University of Maryland	John Haltiwanger	Research to advance understanding of small business dynamics and their role in economic performance.
University of Michigan	Richard Curtin	Data collection and work on the Panel Study on Entrepreneurial Dynamics (PSED) II, a survey of nascent entrepreneurs.
University of Missouri, Columbia	Bruce Walker	Research by an interdisciplinary team of faculty on entrepreneurship.

ORGANIZATION	PRINCIPAL INVESTIGATOR	DESCRIPTION
University of North Carolina at Chapel Hill	James Johnson	Support for a "boot camp" for outstanding junior faculty interested in doing research on minority and women's entrepreneurship. Competitive research grants awarded.
University of North Carolina at Chapel Hill	Tony Waldrup	Research on the social and financial impact of the Bank of America's California Community Venture Funds on minority- and women-owned companies.
Washington University in St. Louis	Ken Harrington	Research in entrepreneurship among faculty in the Schools of Law, Business, and Arts & Sciences.

Notes



Endnotes

Listed numerically in order of appearance

- ¹ This timeline draws heavily from two sources: Scott Shane, “Introduction,” in *The Foundations of Entrepreneurship*, ed. Scott Shane (Northampton, MA: Edward Elgar Publishing, 2002); Richard Swedberg, “The Social Science View of Entrepreneurship: Introduction and Practical Applications,” in *Entrepreneurship: The Social Science View*, ed. Richard Swedberg (Oxford: Oxford University Press, 2000).
- ² Robert W. Fairlie, “Kauffman Index of Entrepreneurial Activity,” (Kansas City, MO: Ewing Marion Kauffman Foundation, 2005).
- ³ *2002 Survey of Business Owners Advance Report on Characteristics of Employer Business Owners: 2002: Gender, Veteran Status, Ethnicity, and Race* (U.S. Census Bureau, 2005 [cited July 29 2005]); available from <http://www.census.gov/econ/census02/sbo/sboadvance.htm>.
- ⁴ “The Third Millennium: Small Business and Entrepreneurship in the 21st Century,” (Washington, DC: United States Small Business Administration Office of Advocacy, 2000).
- ⁵ William J. Baumol, *Entrepreneurship, Innovation and Growth: The David-Goliath Symbiosis* (2002 [cited August 5 2005]); available from <http://www.econ.nyu.edu/user/baumolw/sfg.pdf>.
- ⁶ Adam B. Jaffe and Josh Lerner, *Innovation and Its Discontents: How Our Broken Patent System is Endangering Innovation and Progress, and What to Do About It* (Princeton: Princeton University Press, 2004).
- ⁷ It does not really matter that the profitability of each project offered is a matter of uncertainty—the radical kind of uncertainty that Frank Knight pointed to, for which no one can know the probabilities of the various imaginable outcomes or even all of the possible outcomes.
- ⁸ The Bradley brothers, two celebrated entrepreneurs in Minneapolis some decades ago, remarked on precisely this core aspect of entrepreneurship. “The entrepreneur,” they wrote, “has to invent a new model of the world from which to derive his business projects.” (Quoted by memory from documents ca. 1998.)

⁹ “Economic Report of the President, 2004,” (Executive Office of the President, Council of Economic Advisers, 2004).

¹⁰ This work is supported by the Kauffman Foundation and the U.S. Census Bureau. Any findings, opinions, or conclusions contained in this paper are those of the authors and do not necessarily represent the views of the U.S. Census Bureau.

¹¹ In this paper, we highlight one of several exciting data projects at U.S. statistical agencies. In another project, the Bureau of Labor Statistics (BLS) uses the Business Employment Dynamics database to publish quarterly job creation and destruction measures for the entire economy and by industry and size class. The BLS also has a new survey of job turnover (JOLTS) that provides statistics on hires, separations, and job openings. At the U.S. Census Bureau, new estimates of quarterly hires, separations, job gains, and job losses at a local level (e.g., county) are published for a growing number of states under the Longitudinal Employer Household Dynamics (LEHD) program.

¹² This note draws heavily from a detailed paper on this data infrastructure. See Steven J. Davis et al., “Measuring the Dynamics of Young and Small Businesses: Integrating the Employer and Nonemployer Universes” (paper presented at the NBER/CRIW Conference on Producer Dynamics, 2005).

¹³ Sixty-four percent of businesses are non-employer, sole proprietors.

¹⁴ Twenty-five percent of businesses are employer, single establishments.

¹⁵ Businesses less than four years old are defined as young, and those with less than \$90,000 in annual revenue are defined as small.

¹⁶ We measure the growth rate as the change from $t-1$ to t , divided by the simple average of values at $t-1$ and t . This measure is symmetric about zero, ranges from -2 to 2, and allows for an integrated treatment of births, deaths, and continuing businesses.

- ¹⁷ This type of measure is often used to summarize cross-sectional dispersion in job creation and destruction. See, for example, Steven J. Davis, John Haltiwanger, and Scott Schuh, *Job Creation and Destruction* (Cambridge, MA: MIT Press, 1996).
- ¹⁸ Phillip H. Kim and Howard E. Aldrich, "Teams That Work Together, Stay Together: Resiliency of Entrepreneurial Teams" (paper presented at the Clemson/Kauffman Symposium on the PSED, Clemson, SC, 2004).
- ¹⁹ *Harry Steenbock* (Wikipedia, July 11, 2005 [cited August 9, 2005]); available from http://en.wikipedia.org/wiki/Harry_Steenbock.
- ²⁰ The Thursbys have found in the surveys of universities and businesses that license from them, that successful transfer often requires substantial faculty involvement in further development. That is, the tacit knowledge required to develop embryonic inventions means that publication alone is often not sufficient for industry to be able to successfully pick up inventions.
- ²¹ "National Patterns of Research Development Resources: 2003," ed. Brandon Shackelford (Arlington, VA: National Science Foundation, Division of Science Resources Statistics, 2005).
- ²² Jerome A. Katz, "2004 Survey of Endowed Positions in Entrepreneurship and Related Fields in the United States," (Kansas City: Ewing Marion Kauffman Foundation, 2004).
- ²³ A special thanks to the Kenan Institute at the Kenan-Flagler Business School, University of North Carolina, Chapel Hill, for the use of publicity materials from the 2004 boot camp in the production of this article.
- ²⁴ *National Venture Capital Association Frequently Asked Questions* ([cited August 5 2005]); available from <http://www.nvca.com/faqs.html>.
- ²⁵ *2002 Survey of Business Owners Advance Report on Characteristics of Employer Business Owners: Average Number of Hours Owner Spent Managing or Working in the Business* (U.S. Census Bureau, 2005 [cited July 29 2005]); available from <http://www.census.gov/econ/census02/sbo/hours.htm>.

²⁶ Data sample drawn from the Census Bureau's Characteristics of Business Owners database. For additional information, see Timothy Bates, "Financing Disadvantaged Firms," in *Credit Markets for the Poor*, ed. Patrick Bolton and Howard Rosenthal (New York, NY: Russell Sage Foundation, 2005).

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