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Introduction

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The contribution of entrepreneurial businesses to economic growth is an often debated topic among the academic and policy-making communities and the subject of much discussion in the business and popular press. That there are high-growth entrepreneurial businesses that have made a substantial impact on the US economy, particularly in the high-tech sectors of the economy, is self-evident. High-tech start-ups from the last few decades, including Apple, Facebook, Google, and Microsoft, are now among the largest and most influential companies in the world. The entrepreneurs who founded these businesses have been the subject of much attention with in-depth profiles and popular movies about their lives and how they achieved such enormous success.

However, the high-profile, high-growth entrepreneurs are small in number relative to the hundreds of thousands of new start-ups in the United States every year. Many of the latter fail soon after they start up or do not grow. In spite of this, recent evidence suggests that start-ups and young businesses make important contributions to job creation, innovation, and productivity growth. It is now understood, for example, that the job-creating prowess of

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small businesses is better attributed to the job-creating prowess of start-ups and young businesses. However, since many start-ups fail and don't grow, it is apparent that any job-creating prowess is not shared equally among young businesses.

Understanding the enormous heterogeneity across entrepreneurs is an ongoing area of active research. Some of this heterogeneity may reflect differences in aspirations and abilities across entrepreneurs. Alternatively, it may reflect differences in economic circumstances and business conditions facing entrepreneurs. Our ability to accurately track how businesses perform in a complex economic and financial environment is hampered by difficult measurement challenges. The US statistical agencies have traditionally focused on large, mature businesses in their measurement of business activity. The logic is that large, mature businesses account for most activity so this focus facilitates obtaining precise measures of the level of US economic activity (e.g., employment or gross domestic product [GDP]). This has implied that there has been less information and data collected for tracking entrepreneurial business activity. However, as it has become apparent that entrepreneurial businesses are critical for understanding the growth in US business activity, there is increased attention to measuring and tracking entrepreneurial businesses. The increased attention to entrepreneurial businesses has been made easier by the increased use of administrative data in tracking business activity.

In December of 2014 the Conference on Research in Income and Wealth (CRIW) of the National Bureau of Economic Research (NBER) held a conference in Washington, DC, to provide a forum where economists, data providers, and data analysts could present research on the state of entrepreneurship and to address the challenges we face in understanding this dynamic part of our economies. The conference invited participants to present papers from a theoretical and empirical perspective and to set an agenda for the future of entrepreneurial research. The conference drew participants from academia, government, and nonacademic research institutions. This volume includes the papers presented at the conference. The papers have undergone review and, in some cases, substantial revision since their presentation at the conference.

The themes of the conference address the challenges of measuring entrepreneurship and the contribution of entrepreneurial firms to our economies and ultimately our standards of living. The most basic questions are still under investigation. What characterizes an entrepreneur? What are their goals and motivations? How do they bring them about? Where do their ideas originate from? What is the role of founding teams? How do entrepreneurs finance their operations? What types of employees do they hire? What is their contribution to innovation and productivity growth? How is the entrepreneur and the entrepreneurial firm changing over time? How did entrepreneurs fare during the Great Recession?

Addressing these questions requires progress both conceptually and in terms of economic measurement. The chapters in this volume tackle these conceptual and measurement questions from a variety of different perspectives. Chapters in the volume fit into three broad themes but with substantial overlap, especially given the focus on economics measurement. The first broad theme is to explore entrepreneurial heterogeneity. Some chapters explore the role of high-growth, high-impact entrepreneurs while others explore the vast majority of entrepreneurs that don't grow. Another component of this theme is to explore how differences in individual backgrounds are important for understanding entrepreneurial heterogeneity. The second broad theme is the challenges that entrepreneurs face and how this has varied over time, including over the business cycle. The chapters in the volume that address these issues focus on what we know based on existing evidence and the measurement gaps. The third broad theme is found in chapters that focus on core data and measurement issues and gaps. Some of these chapters discuss new data infrastructure projects under development that have the promise to improve our understanding of the contribution of entrepreneurship to the economy substantially. Others highlight that, in some cases, we know even less than we think we know about entrepreneurship given data limitations that are not well recognized or understood.

Entrepreneurial Heterogeneity

The first few chapters in the volume address one of the key challenges of entrepreneurship research: understanding heterogeneity in the nature of entrepreneurs. The first two chapters focus on high-growth, high-impact entrepreneurs. In "High-Growth Young Firms: Contribution to Job, Output, and Productivity Growth," John Haltiwanger, Ron S Jarmin, Robert Kulick, and Javier Miranda investigate the contribution of high-growth firms in the United States to economic performance. As they note, most of the recent evidence on the contribution of high-growth firms has been to job creation. The authors build on the Census Bureau Longitudinal Business Database (LBD) to create a universe file of employer businesses that incorporate gross output (real revenue) measures. This permits their exploring the contribution of high-growth firms to output and productivity growth. The authors define high-growth firms as those that grow in excess of 25 percent from one year to the next. The authors find that the patterns for high-output-growth firms largely mimic those for high-employment-growth firms. High-growth firms (whether in terms of jobs or output) are rare but contribute disproportionately to overall economic growth. The share of activity accounted for by high-growth output and employment firms varies substantially across industries. High-growth industries include the high-tech and energy-related industries. Firms in small business-intensive industries are less likely to be high-output growth, but small business-intensive industries do not have significantly smaller shares of either employment or output activity accounted for by high-growth firms. The authors also find that high-growth businesses contribute disproportionately to productivity growth.

In "Nowcasting and Placecasting Entrepreneurial Quality and Performance," Jorge Guzman and Scott Stern propose a method to identify high-quality, high-growth firms at time of inception, well before they have demonstrated successful outcomes. The authors focus on incorporated businesses from public-use records linked to business outcome measures, including achieving an initial public offering (IPO) or a significant acquisition. The authors estimate entrepreneurial quality or the probability of high-growth outcome as a function of start-up characteristics observable at or near the time of initial business registration, such as firm name or filing for a trademark/patent. Guzman and Stern implement this approach using data from the state business registry of Massachusetts from 1988 to 2014. The authors find that more than 75 percent of growth outcomes occur in the top 5 percent of their estimated quality distribution. The authors propose two new economic statistics for the measurement of entrepreneurship: the Entrepreneurship Quality Index (EQI) and the Regional Entrepreneurship Cohort Potential Index (RECPI). They find a high correlation between an index that depends only on information directly observable from business registration records and that can be calculated in real time with an index that allows for a two-year lag that allows the estimate of entrepreneurial quality to incorporate early milestones of success. The authors argue these indices are of substantial policy relevance in that they allow for the characterization of entrepreneurial attitude and quality at any arbitrary level of geographic granularity and over time.

The first two chapters focus on the high-growth, high-impact firms. Both of those chapters emphasize that such firms are rare. A third chapter turns toward describing the incentives and dynamics of the vast majority of start-ups that do not grow. In "Wealth, Tastes, and Entrepreneurial Choice," Erik G. Hurst and Benjamin W. Pugsley argue the nonpecuniary benefits of managing a small business are a first-order consideration for many entrepreneurs. The authors develop a model of occupational choice based on heterogeneous taste for entrepreneurship. In this model, individuals differ in their utility from owning a business but are otherwise equal; the model abstracts away from differences in entrepreneurial ability, entrepreneurial luck, or binding liquidity constraints. The authors are able to predict several features of the data with this simple model, including the observation that there are many small businesses in industries with low entry costs. The model also predicts that owning a business is a relative luxury good and that small business subsidies are regressive.

Another set of chapters investigate the characteristics and nature of entrepreneurs. In “Are Founder CEOs Good Managers?” Victor Manuel Bennett, Megan Lawrence, and Raffaella Sadun investigate the management practices adopted by firms where the founders are also the CEOs using data from the World Management Survey. The authors find that founder CEO firms have the lowest management scores of any owner-manager pair type and that this difference is associated with significant performance differentials. The authors argue the managerial gap of founder CEO firms is likely due to either informational problems leading to suboptimal managerial practices or to nonpecuniary returns to inefficient but power-preserving practices.

A related set of questions are about who becomes an entrepreneur and how the heterogeneous characteristics of entrepreneurs impact outcomes. One important question in this context is the connection between immigration and entrepreneurship. In “Immigrant Entrepreneurship,” Sari Pekkala Kerr and William R. Kerr examine immigrant entrepreneurship and the survival and growth of immigrant-founded businesses over time relative to native-founded companies. The analysis quantifies immigrant contributions to new firm creation in a wide variety of fields and using multiple definitions. A theme of the chapter is that it is difficult to assemble comprehensive data for assessing the contribution of immigration to entrepreneurship in the United States. These authors seek to overcome this limitation by combining several restricted-access US Census Bureau data sets to create a unique longitudinal data platform that covers the time period 1992–2008 and many states. They describe differences in the types of businesses initially formed by immigrants and their medium-term growth patterns. One core challenge they face is that data on the characteristics of founders, including their immigration status is limited, especially in the context of the databases that have been assembled to track new businesses and their dynamics in the United States. The authors discuss how they have overcome this limitation and also make constructive suggestions about improvements that need to be made to explore this and related questions about the characteristics of entrepreneurs.

Challenges Facing Entrepreneurs: Finance and Business Conditions

There is accumulating evidence that entrepreneurs are hit hard during economic downturns, especially those that involve a financial crisis like the Great Recession. In “How Did Young Firms Fare during the Great Recession? Evidence from the Kauffman Firm Survey,” Rebecca Zarutskie and Tiantian Yang examine the evolution of several key firm economic and financial variables in the years surrounding and during the Great Recession using the Kauffman Firm Survey, a large panel of young firms founded in 2004 and surveyed for eight consecutive years. The authors find that young firms experienced slower growth in revenues, employment, and assets and faced tighter financing conditions during the recessionary years. The authors also find some evidence that firm growth picked up following the recession, but not to previous levels. They also find financial constraints continued in the period immediately following.

Related themes are explored in the chapter "Small Businesses and Small Business Finance during the Financial Crisis and the Great Recession: New Evidence from the Survey of Consumer Finances," by Arthur B. Kennickell, Myron L. Kwast, and Jonathan Pogach. The authors use multiple years of the Federal Reserve's Survey of Consumer Finances (SCF) to examine the experiences of small businesses owned and actively managed by households during the Great Recession and its aftermath. This is the first chapter to use the SCF to study small business. The authors provide a road map for using the SCF for this purpose. The data contain a broad cross section of firms and their owners. The authors find the majority of small businesses were severely credit constrained during the financial crisis and the Great Recession. The authors document complex interdependencies between the finances of small businesses and their owners with an important role for housing real estate assets.

Due to the perceived importance of entrepreneurial ventures for economic growth, it is not surprising that governmental policies often attempt to facilitate the creation and growth of young businesses. The next two chapters explore government programs intended to encourage entrepreneurial activity. In "Does Unemployment Insurance Change the Selection into Entrepreneurship?" Johan Hombert, Antoinette Schoar, David Sraer, and David Thesmar explore entrepreneurial performance in response to a reform of the unemployment insurance system in France that lead to a 25 percent increase in the supply of newly created firms. The authors explore whether the predictive ability of different markers of entrepreneurial success such as the presence of a growth plan changed with the reform. They find they did not, suggesting entrepreneurial quality did not decline with this policy stimulating entrepreneurship.

In "Job Creation, Small versus Large versus Young, and the SBA," J. David Brown, John S. Earle, and Yana Morgulis analyze a list of all Small Business Administration (SBA) loans between 1991 and 2009 linked with annual information on all US employers from the Census Bureau. The authors estimate the variation in SBA loan effects on job creation and firm survival across firm age and size groups. They find the estimated number of jobs created per million dollars of loans within the small business sector generally increases with size and decreases in age. They also find young firms are particularly vulnerable to exit and benefit the most in this regard from the loans. The authors argue this is consistent with small, mature firms being least financially constrained in their growth while young, faster-growing firms experience the greatest financial constraints to growth.

Data Gaps and Promising Avenues for the Future

One of the core questions about entrepreneurship is the role of financing. For high-growth, high-impact firms, obtaining venture capital funding is often part of the path to success. While this market and its impact on entrepreneurial activity has been the focus of active study, Steven N. Kaplan and Josh Lerner raise a variety of questions about the quality of the data commonly used for this purpose in their chapter, "Venture Capital Data: Opportunities and Challenges." The chapter carefully reviews commercial and private data sources and research on venture capital investments and performance. After careful review of the primary data and the research using that data, the authors conclude that the availability of data as well as the consistency of the academic findings using these data are still lacking. The authors also see and are careful to highlight opportunities for data improvement. The authors briefly discuss the efforts by a new nonprofit research institute to create a high-quality database that will be accessible to researchers under conditions that will ensure the protection and confidentiality of VC's data.

In the final chapter, "The Promise and Potential of Linked Employer-Employee Data for Entrepreneurship Research," Christopher Goetz, Henry Hyatt, Erika McEntarfer, and Kristin Sandusky describe newly available (and early prototypes of) public-use statistics from the Longitudinal Employer Household Dynamics program of the US Census Bureau. These data provide additional detail about the structure and workforce of entrepreneurial firms and about the dynamics of entrepreneurial employment. The new data include new quarterly workforce dynamic indicators by firm age, worker flows across firms, and a proposed new series describing sole proprietors' businesses that includes owner information. These new public-use statistics fill some gaps in the available data on entrepreneurship. They provide researchers with a rich set of new data to explore the early workforce dynamics of entrepreneurial firms, where they draw their workers from, as well as movements from self-employment to sole proprietor. The microdata on entrepreneurs underlying this effort also offers great promise for future research.

Conclusions

It is an exciting time for the field of entrepreneurship. There is increased attention on the role of entrepreneurs in the economy from the academic, statistical, and policy-making communities. In academia, programs of study focusing on entrepreneurs are increasingly common. Developments of administrative data tracking businesses as well as private data sources are providing new opportunities for the study of entrepreneurship. However, as emphasized by the chapters in this volume, there are many core open questions about entrepreneurship that involve both conceptual and measurement issues. It is our hope that the community developing and studying the data on entrepreneurship can use the accumulated knowledge and wisdom embodied in the chapters in this volume to make progress on these issues in the years to come.

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