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Entrepreneurship and Innovation at MIT: Continuing Global Growth and Impact—An Updated Report

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Entrepreneurship and Innovation at MIT: Continuing Global Growth and Impact—An Updated Report

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ABSTRACT

This study analyzes the economic impact of MIT alumni-founded companies and highlights the key trends in the MIT entrepreneurial ecosystem between 1950 and 2014. Based on a large-scale survey of all living MIT alumni in 2014, this study is a major update to Roberts and Eesley (2011). It systematically characterizes alumni engagement in the broader innovation ecosystem through not only starting new companies, but also patenting, investing as angel investors, and joining startup firms as early employees. We highlight the role of foreign-born students as entrepreneurs and innovators as well as key trends in the alumni-founded ventures' industry composition, firm performance, and economic impact through job creation and sales. Based on the lessons from MIT in the past 60 years, we discuss various implications for university leadership for designing and implementing educational curricula and programs that address

the evolving nature of alumni entrepreneurship and innovation. Lastly, the appendix describes our methodological approach to extrapolating survey results and contributes to the literature on survey-based research methods.

Keywords: university role in entrepreneurship; entrepreneurship education and support; entrepreneurial economic impact.

1

Introduction

Leading research-based universities play a significant role in stimulating and sustaining U.S. economic growth. These institutions educate not only productive workers who create value as employees of large established firms but also entrepreneurs who commercialize ideas—often research-based—and build innovation-driven enterprises. These company founders (and their early employees) exert a major ripple effect in both local and global economies, as new companies have the potential to scale rapidly and thus create jobs. This is especially true for companies based on emerging science, technology, or other sources of innovative concepts, whether in manufacturing process, distribution approaches, or newly defined markets. U.S. economic data demonstrate that start-up businesses are the primary driver of job growth and are responsible for a disproportionately high share of job creation, with new and high-growth young firms accounting for roughly 70% of gross job creation.

In 2003, in the first study of its kind, Professor Edward Roberts along with then PhD student Charles Eesley developed a survey to explore the entrepreneurial activities of MIT alumni, in particular the rate, location, and success of their new enterprises. Since then, other universities, including Stanford, Tsinghua (China), the Technion (Israel),

and University of Virginia, have conducted similar studies of their own alumni entrepreneurs. Several studies limited to the entrepreneurial alumni of business schools have been carried out as well.

The findings from the initial MIT survey indicated that MIT alumni were significantly engaged in new enterprise formation. Over 20% of respondents had started one or more for-profit ventures that were still in business in 2006, the year of final data collection. More than 26% of those firms were located in Massachusetts, with the next largest concentration (22%) in California. Nearly 40% of those who reported founding a company were “serial” entrepreneurs (i.e., had started more than one company), with an average of 3.25 start-ups per person.

In 2014—a decade later—we updated the survey to explore the continuing contribution of MIT alumni to innovation and entrepreneurship in the United States and worldwide. This update is particularly salient given the burgeoning interest in the role of universities in economic growth and the fact that students who graduated between 2004 and 2014 faced a more difficult economic climate. On the one hand, fund raising and capital access became more challenging as the U.S. economy entered a period of deep recession starting at the end of 2007, and venture capital assets and investments declined. On the other hand, entrepreneurship concurrently became a potentially more appealing career choice due both to structural and perceptual changes in traditional employment and occupations, as well as to an apparent groundswell in young people’s interests in entrepreneurial endeavors. For instance, the proportion of MIT undergraduates selecting employment in venture capital-backed start-ups upon graduation increased from less than 2% in 2006 to 15% in 2014.

Overall, our new findings indicate that MIT alumni are engaged in entrepreneurship and innovation (E&I) at ever increasing rates, and at earlier and earlier stages in their lives.

The MIT Admissions Office informs us that this trend continues: the dominant percentage of undergraduate applicants to the Institute want to contribute significantly to important global challenges at all stages of the idea-to-impact process—from invention and patenting to venture-creation projects within large corporations to launching their own start-ups. Our results confirm that many act on these aspirations

once they leave MIT. The following findings have particularly important implications for how we educate the coming generation of global innovators:

Of our alumni survey respondents, 31% have filed patents and 34% consider themselves inventors.

Twenty-five percent of the online survey respondents have engaged in new company formation. (Thirty-five percent of alumni who responded to a follow-up telephone survey had started one or more businesses.)

The proportion of respondents who founded a venture within five years of graduation rose from 4% among those who graduated in the 1960s to 8% among those who graduated in the 1990s. The study also revealed another growth trend in MIT entrepreneurship over time: The number of companies founded per 100 active alumni increased from 6 among those who graduated in the 1970s to 12 among those who graduated in the 1990s.

Twenty-two percent of our alumni respondents have worked as employees of early-stage ventures, indicating their engagement not only in the formation but also in the growth of new firms; 38% of these early employees later went on to start their own company.

Our alumni have increasingly engaged in funding innovation projects: 16% of respondents have invested in new companies (that they did not found). Seventeen percent have participated in crowdfunding to support the invention of a new product or service, a new phenomenon in which graduates from the 2000s in particular have engaged.

Of the alumni surveyed, 17% serve as board members of for-profit companies; and 11% serve on a firm's scientific advisory board.

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