

Research Statement – Charles Eesley

Overview

My research can be divided into work on entrepreneurial firms and on established firms. The work on entrepreneurial firms focuses on the role of two different but critical factors in shaping entrepreneurial outcomes: individual level career history and the institutional context. My work spans two outcomes in particular: individual decisions to choose high-tech entrepreneurial activities and the strategies and outcomes of the entrepreneurial firms that are established.

Entrepreneurial Firms

My research is motivated by the current and future economic importance of high tech entrepreneurs. Their importance will only increase as competition for innovation increases. The challenges faced by entrepreneurs are particularly salient in developing countries yet we know much less about high tech entrepreneurship outside of the United States and Europe. There is an increasing focus on international research and exciting results can be expected from the novel theoretical issues which data on entrepreneurship in other countries uniquely sheds light on. I stand on the shoulders of giants in terms of the attention that human capital, work history and institutions have received. Yet there is still a gap in understanding the various mechanisms by which these factors impact entrepreneurial outcomes. While the field has made some progress, many unanswered questions remain; particular those that help policymakers and entrepreneurs understand causal relationships.

Besides being important for our theoretical understanding of entrepreneurial decisions and firm heterogeneity in outcomes, the question of what is the optimal training for potential entrepreneurs has great practical importance both for MBA students planning entrepreneurial careers and for investors making critical investment and co-founder decisions. My work differs from prior literature in these areas in three ways 1) by looking more at individual factors rather than the characteristics of their past firms; 2) by using natural experiments to disentangle confounding factors, and; 3) examining how the institutional context may alter the links between human capital and entrepreneurship.

Selection into Entrepreneurship

My job market paper, “*Who has ‘The Right Stuff’? Human Capital, Entrepreneurship and Institutional Change in China*” examines a model distinguishing barriers to entry from barriers to growth. It exploits a natural experiment to identify effects on individuals at different locations on a talent distribution. The paper asks whether the 1999 Chinese Constitutional amendment increased entrepreneurship among those individuals with higher (or lower) levels of human capital. The type of institutional environment that results in higher quality entrepreneurs is a question that has not been systematically explored previously. The results have implications for our theoretical understanding of the interplay of institutional and individual factors in entrepreneurship, as well as important policy implications given the desire of governments to encourage high impact technology entrepreneurship.

The difficulty in studying the institutional drivers of changes in the distribution of talent drawn into entrepreneurship is two-fold. First, one needs a context with an exogenous change in institutions. Second, obtaining detailed data on human capital levels for a comparable ‘at-risk’ set of individuals is difficult. For this study, I collected original data through a survey sent to all alumni of Tsinghua University, (Beijing) including data on graduates from 1947 to 2007, along with interviews in the

People's Republic of China during the summer of 2007. This is the first large scale dataset of technically trained Chinese entrepreneurs and the first alumni survey abroad. To study how different institutional environments may differentially impact the propensity for entrepreneurship among more talented individuals, a differences-in-differences approach is implemented. The data include panel data on income along with detailed work history and educational information.

In conventional analyses, lowering barriers to entry releases pent-up entrepreneurship among those with entrepreneurial ability, but who were previously constrained. My paper argues that reforms lowering barriers to growth encourage those of higher ability to choose entrepreneurship over wage work through an increase in expected returns. I find that the greatest increase in entrepreneurship in the post-2000 institutional development was among individuals at the top of the talent distribution. The findings suggest that entrepreneurship among high quality individuals is driven less by the relaxation of constraints to entry (which are relatively easy to overcome) and more by constraints to firm growth.

Also examining selection into entrepreneurship, "*Entrepreneurs from Technology-Based Universities: Evidence from MIT*", joint work with Professors David Hsu (Wharton) and Edward Roberts (MIT) has been published in *Research Policy*. The paper uses unique data from the MIT Founder's Survey covering over four decades of graduates. It studies trends over time in who has become an entrepreneur and how the rate of entrepreneurship varies with the external macro-economic environment. We find that the median age of first time entrepreneurs is declining and that alumni who are not U.S. citizens have higher rates of entrepreneurship than their U.S. peers.

Firm Strategy and Outcomes

My research on firm performance examines individual level factors and idea quality effects on entrepreneurial performance. It is unique in distinguishing effects on different stages of performance, disentangling prior founding experience from underlying ability and again in examining different institutional contexts.

My paper entitled "*Cutting Your Teeth: Learning from Rare Experiences*" with Professor Edward Roberts looks at evidence for improvements in performance due to learning-by-doing in a context of rare, heterogeneous events. This paper investigates whether prior founding experience improves subsequent start-up firm performance. Distinguishing the effects of higher ability individuals selecting into serial entrepreneurship from a learning-by-doing story requires detailed data on each firm started by an entrepreneur, regardless of its success or venture capital funding. I exploit such data from the MIT Founder's Survey (Hsu, Roberts, Eesley 2007) to analyze multiple measures of performance with (and without) individual fixed effects as a control for underlying individual-level factors such as skill or persistence. The results provide evidence consistent with a learning-by-doing story. Next, my paper "*Entrepreneurial Ventures from Technology-Based Universities: Evidence from MIT*" joint with David Hsu (Wharton) and Edward Roberts (MIT) examines whether individual level factors or idea quality play a bigger role in start-up performance over time.

Another paper, "*Comparing High Tech Entrepreneurial Ventures from the U.S. and China*" (still in progress) will take advantage of the comparable data from the MIT and Tsinghua surveys on individuals with similar educational backgrounds in top engineering schools who are starting firms in very similar industries (dominated by electronics and software). A key question is whether there may be different drivers of performance in each country and whether these may be converging over

time or diverging due to different institutional environments or funding sources. Multiple outcome and performance measures are available for both the US and Chinese firms including revenues, employees, and fundraising performance.

The most important lessons that motivate my detailed research agenda are two-fold. First, we have only just begun to understand the connections between levels of individual (and team) human capital or ability and the dynamics of firm founding. Entrepreneurs are a very heterogeneous group and implications from the current literature are mainly of a one-size-fits-all type. Second, if we hope to better understand the commercialization of innovation via entrepreneurship, we must do better at identifying causal mechanisms, rather than examining correlations where multiple interpretations are possible. I am beginning to discuss and develop ideas for an exciting new project using experimental methodologies and randomization to look at previously intractable strategic issues related to performance in entrepreneurship. Field experiments are more straightforward to generalize from than lab experiments, but are more challenging to fund and implement. Nonetheless, the benefits to our understanding from field experiments among high tech entrepreneurs either in developing countries like China and India, or even in developed countries are tremendously exciting.

The methodological bar of our field will only continue to move higher, and I plan to be at the forefront of using experimental methods to overcome challenges to identifying clear relationships between strategy and entrepreneurial firm performance. Funding could be raised for a randomization program of selecting a population of high tech start-ups, (perhaps in India) and treating one group by connecting with them with a business (or technical) mentor, aiding in the recruitment of a head of marketing, or providing educational training while the other group is left untreated. Other experimental methods could include deception studies or hiring actors. Local governments, the World Bank or venture philanthropy groups like the Bill and Melinda Gates Foundation could be interested if the policy implications of the results were clear enough. My own previous experience in successfully writing grants, fundraising, getting Institutional Review Board (IRB) approvals, and doing field work in developing countries (India and China) will aid this endeavor. While I feel the focus should be on the drivers of technology start-up performance, I am taking the time to carefully plan the rest of the details before embarking on such a project.

Established Firms

A second, related stream of my research examines the institutional, or non-market strategies of firms and stakeholder organizations as they seek to provide firms with incentives to internalize their negative externalities and innovate in the direction of clean energy and environmentally-friendly practices. This research stream is related in two ways. First it also examines institutional levels and second it explores mechanisms that alter the direction of innovation in society. Just as entrepreneurs unleash a gale of creative destruction and explore new markets and technologies before incumbents commercialize them, emerging scholarship hints that external stakeholder groups and non-profit organizations may play a role in providing incentives for firms to search and innovate in new directions.

In this joint work with Michael Lenox (UVA), I hand-collected archival data of newspaper reports of protests, boycotts, civil suits and other actions from Lexis-Nexis, supplemented by Lexis-Nexis Legal from 1971-2003. This large database includes data on firms targeted for environmental offenses and whether they improved their environmental performance. The first paper from this project, "Secondary Stakeholders and Firm Self-Regulation" has been published in *Strategic*

Management Journal. It uses an approach combining stakeholder and resource dependency theories. We examine under what conditions secondary stakeholder groups can effectively pressure firms to improve their environmental practices. The results strongly support our hypotheses that stakeholder groups with greater power relative to the target firm (in terms of resources) and those requests which are seen as more legitimate in the eyes of the public are more likely to induce a positive response from the firm. This work builds on the emerging area of institutional strategy and suggests mechanisms by which industries can be induced to self-regulate.

Work is also underway with Michael Lenox and Katy Decelles (Univ. of Michigan) to supplement this data with more recent Web 2.0 data from 2000-2008. Using sophisticated rhetorical analysis software we track certain keywords. This methodology allows us to track time-stamped archival data on websites, blogs and other new media sources to examine the temporal structure of multiple, coordinated campaigns against firms targeted over global warming issues.

Summary

To mitigate the success bias inherent in past research I have developed and used a methodology of unique surveys (of university alumni). Each dataset is expected to yield multiple papers. I have also used archival methods and simulation. My research is grounded in an understanding of the context and relevant questions built through interviews. More in-depth fieldwork is planned and my prior experience in entrepreneurship and in scientific labs has motivated my work. Even when working with large datasets, a detailed understanding of the context is invaluable. While grounded in theoretical and methodological tools drawing from economics, I have always benefited from colleagues with diverse approaches and lenses.

To summarize, the fundamental questions driving my research are: What determines the direction (and rate) of innovative activities and what explains the heterogeneity in the ability of new firms to commercialize breakthroughs in science and technology? I am particularly interested in how individuals may be encouraged to become high tech entrepreneurs by shifts in policy and the institutional environment, and the strategic direction and performance of their new ventures. My research examines three mechanisms for a relationship between pre-founding experience and entrepreneurship. First, the institutional environment may shape the types of individuals deciding to engage in entrepreneurship. Second, entrepreneurs may benefit from the skills gained during a previous start-up. Third, factors in the institutional environment across countries may alter the human capital characteristics that drive entrepreneurial outcomes. I look forward to continuing to contribute to what I see as important and exciting research with both past and future colleagues.

References

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