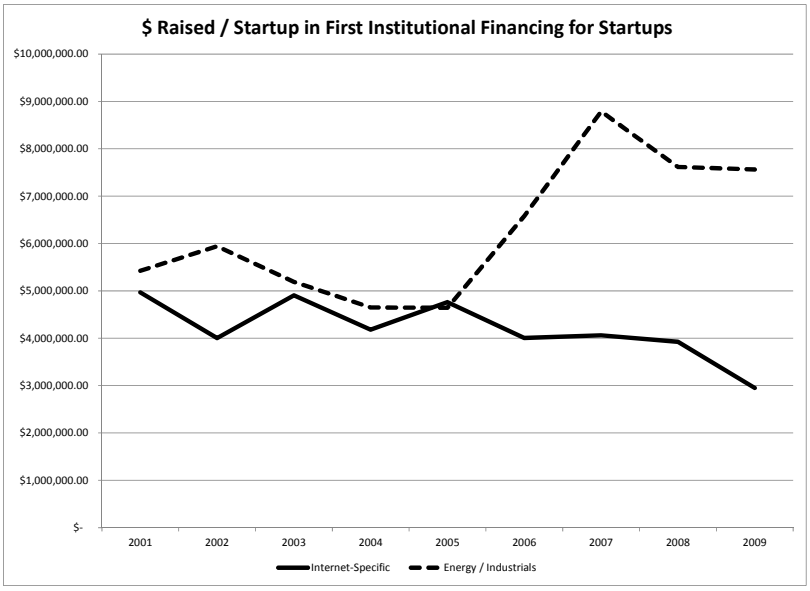
The Changing Face of VC-backed Entrepreneurs

Proposal to NBER Conference on the Changing Financing Market for Entrepreneurship and Innovation

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In the past decade, the venture capital industry has seen two opposing trends in terms of the capital required to build new businesses. On the one hand, certain industries such as consumer internet and mobile applications have experienced declines in the external financing required to build businesses, driven by technological advancement and ability to rent rather than build all the non-core elements of a new innovation.[1] This fall has been associated with the rapid rise of Angel and "Super Angel" investors, who actively compete with venture capital funds for investments. On the other hand, venture capital investors have made forays into extremely capital-intensive industries such as clean energy, where startups raise several hundred million dollars and take many years to build demonstration plants before they know if their technology even works. The figure below shows descriptive evidence of such trends, looking at the average investment in the first institutional round of funding for ventures in Internet startups and Energy startups.



Source: NVCA data on number of deals and total dollars invested in First Institutional Financings

In this paper, we aim to build on the theoretical work in Nanda and Rhodes-Kropf (2012) by looking at whether the lower cost of experimentation in some industries is systematically related to types of entrepreneurs that VCs are willing to back in the first place.

In particular, we hypothesize that the rapid fall in the cost of experimentation in some industries relative to others has a large impact on VC's abandonment options and therefore, should affect the way in which

[1] For example, the use of cloud computing, outsourced coding labor and growth of open source software solutions and the movement towards "lean startups".

they select and manage their portfolio of investments. We plan to examine these changes by looking at the characteristics of the entrepreneurs that VCs back. For example, we should expect to see relatively unproven teams of founders getting financed to try radical new ideas in industries such as consumer internet because the fall in the cost of experimentation increases the value of VC's abandonment options and makes them more willing to take on more speculative investments. This should be much less true in the case of industries such as clean energy. In addition, we may see that VCs will manage their portfolios differently in different industries– by taking on a larger set of investments initially, and having a sharper 'funnel' of projects given that they are more likely to abandon their initial investment.

We have a deal-level database of Venture Capital financing through Dow Jones Venture Source that provides the universe of venture capital financings in the United States over the period 1990-2010. In addition, we have matched in the names of over 30,000 founders/CEOs of these startups. This provides the basis for our analysis on the changing characteristics of founders over time. We are in the process of putting together information on founder characteristics along the following dimensions:

1. Founder Age at first funding
2. Past employment history of founder (including whether they were serial entrepreneurs)
3. Basic measures of 'pedigree' – e.g. went to Ivy League School
4. Whether the founder had a patent at the time of funding
5. CEO turnover at the firm (whether the founder moved out of the CEO role)

Doing so will allow us to (1) Examine the characteristics of entrepreneurs backed by VCs and how these have evolved in the last two decades and (2) Relate these changes to systematic differences in the ways in which VCs manage their portfolios and differences in the cost of experimentation across industries.

Although our framework is essentially set up to document a set of correlations, our data will allow us to employ VC-firm fixed effects, so that the patterns we document will be within VC-changes over time. In addition, our empirical strategy will aim to exploit differences in both industry and geographic variation in the cost of experimentation as a way to separate general trends in the types of individuals becoming entrepreneurs from those related to the changing nature of opportunities faced by venture capital investors. In particular, we are looking into whether we can exploit discrete shocks to the cost of experimentation (such as the advent of the internet or cloud computing) and look at whether industries more impacted by these changes experienced disproportionate changes in the outcomes relative to those that were not (e.g. biotechnology, computer hardware or industrial and energy startups).