

**With a Little Help from My (Random) Friends:**  
**Success and Failure in Post-Business School Entrepreneurship<sup>\*</sup>**

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*An important question in the entrepreneurship literature is whether peers affect the decision to become an entrepreneur. We exploit the fact that Harvard Business School assigns students into sections, which have varying representation of former entrepreneurs. We find that the presence of entrepreneurial peers strongly predicts subsequent entrepreneurship rates of students who did not have an entrepreneurial background, but in a more complex way than the literature has previously suggested. A higher share of students with an entrepreneurial background in a given section leads to their peers to lower rather than higher subsequent rates of entrepreneurship. However, the decrease in entrepreneurship is entirely driven by a reduction in unsuccessful entrepreneurial ventures. The relationship between the shares of pre-HBS and successful post-HBS peer entrepreneurs is insignificantly positive. In addition, sections with few prior entrepreneurs have similar enrollment rates in elective entrepreneurship classes and a considerably higher variance in their rates of unsuccessful entrepreneurs. We argue that these results are consistent with intra-section learning, where the close ties between section-mates lead to insights about the merits of business plans.*

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## **I. Introduction**

The promotion of entrepreneurship has been a major focus of policymakers in recent years (see Kanniainen and Keuschnigg [2004]). Thousands of national and local initiatives have been launched in the belief that entrepreneurial activity is associated with the creation of wealth, technological innovation, and increased social welfare. Consistent with this assertion, cross-national studies (e.g., Djankov, et al. [2002]) suggest that nations with greater barriers to entry of new firms also have poorer-functioning and more corrupt economies.

At the same time, entrepreneurship can have real costs. Individuals can be diverted from more productive careers into lucrative entrepreneurial ventures which may add little to the welfare of society as a whole (Baumol [1990]; Murphy, Shleifer, and Vishny [1991]). An emerging literature on “behavioral entrepreneurship” suggests that individuals may pursue new ventures even if the returns are predictably meager (Camerer and Lovallo [1990]; de Meza and Southey [1996]; Arabsheibani, et al. [2000]). Bernardo and Welch [2001] highlight the phenomenon of “entrepreneurial cascades,” where the decision of one individual to become an entrepreneur may encourage others to do likewise, even though the returns to this activity are poor.

The arguments have received empirical support. Evans and Leighton [1989] show that individuals with a greater “locus of control”—a belief that their performance depends largely on their actions—are more likely to become entrepreneurs. Landier and Thesmar [2007] classify French entrepreneurs into optimists and pessimists based on their financing choices (e.g., the use of long- and short-term debt) and find that firms run by optimists tend to grow less, die sooner, and be less profitable, despite the fact that these owners tend to put in more effort. And the high rates of failure of entrepreneurial ventures have been well-documented (see, for instance, Davis, Haltiwanger, and Schuh [1998]).

An area of particular recent interest has been the impact of peer effects on productive and unproductive entrepreneurship. In many areas of economics, researchers have asked whether interactions among high-skilled individuals with similar interests lead to large social multipliers. In our context, the dramatic levels of entrepreneurship in

regions such as Silicon Valley have led to speculation that powerful peer effects are at work in the decision to become entrepreneurs. Studies have shown that individuals who work at recently formed, venture-backed firms are more likely to become entrepreneurs (Gompers, Lerner and Scharfstein [2005]), as are those who work at companies where colleagues become entrepreneurs (Nanda and Sorensen [2007]) and in regions where many others opt for entrepreneurship (Giannetti and Simonov [2007]). These papers suggest an unequivocally positive effect of “entrepreneurial environment” and “entrepreneurial peers.” While all these studies suggest that peer effects are important determinants of entrepreneurial activity, their inability to fully control for unobserved heterogeneity or sorting of individuals into firms and locations means our interpretation of these results must be cautious.

This paper explores peer effects in entrepreneurship in a particularly promising setting, the Masters of Business Administration (MBA) program at Harvard Business School (HBS). Unlike earlier work, we are able to exploit a truly random element when assessing peer effects: the assignment of MBAs by School administrators into sections, i.e., groups of typically 80 to 90 students who spend the entirety of their first year in the program studying and working together. These sections form extremely close ties, and are a setting where peer effects—if they are to be empirically observable at all—would be likely to be seen. We exploit the fact that the representation of students with entrepreneurial backgrounds varies considerably across sections to evaluate the impact of peers on the decision to become an entrepreneur, as well as on entrepreneurial success.

In addition to the appeal of the random assignment of students, this setting is attractive for other reasons. Many of the primary data sources most frequently used in entrepreneurship research, such as data compiled by the Bureau of the Census, the Internal Revenue Service, and in the Panel Study of Entrepreneurial Dynamics, have substantial limitations in terms of the types of entrepreneurial activity that can be observed. As the recent literature review by Parker [2004] highlights, most empirical studies have focused on the decision to become self-employed (e.g., as a groundskeeper or consultant) rather than the founding of an entrepreneurial firm. In fact, in many databases, founders of entrepreneurial companies cannot be distinguished from employees of established firms. In this setting, we can focus on the founding of

entrepreneurial firms, both in the classification of peers with entrepreneurial experience prior to entering Harvard Business School (pre-HBS entrepreneurs) and in the classification of graduates (post-HBS entrepreneurs).<sup>1</sup>

A second challenge facing much of the earlier empirical work is that the importance of entrepreneurial entities varies tremendously. While the bulk of entrepreneurial ventures simply replicate other entities and have a very limited growth potential, a small number of ventures create enormous wealth and have a profound economic impact. We are able to employ the extensive recordkeeping and research at Harvard Business School about its entrepreneurial alumni to assess the outcomes of these ventures. Historically, Harvard Business School students have been instrumental in founding leading firms in a variety of industries (e.g., the Blackstone Group, Bloomberg, LLP, and the modern Xerox Corporation; for many more examples, see Cruikshank [2005]). Even within our relatively recent sample, we encounter early-career HBS entrepreneurs founding highly successful firms, such as athenahealth (publicly traded, with a market capitalization of \$1.5 billion in November 2007) and SupplierMarket (acquired by Ariba for \$581 million).

We find a striking pattern. When we look at the rate of post-HBS entrepreneurship across sections for students without an entrepreneurial background, we find that exposure to a higher share of peers with a pre-HBS entrepreneurial background leads to *lower* rates of entrepreneurship post-HBS, very much in contrast to the literature evaluating peer effects without randomization. In a number of specifications, a one standard deviation increase in the share of peers with pre-HBS entrepreneurial background in a section (evaluated at the mean of the various independent variables) reduces the predicted share of the other students in a section going into an entrepreneurial role after graduation by about 1%, or over twenty percent.

Our detailed data about the students' entrepreneurial ventures, however, also allows us to differentiate between successful and unsuccessful ventures. When we look

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<sup>1</sup> The imprecision is particularly problematic in studies of professionals who may be unwilling to admit to being unemployed. In these cases, individuals tend to report themselves to instead be "self-employed consultants" or similar labels. By focusing on entrepreneurship by early-career professionals who are also highly sought after by consulting firms and investment banks, we avoid these issues.

one level deeper, we find that the negative peer effect is exclusively driven by a decrease in unsuccessful entrepreneurship. The share of students who start ventures that do not achieve critical scale or other measures of success is significantly and negatively related to the pre-HBS representation of entrepreneurs in a given section. Meanwhile, the relationship between successful post-HBS entrepreneurs and the share with previous entrepreneurial background is slightly positive, though typically not significant. The differences between the impact of prior entrepreneurs on the successful and unsuccessful post-HBS entrepreneurship rates are statistically significant. Finally, we show that sections with few prior entrepreneurs have a considerably higher variance in their rates of unsuccessful entrepreneurs, beyond (mechanistic) increases in variance due to the increase in the probability of entrepreneurship.

These results are consistent with the presence of intra-section learning. An extensive literature, beginning with Jovanovic [1982], has highlighted the fact that entrepreneurs learn about their abilities through running their businesses. The close ties between students in the same section may lead to an accelerated learning process about prospective business ideas. Students seeking to start new ventures may be able to benefit from the counsel of their peers, rather than succeeding or failing themselves. These benefits may come through different channels. One mechanism might be that peers with an entrepreneurial background help in identifying which initially promising ideas are problematic and thus not worth pursuing. This interpretation also explains the significantly higher variance of entrepreneurship rates and unsuccessful entrepreneurship rates when only one or two former entrepreneurs are present in the section (beyond the mechanistic changes in variance due to the difference in the probability to become entrepreneur). Students' assessments may be colored by the perspectives and experiences of the prior entrepreneurs (which may have been favorable or unfavorable); but, with a large enough number of entrepreneurial peers, at least one of them will have the expertise to detect the flaw in a given business idea.

A second, related explanation is that the mere presence of entrepreneurial peers and their reports about their experiences help other students to realize the challenges involved in starting a company and, even without individual advice, inject realism into other students and discourage all but the best potential entrepreneurs from pursuing their

ventures. A third explanation is that the presence of entrepreneurial peers do not effect individual decisions directly, but encourage students to take more elective entrepreneurship classes, which in turn leads to better decisions. When we examine the enrollment of students without an entrepreneurial background in second-year entrepreneurship classes, however, we find that students in sections with more entrepreneurial peers are neither less likely (as the second explanation might suggest) nor more likely (as the third hypothesis implies) to enroll in elective entrepreneurship classes. While our ability to distinguish between the alternative explanations of the results is limited, the patterns seem most consistent with the first interpretation.

In addition to helping understand peer effects in entrepreneurship, our analysis is relevant to policy-makers, business school faculty, and administrators.<sup>2</sup> Business schools are putting significant energy and resources into the promotion of these activities, often with public subsidies. For instance, during the 1990s and early 2000s, U.S. business schools created over 300 endowed chairs in entrepreneurship, typically paying salaries that were significantly higher than those in other business disciplines (Katz [2004]). Several hundred business plan contests for business school students were also launched during these years. The results of this paper suggest a slight redirection in educational and policy initiatives. Much of the benefit from exposure to entrepreneurship appears to come not from encouragement of more entrepreneurship but from help in weeding out ventures that are likely to fail. Rather than focusing on the attraction of more people into entrepreneurship, schools and policy-makers may want to provide support to would-be entrepreneurs in critically evaluating and identifying their most promising ideas.

The plan of this paper is as follows. In Section II, we review the relevant literature on the determinants of entrepreneurship. Section III describes the role of sections at Harvard Business School. We describe the construction of the sample in Section IV. Section V presents the analysis. The final section concludes the paper.

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<sup>2</sup> To our knowledge, the only papers examining entrepreneurial choices among MBAs are Lazear [2005] and Eesley, Hsu and Roberts [2007], both with quite different focuses.

## **II. Peer Effects and the Determinants of Entrepreneurship**

An extensive literature has examined the determinants of entrepreneurship. The determinant we focus on is the role of peer effects, which have been attracting particular interest in the entrepreneurship literature. As noted above, previous studies have focused on the impact of working or living in an entrepreneurial environment.

The earlier papers measure peer effects by using observational data and regressing entrepreneurship outcomes on entrepreneurship among peers. There are several difficulties in interpreting coefficients estimated with this approach (Manski [1993], Sacerdote [2001]). The most important issue is that individuals self-select into firms and locations. This makes it difficult to separate out the selection from actual peer effects. In fact, an extensive literature on peer effects in the economics of education shows that peer effects found in non-randomized settings tend to disappear once the analysis is redone exploiting true randomization (or vice versa), regardless of how extensively observables are controlled for in the non-randomized settings. Kremer and Levy [2003], for example, study the peer effects of college students who frequently consumed alcohol prior to college on the GPA of their roommates and find systematic differences in the sample of randomly assigned and the sample of self-selected roommates.

In this paper, we are able to move beyond the limitations of previous literature on peer effects in entrepreneurship by exploiting truly exogenous variation in the exposure to entrepreneurial peers. Our identification strategy is discussed in more detail in the next section.

Another confounding issue in the prior literature on entrepreneurial peer effects is the distinction between the effect of one peer on others on the one hand and common shocks affecting the entire peer group on the other hand. In the context of school outcomes, Sacerdote [2001] finds a significant correlation in the GPAs of randomly assigned college roommates but little evidence that students are affected by their roommate's pre-college academic background (SAT scores and high-school performance). Hence, as discussed in Kremer and Levy [2003], common shocks due to dorm room characteristics, infections, or joint class choices might be affecting both roommates and explain part of the results. Focusing on pre-determined characteristics,

such as entrepreneurial activities prior to graduate school in this paper, avoids this problem.

Much of the literature on entrepreneurship has also been hampered by identifying a broad range of self-employment without distinction. In this paper we are able to distinguish between (ex post) good and bad decisions to become entrepreneur, by obtaining information about the scale and success of the entrepreneurial ventures. Hence, our paper provides not only a cleaner (and different) answer to the question whether exposure to entrepreneurial peers increases entrepreneurship, but also whether entrepreneurial peers help to make the “right” decision.

### **III. Sections at Harvard Business School**

Harvard Business School has long used a section system. Students spend their first year of the MBA program in a single classroom, taking a fixed slate of classes (e.g., accounting, finance, and marketing) with a set group of peers. There is no provision for switching between sections. While administrators ensure that each section is taught by a mixture of junior and senior faculty, no effort is made to match faculty and section characteristics. While in their second year of the program, students take elective courses with the entire student body, the social ties established in the first year remain extremely strong. For instance, even at 25<sup>th</sup> reunions of HBS alumni, fundraising and many activities are arranged on a section-by-section basis.

The power of the social experience engendered by HBS sections has been observed upon in both journalistic accounts and academic studies. For instance, in his account of Harvard Business School life, Ewing [1990] observes:

If the Harvard Business School has a secret power, it is the section system. A first-year section has a life of its own, bigger than any student, more powerful than any instructor... All first-year instructors I know agree about the awesome power of the section. They may not like the way it works in all cases—who does—yet it drives B-school students to learn, influencing them in countless ways.

Similarly, in a field-based analysis of the first-year HBS experience, Orth [1963] highlights the extent to which students in sections, “in order to insure feelings of safety and, if possible competence in a situation that is initially perceived to them to be



threatening,” adopt “norms” that affect study patterns, social interactions, and even choices regarding employers with which to interview. He notes that “some norms appeared to be common to all first-year sections and others appeared to develop as a result of a particular section’s pattern of adaptation to the conflicts and pressures of the first year.”

Given the persuasive influence of the section experience, it is not surprising that it affects the decision to become an entrepreneur. Cruickshank [2005] offers a number of illustrations where section-mates began businesses or refined business ideas together. One way to see the impact of the section relationships on entrepreneurial choices is to examine the HBS business plan contest. This competition, begun in 1997, was open in its initial years only to second-year students (who are not required to undertake any classes or complete any assignments with first-year section-mates).<sup>3</sup> Many of the entries in the business plan contest were the foundation for post-HBS ventures. Despite their freedom to choose partners across their entire class, the students disproportionately chose partners who had been in their first-year sections. In business plan contests between 1998 and 2004, there were 277 student teams consisting of 566 pairs of second-year students. Of the pairs of the second-year HBS MBAs who entered the contest together, 185 pairs, or 33%, consisted of section-mates. Were the selection of fellow students for these teams random, the expected share of section-mates would have been 9% for the classes of 1998 through 2003 and 10% for the class of 2004.

Moreover, there is a considerable degree of diversity in terms of the backgrounds of the students across sections, which allows us to exploit the differences across sections empirically. Unlike other professional schools, HBS students have considerable professional experience prior to matriculation: in the classes under study, the median student had between three and five years of post-college work experience.<sup>4</sup>

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<sup>3</sup> The students were allowed in these years to involve students at other schools in their teams but not first-year students. In the calculations below, we ignore non-HBS students. A team consisting of three students, hailing from sections A, B, and B, was regarded as involving three pairs, one pair of which consisted of students in the same section and two of which did not.

<sup>4</sup> <http://www.hbs.edu/about/mba.html> (accessed November 17, 2007) and unpublished tabulations.

Students are assigned into sections by a computer program developed by School administrators whose assignment procedure is a mixture randomization and stratification. From conversations with the responsible administrators and observing the sectioning process for the class of 2010, we learned that the primary considerations behind the stratification of students into sections are, in relative order of priority:

1. Gender.
2. Ethnicity.
3. Whether the student went to the remedial analytics course in August prior to matriculation, and if so, what section the student was assigned to.
4. Whether the student's admission was conditional on supplemental work on quantitative skills (this was true of 9% of the class of 2009).
5. Whether the student's admission was conditional on supplemental work on verbal skills (this was true of 7% of the class of 2009)
6. Whether the student's quantitative GMAT score was high, medium, or low.
7. Whether the student's verbal GMAT score was high, medium, or low.
8. The home region of the student (the system identifies separately seven US regions, most major European countries, Japan, China, India, and elsewhere regions).
9. The industry in which the student worked in his/her most recent job (e.g., consulting, finance, telecommunications, etc.).
10. The student's age.
11. Whether the student attended one of the major "feeder" colleges (Harvard, Yale, West Point, etc.).
12. The function in the student's last job (sales, finance, etc.). Students who had been entrepreneurs prior to business school are classified as general management, but so are many others).
13. The student's marital status.
14. The student's college major.
15. Whether the student worked for one of 49 major companies in their last job prior to graduation. Due to the limitations in the computer program—for instance, it only recognizes students who record "McKinsey & Co." or

“McKinsey & Company” as their previous employer, and not “McKinsey” or “McKinsey Chicago”—this element works poorly: for approximately 450 admits in the class of 2010 that we examined, the program only recognized the firms for about 10%. All the others were bunched together in “other,” along with former entrepreneurs and others who worked for smaller firms.

In addition, School administrators do some hand sorting afterwards. The main goals in these hand corrections are two-fold:

16. Identifying students who are born to expatriate parents. Thus, a student born in the U.S. with French citizenship (which suggests French parents) may be switched to a section with fewer French people.
17. Identifying students with a military background who did a stint on Wall Street or consulting before going to business school. Students will be swapped to ensure the military component in each section is about even.

The information used in the sectioning process is derived largely from forms that students fill out, which also serve as the basis of the class cards which we analyze. Because School administrators do not undertake the detailed textual analysis we do (see below), they do not identify and balance out those students who were entrepreneurs prior to HBS. We had access to all information used about the students in the sectioning process with the exception of that on test scores, conditional admissions, and age (items c through g and j).

Hence, the primary dimensions along which students are sorted are essentially orthogonal to the ones of interest of our study. Secondary considerations in assigning students to sections, such as undergraduate institutions—e.g., Ivy League vs. state university graduates—are not completely orthogonal to the variable of interest. However, stratification along these dimensions does not bias our identification; it only lowers the power of our analysis.

#### **IV. The Data**

Our analysis draws on four primary sets of data. These data sources characterize the sections in which the students spend their initial years, their elective course choices,

their career choices upon graduation, and the ultimate outcomes of the entrepreneurs' ventures respectively.

First, we collected data on the characteristics of each HBS section for the classes between 1997 and 2004. The starting date was dictated by data availability, the end date by the need to have several years after HBS graduation in order to identify which entrepreneurs were successful.

The sources of section information are "class cards" for each individual student. The class cards are initially filled in by School administrators using information students provide in their applications (and which students may update while enrolled at HBS) and are used to provide background information for other students and faculty.<sup>5</sup> Information provided includes marital status, education, employment history, home region, and interests. From these cards, we determined a variety of information for nearly 6,000 HBS students:

- First, we determined gender, nationality (in particular, sole or joint U.S. citizenship), and family status. For the last item, we used their response to a query as to whether they had a partner, as well as whether they indicated children among their interests or other descriptive material.
- Second, we identified the industry where each student in the section had worked between the time of graduation from college and prior to entry into HBS. We coded the students who worked in multiple industries (e.g., investment banking and private equity) as having participated in both.<sup>6</sup>

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<sup>5</sup> The fact that the information in the class cards is drawn from applications helps address concerns that students exaggerate their accomplishments on the cards to impress peers. Lying on one's application is a very high risk strategy, as it can lead to expulsion from the School or even the subsequent voiding of a degree. The School taken ethics during the application process very seriously: for instance, several years ago, some accepted students who had checked the status of their application on a web site earlier than allowed had their offers rescinded (Broughton [2008]).

<sup>6</sup> We employed a sixty-industry scheme employed by in the hiring and compensation database of Harvard Business School's Career Services (see description below). In an unreported analysis, we explore the robustness of the results to assigning students to a single field—the one in which he or she spent the most time. (If a student worked an equal amount of time in two fields, we choose the area in which he or she worked most

- We characterized the educational background of the students in two ways. First, we identified primary degrees from Ivy League Schools. Second, we used “Ivy Plus” schools (an association of administrators of leading schools), which includes the Ivy League schools as well as the California Institute of Technology, the University of Chicago, Duke University, the Massachusetts Institute of Technology, Stanford University, and the Universities of Cambridge and Oxford. In unreported analyses, we also added to this the top non-U.S. schools (as defined by the *Times Higher Education Supplement*) in addition to Cambridge and Oxford: the Ecole Polytechnique and the London School of Economics. These changes make little difference to the results.
- We also attempted to characterize students’ risk attitudes, given some suggestive evidence in the entrepreneurship literature on the lower risk-aversion of entrepreneurs (Parker [2004]). As an imperfect proxy, we characterized the riskiness of the activities listed by the students based on the injury data from American Sports Data [2005].<sup>7</sup> We employed their compilation of “Total Injuries ranked by Exposure Incidence,” which gives the number of injuries per 1000 exposures for each sport. The most risky activity (boxing) causes 5.2 injuries per 1000 exposures and got a risk score of 1. Other activities were scaled accordingly. Lacrosse, for example, causes 2.9 injuries per 1,000 exposures and got a risk score of  $2.9/5.2 = 0.558$ , etc. We averaged the top risk score for each student in

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recently before beginning business school, as they are likely to have had more responsibility there.) The results are little changed.

<sup>7</sup> The data is based on a survey of 25,000 households in 2003, which obtained a 62% response rate. Several injury measures are provided, e.g., injuries resulting in an emergency room visit, which tend to be quite correlated with the measure we employ. A number of the sports listed by the students are not included in the American Sports Data list. In these cases, we substituted the closest sport (e.g., baseball for cricket, day hiking for orienteering). For some activities we found no comparable listing by American Sports Data, some of which appear to be very high risk (e.g., motorcycle racing) and others more moderate (for instance, fencing). We assigned these the top and median risk rankings respectively. We excluded activities that did not involve physical exertion (e.g., fantasy football and pigeon racing) or entries were too vague to be classified (for instance, “athletics” or “all sports”).

the section. In unreported robustness checks, we employed the average across all activities listed by each student in the section.

- Finally, and most critically for our analysis, we identify students who have worked as a founder or co-founder of an entrepreneurial venture prior to entering Harvard Business School. These individuals were identified using key terms in the class cards such as “co-founded,” “started,” “launched,” and so forth. Unlike the calculation of industry experience (which focused only on post-college graduation employment), we included businesses begun before graduating from college, on the ground that these experiences could also have led into valuable insights into the planning and implementation of entrepreneurial ventures.<sup>8</sup> We are also concerned that the impact of successful and unsuccessful entrepreneurs may be different. We thus characterized the businesses by whether the businesses launched prior to business school were successful or unsuccessful. (We determined this information through descriptions in the class-cards, social networking sites such as Facebook and LinkedIn, and direct contacts with the students.) Our primary cut-off point was whether the business achieved a million dollars in annual revenues. In total, 42% of the businesses were classified as successful, 19% as unsuccessful, and the remainder as unknown.<sup>9</sup>

We aggregated these measures on a section level: e.g., we computed the share of the section that had attended an Ivy League college. A major difficulty in the data collection process was posed by the failure of HBS to archive class cards prior to 2000. For the period between 1997 and 1999, we obtained the cards from HBS professors who had saved the class cards of their former students. Some of these instructors had taught first-year classes, in which case they had information on all the students in a given

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<sup>8</sup> Starting up and heading a division within a company was not counted as entrepreneurship. Freelance consulting was not counted as starting a business unless there are other consultants working for that person. We also did not include a small number of cases where students operated franchises as entrepreneurs since operating a franchise is more similar to running a corporate unit.

<sup>9</sup> Note we used a lower cut-off than when defining the success of post-business school entrepreneurship. This reflected our belief that students engaging in pre-business school entrepreneurship had a lower opportunity cost, so a lower hurdle should be applied.

section. Others had taught second-year classes, in which they had cards on an assortment of students across various sections. As a result, the completeness of our information about sections in the early years (and the precision with which we can characterize the features of sections) varies.

We also wished to characterize the opportunity set that students considering entrepreneurial ventures faced. One approach, which we employ in many regressions, is to simply use year dummies. In other specifications, we used several measures of the overall U.S. economic environment for entrepreneurs. The first of these is the total amount of venture capital financing disbursed by year. Venture capital is an important mechanism for funding new growth firms. Many of the new ventures begun by Harvard MBAs have been funded by these intermediates. We compiled the amount provided annually both in all financing rounds and (in unreported analyses) in initial financings in the United States.<sup>10</sup> We also compiled from Securities Data Company and the web-site of Jay Ritter the number and dollar volume of initial public offerings in United States, as well as the amount “left on the table” in these offerings (the difference between the closing price on the first day and the offer price, multiplied by the number of shares sold<sup>11</sup>). We only used two of these measures in the reported analyses; the results are robust to the use of alternatives.<sup>12</sup>

Table I presents the basic characteristics of the MBA classes. Unlike elsewhere in the paper, here we show aggregate data on the entire student body from the HBS administration, which includes those students for whom we are missing class-cards. While the MBA class size remained constant during this period, the composition

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<sup>10</sup> Venture capitalists typically finance firms in multiple rounds. In certain time periods, they appear to emphasize more funding new companies, in other times the refinancing of firms already in their portfolio. The information is taken from National Venture Capital Association [2005], based on the records of Venture Economics.

<sup>11</sup> This is the wealth transfer from the shareholders of the issuing firm to the investors who were allocated shares at the offer price (Loughran and Ritter [2002]).

<sup>12</sup> Even though IPOs are typically confined to firms that have several years of operations, they provide a useful measure of venture capital financing available to new ventures in the same industry, possibly reflecting attractive investment opportunities in this industry (Gompers, Kovner, Lerner, and Scharfstein [2007]).

changed: female, minority and non-U.S. students were increasingly represented. In addition, the share of students with technical training increased markedly. The average section size remained relatively constant from the class of 1998, when an additional section was added and the average section size shrank in conjunction with an experimental accelerated MBA program, until the class of 2004, when the number of sections was reduced from 11 to 10 shortly after the elimination of the program (resulting in an increase in section size). The lower half of Table I shows the measures of financing activity. The year-by-year tabulation highlights the acceleration of activity during the “bubble years” of the late 1990s. This pattern is also illustrated in Figure 1.

Table II shows the distribution of student characteristics by section. We present the results for all 86 sections, and then for the 60 sections where we were able to gather at least sixty class cards, and thus can characterize the distribution of students with greater confidence. On average, 5% of each section has worked previously as an entrepreneur, though the range is between one and ten percent. The heavy representation of students in investment banking and consulting is also apparent.<sup>13</sup> We also report the share of students working in private equity (which we define here to include both venture capital and buyout funds), since these students may be particularly well prepared to provide counsel to would-be entrepreneurs.

Sections differ sharply on a variety of personal characteristics, including the presence of students with children and graduates of elite schools. The differences across sections narrow somewhat when we require that we have data on at least 60 students, which reflects the fact that the characteristics of the section are less noisy when we have a larger number of class cards.

As noted above, our explanations for the patterns had differing implications for enrollment in the elective entrepreneurship classes that are offered in the second year. The second set of data thus revolves around the students’ elective class choices. We determined all elective classes that the students enrolled in, as well as the fraction that were listed as being sponsored or co-sponsored by the Entrepreneurial Management group in the course prospectus distributed to the students each year. For all the students

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<sup>13</sup> The variation in the share of investment bankers reflects in large part the ebb-and flow of these admits across classes, rather than inter-section differences.



without an entrepreneurial background in a given section, we computed the share of classes that related to entrepreneurship. On average, the non-entrepreneurs in a given section devoted 19% of their elective classes to entrepreneurship; the ratio varied from as low as 9% to as high as 27%.

The third source of information related to the choice of careers post-graduation. HBS conducts each year an “exit survey” of each graduating class.<sup>14</sup> The School has made the picking of a cap and gown for graduation conditional on completion of the survey, which ensures a very high participation rate. The survey includes multiple choice categories (i.e., for industry of employment), as well as for cases where the student is still looking for employment and where the student has founded or is planning to imminently found a new venture.<sup>15</sup> These responses to this survey are anonymous, in order to ensure candid responses. We identify all cases where students indicated they had or were beginning an entrepreneurial venture. Again, we aggregate the responses to the section level.

Finally, we compute the number of successful firms established by students in each section while at HBS or within one year of graduation. We determine success as of October 2007. Though it is hard to find any objective threshold criterion and any systematic definition of success is sure to have its arbitrary elements, for the bulk of the paper we define a successful business as one that (a) went public, (b) was acquired for greater than \$5 million, or (c) had in October 2007 or at the time of the sale of the company at least 50 employees or \$5 million in annual revenues. Only 13% of the post-HBS MBA entrepreneurs were successful using these criteria. In supplemental analyses, we employ a higher hurdle, defining a successful firms as one that that (a) went public,

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<sup>14</sup> This survey does not, of course, characterize the career choices those students who drop out without completing a degree. Only a small fraction of each class (typically considerably under 1%) does not complete their degree, and these overwhelmingly represent students who are separated involuntarily due to poor academic performance. Even at the peak of the Internet boom, only a handful of students permanently left school before graduation to pursue an entrepreneurial opportunity.

<sup>15</sup> It should be noted that the survey only reflects student’s intentions at the time of graduation: some would-be entrepreneurs may abandon their quests if they get an attractive offer thereafter.

(b) was acquired for greater than \$100 million, or (c) had in October 2007 or at the time of the sale of the company at least \$100 million in revenues.<sup>16</sup>

We determine this information from three sources. First, the HBS External Relations (Development) Office has undertaken extensive research into its entrepreneurial alumni. This research process intensified in 2006 and 2007, in anticipation of a planned 2008 conference in honor of the institution's 100<sup>th</sup> anniversary that was intended to bring together its most successful and/or influential entrepreneurial alumni.

Second, the School conducted an on-line survey of entrepreneurial HBS alumni who had been in the 1997 through 2004 classes. This survey, organized by Michael Roberts, executive director of the Rock Center for Entrepreneurship, sought to capture information about all those who participated in the School's business plan contest,<sup>17</sup> as well as others known to have undertaken early-career entrepreneurial ventures. The survey used a "viral" approach, whereby known entrepreneurs were asked to identify other entrepreneurs among their classmates, and encourage them to complete the survey.

Finally, we conducted interviews with the faculty in the HBS Entrepreneurial Management Unit. These faculty members are often intimately involved with alumni ventures, whether as sponsors of the independent studies where the initial business plans are drawn up or as directors, advisory board members, or investors in subsequently established ventures. Even in cases where the faculty members have no formal role going forward, they often stay in touch with alumni entrepreneurs. As a result, they have extensive knowledge about the performance of these ventures.<sup>18</sup> After compiling this information on individual ventures, we again aggregated it on the section level.

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<sup>16</sup> While we would have liked to determine the success as of a set time after graduation (e.g., three years after degree completion), this information proved impossible to gather.

<sup>17</sup> The contest for students in the second (and final) year of the MBA program was first initiated in 1997. The individuals were initially contacted via e-mail in January 2005. Non-respondents were contacted three times via e-mail and telephone. Overall, 41% of all contacted students participated. This rate is consistent with or above the level of responses typical in social science studies of this cohort (Barch [1999]).

<sup>18</sup> In some cases, we were unable to determine from our sources the exact specifics regarding revenues or acquisition process private firms. In these cases, we consulted a

Figure 2 summarizes some key patterns in regard to HBS early-career entrepreneurship. The top panel presents the extent to which pre-HBS entrepreneurship rates vary across section, on both a count basis and when adjusted for the average level of entrepreneurs in each class. In particular, the right graph in the top panel presents the distribution of the normalized entrepreneurship rate: the share of students with entrepreneurial experience prior to entering HBS in each of the 86 sections divided by the average rate in that year. While some sections have no members with previous entrepreneurial ventures, others have a rate nearly three times the others in that year.

The lower panel highlights the extent to which the rate of post-HBS entrepreneurship varies over time. We present the share of the class who became entrepreneurs after graduation, as well as those who became successful entrepreneurs. These shares are computed for the entire graduating class, as well as only for those who were not entrepreneurs prior to graduation. (The latter measures more closely reflect the dependent variable in our regression analyses.) The peak in entrepreneurial entry around 2000, when more than ten percent of the class began entrepreneurial ventures upon graduating, is very evident. Several observations can be made about pattern of successful entrepreneurship. First, though we are using the first, less demanding definition of successful entrepreneurship, only a very small share of the entrepreneurial ventures were successful. There is a less pronounced temporal pattern here, but the years that saw the greatest number of successful entrepreneurs were earlier (suggesting that less suited students may have been drawn into entrepreneurship by their predecessors' success).

The final element of the data preparation had to do with determining the share of students who did not have an entrepreneurial background who became entrepreneurs. As noted above, the placement data is compiled anonymously, with only information on the student's gender, section, and so forth, which means we cannot use it directly. To create the desired ratio, we researched each of the students who had an entrepreneurial background to determine if they took an entrepreneurial position after HBS, using social networking sites, Google searches, and direct contacts. (If a student is an entrepreneur

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wide variety of business databases, such as CorpTech, EDGAR, Factiva, and Orbis. We also undertook direct contacts with the entrepreneurs to obtain this information on a confidential basis.

prior to and immediately after HBS, we refer to him or her as a “pre- and post entrepreneur.”) Our primary measure was constructed as follows:

$$\frac{\text{\# of Post-HBS Entrepreneurs in Section} - \text{\# of Pre and Post Entrepreneurs in Section}}{\text{Section size} * (1 - \text{Section's Pre-HBS Entrepreneurship Rate})}$$

One difficulty was that in some cases we did not have all the class-cards, or could not determine with certainty whether the student became an entrepreneur. We also repeated the analysis in a robustness check, assuming that as set percentage of the students who were entrepreneurs prior to HBS also chose this career upon graduation (30% in the reported results, a rate based on data from the Rock Center survey, though we also used other rates and found they had little impact).

## **V. Empirical Analysis**

Our analysis proceeds in several steps. First, we test for determinants of the overall rate of HBS graduates in each section becoming entrepreneurs. Then we turn to understanding the determinant of successful and unsuccessful entrepreneurs. We also examine enrollment in elective entrepreneurship classes. Finally, we explore the variance of success rates across sections.

### ***A. Test of Randomization***

We initially conduct a test of whether the distribution of entrepreneurs across sections is truly random. If the students are not randomly distributed, as we argued above, our empirical strategy would pose concerns. We compare the distribution of the students without an entrepreneurial background prior to HBS in sections with more and fewer pre-HBS entrepreneurs.

These results are presented in Table III. When we compare sections that have below and above the median number of entrepreneurs in Panel A, only one set of differences are significant at the five-percent confidence level: sections with more entrepreneurs are less likely to have students who attended elite schools. (We will control for this share in supplemental regressions below.) When we seek to explain the number of pre-HBS entrepreneurs in Panel B, the explanatory variables (the characteristics of the students in the section who were not entrepreneurs prior to HBS) are jointly insignificant.

These results help assure us that the distribution of pre-HBS entrepreneurs across sections is random.

### ***B. Univariate Comparisons***

We begin by analyzing the basic relationship between the representation of students with previous entrepreneurial experience in a given section and the rates of total and successful post-HBS entrepreneurship.

First, we simply review the patterns graphically. Figure 3 looks at the relationship between the share of pre-HBS entrepreneurs in the section and the share of total and successful post-HBS entrepreneurs. The top panel suggests that sections with more prior entrepreneurs have considerable less variation in the share of entrepreneurs after graduation. The sections with few earlier entrepreneurs have either very high or very low levels of post-HBS entrepreneurship, and have on average higher rates.

The lower panel looks only at the share of successful post-HBS entrepreneurs. Here the pattern is much more ambiguous, with the exception of one section with a number of successful entrepreneurs and a high normalized pre-HBS entrepreneurship rate. Certainly, no sign of the negative relationship identified in the top panel appears here.

Table IV examines correlation coefficients between various characteristics of the sections and the share of students who were not entrepreneurs prior to HBS becoming entrepreneurs post-HBS. We present the results for all sections and for those where we have at least 60 class cards. The results restricting the sample to those sections with at least 60 responses are consistently more significant, reflecting our ability to better characterize section characteristics. In that analysis, we see that those sections which had relatively more males, U.S. citizens, and students with children (again, all variables are computed using just the students who were not pre-HBS entrepreneurs) were more likely to have higher rates of entrepreneurship. Both venture capital funding and IPO activity in the year of graduation are highly correlated with post-HBS entrepreneurship. There is a negative relationship between the share of students who were entrepreneurs prior to business school and those beginning ventures after HBS: as with the other most of the patterns, the patterns are highly statistically significant when we use the sections for which we had at least 60 class cards.

The correlations with successful entrepreneurship are much weaker. The only significant correlates are the measures of entrepreneurial finance activity in the year of graduation and even these are not consistently significant across the specifications. The relationship between the normalized share of pre-HBS entrepreneurs and the share of the non-pre-HBS entrepreneurs in the section becoming successful entrepreneurs is positive but insignificant.

These patterns are, of course, simply suggestive: we will want to control for a number of features of the sections simultaneously. Nonetheless, they are indicative of the patterns we will see throughout the paper.

### *C. Regression Analyses*

We now turn to analyzing the determinant of post-HBS entrepreneurial in a more systematic manner. We estimate regressions where the unit of observation is each section in the classes of 1997 through 2004. The share of the section who was not entrepreneurs prior to HBS becoming entrepreneurs immediately after graduation (either overall, or divided into the share that was successful and unsuccessful) is the dependent variable. We control for the characteristics of these same students: that is, the independent variables in the regressions (with the exception, of course, of the share of prior entrepreneurs in the section) are similarly calculated using only those students who were not entrepreneurs prior to HBS.

Table V presents the analysis of the propensity of students who are not entrepreneurs prior to HBS to become entrepreneurs. We employ a variety of specifications:

- We first run the analysis using our preferred specification: only using those sections where we have at least sixty class cards, and thus can reasonably characterize the distribution of students. We then repeat the analysis, restricting the sample to sections with at least forty class cards and then using all sections (weighted by the number of observations), even though these sections can be characterized less precisely.
- Because the left-hand side variable is censored at zero, we first estimate a Tobit specification. Unfortunately, we could not employ year dummy variables in these

regressions, as the estimates did not converge when we included them: instead, we used the volume of venture financing and IPOs as controls.

- We also use the two methods of correcting the aggregate entrepreneurship rate described at the end of section IV: the first four regressions subtract out the number of pre- and post-HBS entrepreneurs, while the last three employ the average post-HBS entrepreneurship rate for pre-HBS entrepreneurs.

We find several patterns consistently across the regressions:

- The coefficient on the share of the section with an entrepreneurial background is always negative. In the Tobit specification and in the regressions where we limit the sample size to those where section characteristics can be better measured (i.e., those with 40 or more responses), this coefficient is consistently significant at the five-percent confidence level.
- The coefficient on the share of the section that is male is always positive. In the regressions using sections with 60 or more class cards, this variable is consistently statistically significant.
- The share of the section that has a partner is always negatively and significantly associated with the post-HBS entrepreneurship rate. The magnitude and significance of the coefficient is larger in the regressions where we require a minimum number of class cards.
- More entrepreneurial activity in the economy is associated with periods of more venture activity. When we employ class dummies, those for 1999 and 2000 have the greatest magnitude and significance. When we employ the venture and IPO dummies, the measure of the level of venture activity in the year of graduation is consistently positive and significant at the one-percent level.
- The goodness of fit is markedly greater in the regressions where a minimum number of class cards is required, reflecting the greater precision with which we can measure the characteristics of the sections.
- The coefficient on the mean risk tolerance of the section is insignificant. This may, however, simply reflect the poor quality of the proxy we employ.
- The share of students with a private equity background only has a positive and significant impact employing the Tobit specification. The weak result may reflect

the fact that this category is dominated by students who have worked for buyout firms that have little exposure to young firms, rather than for venture capitalists. The basic pattern is consistent with our hypotheses delineated above.

The results are not only statistically significant, but economically meaningful. In the first OLS regression, a one standard deviation increase in the pre-HBS entrepreneurship rate ( $= -0.363 * 0.030$ ) translates into a 1.1 percent decrease in the predicted rate of entrepreneurship after business school (across the six OLS regressions (across all specifications, the changes ranges from -0.7% to -1.3%). Other regressions are similar in magnitude. These changes are significant relative to the mean rate of post-HBS entrepreneurship among those who were not pre-HBS entrepreneurs, which averages a little under four percent.

We then examine the rates of successful and unsuccessful post-HBS entrepreneurship. We defined the rate of unsuccessful entrepreneurship in each section as the difference between the total rate of entrepreneurship and the successful entrepreneurship rate.<sup>19</sup>

Table VI presents regressions with the same set of specifications as in the previous table, with the share of students who were not previously entrepreneurs and who were successful in ventures started immediately after HBS as the dependent variable in Panel A, and that of unsuccessful entrepreneurs in Panel B. The representation of successful entrepreneurs is much more difficult to predict: the goodness of fit is considerably lower and is not consistently greater in the regressions which require more class cards and in which the section variables are measured more precisely. The coefficient on the share of the section that was an entrepreneur prior to HBS is always positive, but never statistically significant in the first set of regressions. It is significantly positive in the second set of regressions, which use the alternative way to control for pre-HBS entrepreneurs. Nor are the other variables that are important in the Table V regressions significant. The appearance of successful entrepreneurs seems driven by other

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<sup>19</sup> While we believe that we identified a virtually comprehensive list of successful HBS entrepreneurs from the classes in our sample, a similar approach would not have worked for unsuccessful entrepreneurs. Unsuccessful ventures are frequently much less visible, and participants may not be willing to disclose them (e.g., in response to a survey request) after the failure.



unidentified features, perhaps relating to the entrepreneurial talent of individual section members. In part, this may reflect the low success rate, which may make it hard to identify statistically significant effects.

The results of regressions explaining unsuccessful entrepreneurship, by way of contrast, are very similar to those on Table V. Of particular note, in the regressions which require a minimum number of class cards (and in which sections' features can be more precisely measured), the share of the section with an entrepreneurial background pre-HBS is significantly negatively associated with unsuccessful entrepreneurship after HBS.

In the final line of the table, we report the results of formal tests of whether the coefficients on the variable measuring the entrepreneurial background of the section are the same in the successful and unsuccessful regressions. We do this by estimating a pooled regression and then performing an F-test of the null hypothesis that the coefficient on this variable is not different. The null hypothesis of no difference is always rejected at least at the five-percent confidence level.

Thus, the presence of peers who have had entrepreneurial experience tend to deter peers without an entrepreneurial background from undertaking unsuccessful ventures, but does not have this effect on those who will launch successful ventures. Indeed, entrepreneurial peers may even have a slightly positive effect on would be successful entrepreneurs.

One possible interpretation of this finding is that pre-HBS entrepreneurs tend to be “bad” entrepreneurs, whose previous failures dampen the general enthusiasm about entrepreneurship among their peers. Empirically, however, that does not seem to be the case. As noted above, many of the pre-HBS entrepreneurs have been extremely successful, having sold companies for tens of millions of dollars. When we estimate unreported regressions using as independent variables the shares of the section who were entrepreneurs prior to HBS that were or were not successful, the differences between the impact of the two classes of entrepreneurs are insignificant.

#### ***D. Robustness Checks***

We then undertook a series of robustness checks of the results. This section describes the reported and unreported analyses we did.

One concern was potential limitations of our success measure. For example, our primary measure of success includes firms such as Guru.com, an online marketplace for freelance talent that was sold for approximately \$5 million to rival Unicru in 2002. Whether any of the key parties associated with the firm regarded this as a success is doubtful, given that Guru.com raised over \$62 million in venture capital financing in 1999 and 2000.<sup>20</sup>

In the first two columns of Table VII, we repeat the analyses in second regressions reported in Panels A and B Table VI, now using the higher, \$100 million cutoff defined above. The results continue to resemble those above, as they did when we re-estimate a number of the other regressions reported in Table VI. The coefficients on the share of the section with an entrepreneurial background in the two reported regressions are significantly different at the one-percent confidence level.

A second concern relates to unobserved differences in the quality of the students in sections. One possibility is that students with entrepreneurial backgrounds were admitted more because of their interesting prior experience rather than their academic abilities, and that sections with many entrepreneurs are somehow less talented as a result. To address this concern, we sought to use a measure of academic achievement prior to HBS, rather than one from the time the students were in school. We worried that students pursuing a new venture at HBS might have neglected their classes, while those pursuing careers in consulting, for instance, may have found the certification associated with academic honors more valuable. In the reported results, we use the share of the section that attended an “Ivy Plus” institution.

In the third and fourth regressions in Table VII, we again re-estimate the second regression reported in Panels A and B of Table VI with this additional control. The results are again little changed, and the entrepreneurial background coefficients are significantly different at the five-percent confidence interval. These results continue to hold when we use the broader and narrower designations of elite schools defined above.

A final concern related to the HBS class of 2000, which as Figure 2.b revealed, had an extraordinary high post-HBS entrepreneurship rate. In an unreported analysis, we

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<sup>20</sup> The information on Guru.com was obtained from <http://www.venturexpert.com> (accessed November 17, 2007), Factiva, and other on-line sources.

reran the regressions without the observations from the class of 2000. The results were little changed.

### ***E. Additional Analyses***

As noted in the introduction, we can offer a variety of explanations for the results seen above. In addition to intra-section learning about what constitutes a good business idea, the presence of more former entrepreneurs in a section may simply discourage would-be entrepreneurs, or alternatively drive them to take additional entrepreneurship classes as electives (which may lead them to make better decisions). The second and third hypotheses suggest there will be a negative or positive relationship between elective entrepreneurship class enrollment and the presence of prior entrepreneurs in a section.

To examine these suggestions, we repeated the above analyses. We used as the dependent variable the share of classes that the students without an entrepreneurial background prior to HBS took in their second year that fell under the sponsorship of the Entrepreneurial Management unit. (Recall all second-year classes during this period were electives.) As Table VIII reports, there are no consistently significant results (except for the time dummies: the classes of 2000 and 2001 had the greatest enrollment in entrepreneurship classes). The impact of peers with an entrepreneurial background was positive, but very weak and never significant. This non-result is most consistent with the hypothesis that the most important learning mechanism is intra-section learning.

The final analysis examines not the mean rate of entrepreneurship, but rather its variance. As hypothesized above, sections with fewer students with an entrepreneurial background are likely to display a greater variance in their post-HBS entrepreneurship rates, particularly in the share of unsuccessful entrepreneurs.

Table IX displays the results of the analysis. We divide the sections by the unadjusted share of entrepreneurs into the section: we assume that the hypothesized effect occurs whenever there are few entrepreneurs, regardless of whether the section is particularly poorly represented in this regard relative to the other sections. The table reports the variance in the rate of overall, successful, and unsuccessful entrepreneurship for sections that are above and below the median on this measure. Following our approach above, we repeat the analysis for all sections and for those with at least 40 and 60 class cards.

We find that sections with more entrepreneurs have less variance in the overall entrepreneurship rate. This pattern is entirely driven by the unsuccessful entrepreneurs: the variance in the unsuccessful post-HBS entrepreneurship rate is nearly twice as great in sections with below the median numbers of prior entrepreneurs than those with above the median.

One reason for the reduction in variance in section with above-median number of entrepreneurs is a mechanical relationship. A natural statistical model of the number of students who become entrepreneurs is a binomial distribution. For a distribution with  $N$  independent observations, which may take on values of 1 with probability  $p$  and 0 otherwise, the variance is equal to  $(p - p^2)N$ . In this case, the reduction in variance associated with the sections with high rates of pre-HBS entrepreneurship will be partially due to the lower probability of post-HBS entrepreneurship and hence lower variance. This point can be illustrated by the following simplifying calculation: Moving from the 75<sup>th</sup> to the 25<sup>th</sup> percentile for a normally distributed variable is associated with a reduction by 1.35 standard deviations. Evaluated at the mean of the independent variables, this translates into a reduction in variance by 32%. Thus, a significant part of the observed 44% decline in variance of the total rate of entrepreneurship, going from sections with below-median to sections with above-median pre-HBS entrepreneurship, may be due to this mechanical relationship.

At least the remaining variance reduction, however, might be explained as described above: the feedback from pre-HBS entrepreneurs are likely to be colored by their personal experience. With a large enough number of entrepreneurs present, however, one of them will be critical and experienced enough to detect the “flaw” in a business plan. Somewhat more puzzling is the fact that the variance of the successful entrepreneurship rate actually increases when there are more entrepreneurs in the section. We do not have a ready explanation for this pattern. We note, however, that the magnitude and the significance of the difference declines as we are more restrictive in terms of the sample size.

## **VI. Conclusions**

This paper studies a topic of increasing scholarly and practical interest, the impact of peer effects on the decision to become an entrepreneur. We examine the decision to undertake entrepreneurial activities among recent graduates of the HBS MBA Program. This setting is an attractive one for a study of these issues due to the random assignment of students to sections, the ability to distinguish the establishment of truly entrepreneurial firms (as opposed to self-employment), and the potentially high economic impact of these ventures.

We find that a higher share of students in a given section with an entrepreneurial background leads to lower rates of entrepreneurship among students who did not have an entrepreneurial background prior to HBS. This effect is driven by the rate of unsuccessful entrepreneurs: students in sections with more pre-HBS entrepreneurs are less likely to start unsuccessful ventures. The relationship between successful post-HBS entrepreneurs and the share with a previous entrepreneurial background is considerably weaker, but appears to be slightly positive. The presence of former entrepreneurs does not appear to affect enrollment in entrepreneurship classes by section-mates in the second year. Finally, sections with few prior entrepreneurs have a considerably higher variance in their rates of unsuccessful post-HBS entrepreneurship. We argue that these results are consistent with intra-section learning, where the close ties between students in a section lead to an enhanced understanding of the merits of proposed business ideas.

We highlight two avenues for future research. This paper suggests a richer role for peer effects than what has been described in much of the literature. Most of the empirical studies of peer effects in entrepreneurship, for instance, have implicitly assumed a “contagion effect,” where the decision of one individual to begin a firm leads others to do so likewise. This analysis suggests a richer set of dynamics are at work. Understanding how these effects work in more detail would be very worthwhile.

A second avenue for future research is exploiting the randomness of section assignments at HBS to look at other phenomena. The differing educational, national, religious, and experiential mixtures of the various sections should make this a fertile testing ground for a variety of economic theories about network and peer effects.

## References

American Sports Data, 2005, *A Comprehensive Study of Sports Injuries in the U.S.*, Cortlandt Manor, NY, American Sports Data.

Arabsheibani, Gholamreza, David de Meza, John Maloney, and Bernard Pearson, 2000, And a vision appeared unto them of a great profit: Evidence of self-deception among the unemployed, *Economic Letters* 67, 35-41.

Baruch, Yehuda, 1999, *Response Rates in Academic Studies—A Comparative Analysis*, Berlin, Springer Science+Business Media.

Baumol, William J., 1990, Entrepreneurship: Productive, unproductive, and destructive, *Journal of Political Economy* 98, 893-921.

Bernardo, Antonio, and Welch Ivo, 2001, On the evolution of overconfidence and entrepreneurship, *Journal of Economics & Management Strategy* 10, 301-30.

Broughton, Philip, D., 2008, *Ahead of the Curve: Two Years at Harvard Business School*, New York, Penguin.

Camerer, Colin, and Dan Lovallo, 1999, Overconfidence and excess entry: An experimental approach, *American Economic Review* 89 306-318.

Cruikshank, Jeffrey L., 2005, *Shaping the Waves: A History of Entrepreneurship at Harvard Business School*, Boston, Harvard Business School Publishing.

De Meza, David, and Clive Southey, 1996, The borrower's curse: Optimism, finance, and entrepreneurship, *Economic Journal* 106, 375-386.

Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer, 2002, The regulation of entry, *Quarterly Journal of Economics* 117, 1-37.

Eesley, Charles, David Hsu, and Edward Roberts, 2007, Entrepreneurs from technology-based universities: Evidence from MIT, *Research Policy*, 36, 768-788.

Evans, David S., and Linda S. Leighton, 1989, Some empirical aspects of entrepreneurship, *American Economic Review* 79, 519-535.

Ewing, David W., 1990, *Inside Harvard Business School: Strategies and Lessons of America's Leading School of Business*, New York, Times Books.

Giannetti, Mariassunta, and Andrei Simonov, 2007, Social interactions and entrepreneurial activity, Unpublished working paper, Stockholm School of Economics.

Gompers, Paul A., Anna Kovner, Josh Lerner, and David Scharfstein, 2007, Venture capital investment cycles: The impact of public markets, *Journal of Financial Economics*, forthcoming.

Gompers, Paul A., Josh Lerner, and David Scharfstein, 2005, Entrepreneurial spawning: Public corporations and the genesis of new ventures, 1986 to 1999, *Journal of Finance*, 60, 577-614.

Holtz-Eakin, Douglas, David Joulfaian, and Harvey S. Rosen, 1994, Sticking it out: Entrepreneurial survival and liquidity constraints, *Journal of Political Economy* 102, 53-75.

Jovanovic, Boyan, 1982, Selection and the evolution of industry, *Econometrica* 50, 649-670.

Kanniainen, Vesa, and Christian Keuschnigg, 2004, *Venture Capital, Entrepreneurship, and Public Policy*, Cambridge, Massachusetts, MIT Press.

Katz, Jerome A., 2004, *Survey of Endowed Positions in Entrepreneurship and Related Fields in the United States*, St Louis, Missouri, J. A. Katz and Associates.

Kremer, Michael and Dan Levy, 2003, Peer effects and alcohol use among college students, Working paper no. 9876, National Bureau of Economic Research.

Landier, Augustin, and David Thesmar, 2007, Financial contracting with optimistic entrepreneurs: Theory and evidence, *Review of Financial Studies*, forthcoming.

Lazear, Edward P., 2005, Entrepreneurship, *Journal of Labor Economics* 23, 649-680.

Loughran, Tim, and Jay R. Ritter, 2002, Why don't issuers get upset about leaving money on the table in IPOs?, *Review of Financial Studies* 15, 413-443.

Manski, Charles F., 1992, Identification of Endogenous Social Effects: The Reflection Problem, *Review of Economic Studies* 60, 531-542.

Murphy, Kevin M., Andrei Shleifer, and Robert W. Vishny, 1991, The allocation of talent: Implications for growth, *Quarterly Journal of Economics* 106, 503-530.

Nanda, Ramana, and Jesper Sorensen, 2007, Peer effects and entrepreneurship, Unpublished working paper, Harvard University and Stanford University.

National Venture Capital Association, 2005, *2005 Venture Capital Yearbook*, Newark, New Jersey, Venture Economics.

Orth, Charles D., III, 1963, *Social Structure and Learning Climate: The First Year at the Harvard Business School*, Boston, Division of Research, Graduate School of Business Administration, Harvard University.

Parker, Simon C., 2004, *The Economics of Self-Employment and Entrepreneurship*, New York, Cambridge University Press.

Sacerdote, Bruce, 2001, Peer effects with random assignment: Results for Dartmouth roommates, *Quarterly Journal of Economics* 116, 681-704.

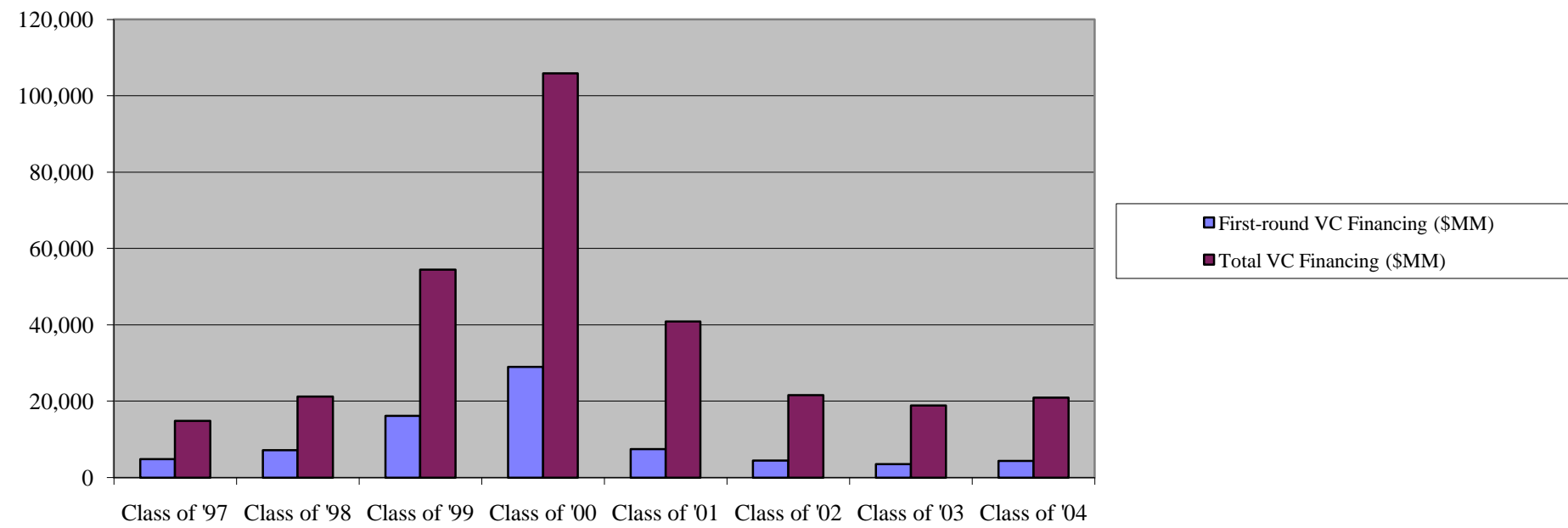


**Table I: Background Variables**

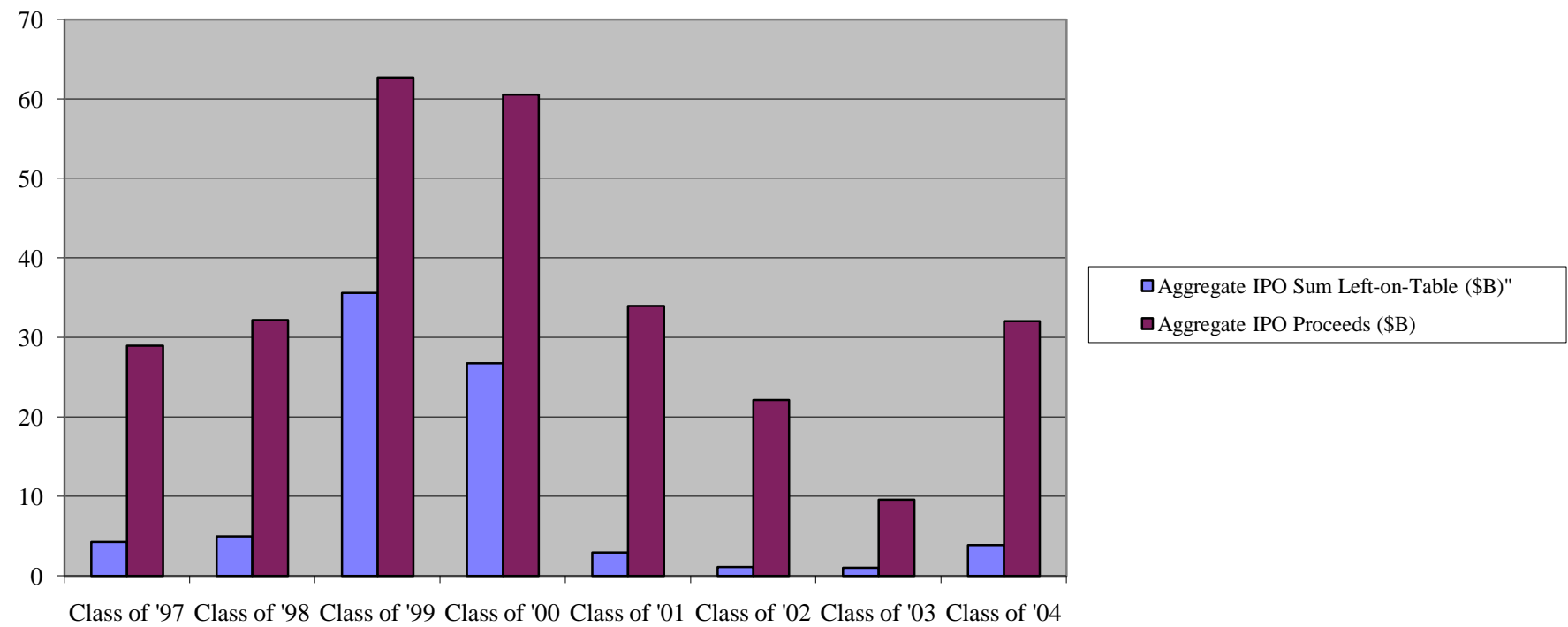
	<i>Class of '97</i>	<i>Class of '98</i>	<i>Class of '99</i>	<i>Class of '00</i>	<i>Class of '01</i>	<i>Class of '02</i>	<i>Class of '03</i>	<i>Class of '04</i>
<b>MBA Enrollment</b>	898	913	903	880	865	917	898	898
<b>MBA Applications</b>	6973	8053	7496	8061	8476	8124	8893	10382
<b>Profile</b>								
Female	27%	24%	29%	30%	31%	33%	36%	35%
Minorities	19%	18%	18%	19%	18%	20%	21%	25%
International	24%	25%	26%	26%	35%	32%	33%	32%
<b>Undergraduate Majors</b>								
Humanities & Social Science	50%	46%	47%	42%	41%	41%	45%	40%
Engineering & Sciences	22%	26%	29%	34%	31%	31%	30%	32%
Business Administration	24%	25%	20%	21%	24%	24%	20%	20%
Other	5%	3%	4%	3%	4%	4%	5%	8%
<b>Average Section Size</b>	90	83	82	80	79	83	82	90
<b>IPOs in Graduation Year</b>								
Number of IPOs	432	267	457	346	76	67	62	179
Aggregate Proceeds (\$B)	29	32	63	61	34	22	10	32
Aggregate Sum Left-on-Table (\$B)	4	5	36	27	3	1	1	4
<b>Venture Financing in Graduation Year</b>								
First-Round Financing (\$MM)	4,844	7,199	16,201	28,979	7,512	4,452	3,577	4,438
Total Financing (\$MM)	14,897	21,270	54,480	105,832	40,943	21,615	18,924	20,993

**Figure 1: Macroeconomic Conditions over Time**

**VC Financing 1997-2004**



**IPO Financing 1997-2004**



**Table II: Section Characteristics**

**Panel A: Full Sample of all 86 Sections (Classes of 1997-2004)**

	<i>Mean</i>	<i>Median</i>	<i>St. Dev.</i>	<i>10th Percentile</i>	<i>90th Percentile</i>
Share of Section that Worked as an Entrepreneur	5.4%	4.9%	3.6%	1.2%	10.3%
... in Consulting	22.5%	22.9%	5.4%	16.0%	28.4%
... in Investment Banking	18.7%	18.6%	5.5%	12.8%	25.0%
... in Private Equity	4.6%	4.0%	3.0%	1.1%	8.6%
Share of Section that is Male	70.2%	68.5%	7.0%	63.9%	82.5%
... Has USA Citizenship	66.6%	65.9%	6.5%	58.2%	75.9%
... Has Children	5.1%	4.9%	3.3%	1.3%	9.7%
... Has a Partner	41.5%	42.0%	7.7%	31.7%	50.7%
Average Maximum Risk Score	38.6%	39.0%	3.1%	34.4%	42.2%
Share of Section Having Attended an Ivy League College	24.2%	24.1%	5.5%	18.1%	31.8%
Share of Section Having Attended an Ivy Plus College	34.4%	34.4%	6.5%	25.3%	42.7%
Share of Post-HBS Entrepreneurs	4.5%	4.2%	3.5%	0.0%	7.9%
Share of Successful Post-HBS Entrepreneurs	0.6%	0.0%	1.0%	0.0%	1.4%
Share of Post- but Not Pre-HBS Entrepreneurs	3.7%	2.9%	3.7%	0.0%	8.4%
Share of Successful Post-but Not Pre-HBS Entrepreneurs	0.6%	0.0%	1.0%	0.0%	1.5%

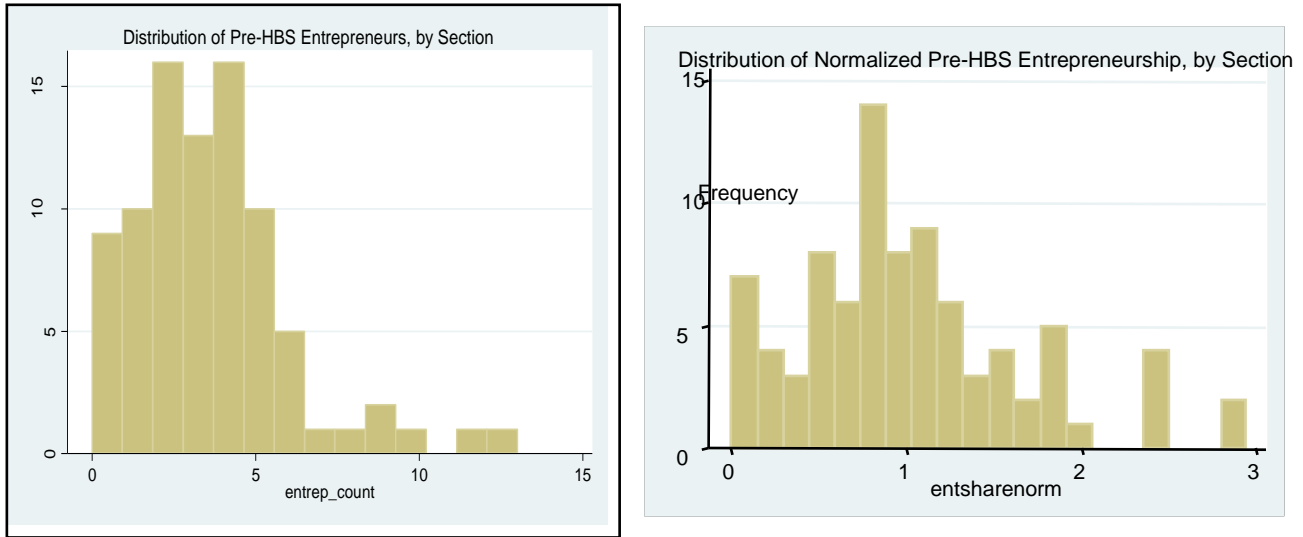
**Panel B: Subsample of 60 Sections with at Least 60**

**Class Cards (Classes of 1997-2004)**

	<i>Mean</i>	<i>Median</i>	<i>St. Dev.</i>	<i>10th Percentile</i>	<i>90th Percentile</i>
Share that Worked pre-HBS as an Entrepreneur	5.0%	4.8%	3.1%	1.3%	9.3%
... in Consulting	24.0%	23.6%	4.1%	19.5%	28.3%
... in Investment Banking	18.3%	18.4%	3.7%	13.5%	23.0%
... in Private Equity	5.1%	4.3%	3.1%	1.3%	9.4%
Share of Section that is Male	67.2%	67.3%	3.1%	63.5%	71.0%
... Has USA Citizenship	64.9%	64.7%	5.4%	58.2%	72.6%
... Has Children	4.7%	4.4%	3.0%	1.3%	9.1%
... Has a Partner	42.7%	43.3%	7.3%	33.3%	51.3%
Average Maximum Risk Score	38.9%	39.6%	2.7%	35.4%	42.0%
Share of Section Having Attended an Ivy League College	24.0%	24.1%	4.1%	19.4%	29.1%
Share of Section Having Attended an Ivy Plus College	34.7%	34.3%	5.5%	27.4%	42.2%
Share of Post-HBS Entrepreneurs	4.8%	4.2%	3.8%	0.0%	10.2%
Share of Successful Post-HBS Entrepreneurs	0.4%	0.0%	0.7%	0.0%	1.4%
Share of Post- but Not Pre-HBS Entrepreneurs	3.9%	2.8%	4.1%	0.0%	10.6%
Share of Successful Post-but Not Pre-HBS Entrepreneurs	0.3%	0.0%	0.7%	0.0%	1.4%

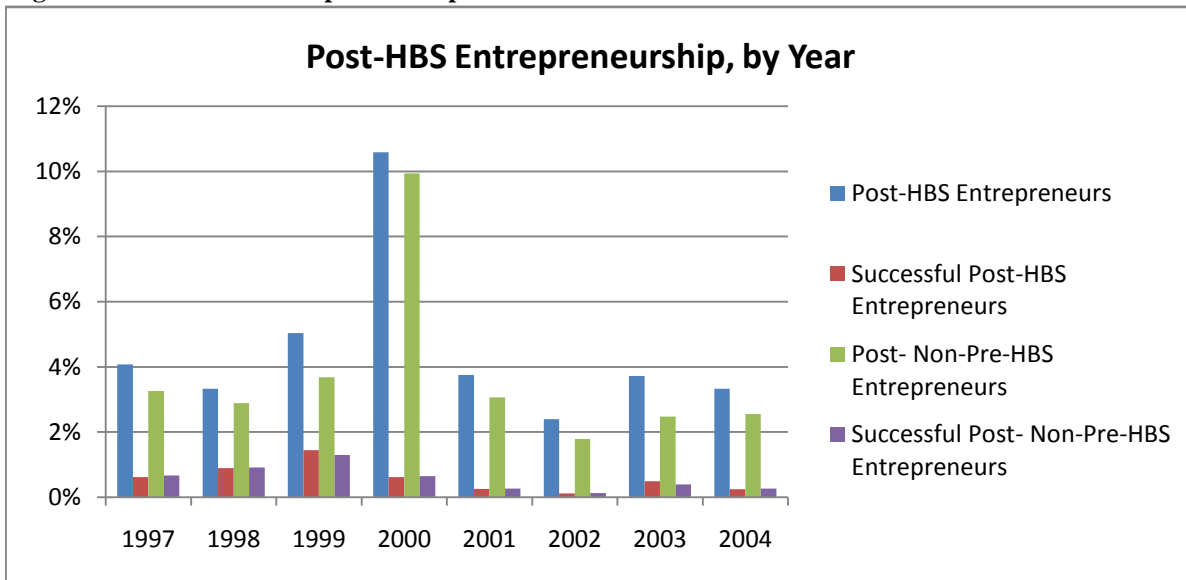
**Figure 2: Variation in Entrepreneurial Activity by Class and Section**

**Figure 2.a: Pre-HBS Entrepreneurship**



Notes. The left graph shows the distribution of the number of students with entrepreneurship experience prior to entering HBS over the 86 sample sections. The right graph shows the number of entrepreneurs normalized by the number of classcards available for the section, divided by the average rate in the same year across sections.

**Figure 2.b: Post-HBS Entrepreneurship**



**Table III. Test of Randomization**

**Panel A: Full Sample (86 Sections, Classes of 1997-2004)**

	Full Sample	Mean (St.Dev.) # of Entrepreneurs		p- values
		Below median	Above median	
Share that Worked as an Entrepreneur	5.0% (3.4%)	2.5% (1.6%)	7.8% (2.7%)	0.81
... in Consulting	22.9% (5.3%)	22.8% (5.3%)	23.0% (5.4%)	
... in Investment Banking	19.3% (5.7%)	19.0% (4.8%)	19.5% (6.6%)	
... in Private Equity	4.7% (3.0%)	5.0% (3.0%)	4.2% (3.0%)	0.23
Share of Section that is Male	69.4% (7.1%)	69.5% (7.3%)	69.3% (7.0%)	0.92
... Has USA Citizenship	66.9% (6.7%)	67.6% (6.7%)	66.1% (6.7%)	0.28
... Has Children	4.9% (3.1%)	4.9% (3.4%)	4.9% (3.1%)	0.99
... Has a Partner	41.3% (7.4%)	41.9% (6.6%)	40.6% (8.2%)	0.41
Average Maximum Risk Score	38.4% (3.2%)	38.4% (2.7%)	38.4% (3.7%)	0.93
Share of Section Having Attended an Ivy League College	24.0% (5.3%)	25.1% (5.1%)	22.9% (5.3%)	0.05
Share of Section Having Attended an Ivy Plus College	34.3% (6.3%)	35.5% (5.8%)	32.9% (6.6%)	0.05

The last column shows heteroskedasticity-robust p-values for the test of no difference in means between the Below-Median and Above-Median subsamples. All section-level measures (except for pre-HBS entrepreneurs) do not include pre-HBS entrepreneurs.

**Panel B: Predicting the Share of Pre-HBS entrepreneurs**

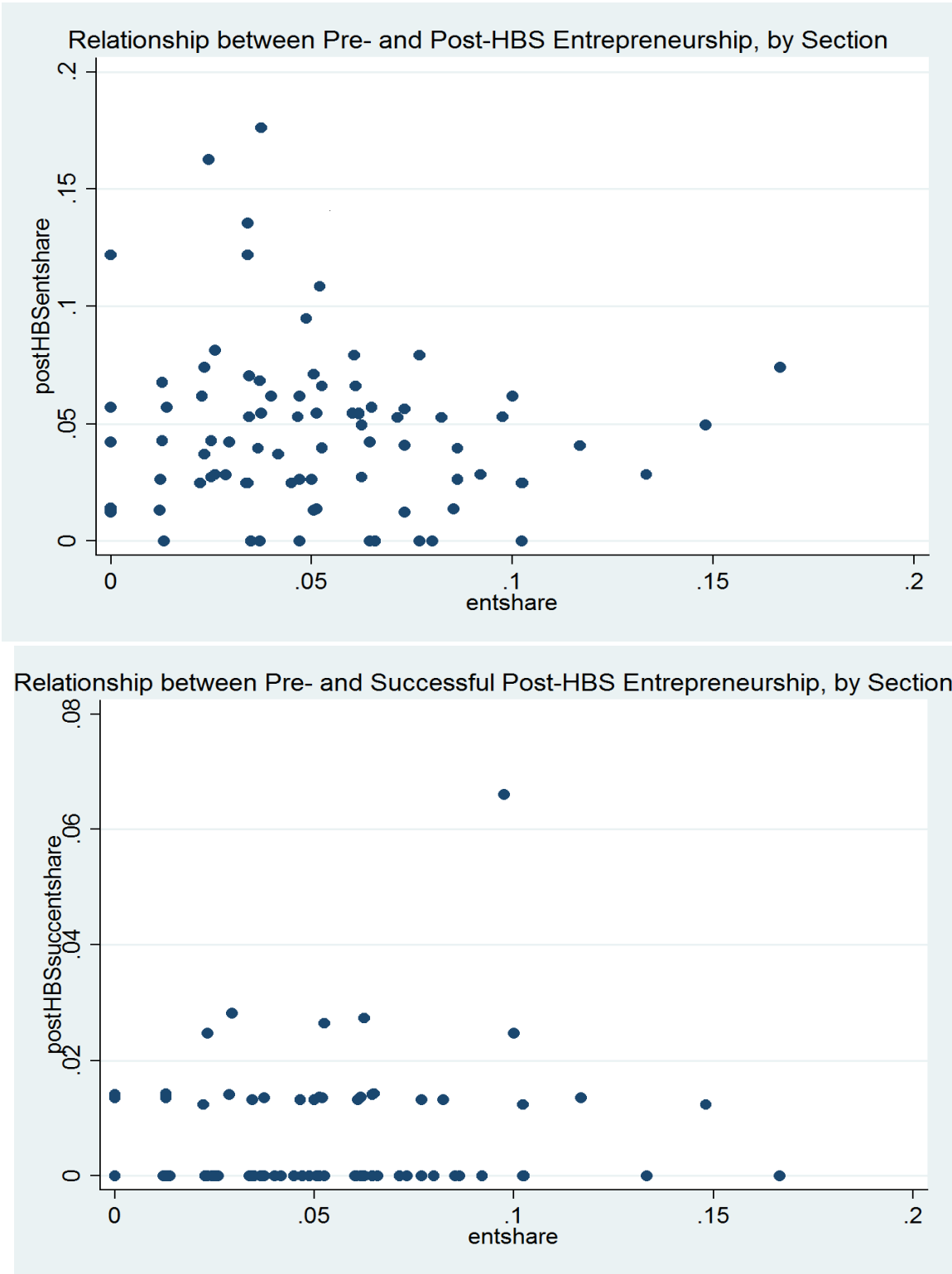
Share that Worked Pre-HBS in Consulting	-0.034 [0.101]
... in Investment Banking	0.037 [0.062]
... in Private Equity	-0.089 [0.138]
Share of Section that is Male	-0.004 [0.093]
... Has USA Citizenship	-0.031 [0.070]
... Has Children	-0.086 [0.137]
... Has a Partner	0.094 [0.084]
Average Maximum Risk Score	-0.024 [0.154]
Year Fixed Effects	yes

F( 8, 70) = 0.33

Prob > F = 0.951

Robust standard errors in brackets. All section-level measures (except for pre-HBS entrepreneurs) do not include pre-HBS entrepreneurs.

**Figure 3: Relationship between Pre- and Post-HBS Entrepreneurship, by Section**



**Table IV: Correlation Coefficients**

	All 86 Sections, Classes of 1997-2004		60 Sections with at Least 60 Responses, Classes of 1997-2004	
	<i>Share of Post-HBS Entrepreneurs</i>	<i>Share of Successful Post-HBS Entrepreneurs</i>	<i>Share of Post-HBS Entrepreneurs</i>	<i>Share of Successful Post-HBS Entrepreneurs</i>
Share of Post-HBS Entrepreneurs	1.00		1.00	
Share of Successful Post-HBS Entrepreneurs	0.08 (0.449)	1.00	0.19 (0.147)	1.00
Share of Section that Worked as an Entrepreneur	-0.17 (0.116)	0.12 (0.258)	-0.33 (0.011)	0.12 (0.371)
... in Consulting	-0.09 (0.425)	-0.12 (0.278)	-0.13 (0.332)	-0.08 (0.565)
... Investment Banking	-0.03 (0.774)	0.00 (0.995)	-0.13 (0.321)	-0.13 (0.315)
... Private Equity	-0.04 (0.701)	-0.09 (0.409)	-0.08 (0.563)	0.02 (0.867)
Share of Section that is Male	0.03 (0.766)	0.16 (0.147)	0.33 (0.010)	0.05 (0.731)
... Has USA Citizenship	0.16 (0.132)	0.08 (0.479)	0.24 (0.068)	0.00 (0.983)
... Has Children	0.23 (0.030)	-0.03 (0.804)	0.25 (0.057)	0.11 (0.414)
... Has a Partner	-0.11 (0.338)	-0.01 (0.919)	-0.13 (0.325)	0.04 (0.748)
Average Maximum Risk Score of Section	-0.04 (0.721)	0.02 (0.877)	-0.04 (0.762)	0.12 (0.354)
IPO Proceeds in Graduation Year (\$ trillion)	0.46 (0.000)	0.23 (0.031)	0.57 (0.000)	0.16 (0.219)
Total Venture Funding in Graduation Year (\$ trillion)	0.63 (0.000)	0.10 (0.351)	0.70 (0.000)	0.22 (0.095)

All section-level measures (except for pre-HBS entrepreneurs) do not include pre-HBS entrepreneurs.  
p-Values in parentheses.

**Table V: Determinants of Post-HBS Entrepreneurship**

<i>Dependent Variable:</i>	Share of Post-HBS Entrepreneurs net of <i>identified</i> share of Pre-and-post-HBS entrepreneurs				Share of Post-HBS Entrepreneurs net of <i>average estimated</i> share of Pre-and-post-HBS entrepreneurs		
Share of section with entrepreneurial background	-0.422 [0.135]***	-0.295 [0.125]**	-0.294 [0.117]**	-0.187 [0.103]*	-0.363 [0.103]***	-0.352 [0.101]***	-0.278 [0.086]***
Share of section with consulting background	-0.117 [0.116]	-0.110 [0.110]	-0.062 [0.090]	-0.085 [0.082]	-0.098 [0.091]	-0.048 [0.077]	-0.074 [0.069]
Share of section with inv. banking background	-0.105 [0.111]	-0.164 [0.124]	-0.065 [0.085]	-0.013 [0.077]	-0.149 [0.103]	-0.055 [0.073]	-0.034 [0.064]
Share of section with private equity background	0.365 [0.150]**	0.136 [0.168]	0.060 [0.158]	0.109 [0.137]	0.100 [0.139]	0.032 [0.136]	0.059 [0.115]
Share of section that is male	0.427 [0.159]**	0.635 [0.228]***	0.147 [0.105]	0.101 [0.100]	0.582 [0.188]***	0.082 [0.090]	0.048 [0.084]
Share of section that are U.S. citizens	0.02 [0.089]	0.072 [0.129]	-0.106 [0.095]	-0.042 [0.078]	0.078 [0.106]	-0.117 [0.082]	-0.053 [0.065]
Share of section with children	-0.02 [0.162]	0.160 [0.165]	0.176 [0.157]	0.145 [0.130]	0.168 [0.136]	0.154 [0.135]	0.117 [0.109]
Share of section with a partner	-0.128 [0.064]**	-0.179 [0.070]**	-0.162 [0.066]**	-0.113 [0.057]*	-0.211 [0.057]***	-0.191 [0.057]***	-0.146 [0.048]***
Mean maximum risk score of section (\$ trillions)	-0.11 [0.141]	-0.099 [0.149]	-0.054 [0.138]	-0.122 [0.118]	-0.061 [0.123]	-0.048 [0.118]	-0.081 [0.098]
Total IPO proceeds in graduation year (\$ trillions)	-1.448 [0.548]**						
Total venture financing in graduation year	1.469 [0.257]***						
Year dummies	no	yes	yes	yes	yes	yes	yes
Minimum number of responses	60	60	40	weighted	60	40	weighted
Regression type	Tobit	OLS	OLS	OLS	OLS	OLS	OLS
Observations	60	60	68	86	60	68	86
R-squared		0.69	0.64	0.57	0.76	0.70	0.66

All section-level measures (except for pre-HBS entrepreneurs) do not include pre-HBS entrepreneurs.

Robust standard errors in brackets. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%



**Table VI: Determinants of Successful and Unsuccessful Entrepreneurship**

**Panel A. Successful Entrepreneurship**

<i>Dependent Variable:</i>	Share of <i>Successful</i> Post-HBS Entrepreneurs net of <i>identified</i> share of Pre-and-post-HBS entrepreneurs				Share of <i>Successful</i> Post-HBS Entrepreneurs net of <i>average estimated</i> share of Pre-and-post-HBS entrepreneurs		
Share of section with entrepreneurial background	0.105 [0.117]	0.040 [0.035]	0.067 [0.042]	0.041 [0.033]	0.035 [0.016]**	0.057 [0.021]***	0.044 [0.016]***
Share of section with consulting background	-0.127 [0.114]	-0.030 [0.031]	-0.057 [0.032]*	-0.023 [0.026]	0.004 [0.014]	-0.012 [0.016]	0.003 [0.012]
Share of section with inv. banking background	-0.148 [0.120]	-0.027 [0.035]	-0.001 [0.030]	0.009 [0.025]	-0.002 [0.016]	-0.009 [0.015]	0.004 [0.012]
Share of section with private equity background	0.025 [0.148]	0.010 [0.048]	0.009 [0.056]	0.025 [0.044]	-0.007 [0.021]	-0.013 [0.029]	-0.005 [0.021]
Share of section that is male	-0.072 [0.165]	0.042 [0.065]	-0.033 [0.037]	0.001 [0.032]	0.018 [0.029]	0.000 [0.019]	0.010 [0.015]
Share of section that are U.S. citizens	-0.045 [0.093]	-0.008 [0.036]	-0.050 [0.034]	-0.027 [0.025]	0.005 [0.016]	-0.016 [0.017]	-0.002 [0.012]
Share of section with children	-0.092 [0.164]	0.015 [0.047]	-0.019 [0.056]	-0.023 [0.042]	-0.004 [0.021]	-0.034 [0.028]	-0.026 [0.020]
Share of section with a partner	-0.011 [0.056]	0.003 [0.020]	0.030 [0.023]	0.023 [0.018]	0.004 [0.009]	0.019 [0.012]	0.015 [0.009]*
Mean maximum risk score of section	0.104 [0.149]	0.044 [0.042]	0.055 [0.049]	0.036 [0.038]	0.004 [0.019]	0.000 [0.025]	0.001 [0.018]
Total IPO proceeds in graduation year (\$ trillions)	0.173 [0.497]						
Total venture financing in graduation year (\$ trillions)	0.189 [0.237]						
Year dummies	no	yes	yes	yes	yes	yes	yes
Minimum number of responses	60	60	40	weighted	60	40	weighted
Regression type	Tobit	OLS	OLS	OLS	OLS	OLS	OLS
Observations	60	60	68	86	60	68	86
R-squared		0.17	0.34	0.20	0.18	0.36	0.26

All section-level measures (except for pre-HBS entrepreneurs) do not include pre-HBS entrepreneurs.

Robust standard errors in brackets. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Panel B. Unsuccessful Entrepreneurship**

<i>Dependent Variable:</i>	Share of <i>Unsuccessful</i> Post-HBS Entrepreneurs net of <i>identified</i> share of Pre-and-post-HBS entrepreneurs				Share of <i>Unsuccessful</i> Post-HBS Entrepreneurs net of <i>average</i> <i>estimated</i> share of Pre-and-post- HBS entrepreneurs		
Share of section with entrepreneurial background	-0.449 [0.142]***	-0.316 [0.126]**	-0.310 [0.115]***	-0.197 [0.103]*	-0.380 [0.103]***	-0.383 [0.099]***	-0.302 [0.086]***
Share of section with consulting background	-0.090 [0.124]	-0.082 [0.111]	-0.021 [0.088]	-0.067 [0.082]	-0.096 [0.090]	-0.036 [0.076]	-0.073 [0.068]
Share of section with inv. banking background	-0.080 [0.117]	-0.146 [0.125]	-0.095 [0.083]	-0.040 [0.077]	-0.148 [0.102]	-0.052 [0.072]	-0.042 [0.064]
Share of section with private equity background	0.387 [0.159]**	0.136 [0.170]	0.050 [0.155]	0.091 [0.137]	0.109 [0.139]	0.043 [0.133]	0.061 [0.114]
Share of section that is male	0.479 [0.171]***	0.598 [0.230]**	0.187 [0.102]*	0.106 [0.100]	0.576 [0.188]***	0.086 [0.088]	0.043 [0.083]
Share of section that are U.S. citizens	0.021 [0.093]	0.081 [0.130]	-0.083 [0.093]	-0.028 [0.078]	0.082 [0.106]	-0.102 [0.081]	-0.050 [0.065]
Share of section with children	0.002 [0.170]	0.154 [0.167]	0.156 [0.153]	0.138 [0.130]	0.171 [0.136]	0.175 [0.132]	0.134 [0.108]
Share of section with a partner	-0.138 [0.067]**	-0.192 [0.070]**	-0.183 [0.065]***	-0.133 [0.057]**	-0.210 [0.057]***	-0.199 [0.056]***	-0.153 [0.047]***
Mean maximum risk score of section	-0.162 [0.150]	-0.143 [0.150]	-0.119 [0.135]	-0.157 [0.117]	-0.070 [0.123]	-0.055 [0.116]	-0.088 [0.098]
Total IPO proceeds in graduation year (\$ trillions)	-1.396 [0.578]**						
Total venture financing in graduation year (\$ trillions)	1.402 [0.270]***						
Year dummies	no	yes	yes	yes	yes	yes	yes
Minimum number of responses	60	60	40	weighted	60	40	weighted
Regresssion type	Tobit	OLS	OLS	OLS	OLS	OLS	OLS
Observations	60	60	68	86	60	68	86
R-squared		0.67	0.64	0.56	0.76	0.71	0.67
p-Value, test of equality of entrepreneurial background var.	0.008	0.008	0.003	0.030	0.000	0.000	0.000

All section-level measures (except for pre-HBS entrepreneurs) do not include pre-HBS entrepreneurs.

Robust standard errors in brackets. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Table VII: Determinants of Successful and Unsuccessful Post-HBS Entrepreneurship: Robustness Checks**

<i>Dependent Variable: Share of Non-Pre HBS Entrepreneurs Section Becoming Entrepreneurs Post-HBS Which Are...</i>				
	<u>"Super" successful</u>	<u>Not "super" successful</u>	<u>Successful</u>	<u>Unsuccessful</u>
Share of section with entrepreneurial background	0.027 [0.015]*	-0.305 [0.126]**	0.021 [0.035]	-0.271 [0.128]**
Share of section with consulting background	0.000 [0.013]	-0.111 [0.110]	-0.037 [0.030]	-0.064 [0.110]
Share of section with inv. banking background	-0.005 [0.015]	-0.167 [0.125]	-0.029 [0.034]	-0.142 [0.124]
Share of section with private equity background	-0.004 [0.020]	0.148 [0.170]	0.022 [0.046]	0.107 [0.169]
Share of section that is male	0.000 [0.027]	0.640 [0.230]***	0.062 [0.062]	0.551 [0.230]**
Share of section that are U.S. citizens	-0.017 [0.015]	0.090 [0.130]	-0.012 [0.035]	0.091 [0.129]
Share of section with children	0.040 [0.020]**	0.127 [0.166]	-0.004 [0.046]	0.199 [0.168]
Share of section with a partner	-0.025 [0.008]***	-0.163 [0.070]**	0.004 [0.019]	-0.194 [0.069]***
Mean maximum risk score of section	0.002 [0.018]	-0.101 [0.150]	0.057 [0.041]	-0.173 [0.150]
Share of section having attended an "Ivy Plus" college			-0.071 [0.032]**	0.169 [0.117]
Year dummies	yes	yes	yes	yes
Minimum number of responses	60	60	60	60
Regression type	OLS	OLS	OLS	OLS
Observations	60	60	60	60
R-squared	0.32	0.68	0.26	0.68
p-Value, test of equality of entrepreneurial background var.		0.007		0.030

All section-level measures (except for pre-HBS entrepreneurs) do not include pre-HBS entrepreneurs.

Robust standard errors in brackets. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Table VIII: Determinants of Enrollment in Elective Entrepreneurship Classes**

<i>Dependent Variable:</i>	Share of Entrepreneurship Classes Selected by Students in the Section who were Not Pre-HBS Entrepreneurs		
Share of section with entrepreneurial background	0.020 [0.082]	0.029 [0.075]	0.026 [0.061]
Share of section with consulting background	0.058 [0.072]	0.003 [0.057]	-0.006 [0.048]
Share of section with inv. banking background	-0.050 [0.082]	-0.048 [0.054]	-0.061 [0.045]
Share of section with private equity background	0.010 [0.111]	0.054 [0.101]	0.067 [0.081]
Share of section that is male	-0.282 [0.150]*	-0.102 [0.067]	-0.120 [0.059]**
Share of section that are U.S. citizens	-0.149 [0.085]*	-0.105 [0.061]*	-0.069 [0.046]
Share of section with children	0.116 [0.109]	0.104 [0.100]	0.102 [0.077]
Share of section with a partner	-0.075 [0.046]	-0.058 [0.042]	-0.059 [0.034]*
Mean maximum risk score of section	0.094 [0.098]	0.100 [0.088]	0.092 [0.069]
Year dummies	yes	yes	yes
Minimum number of responses	60	40	weighted
Regression type	OLS	OLS	OLS
Observations	60	68	86
R-squared	0.87	0.89	0.89

All section-level measures (except for pre-HBS entrepreneurs) do not include pre-HBS entrepreneurs.  
Robust standard errors in brackets. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Table IX: Variance in Post-HBS Entrepreneurship Rates**

	<i>For sections with below median number of students with entrepreneurial background</i>	<i>For sections with above median number of students with entrepreneurial background</i>	<i>p-Value, test of null hypothesis of no difference</i>
<u>For All Sections</u>			
Standard Deviation of Entrepreneurship Rate			
Total Post-HBS Entrepreneurship	4.15%	2.58%	0.003
Successful Post-HBS Entrepreneurship	0.77%	1.23%	0.003
Unsuccessful HBS Entrepreneurship	4.17%	2.44%	0.001
<u>68 Sections with at Least 40 Responses</u>			
Standard Deviation of Entrepreneurship Rate			
Total Post-HBS Entrepreneurship	4.43%	2.54%	0.002
Successful Post-HBS Entrepreneurship	0.65%	1.33%	0.000
Unsuccessful HBS Entrepreneurship	4.37%	2.34%	0.001
<u>60 Sections with at Least 60 Responses</u>			
Standard Deviation of Entrepreneurship Rate			
Total Post-HBS Entrepreneurship	4.57%	2.54%	0.003
Successful Post-HBS Entrepreneurship	0.53%	0.75%	0.062
Unsuccessful HBS Entrepreneurship	4.45%	2.35%	0.001