

Considering a Student Managed Venture Capital Fund? Approaches, Benefits, and Performance

William A. Andrews
Stetson University

John M. Tichenor
Stetson University

This paper explores the rationale for and performance of student-managed venture capital funds. In particular, it seeks to identify whether the performance of student-managed funds is inferior to professionally-managed funds. The results suggest that professionally-managed funds may perform better than student managed funds, but this difference disappears when comparing investments made 7 or more years ago – a typical holding period for a VC firm. Pedagogical benefits of having a student-managed fund are discussed, and guidelines of implementing a student-managed VC fund are derived.

INTRODUCTION

According to Dayton University's Redefining Investment Strategy Education (RISE) conference, more than 200 universities have programs that teach portfolio and investment management through student-managed funds using real money. Fund assets consist of publically traded securities where company information is readily available and where a market price exists for each issue. By contrast, very few universities sponsor student-managed venture funds where students invest in privately held companies at the start-up, early or growth stages. The purpose of this paper is to describe the benefits, approaches and challenges to launching a student-managed venture fund, and to make some preliminary analysis of the performance of such funds relative to their professionally-managed counterparts. We explore the experience and subsequent economic performance of portfolio companies in student-oriented venture funds and compare their performance with that of professionally-managed venture capital (VC) investments. In addition, we describe factors that relate to the feasibility of a university initiating a student managed fund. Finally, we discuss the unique pedagogical benefits of a student managed VC fund.

DEFINITIONS

Identifying student-managed funds proved to be more difficult than anticipated because there were a number of fund-types that were university-oriented but not technically student-managed. University-oriented funds can be divided into three subcategories:

- Student-managed funds (SMFs) where students make investments by themselves or in collaboration with faculty, program staff or unpaid advisors. These are the funds of particular

interest in this research. Michigan's Wolverine Fund, North Dakota's Dakota Ventures and Utah's University Venture Fund follow this design and 40 others follow this model.

- Funds that allow students to “eavesdrop” on the venture-investment process, but the final decision is made by investment professionals. Here, students may participate in sourcing and structuring deals, business planning, due diligence, and portfolio monitoring, but the actual investment decision is left to professional investors – typically a venture fund. These were called “Intern-type Associations” (ITAs). StartX at Stanford and University of Maryland's association with New Market Venture Partners illustrate this approach.
- A “fund” that functions more as an angel network for university inventions than a true fund. Often born of an alumni network, this type of program may actively invest in university-generated technology, but decisions are made by individual investors as to their participation in a particular deal. The university typically out-licenses the technology to the company seeking funding, and the angel network invests in the company; students tend to be only incidentally involved in the investment process. These were termed Angel-Alumni Networks (AANs). Columbia University's Columbia Technology Ventures exemplifies this approach.

While all three types of university associations are of interest in the descriptive part of this research, the analytical section of this manuscript focused only on SMF performance relative to professionally managed venture funds. All three offer pedagogical advantages over a strictly class-based pedagogy.

LITERATURE OVERVIEW AND RESEARCH PROPOSITIONS

In a study of 64 German companies that were venture-backed, Streletski and Schulte (2013) found that one of the correlates of a highly-successful exit (>5x return) was professional VC guidance at a very early stage (pre proof-of-concept). In a study covering 25 years of performance data, Puri and Zarutskie (2012) found no difference between the performance of VC-backed versus non-VC-backed firms (survivors), especially in the early years of a company's life, though they noted that failure rates were lower in VC-backed firms than in non-VC backed firms, suggesting again that professional VCs add value, especially in the early stages. Hsu (2004) shed light on the extent to which this value was derived simply from the money or from the expertise. He found that entrepreneurs were willing to pay a 10-14 percent premium for funding coming from top-tier VCs compared to funding coming from lesser-known VCs. Moreover, Park and Steensma (2012) corroborated Hsu's conclusion that the entrepreneurs were willing to “pay” for the extra value-added associated with VC expertise, while providing context for when strategic VC partners (contrasted with financial/institutional partners) may create conflicts of interest that might dissipate founders' returns.

These studies provide empirical support for the industry axiom that “if all you get from your VC is money, you did not get enough.” Rather, complementary assets, industry operating experience, and an extensive professional network allow the VC firm to add significant value to the portfolio company (Streletski and Reinhardt 2013). The assumption is that VC participation is related to highly successful exits and fewer early-stage failures – i.e., entrepreneurs are willing to pay a premium for the experience and connections that marquee VCs can bring to the firm. Student-oriented VC firms are presumed to lack the depth of these resources that would be found in professional VC firms, thereby suggesting that performance of university venture investments do not perform as well. Therefore, we address the following three research propositions.

- Proposition 1: Student-managed funds will underperform conventional funds as they will, in general, be managed by those lacking industry operating experience, business connections, and the financial reputation of professionally-managed funds.
- Proposition 2: Student-managed funds will underperform Angel-Alumni networks, as the latter will tend to have broader industry operating experience, industry connections and financial reputation than SMFs (Shane 2008).

- Proposition 3: Investments made prior to 2006 will outperform investments made in 2006 or later due to the “maturation effect” (3-7 years) cited previously.

SAMPLE SELECTION, RESEARCH DESIGN, AND STATISTICAL METHODS

Sample Frame

The sample frame was determined to be US funds, as no international student-managed funds were identified. Nine universities in the US have funds for investing in start-ups. Of these, only 7 were student managed (see appendix 1 of university-oriented funds). One was an Angel-Alumni network, and three were managed professionally by either VC funds or university administrators. The Student-managed funds have owned 74 portfolio companies in total including exits, failures, and active investments. Data was collected through fund websites and through telephone interviews. Industry-wide data showing results of professionally managed firms was extracted from the National Venture Capital Association (NCVA 2011).

Measuring Performance

Measuring performance was more difficult than anticipated. Funds were unanimously unwilling to share deal-level internal rate of returns (IRR) - the standard industry performance benchmark when attempting to raise capital. Moreover, the oldest SMF was about 15 years old, and holding periods were typically anticipated at 3-7 years. As a result, some of the newer funds had no exits, so gauging performance became all the more difficult. Finally, VC returns are cyclical with the IPO market, general economic conditions and cost of capital (all influence exit valuations). The sample size did not allow us to control for “vintage” (year of investment). However, we did perform an analysis of pre-2006, allowing for adequate time for a portfolio company to mature and be sold. As a result of the foregoing challenges, overall group performance of SMFs was designated by the number of exits through IPO or sale. Tracking failures directly was difficult for two reasons: (1) Companies die quietly; dead and dying companies were not normally reported in the news, so they were difficult to identify; (2) contrary to an exit by sale or IPO, no one rings a bell when a company fails. It tends to be a long slow process making the line between the dead and the dying somewhat arbitrary. To wit, over

Thirty percent of VC investments made prior to 2001 (giving them ample time to mature, were identified as neither dead nor sold. Hence, we did not use failure rates as an indication of relative success. We compared exits from student-managed funds to the historical performance of the group of 11,686 companies funded by VC from 1991 through 2000 (NVCA 2012). Because most firms designate holding periods of three to seven years, we subdivided the SMF portfolio companies into those investments made prior to 2006 and those made in 2006 or later. It should be noted that prior to 2006, only three student-managed VCs were operating. So on one hand, we did not want to discard the investment performance of the other 4 SMFs with exits, yet we recognized that investments take time to mature. For this reason, we compared performance of student-managed investments made prior to 2006 separately from the comparison involving all student-managed portfolio companies.

Statistical Method

Sample sizes were small, and thus required the use of non-parametric statistics to gauge statistically significant differences. The Fisher’s Exact Test, a non-parametric statistic, was used to test the null hypothesis that the SMF performance was no different than the industry-wide performance. Fisher’s Test is appropriate for very small sample sizes when using categorical variables in a contingency table (2x2) format (Fisher, 1922). The test was also used to assess whether a difference could be determined between SMFs and ITAs.

Results

Research Proposition 1: Student-managed funds will underperform conventional funds as they will, in general, be managed by those lacking industry operating experience, business connections, and the financial reputation of professionally-managed funds.

TABLE 1
STUDENT MANAGED VERSUS PROFESSIONALLY MANAGED BY SALE OF FIRM

Was Firm Sold?	Was Firm in Student Managed VC Fund?		Total
	No	Yes	
No	7,830 (67.0%)	77 (83.7%)	7,907 (67.1%)
Yes	3,856 (33.0%)	15 (16.3%)	3,871 (32.9%)
Total	11,686 (100.0%)	92 (100.0%)	11,778 (100.0%)
Fisher's Exact Test Significance (1-sided) = .001			

When judged by the performance metric of whether the portfolio company was sold, professionally managed funds had almost double the rate of “exit-by-sale” as did the student managed funds. Moreover, this difference was significant at the .001 level. When evaluated on the basis of “IPO-as-exit”, the results were similarly significant at the .046 level.

TABLE 2
STUDENT MANAGED VERSUS PROFESSIONALLY MANAGED BY IPO OF FIRM

Did Firm Have IPO?	Was Firm in Student Managed VC Fund?		Total
	No	Yes	
No	10,050 (86.0%)	85 (92.4%)	10,135 (86.1%)
Yes	1,636 (14.0%)	7 (7.6%)	1,643 (13.9%)
Total	11,686 (100.0%)	92 (100.0%)	11,778 (100.0%)
Fisher's Exact Test Significance (1-sided) = .046			

However, since the entire database of non-university oriented, professionally managed VC investments included only investments made prior to 2001, it is safe to assume that all would have had time to fully mature (2011 data). However, because most of the student- managed investments were made after 2006, it is possible that this difference in performance is an artifact of not having held the investment to maturity. A 3 to 7-year holding period is common in venture capital. Surprisingly, when testing the professionally managed funds against only those student-managed investments made prior to 2006 (a 7 year holding period), the difference between the professionally managed and student-managed funds disappears for both the IPO measure and the Sale measure:

TABLE 3
PRE-2006 STUDENT MANAGED VERSUS PROFESSIONALLY MANAGED BY SALE OF FIRM

Was Firm Sold?	Was Firm in Student Managed VC Fund?		Total
	No	Yes	
No	7,830 (67.0%)	9 (56.3%)	7,839 (67.0%)
Yes	3,856 (33.0%)	7 (43.8%)	3,863 (33.0%)
Total	11,686 (100.0%)	16 (100.0%)	11,702 (100.0%)
Fisher's Exact Test Significance (1-sided) = .253			

TABLE 4
PRE-2006 STUDENT MANAGED VERSUS PROFESSIONALLY MANAGED BY IPO OF FIRM

Was Firm Sold?	Was Firm in Student Managed VC Fund?		Total
	No	Yes	
No	10,050 (86.0%)	12 (75.0%)	10,062 (86.0%)
Yes	1,636 (14.0%)	4 (25.0%)	1,640 (14.0%)
Total	11,686 (100.0%)	16 (100.0%)	11,702 (100.0%)
Fisher's Exact Test Significance (1-sided) = .177			

Research Proposition 2: Student-managed funds will underperform Angel-Alumni networks, as the latter will tend to have broader industry operating experience, industry connections and financial reputation than SMFs.

Since Columbia Technology Ventures, our only representative in this category, did not distinguish between IPOs and Sales, we collapsed IPOs and Sales into “successful exits” in order to test this proposition. Surprisingly, no significant difference was found between the performance of this angel network and the student-managed VC investments.

TABLE 5
STUDENT MANAGED VERSUS ANGEL/ALUMNI NETWORK BY “SUCCESSFUL EXIT”

Successful Exit?	Was Firm in Student Managed VC Fund?		Total
	Student Fund	Angel Fund	
No	70 (76.1%)	120 (81.6.0%)	190 (79.5%)
Yes	22 (23.9%)	27 (18.4%)	49 (20.5%)
Total	92 (100.0%)	147 (100.0%)	239 (100.0%)
Fisher's Exact Test Significance (1-sided) = .192			

These results would suggest that the active guiding, mentoring and advising of portfolio firms typical of VC investors does not occur to the same extent in angel networks. The implications of this for entrepreneurs could be significant: angels provide money and little else.

Research Proposition 3: Investments made prior to 2006 will outperform investments made in 2006 or later due to the “maturation effect” (3-7 years) cited previously. To test this proposition, we compared the results of portfolio investments made by student managed funds prior to 2006 with those made by student-managed funds in 2006 or later.

TABLE 6
STUDENT MANAGED FUNDS PRE-2006 VS. LATER BY SALE OF FIRM

Was Firm Sold?	Timeframe		Total
	Pre-2006	2006 or later	
No	9 (56.3%)	62 (88.6%)	71 (82.6%)
Yes	7 (43.8%)	8 (11.4%)	15 (17.4%)
Total	16 (100.0%)	70 (100.0%)	86 (100.0%)
Fisher's Exact Test Significance (1-sided) = .006			

TABLE 7
STUDENT MANAGED FUNDS PRE-2006 VS. LATER BY IPO OF FIRM

Was Firm Sold?	Timeframe		Total
	Pre-2006	2006 or later	
No	12 (75.0%)	67 (95.7%)	79 (91.9%)
Yes	4 (25.0%)	3 (4.3%)	15 (17.4%)
Total	16 (100.0%)	70 (100.0%)	86 (100.0%)
Fisher's Exact Test Significance (1-sided) = .021			

The results indicated that investments made prior to 2006 were more likely to have been exited successfully, whether by Sale or IPO, than those made in 2006 or later. The implications of this are intriguing for schools contemplating starting a venture fund, as they corroborate the finding of “no difference” between student-managed and professionally-managed funds when adjusted for a longer student holding period (see results under P1 above).

Research Conclusions

While more research needs to be done, our finding suggest that any claim that professionally-managed funds perform better than student-managed funds is largely attributable to the fact that student-managed funds are in general a relatively new phenomenon and their portfolios have not had time to mature. When controlled for a reasonable period for maturing, no difference in performance was observed between student-managed and professionally-managed funds.

FACTORS INFLUENCING FUND DESIGN

In evaluating the feasibility of initiating a fund, six observations from our sample seem noteworthy. The following items can help one assess whether a fund would be a good fit for a particular university, how large it should be, and what challenges should be anticipated. It should be further noted that internal resistance to operating a fund is common, typically from the risk management or investment sides of the administration.

1) Fund size is critically important. Huntsman and Homan (1972) analyzed performance of private investments tracked for 15 years and found that of 110 investments, the average fund's ROI was an 18.9% p.a. However, these returns were highly conditioned on having a very small number of very highly successful investments. A “significant number” of randomly selected portfolios of 10 companies from the sample of 110 actually had negative returns. This suggests that venture funds will want to be large enough to allow for adequate diversification, targeting more than 10 portfolio companies. In our survey, reported fund sizes range from \$18.6 million to \$100,000.

2) Stage matters (Cumming 2006). The majority of university-oriented funds focus on pre-seed, seed and early stage investments. While this allows meaningful investments to be smaller, which in turn allows for greater diversification, it also implies that holding periods may be longer and risk of failure is higher. Complicating this early-stage bias is that fact that early investors should be prepared to invest in follow-on rounds when a company has been successful and requires more capital. Doing so may burden a small fund's diversification plan, but not doing so sends a bad signal to potential next-round investors.

3) University research is important. Strong engineering, computer science, and bioscience research programs often provide the fund with preferential and early access to technology. Moreover, the fund can provide assistance to the university's licensing office as to which technologies may have the most commercial potential, thereby helping determine which inventions should be patented. In the absence of strong science research at the university, the fund needs to define a clear strategy for assuring deal-flow.

4) University geography matters. Porter's (1986) volume on global competitive advantage has application to starting a student-managed VC business. According to Porter, skills and resources cluster

geographically and interact with demanding consumers to continually refine products. Universities situated in communities with thriving commercial/industrial cultures will be better situated to identify and develop potential start-ups than universities located in less progressive business environments. While portfolio companies are typically highly scalable and may reach customers across the globe, venture capital is local or regional, since the process of funding, developing, and monitoring these companies is contact-intensive. If a university is not part of a vibrant business community, it may have to lean more heavily on its AAN.

5) Angel-Alumni development is important. Regardless of whether a university operates an SMF or an AAN, developing the alumni/angel network should be a high priority. Even among the student managed funds, angels and alumni often served as speakers, advisors or consultants in the funds we examined. Considerable expertise, contacts and even future funding can come for an AAN. If the university's VC initiative is through an ITA, developing an AAN is less important since the sponsoring VC firm is likely to have a well-developed network itself.

6) Who are the LPs? In all of the cases of student-managed funds that we examined, the limited partner was the school itself (the school owned the fund). However, by allowing investors the option of investing directly into the fund as a limited partner, the investor /donor could more closely tailor his personal financial planning objectives by deciding whether to donate and take a tax write-off or invest now and perhaps donate later. This could be especially attractive to donors who still want to help the school, but have "donor fatigue" from previous "asks".

IMPLICATIONS: WHY REAL MONEY IS IMPORTANT WHEN TEACHING ENTREPRENEURSHIP

The failure rates of start-up businesses are frightening. Depending on which sources one cites and what criteria are used, $\frac{1}{2}$ to $\frac{2}{3}$ rds of businesses fail in the first 5 years. Recent research suggests that up to 75% of venture-backed businesses fail (Blank 2013). Given those odds, it stands to reason that only four types of individuals would take the entrepreneurial plunge: (1) the ignorant, (2) the arrogant, (3) the desperate, or (4) the confident. However, the difference between the confident and the arrogant (or presumptuous) can be a very fine line. A careful entrepreneurial education should be designed to give students the confidence to take well-calculated risks about which they are well-informed. Having real money available as a pedagogical tool initiates three critical processes that build real-world confidence in entrepreneurs.

First, if an academic program has real money to invest, it can attract real deal flow. Real deal flow allows the student-entrepreneur the opportunity to examine perhaps 10 or 20 business plans in a semester in the context of peer and professional scrutiny. Students receive fast feedback from their peers and from professionals associated with the fund on their own assessments of the possibility of a plan's success. In effect, the student learns what constitutes a successful plan from having critiqued many and observed what was funded. The validation of a student's own ability to assess the likelihood of a plan's success provides a basis for a student to place confidence in his or hers own ability to successfully formulate and craft a plan. By contrast, entrepreneurship pedagogy built around student business planning in effect asks the student to learn from his sample size of 1 (his or her own project).

Secondly, real money invites adequate disclosure that supports careful due diligence. Too often, students are asked to write business plans without having much experience in the industry or without having formed a real founding team. Companies pursuing funding will likely have both. The level of disclosure that is expected from companies seeking real funding ensures that students can learn what data should be presented, how it should be analyzed and where to access it. Thorough analysis of a business model can increase confidence in its success, or identify areas where change would be required.

Finally, once a student-managed fund invests, it adds a portfolio company. The fund typically receives regular operating reports. This level of visibility into the struggles of a privately held early-stage company is difficult - if not impossible - without being invested. As operational challenges arise, the students can gain insights into the reasons for the problems, whether they were successfully resolved, and

how they were resolved. In effect, they receive operating experience – though of an indirect kind. Operating experience is very difficult to teach in a classroom, but critical to developing confidence in business.

It has been said that one is not an entrepreneur until one “pays his money and takes his chances”. Prior to that, one is merely a student. Yet it is precisely the lack of confidence that keeps many from initiating good ideas. However, a program that funds and operates real businesses gives entrepreneurship students the opportunity to develop the confidence gained from overcoming obstacles and achieving milestones. Moreover, real profits and losses force entrepreneurs to live within their true risk threshold. If there is nothing to lose, economic theory suggests one will game the system by taking inordinate risks in hopes of extraordinary returns. Much entrepreneurship education seems to discount this reality by asking students for go/no-go decisions on case-based presentations.

To summarize, real money generates deal flow. Without real money to invest, few start-ups will be interested in presenting their story to a class for analysis. Secondly, real deal flow allows entrepreneurs to assess real management teams, real opportunities, and real capabilities, thereby learning the discipline of due diligence. Thirdly, overseeing portfolio companies gives students insights into operational challenges and solutions in start-ups. Finally, by examining many deals over the course of the semester, students get a feel for the profiles of promising companies versus less promising ones – a substantial improvement over the “sample size = 1” of business plan development. When coupled with the prospects that student-managed funds perform equally as well as professionally managed firms, universities considering launching such a program should take heart.

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APPENDIX 1

UNIVERSITY-ORIENTED FUNDS

Name	University	Portfolio companies (total since inception) / successful exits	Managed by /begun in
Wolverine Fund	U. Michigan	18/3	Students/1998
Laurie Commercialization	U. Michigan	7/1	Students/2006
Big Red Ventures	Cornell	10/2	Students/1999
University Venture Fund	U. of Utah	23/7	Students/2004
Dakota Venture Fund	U. of N. Dakota	13/2	Students/2006
Garber VC Fund	Penn State	8/3	Students/2002
NYU Innovation Venture Fund	NYU	6/1	Students/2011
Hop-On Venture Fund	U. of Akron	0/0	Students/2011 (fund-raising)
Uncertain	Miami University (Ohio)	2/0	Students/ 2007 (restart)
<u>TOTALS</u>		<u>74/17</u>	
Columbia Tech Ventures	Columbia Univ.	147/	Angel/tech. network
New Markets Venture Fund	Univ. of Maryland	----	Professional VC Firm/
StartX	Stanford	---	Univ. admin/2013
-----	Creighton Univ.	---	Produces business plans for biotechs in incubator