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University Venture Capital



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Synonyms

Entrepreneurial finance; Limited partnership; University; University-managed venture capital; University endowment; Venture capital

Description/Definition

Universities have become increasingly active in venture capital (VC) markets via (i) limited partnerships in traditional VC funds and (ii) direct investments in new ventures. Despite the policy relevance of this phenomenon, it is still under-researched. This entry provides a brief overview of university venture capital in terms of (a) the two above modes through which universities enter VC, the goals of these two modes, their investment characteristics, and their geographical diffusion; and (b) the distinctive style that

university-affiliated funds have in terms of investment focus, ventures' age and capital requirements, geography, syndication patterns, and industry preferences.

Introduction

Universities play a central role in spurring entrepreneurial and innovation ecosystems (Stam and Van de Ven 2021) and generating positive spillovers on the development and growth of new ventures. In addition to their “classical functions” of enhancing university-industry collaborations and transferring technology and knowledge to third parties – via patent licensing, science parks, incubator facilities, accelerators, technology transfer offices, and university spinouts (Wright et al. 2006) – universities are often also active in venture capital (VC) activities. Indeed, several universities invest as limited partners (LPs) in traditional VC funds; moreover, many universities worldwide have their own initiatives to directly invest in and support entrepreneurial ventures.

Using comprehensive data on VC investments from 2006 to 2022, this entry shows that approximately (i) 3400 deals worldwide were made by university-affiliated investors and (ii) 13% of traditional VC funds have at least one university endowment as LP (with this percentage being 20% in the United States). University endowments as LPs commit, on average, US\$16 million to VC funds.

Despite the relevance of universities in entrepreneurial finance, this phenomenon is still under-researched (Etzkowitz et al. 2023). This theme is policy relevant because of the increasing emphasis of policymakers on the entrepreneurial role of universities in spurring venture growth and entrepreneurial societies.

This entry begins by reviewing the thin academic literature on university initiatives in VC. Next, it provides an overview of the data and the main findings.

Literature Review

The involvement of universities in VC takes two main forms. The first is about the direct management of entities affiliated with the university that take equity stakes in new ventures (UVCs, hereafter). The second consists in acting as LPs in traditional VC funds (UVC-LPs, hereafter). Hochberg and Rauh (2013) show that, on average, university endowments allocate 13% of their capital to VC, buyouts, and real estate. As shown in this entry, some universities have more than one UVC initiative and also act as UVC-LPs.

The goal of UVCs is twofold (Croce et al. 2014): (i) invest in ventures whose technology is close to the scientific specialties of the parent university's faculty and (ii) use the exit proceeds (i.e., cash) from the investments to speedup the commercialization and transfer of technologies developed by the parent university. Instead, the goal of UVC-LPs is more blurred. Sensoy et al. (2014) argue that the GPs of traditional VC funds value "knowledgeable, long-term investors who will invest in future funds as well as the current one." (p. 322) and provide the example of David Swensen, the head of the Yale University endowment who implemented what can be labeled as a "reinvesting in the same VC funds" policy (for details, see Lerner and Leamon 2011). These arguments suggest that the main goal of UVC-LPs is to build a solid relationship with prominent VC funds to secure a stable stream of cash flows useful to fund the development and commercialization of the parent university's technologies and business projects. Instead, Lerner

et al. (2007) describe how (private) university endowments are used to identify and pursue more flexibly investment opportunities (for details, see Swensen 2000). This flexibility may point to a "technology window" goal of UVC-LPs, with university endowments using traditional VC funds as agents to spot the next technology winner in the market. This strategy calls for the need for universities to complement their internal research and technology development with external technological sources. Given that screening the entrepreneurial markets for promising technologies is the main function of traditional VC funds, universities aim to act as LPs also to learn from traditional VC funds on how to pick the most promising ventures.

After agreeing with the memorandum of investments proposed by the traditional VC funds' GP – which specifies fund duration, target industries, target venture characteristics, and target locations, among others – university endowments as LPs play a limited role in the selection and management of investments. By contrast, UVCs directly select and manage investments and likely invest locally because of their aim to form an institutional-personal relationship between the university and the founders (Kremer et al. 2022) and the prominent role of universities in innovation (Heaton et al. 2019) and entrepreneurial ecosystems (Johnson et al., 2019), so as to generate local external benefits, support local development and well-being, and increase the local flow of capital (Fried 2003). This "local investment strategy" becomes a reinforcing mechanism when the university is located close to a VC ecosystem: indeed, proximity to a reputable VC ecosystem positively impacts the performance of UVCs (Kremer et al. 2022).

Data and Findings

This entry uses data collected from Pitchbook, a comprehensive database widely used by researchers and professional investors, which relies on disclosed information from LPs and GPs, filings from national regulators, and other publicly available data. This entry uses data on the

investments made by UVCs (i.e., investors labeled as “University” by Pitchbook) and traditional VC firms (i.e., investors labeled as “Venture Capital” by Pitchbook) from 2006 to 2022. Deals where investment dates are missing were excluded.

As described above, there are two main approaches through which universities can contribute to venture funding. The first approach consists of setting up funds specifically designed to make equity investments in ventures (UVCs). In Table 1, the list of UVCs that made at least 10 investments from 2006 to 2022 (first column) and their affiliated parent universities (second column) are reported. As shown, the University of Oxford stands out as the most active university, with over 300 investments made through 3 different units: Oxford Science Enterprises, Oxford University Innovation, and Saïd Business School. The University of Maryland, The Hong Kong Polytechnic University, and the Massachusetts Institute of Technology (MIT) are also particularly active, having completed over 100 deals each during the analyzed time period. In addition to the 1893 deals completed by the UVCs that made at least 10 investments, there were additional 1508 deals made by less active universities.

The second approach through which universities join the VC arena is more passive and indirect. Rather than directly investing in ventures, university endowments sign limited partnership contracts and provide financial capital to traditional VC funds. According to Pitchbook data, approximately 13% of VC funds with available information on their LPs have at least one university endowment as a limited partner. This proportion is notably higher in the United States (c.a. 20%). On average, university endowments commit approximately US\$16 million to VC funds, with a median commitment of US\$10 million. An example of a VC fund funded by university endowments is Sequoia Capital IX, which received support from the Regents of the University of California, the University of Michigan Endowment, Amherst College Endowment, Cornell University Endowment, and Duke Management Company. Another example is Kleiner Perkins Caufield & Byers VIII, which received

support from the University of Michigan Endowment, Stanford Management Company, Harvard Management Company, Duke Management Company, University of Notre Dame Endowment, Yale University Endowment, Rockefeller University Endowment, Georgia Tech Foundation, and Vanderbilt University Endowment. Table 2 shows the most active universities that serve as LPs of traditional VC funds, focusing solely on the endowments that have supported three or more funds. The University of Michigan is the most active LP having backed more than 200 VC funds.

It is worth noting that Table 2 reports the list of all university endowments that supported at least three traditional VC funds. From this list, five endowments that are not directly associated with specific universities (e.g., endowments supporting education in certain US States) and other types of entities such as pension funds or sovereign wealth funds were excluded. The list of excluded endowments and entities is: Alaska Permanent Fund, Texas Permanent School Fund, Permanent University Fund, Tobacco Settlement Investment Board, Nevada System of Higher Education Endowment, University System of New Hampshire, and Oklahoma State Regents for Higher Education Endowment.

While the establishment of investment units for directly supporting ventures (i.e., UVCs) seems to be common across the globe, the strategy to act as LPs in traditional VC funds (i.e., UVC-LPs) is predominant among universities in the United States. As shown in Table 2, only a handful of non-US universities acts as LPs in traditional VC funds.

It is worth mentioning that certain universities may have decided not to enter the VC arena because they implemented other strategies, such as accelerator programs or science parks to support ventures. For instance, Luiss University set up Luiss Enlabs in 2010 to provide ventures with funding and network. Similarly, the University of Warwick launched the University of Warwick Science Park to offer office and lab spaces to ventures as well as provide access to research and resources from the University of Warwick and an experienced in-house business support

University Venture Capital, Table 1 List of UVCs that made at least 10 investments from 2006 to 2022

University programs with at least 10 deals	University	Investments	%
Oxford Science Enterprises Oxford University Innovation Saïd Business School	University of Oxford	321	16.957
Maryland Industrial Partnerships	Maryland University	220	11.621
The Hong Kong Polytechnic University	The Hong Kong Polytechnic University	207	10.935
MIT Sandbox MIT Climate & Energy Prize MIT \$100K Entrepreneurship Competition	MIT	101	5.335
UCL Business University College London	University College London	85	4.490
CARB-X	Boston University	61	3.222
Rice University Rice Business Plan Competition	Rice University	60	3.170
Columbia Venture Competition Columbia Technology Ventures	Columbia University	54	2.853
Carnegie Mellon University Silicon Valley Carnegie Mellon University	Carnegie Mellon University	49	2.589
University of Chicago University of Chicago Booth School of Business	University of Chicago	46	2.430
Harvard Business School	Harvard University	40	2.113
Venture Cup	Multiple Danish Universities	36	1.902
Leland Stanford Junior University	Stanford University	36	1.902
Carlson School of Management Minnesota Cup	University of Minnesota	35	1.850
Samuel Zell & Robert H. Lurie Institute for Entrepreneurial Studies University of Michigan MINTS	University of Michigan	34	1.796
The Chinese University of Hong Kong	The Chinese University of Hong Kong	34	1.796
University of Washington Foster School of Business	University of Washington	32	1.690
University of Wisconsin – Oshkosh	University of Wisconsin	32	1.690
Royal Academy of Engineering	Royal Academy of Engineering	27	1.426
Berkeley Haas Global Social Venture Competition	University of California	26	1.373
IESE Business School	IESE University	25	1.320
Innovation Fund	Lorain County Community College	22	1.162
Oregon Nanoscience and Microtechnologies Institute	Oregon University	21	1.109
Technion Israel Institute of Technology	Israel Institute of Technology	18	0.951
Northwestern University	Northwestern University	18	0.951
Yonsei University Technology Holdings	Yonsei University	16	0.846
Tufts University	Tufts University	15	0.792
University at Buffalo	University at Buffalo	14	0.740
McGill University	McGill University	14	0.740
Imperial College London	Imperial College London	13	0.687
University of Cambridge	University of Cambridge	13	0.687
University of Waterloo	University of Waterloo	13	0.687
The University of Sydney	The University of Sydney	13	0.687

(continued)

University Venture Capital, Table 1 (continued)

University programs with at least 10 deals	University	Investments	%
University of Toronto	University of Toronto	12	0.634
Cornell University	Cornell University	12	0.634
UCLA Anderson School of Management	UCLA	12	0.634
ETH Zurich	ETH Zurich	12	0.634
Beijing Collaborative Innovation Institute	Beijing Collaborative Innovation Institute	11	0.581
Royal College of Art	Royal College of Art	11	0.581
Indian Institute of Technology Kanpur	Indian Institute of Technology	11	0.581
Yale University	Yale University	11	0.581
Cozad New Venture	University of Illinois	10	0.528
University of Pennsylvania	University of Pennsylvania	10	0.528
SLU Holding	Multiple Swedish Universities	10	0.528
Trinity College Dublin	Trinity College	10	0.528
USC Marshall School of Business	University of Southern California	10	0.528
Total		1,893	100

team. These non-UVC strategies are beyond the scope of the present work.

Focus on UVCs

In this section, the focus is on the investment strategies employed by UVCs. Figure 1 shows a remarkable growth in the number of investments made by UVCs between 2006 and 2019 (left graph). Over this 14-year period, the number of deals completed by these investors increased by approximately 2000%. Traditional VC firms' investments also grew during the same period (right graph), though at a slower pace (around 600%). The figure further shows that the Covid-19 pandemic had a profound impact on UVCs investments, leading to a significant slowdown in their venture investment activity; the number of investments made by UVCs declined by approximately 55% between 2019 and 2022. Conversely, the number of deals completed by traditional VC firms kept growing throughout the pandemic and experienced a decline only in 2022.

Table 3 reports the investment/round types as labeled by Pitchbook. The table highlights the distinctive nature of the investments made by UVCs and the significant divergence from

traditional VC firms in terms of investment types. UVCs are more likely to support ventures through grants and participation in accelerator/incubator or angel rounds (i.e., rounds where no private equity or VC firms are involved in the portfolio venture at the time of the round). This suggests that UVCs are less likely to nurture the growth of their portfolio companies by joining traditional VC round types.

Table 4 shows that UVCs tend to invest in younger ventures that have raised less capital prior to the UVC investment. On average, ventures backed by UVCs are less than 3 years old, 1 year younger than those backed by traditional VC firms. The amount raised (in US\$ million) by UVCs-backed ventures before the UVC investment is, on average, almost nine times lower than that raised by traditional VCs-backed ventures. This evidence may suggest that universities play a vital role in supporting nascent ventures and filling a potential early stage funding gap. By investing in ventures at an earlier stage, universities contribute to the development of innovative ideas and technologies from their infancy, potentially reaping long-term benefits. Moreover, Table 4 suggests that universities are more inclined to invest in ventures with lower capital requirements, as testified by the average deal size (in US\$ million) of UVCs-backed ventures which

University Venture Capital, Table 2 List of UVC-LPs that supported three or more traditional VC funds from 2006 to 2022

Endowment with at least 3 VC funds backed	University	N. VC funds	%
University of Michigan Endowment	University of Michigan	237	19.206
University of Texas Investment Management Company	University of Texas System	154	12.480
Regents of the University of California	University of California System	143	11.588
University of Washington Endowment Washington University Investment Management Company	University of Washington	77	6.240
University of Pittsburgh Endowment	University of Pittsburgh	57	4.619
Duke Management Company	Duke University	39	3.160
Princeton University Investment Company	Princeton University	32	2.593
University of Chicago Endowment	University of Chicago	31	2.512
Harvard Management Company	Harvard University	29	2.350
Yale University Endowment	Yale University	28	2.269
Stanford Management Company	Stanford University	27	2.188
Cornell University Endowment	Cornell University	19	1.540
University of Missouri	University of Missouri	18	1.459
University of Notre Dame Endowment	University of Notre Dame	15	1.216
Texas A&M University System Endowment	Texas A&M University	14	1.135
All Souls College (Oxford) Endowment University of Oxford Endowment St. Catherine's College (Oxford) Endowment	University of Oxford	14	1.135
Texas Tech University System Endowment	Texas Tech University	14	1.135
California Institute of Technology Endowment	California Institute of Technology	13	1.053
University of Richmond Endowment	University of Richmond	13	1.053
University of Houston System Endowment	University of Houston	13	1.053
University of Illinois Foundation	University of Illinois	12	0.972
Rutgers University Foundation	Rutgers University	10	0.810
Vanderbilt University Endowment	Vanderbilt University	10	0.810
University of Virginia Investment Management Company	University of Virginia	10	0.810
Carnegie Mellon University Endowment	Carnegie Mellon University	8	0.648
University of Vermont Endowment	University of Vermont	8	0.648
University of Cincinnati Endowment	University of Cincinnati	8	0.648
Northeastern University Endowment	Northeastern University	7	0.567
The Ohio State University Endowment	Ohio State University	7	0.567
Tsinghua University Education Foundation	Tsinghua University	7	0.567
Kenyon College Endowment	Kenyon College	7	0.567
Indiana University Foundation	Indiana University	7	0.567
Ohio University Foundation	Ohio University	6	0.486
Boston University Endowment	Boston University	6	0.486
Denison University Endowment	Denison University	6	0.486
Georgia Tech Foundation	Georgia Institute of Technology	6	0.486
Merton College Endowment	Merton College	6	0.486
Rollins College Endowment	Rollins College	6	0.486
Dartmouth College Endowment	Dartmouth College	6	0.486
Trinity College Endowment, Cambridge University	University of Cambridge	5	0.405
University of Minnesota Foundation	University of Minnesota	5	0.405

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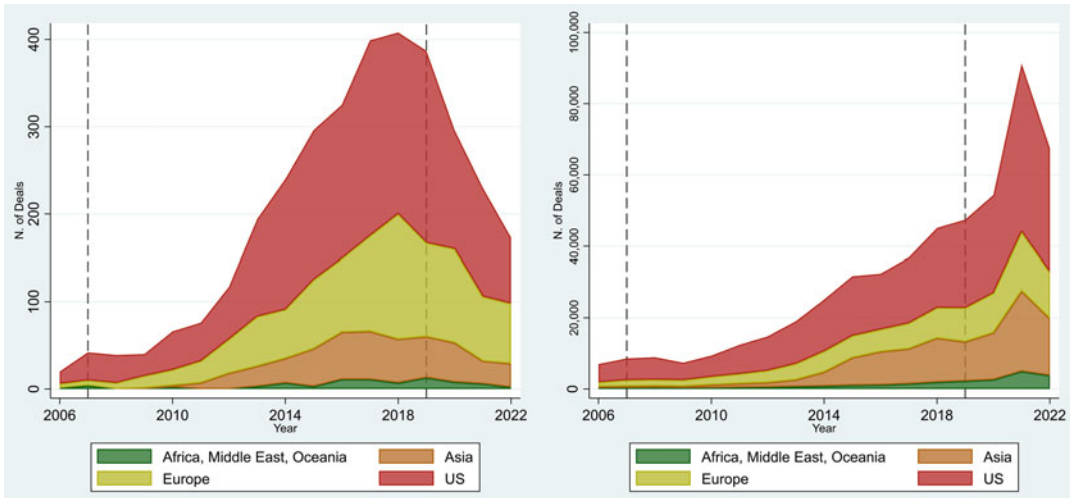
University Venture Capital, Table 2 (continued)

Endowment with at least 3 VC funds backed	University	N. VC funds	%
Amherst College Endowment	Amherst College	5	0.405
Emory University	Emory University	5	0.405
Rockefeller University Endowment	Rockefeller University	4	0.324
Washington State University Foundation	Washington State University	4	0.324
Shanghai Jiao Tong University Foundation	Shanghai Jiao Tong University	4	0.324
Peking University Education Foundation	Peking University	4	0.324
Queensland University of Technology Endowment	Queensland University of Technology	4	0.324
The University of Melbourne Endowment	The University of Melbourne	4	0.324
University of Colorado Foundation	University of Colorado	4	0.324
Hampton University Endowment	Hampton University	4	0.324
Brown University Endowment	Brown University	4	0.324
Michigan State University Endowment	Michigan State University	3	0.243
Southern Methodist University Endowment	Southern Methodist University	3	0.243
Grinnell College Endowment	Grinnell College	3	0.243
Delft University of Technology Endowment	Delft University	3	0.243
Colby College Endowment	Colby College	3	0.243
Oregon State University Foundation	Oregon State University	3	0.243
University of Wisconsin System Endowment	University of Wisconsin	3	0.243
Pennsylvania State University Endowment	Pennsylvania State University	3	0.243
Pomona College Endowment	Pomona College	3	0.243
Southern New Hampshire University Endowment	Southern New Hampshire University	3	0.243
Lawrenceville School Endowment	Lawrenceville School	3	0.243
Smith College Endowment	Smith College	3	0.243
Northwestern University Endowment	Northwestern University	3	0.243
Claremont McKenna College Endowment	Claremont McKenna College	3	0.243
Case Western Reserve University Endowment	Case Western Reserve University	3	0.243
Lehigh University Endowment	Lehigh University	3	0.243
Total		1,234	100.00

is more than six times lower than that of traditional VCs-backed ventures. Finally, UVCs are more likely to invest in ventures geographically closer to them: 90% (34%) of UVCs-backed ventures are located in the same country (city), while the same figure for traditional VCs-backed ventures is 75% (22%). This investment strategy clearly aligns with the emphasis of universities on fostering closer ties with entrepreneurs and researchers in their proximity, who can then develop innovative ideas and enhance local development. By supporting ventures locally, universities can facilitate a more seamless transfer of knowledge, expertise, and technology between academia and

the entrepreneurial ecosystem. Figure 2 shows that the propensity of UVCs to invest in geographically proximate ventures (i.e., ventures headquartered in the same city where the university is based) has increased over time.

Table 5 shows the syndication patterns of UVCs. Compared with traditional VC investors, UVCs are less likely to syndicate their investments with other investors. On average, UVCs syndicate approximately 42% of their investments, while the same figure for traditional VC investors is more than 84%. This may suggest that UVCs often prefer to make investments alone rather than forming syndicates as commonly



University Venture Capital, Fig. 1 Investments made by UVCs and traditional VC investors from 2006 to 2022

University Venture Capital, Table 3 Investment types of UVCs and traditional VC investors

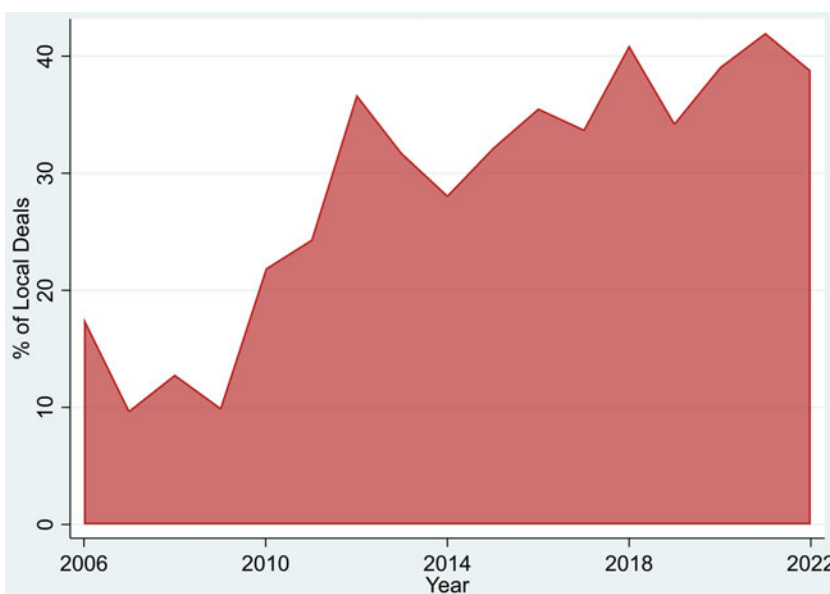
<i>Investment type</i>	Universities (UVCs)	Traditional VC investors (VCs)	Difference: UVCs – VCs
Grant	0.467	0.005	0.463*** (0.001)
Accelerator/incubator round	0.182	0.020	0.162*** (0.002)
Angel round	0.011	0.002	0.009*** (0.001)
Seed round	0.129	0.258	–0.129*** (0.008)
Early VC round	0.135	0.420	–0.284*** (0.008)
Late VC round	0.076	0.295	–0.219*** (0.006)

done by traditional VC investors because of, for instance, different target ventures or technologies and/or different fund duration. It is likely that UVCs are more patient investors than traditional VC investors and target early stage ventures (as shown in Table 4) and technologies that are more radical, uncertain, or relatively far from being commercialized. Another plausible reason for the lower tendency of UVCs to syndicate investments is their pursuit of autonomy in investment decision-making. Universities, as educational and research institutions, often prioritize

long-term objectives that align with their institutional mission and values. Avoiding syndication makes universities retain control over their investment strategies and enables them to invest consistently with their broader objectives in education, research, and societal impact. The lower tendency of UVCs to syndicate is even stronger when focusing on syndication with VC investors (26% versus 76%), private equity (PE) funds (2.6% versus 11%), angels (9% versus 30%), and corporations (13% versus 29%). By contrast, when compared to traditional VC investors, UVCs do

University Venture Capital, Table 4 Investment strategies of UVCs and traditional VC investors

<i>Investment strategies</i>	Universities (UVCs)	Traditional VC investors (VCs)	Difference: UVCs – VCs
Million \$ raised before the investment by the venture	5.413	44.417	-39.004***
			(5.301)
Deal size (\$ million)	3.875	24.904	-21.028***
			(2.299)
Venture age (years)	2.969	4.055	-1.086***
			(0.078)
Lead investor	0.597	0.267	0.330***
			(0.008)
Same country	0.900	0.755	0.145***
			(0.007)
Same city	0.342	0.221	0.121***
			(0.007)



University Venture Capital, Fig. 2 Percentage of UVCs investments in geographically proximate ventures from 2006 to 2022

exhibit a higher likelihood of syndicating with other universities (4.5% versus 0.4%) or government entities (6% versus 1%), indicating a collaborative approach with similar institutional actors.

Lastly, Table 6 shows the industries that UVCs typically target in their investment activities. In

comparison to traditional VC investors, UVCs are more likely to invest in healthcare devices and technology systems (more than 18% versus less than 8%), and pharmaceuticals and biotechnology industries (more than 14% versus less than 7%). This strategic focus may reflect the inherent strength of universities in scientific research and

University Venture Capital, Table 5 Syndication patterns of UVCs and traditional VC investors

Syndication patterns	Universities (UVCs)	Traditional VC investors (VCs)	Difference: UVCs – VCs
Syndication	0.424	0.843	–0.419*** (0.006)
Syndication with VC firms	0.262	0.756	–0.494*** (0.007)
Syndication with universities	0.045	0.004	0.041*** (0.001)
Syndication with PE firms	0.026	0.109	–0.083*** (0.005)
Syndication with nonprofit VC firms	0.027	0.036	–0.009*** (0.003)
Syndication with government entities	0.063	0.013	0.050*** (0.002)
Syndication with family offices	0.016	0.048	–0.032*** (0.004)
Syndication with growth/expansion funds	0.017	0.079	–0.062*** (0.005)
Syndication with accelerators	0.081	0.104	–0.023*** (0.005)
Syndication with angels	0.088	0.298	–0.210*** (0.008)
Syndication with corporations	0.131	0.288	–0.158*** (0.008)

University Venture Capital, Table 6 Industry focus of UVCs' and traditional VC investors' investments

Share of investments by industry	Universities	Traditional VC investors
Software	20.72	41.30
Commercial services	7.23	9.35
Pharmaceuticals and biotechnology	14.23	6.76
Healthcare devices and supplies	12.70	4.39
Commercial products	6.64	3.53
(Nonfinancial) services	2.56	3.39
Healthcare technology systems	5.44	3.23
Consumer nondurables	2.94	3.01
Media	1.88	2.90
Computer hardware	4.73	2.60
Consumer durables	3.88	2.16
Healthcare services	2.79	2.15
Retail	0.59	2.04
Other financial services	0.35	1.86
Transportation	0.65	1.43
Semiconductors	1.09	1.39
Restaurants, hotels, and leisure	0.62	1.26
IT services	0.62	1.10
Communications and networking	0.62	1.08

innovation, as well as their commitment to advancing breakthrough technologies in medical and life sciences (for an example of biomedical technologies, see, for instance, Atkinson 1994). By contrast, UVCs are less likely than traditional VC investors to invest in the software industry (less than 21% versus more than 41%). By investing in medical and “hard” science fields such as pharmaceuticals and biotechnology, it is reasonable to argue that universities are both exploiting their research-driven expertise and pursuing their mission to have a societal impact. Moreover, UVCs likely have a long-term investment horizon, which is often a necessary condition to invest in industries like healthcare, pharmaceuticals, and biotechnology, which often require substantial time and resources for research, development, and regulatory approvals.

These findings collectively demonstrate the distinctive investment strategies pursued by UVCs, highlighting their emphasis on early stage support, unique syndication patterns, and targeted industry preferences.

Conclusions

This entry has provided a brief overview of an under-researched but growing phenomenon in the entrepreneurial finance landscape: university venture capital. First, the two modes through which universities enter VC, namely (i) investing as LPs in traditional VC funds and (ii) investing directly in portfolio companies through university-affiliated initiatives, have been presented. Then, the goals of these two modes, as well as their investment characteristics, have been described. Second, the use of Pitchbook data has shown that the establishment and management of university-affiliated funds is common across the globe, while the investment strategy via LPs in traditional VC funds is mainly a US phenomenon. Third, it has been revealed that university-affiliated funds have a distinctive investment style in terms of investment focus, ventures’ age and capital requirements, geography, syndication patterns, and industry preferences.

Cross-References

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