TECHNOLOGY

The Future of Venture Capital? Insights Into Data-Driven VCs

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Can data-driven tools crack the art of finding and funding innovative startups?

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Algorithms have proliferated across industries and professions. The successful application of Large Language Models (LLM), Robotic Process Automation (RPA) and other data-driven tools is the hallmark of our time.[1] Yet, the contribution of such tools across different use-cases remains a topic of heated discussion. Case in point is the extent to which algorithms can engage in creative and innovative tasks or offer an accurate evaluation of their value. The successful application of data-driven approaches is documented across a host of business and scientific settings (Agrawal, Gans, & Goldfarb, 2018; Brynjolfsson & McAfee, 2014; Haenlein & Kaplan 2019; Krakowski, Luger, & Raisch, 2022). Yet, the discovery of entrepreneurial opportunities can be seen as an extreme test – think of it as 'frontier application' of data-driven tools. The impact of a data driven approach to entrepreneurial discovery remains a topic of open conversation.

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We seek to inform this conversation through a mix of anecdotal and large-sample evidence on the practice of data-driven venture capital investments. Venture capital (VC) investors are in the business of discovering and backing innovative entrepreneurial ventures. Since the early days of George Doriot and the American R&D Corporation, venture capitalists were viewed as investment connoisseurs who rely on their business acumen and networks to source and screen potential investment opportunities (Bhide, 2003; Fried and Hisrich 1994; Kaplan and Stromberg 2001). These practices were often facilitated through tight connections with geographically proximate entrepreneurs and industry veterans as well as co-investors with whom they share an investment history (Gompers and Lerner 2001; Rider 2012).

Data Driven VCs

Recently, some venture capitalists have opted to embrace data-driven approaches (Gompers, Gornall, Kaplan, Strebulaev 2020). The tools are deployed for various use cases, such as sourcing and screening of nascent startups or more mature investment opportunities. Below, we focus on the use of data-driven tools towards sourcing and screening nascent investment opportunities; namely, the practice of 'first money' into budding startups. We further discuss findings from analysis documenting portfolio characteristics for data-driven as well as traditional VCs.

To understand the data driven proposition in VC, we are reminded of the key activities over the lifespan of the VC fund; sourcing, screening, signing, and supporting. Traditionally, investors relied on their teams and networks to excel along the four dimensions. Recently, several VC investors have advocated the use of data-driven methodologies. Consider *Sourcing*. Signalfire, a U.S.-based VC, makes use of a data platform called Beacon, which its CEO, Chris Farmer, describes as, "*a proprietary mini-Google*."[2] Beacon is said to track more than 6 million companies in real-time by drawing upon 10 million data sources. Similar arguments pertain to the *Selection* dimension. The San Diego based Labx Ventures declares it can overcome bias and increase accuracy through the use of a proprietary New Venture Assessor (NVA), named RubX. The VC firm' website explains that RubX "*gives us the power to make scientifically-based recommendations and unlock the core strategies necessary for success*," and "*we correctly predicted—with over 80% accuracy—whether investors would have a high ROI within 7 years*."[3]

Investment Patterns

Informed by these anecdotes, we turn to document key characteristics for the portfolios of a set of data-driven (D-VC) and traditional (T-VC) investors. Below, we summarize the key findings based on preliminary analyses of twenty US-based funds and all their portfolio companies. To gauge the extent to which D-VCs uncover under-represented ventures, we focus on three commonly observable features of nascent startups; their geographical location and the attributes of the lead founder.

We observe that D-VCs exhibit a similar pattern of targeting ventures based in well- known 'startup hubs' across the USA. Specifically, about 52% of the initial investments undertaken by D-VCs are targeted at those in hub locations. The ratio is similar to the 51% of 'startup hub' investment for the portfolio of the comparison T-VC group.

A comparison of founders' attributes uncovers more meaningful differences. Analysis of CEO gender suggests that D-VCs fund a third more female-led companies compared to their T- VC peers; 13% versus 10%. The analysis of educational background reveals nuanced patterns as well. Among the U.S.-based investors we study, D-VCs are less likely to back 'elite' graduates, in comparison to T-VCs; 59% versus 66%, respectively.[4]

Taken together, these observations are consistent with a view of 'algorithms as tools for exploration.' The features and timing of their early investments suggest that D-VCs utilize the tools towards an exploratory approach. They derive value from such tools in identification of under-represented founders such as female and those from non-elite backgrounds.

Algorithms As Startup Investors

The successful application of algorithms is evident across different industries. Yet, the contribution of such tools across different use-cases remains a topic of heated discussion. Case in point is the extent to which algorithms can successfully engage in innovative tasks or offer an accurate evaluation of thereof. Evidence-based insights from the data-driven venture capitalists can inform the conversation. Data-driven investors in the United States, initial analysis suggests, are more likely to back founders from under-represented backgrounds (i.e., more females, fewer graduates of 'elite' universities), in comparison to their VC peers. The portfolios of both US- based investor groups exhibit similarities in their inclination to invest in startups of similar age and those based in 'startup hubs.' Future work is therefore needed to understand the extent to which data-driven VCs discern – and profit – from targeting opportunities that traditional VCs do not.

Key Takeaways

- The authors study venture capital firms using data-driven investment tools (D-VCs) and specifically focus on the 'first money in' portfolio of investments in nascent startups.

- The study explores D-VCs' portfolio and compares it to those of VCs using traditional investment methods (T-VCs) on geographical coverage (e.g., backing founders based in 'startup hubs'), CEO gender (e.g., the fraction of female founders), and educational background (e.g., backing graduates of 'elite' universities).

- Preliminary findings suggest D-VCs in the United States back founders from under-represented backgrounds (i.e., more females, fewer graduates of 'elite' universities), in comparison to their T-VC peers. The portfolios of both US-based investor groups exhibit similarities in terms of startups' age and location in 'startup hubs.'

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1. https://cmr.berkeley.edu/2022/11/harnessing-alternative-data-for-competitive-advantage/

2. Quoted; techcrunch.com/2015/10/22/watch-out-vcs-chris-farmer-says-hes-about-to-massively-disrupt-the-industry/

3. Quoted; labxventures.com/our-differentiator/.

4. A university is designated as 'elite' if it is listed on the 2019 QS World University Rankings top 10th percentile of universities in the focal country, or the 2019 global FT rankings.

References

1. Agrawal, A., Gans, J., and Goldfarb, A. 2018. "Prediction machines: The simple economics of artificial intelligence." Boston, MA: *Harvard Business Review Press*

2. Åstebro, T. 2021. "An Inside Peek at AI Use in Private Equity." *The Journal of Financial Data Science,* 4(4)

3. Bhide, A. 2003. "The origin and evolution of new businesses." *Oxford University Press*.

4. Brynjolfsson, E., and McAfee, A. 2012. *Race against the machine: How the digital revolution is accelerating innovation, driving productivity, and irreversibly transforming employment and the economy*.

5. Brynjolfsson, E., and McAfee, A. 2014. *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. New York, NY: W.W. Norton.

6. Gompers, P. and J. Lerner. 2001. "The Venture Capital Revolution." *The Journal of Economic Perspectives,* 15(2): 145-168

7. Gompers, P. A., Gornall, W., Kaplan, S. N., and Strebulaev, I. A. 2020. "How do venture capitalists make decisions?" *Journal of Financial Economics*, 135(1):169–190.

8. Fried, V. H., and Hisrich, R. D. 1994. "Toward a model of venture capital investment decision making." *Financial Management*, 28–37.

9. Haenlein, M., & Kaplan, A. 2019. "A Brief History of Artificial Intelligence: On the Past, Present, and Future of Artificial Intelligence." *California Management Review*, 61(4), 5–14.

10. Jiang, F., Jiang, Y., Zhi, H., Dong, Y., Li, H., Ma, S., Wang, Y., Dong, Q., Shen, H. and Wang, Y., 2017. "Artificial intelligence in healthcare: past, present and future." *Stroke and Vascular Neurology*, 2(4).

11. Kaplan, S. N., and Stromberg, P. 2001. "Venture capitals as principals: Contracting, screening, and monitoring." *American Economic Review*, 91(2), 426-430.

12. Krakowski, S., Luger, J., and Raisch, S. 2022. "Artificial intelligence and the changing sources of competitive advantage." *Strategic Management Journal*.

13. Ng, W., and Stuart, T. E. 2022. "Acquired employees versus hired employees: Retained or turned over?" *Strategic Management Journal*, 43(5), 1025-1045.

14. Rider, C.I. 2012. How employees' prior affiliations constrain organizational network change: a study of U.S. venture capital and private equity. *Administrative Science Quarterly* 57:453–483

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