

Schoar, Antoinette

Article

Fund flows and performance in the venture capital industry

NBER Reporter Online

Provided in Cooperation with:

National Bureau of Economic Research (NBER), Cambridge, Mass.

Suggested Citation: Schoar, Antoinette (2011) : Fund flows and performance in the venture capital industry, NBER Reporter Online, National Bureau of Economic Research (NBER), Cambridge, MA, Iss. 4, pp. 11-13

This Version is available at:

<https://hdl.handle.net/10419/61972>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

NBER Working Paper No. 5958, March 1997.

⁴ F. Foley, M. Desai, and J. Hines Jr. "Domestic Effects of the Foreign Activities of U.S. Multinationals," *American Economic Journal: Economic Policy*, No. 1 February 2009, pp. 181–203.

⁵ A. Harrison and M. McMillan, "Dispelling Some Myths about Offshoring," *Academy of Management Perspectives*, Vol. 20, No. 4, November 2006, pp. 6–22, and A. Harrison, M. McMillan, and C. Null, "U.S. Multinational Activity Abroad and U.S. Jobs: Substitutes or Complements?," *Journal of Industrial Relations*, Vol. 45, No. 2, 2007, pp. 347–65.

⁶ A. Harrison and M. McMillan, "Outsourcing Jobs? Multinationals and U.S. Employment," and "Offshoring Jobs? Multinationals and U.S. Manufacturing Employment."

⁷ J. Markusen and K. Maskus, "General-Equilibrium Approaches to the Multinational Firm: A Review of Theory

and Evidence," NBER Working Paper No. 8334, June 2001.

⁸ G. Grossman and E. Rossi-Hansberg, "Trading Tasks: A Simple Theory of Offshoring," NBER Working Paper 12721, December 2006.

⁹ A. Ebenstein, A. Harrison, M. McMillan, and S. Phillips, "Estimating the Impact of Trade and Offshoring on American Workers Using the Current Population Surveys," NBER Working Paper 15107, June 2009.

¹⁰ A. Harrison, J. McLaren, and M. McMillan, "Recent Findings on Trade and Inequality," NBER Working Paper 16425, September 2010, and "Recent Perspectives on Trade and Inequality," *Annual Review of Economics*, Vol. 3: pp. 261–89, September 2011.

¹¹ D. Brautigam and T. Xiaoyang, "Going Global in Groups: Analyzing China's New Overseas Economic Zones," IFPRI Working Paper, 2011.

¹² M. McMillan and D. Rodrik, "Globalization, Structural Change and

Productivity Growth," NBER Working Paper No. 17143, June 2011. Results for the United States are not shown in this paper. In more recent work, McMillan shows that 1997–2007 was a period of growth-reducing structural change for the United States.

¹³ J. Lin, "Should Industrial Policy in Developing Countries Conform to Comparative Advantage or Defy It? A Debate between Justin Lin and Ha-Joon Chang," *Development Policy Review*, 27(5), 2009, pp. 483–502.

¹⁴ A. Harrison and A. Rodriguez-Clare, "Trade, Foreign Investment, and Industrial Policy for Developing Countries," NBER Working Paper No. 15261, August 2009, and *Handbook of Development Economics*, Volume 5, D. Rodrik and M. Rosenzweig eds., North Holland, 2010, pp. 4039–214.

¹⁵ P. Aghion, M. Dewatripont, L. Du, A. Harrison, and P. Legros, "Industrial Policy and Competition," Working Paper, June 2011.

Fund Flows and Performance in the Venture Capital Industry

Antoinette Schoar*

The venture capital industry in the United States has undergone a major expansion over the last three decades, starting from a handful of funds in the early 1980s to an industry with more than \$50 billion in invested capital per year today. However, this expansion has not been entirely smooth: the venture capital industry experienced a dramatic boom and growth period in the late 1990s, but a subsequent bust led to consolidation of the industry after 2001. In the aftermath of the tech bubble's bursting, the aver-

age performance of the venture capital industry in the United States over the last decade has been poor.

When compared to the R and D budgets of the largest public firms in the United States, the size of the venture capital industry is small in absolute terms. But there is intense interest in the performance and functioning of this industry because of its central role as a catalyst in providing risk capital to entrepreneurs. In this context, the poor performance of venture capital over the last decade is of great concern for policymakers and market participants alike.

My research aims to understand the factors that drive the efficiency of fund flows and performance in the industry

and ultimately the role of venture investments on entrepreneurial firms. In a series of research papers, my co-authors and I have studied the role of investor and fund manager heterogeneity in an attempt to understand industry performance and investment behavior.

Persistence and heterogeneity in fund returns

Steven Kaplan and I provide the first large-scale documentation of private equity returns at the fund level, using a novel dataset of individual fund performance collected by Venture Economics.¹ We document three stylized facts about the industry that have not been closely

*Schoar chairs the NBER's Entrepreneurship Working Group and is the Michael M. Koerner Professor of Entrepreneurial Finance at MIT. Her Profile appears later in this issue.

examined before. First, when we investigate the performance of private equity funds, we find that venture capital (VC) fund returns on average are lower than the S&P 500 on an equal-weighted basis, but that they are higher than the S&P 500 on a capital-weighted basis. We also find a great deal of heterogeneity in returns across funds and time.

Second, we find substantial persistence in VC fund performance. General partners (GPs)—that is, the managers of VC funds—whose funds outperform the industry in one fund are likely to outperform the industry in the next fund, and vice versa. Furthermore, we find persistence not only between two consecutive funds but also between the current fund and the fund that preceded it. These findings are markedly different from the results for mutual funds, where persistence has been difficult to detect and, when detected, tends to be driven by persistent underperformance. We investigate whether selection biases, risk levels, or industry differences can explain the results, but conclude that they are unlikely to do so.

Third, we study the relationship between fund performance and capital flows, fund size, and overall survival of the GP. When we analyze the fund's track record in terms of capital flows, and consider both individual GPs and the industry overall, we find that fund flows are positively related to past performance. However, in contrast to the convex relationship found in the mutual fund industry, the relationship in private equity is concave. Similarly, new partnerships are more likely to be started in periods after the industry has performed especially well. But funds that are raised and partnerships that are created in boom times are less likely to raise follow-on funds; this suggests that these funds perform poorly. Therefore, a larger fraction of fund flows during boom times appears to go to funds that have lower performance, rather than to top funds. Finally, the dilution of overall industry performance in periods when many new funds enter is driven mainly by the poor performance of new entrants. The performance of established funds is less affected.

These results are puzzling, since we do not find long-term persistent return differences in other asset classes. We conjecture that underlying heterogeneity in the skill and quality of GPs could lead to heterogeneity in performance and to more persistence if new entrants cannot compete effectively with existing funds.

Several forces might make it difficult to compete with established funds. Many practitioners assert that unlike mutual fund and hedge fund investors, private equity investors have proprietary access to particular transactions. In other words, better GPs may be able to invest in better investments. In addition, private equity investors typically provide management or advisory inputs along with capital. If high-quality GPs are scarce, then differences in returns between funds could persist. However, if heterogeneity in GP skills drives the persistence results, then it is surprising that the returns to superior skill are not appropriated by the GPs through higher fees and larger funds in our sample period, as has been suggested for mutual funds.²

Investor selection

One reason why heterogeneity in returns between venture funds might persist over time is if these funds voluntarily restrict the amount of funding and the type of investors from whom they raise capital. Josh Lerner and I³ present a theory that relies on the idea that managers use the liquidity of securities as a choice variable to screen for deep-pocket investors, those who have a low likelihood of facing a liquidity shock. We assume an information asymmetry about the quality of the manager between the existing investors and the market. The manager then faces a lemons problem when he has to raise funds for a subsequent fund from outside investors, because the outsiders cannot determine whether the manager is of poor quality or the existing investors were hit by a liquidity shock. Thus, liquid investors can reduce the manager's cost of capital in future fundraising.

We test the assumptions and predictions of our model in the context of the

private equity industry. Consistent with the theory, we find that transfer restrictions on investors are less common in later funds organized by the same private equity firm, where information problems are presumably less severe. Also, partnerships whose investment focus is in industries with longer investment cycles display more transfer constraints. Finally, we present evidence consistent with the assumptions of our model, including the high degree of continuity in the investors of successive funds and the ability of sophisticated investors to anticipate funds that will have poor subsequent performance. Overall, the research suggests that heterogeneity in the characteristics of investors might impose constraints on how (even good) funds expand their capital.

Heterogeneity in investor performance

To further shed light on the puzzle of return heterogeneity in venture capital, especially at the lower end, Lerner, Wongsunwai Wan, and I investigate the differences in investment strategies and sophistication across types of institutional investors.⁴ Almost parallel to the findings on the fund side, we find that different classes of investors in private equity have enjoyed dramatically different returns over the past two decades. Using detailed records of the composition and performance of funds that different classes of investors select, we document very substantial differences in the returns that those investors enjoy. On average, endowments' average annual returns from private equity funds are nearly 14 percent greater than returns of the average investor. Funds selected by investment advisors and banks lag sharply, even after we control for fund characteristics.

What drives this difference in returns across investors? We find that both endowments and public pension funds generally appear to be better able to use information about the fund's prospects that they obtain during the investment process. These investors are much less likely to reinvest in a given partnership, and they seem to be better at forecasting the per-

formance of follow-on funds. Those funds in which endowments (and to a lesser extent, public pension funds) decided to reinvest show much higher performance than funds where endowments decided not to reinvest. Other Limited Partner (LP) classes do not display these performance patterns. In fact, corporate pension funds and advisors are more likely to reinvest if the *current* fund had high performance, but this does not necessarily translate into higher future performance. These findings suggest that endowments proactively use the information they gain as inside investors, while other LPs seem less willing or able to use information that they obtained as an existing fund investor.

We also rule out the possibility that the superior performance of endowments or public pension funds is the result of historical accident: that is, that through their early experience these LPs may have had greater access to established private equity groups that manage high performing funds. To test this hypothesis, we examine investments in young private equity groups (those established after 1990) across all classes of LPs. When we repeat our analysis conditioning on young GPs, we still find a performance premium for endowments and public pension funds, although the difference is somewhat smaller than in the analysis using all GPs. This finding does not support the idea that the superior performance of these LPs is merely driven by historical accident.

In a related paper, Lerner, Wang and I⁵ show that even within the set of endowments and foundations there are big differences in the performance of their portfolios. We investigate the underlying drivers of this return heterogeneity and show that performance is related to the size of endowment, the quality of the student body, and the use of alternative investments.

This documented heterogeneity in the sophistication of how investors use information about past fund performance

to make investment decisions might have broader implications for the governance of the industry overall. The most effective (if not the only) governance tool that investors in private equity can bring to bear is the threat of not reinvesting in the next fund of the partnership. More direct interference and oversight of investors in fund management is not possible because of the limited liability structure of the funds. However, the presence of a critical mass of inefficient investors allows poorly performing GPs to raise new funds and thus can even make the governance mechanism by sophisticated LPs less effective. This governance externality therefore can lead to a worsening of industry performance overall, if there is an inflow of investors with lower return expectations or who are unable to monitor managers. The illiquidity and very long time horizon of venture capital and private equity investments further aggravate the governance challenge.

Going Forward

While earlier research often was severely limited by the quality of the available data about this notoriously “private” industry, a number of very welcome recent efforts by academics and industry organizations will allow for more comprehensive research on the topic. Still, a lot remains to be explained. The recent financial crisis has highlighted the importance of managing liquidity risk in private equity and venture capital. At the same time, the venture capital industry itself is undergoing big changes. Investors are experimenting with new fund structures, and greater variation in fund sizes, in response to a widening range of investment opportunities: we see the entry of super angels who often have only a few million dollars under management and of multibillion dollar funds investing in clean energy or health care solutions. Moreover, there is a growing focus on investments of U.S. venture capitalists in emerging markets, not

just to help U.S. companies build a more efficient supply chain abroad but also to directly take advantage of opportunities in emerging economies.

In the current economic environment there is enormous policy interest in understanding the potential for venture capital to be a catalyst for economic growth and job creation. In light of the unique governance challenges that private equity investors face described in this article, it will be of immense interest to understand how these changes affect the performance and ultimate sustainability of the industry.

¹ S. N. Kaplan and A. Schoar, “Private Equity Performance: Returns, Persistence and Capital Flows,” NBER Working Paper No. 9807, June 2003, and the *Journal of Finance*, August 2005, 60 (4), pp.1791–823.

² See J.B. Berk and R.C. Green, “Mutual Fund Flows and Performance in Rational Markets,” NBER Working Paper No. 9275, October 2002, and *Journal of Political Economy* (2004), 112, pp.1269–95.

³ J. Lerner and A. Schoar, “The Illiquidity Puzzle: Evidence from Private Equity Partnerships,” NBER Working Paper No. 9146, September 2002, and the *Journal of Financial Economics*, May 2004, Vol. 72 (2), pp. 3–40.

⁴ J. Lerner, A. Schoar, and W. Wan, “Smart Institutions, Foolish Choices? The Limited Partner Performance Puzzle,” NBER Working Paper No. 11136, February 2005, and the *Journal of Finance*, April 2007, 62 (2), pp. 731–64.

⁵ J. Lerner, A. Schoar, and J. Wang, “Secrets of the Academy: Drivers of University Endowment Success,” NBER Working Paper No. 14341, September 2008, and *Journal of Economic Perspectives*, Summer 2008, 22 (3), pp. 207–22.