

Assessing Fund Performance:

Using Benchmarks in Venture Capital

Venture Capital Update

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The goal of benchmarking is to measure comparative performance. When it comes to cars and other manufactured products, measurements are precise and benchmarks are consistently applied. As a result, benchmarks create value by identifying performance gaps and enabling better decision making based on facts. Venture benchmarks, however, are a different story.

As a way to compare the performance of venture capital funds over time, available industry benchmarks can be inconsistent and confusing. Not surprisingly, LPs often seek independent verification of these claims. To assess the performance of our own funds, SVB Capital continuously examines the best methods of using these statistics.

In this issue of *Venture Capital Update*, SVB Capital shares our findings about

venture capital industry benchmarks. We explain the metrics and methods and review the benefits and limitations of benchmarks commonly used in the industry. It is our hope that a better understanding of benchmarking across the investment community can lead to improved means of developing and gaining value from the benchmarks.

WHY WE NEED BENCHMARKS

Making an investment in venture capital is a long-term commitment, with 10 years being the typical lifespan of a fund. During this period, LPs receive quarterly financial reports on capital calls and distributions related to their investment. However, they also need to understand how their investment is performing while the capital is put to work during the “J-curve” and before the fund’s

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portfolio is completely realized. Financial statements alone will not provide this perspective, so LPs typically turn to benchmarks.

In addition to gauging the returns they might expect over time, LPs also require a way to compare the performance of investments across their portfolio. This is true even when investments are in different asset classes such as public equity and private equity, and regardless of whether the LP is a private individual, endowment, private or public pension fund.

But benchmarks are also an important indicator for venture capitalists (VCs). Sizing up the performance of a fund in the middle of its life cycle is key to assessing how portfolio companies are performing relative to the market.

PERFORMANCE METRICS: APPLES AND ORANGES

When assessing the return-on-investment performance of a venture fund, three different metrics are typically used:

- internal rate of return (IRR)
- distributions to paid-in capital (DPI)
- total value to paid-in capital (TVPI)

IRR provides an effective rate of return based on cash flows and current valuations of the fund portfolio, while DPI shows the realized portion of the portfolio that was distributed to the LP as a multiple of the contributed capital. By comparison, TVPI provides a multiple value on the entire portfolio—both distributed capital and the net asset value of the portfolio.¹

Which of these metrics is the best assessment of fund performance? The short answer is, “it depends.” Many LPs rely on IRR measurements of

performance because they manage a portfolio that includes a mix of public and private investments. Consequently, IRR reported as a percentage provides an easy comparison to return percentages on public investments, even though IRR percentages are not completely comparable.² LPs will often look for 400 to 600 basis points over a public benchmark to justify the illiquid and long-term nature and risk profile of VC investing. DPI provides a clear metric of the actual multiple of cash invested which has been received by an investor, and TVPI provides a metric that accounts for potential returns that are the result of increased valuations of portfolio companies as they approach exit. Given this difference, many LPs rely on TVPI earlier in the life of a fund and DPI towards the end. In contrast to IRR, TVPI and DPI do not account for the time it takes to produce these gains.

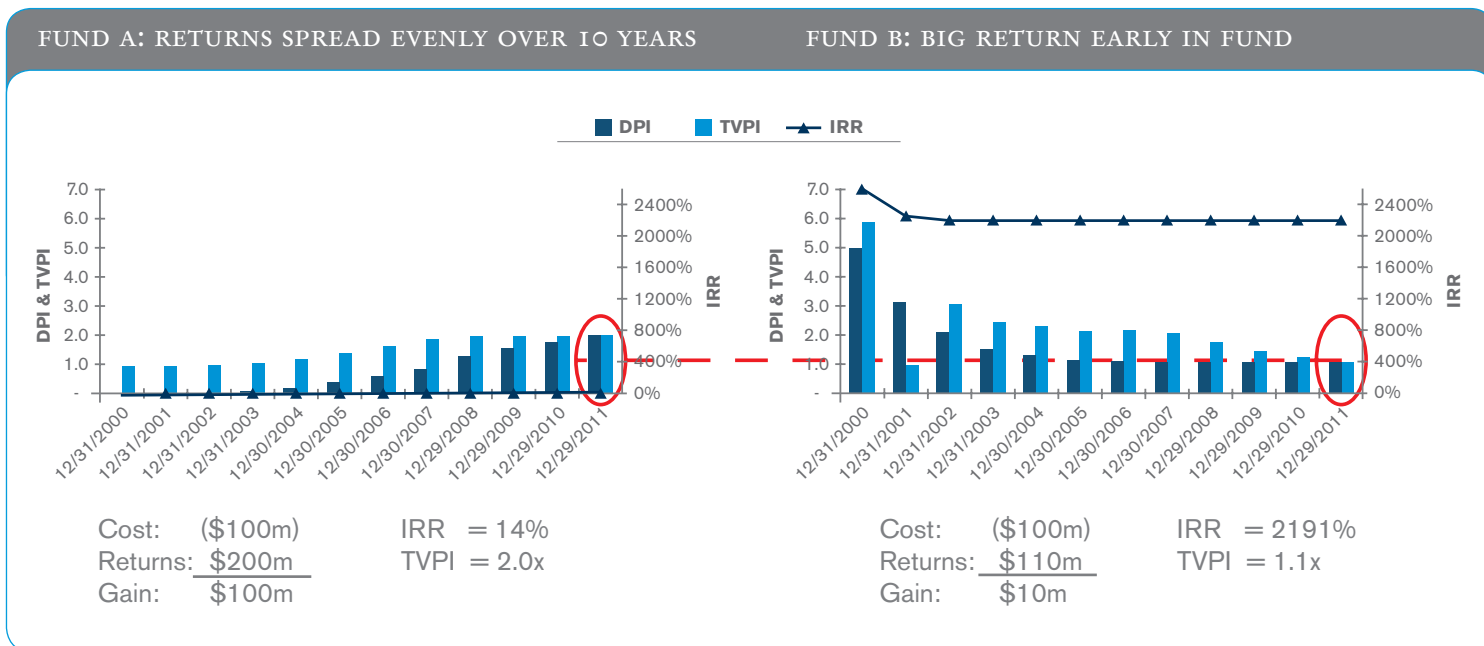
Despite the shortfalls, the three metrics have become the standard for comparison. In our experience, we have found that LPs rely on a combination of all three metrics to assess the performance of their investments, with some favoring one over the other, in part, due to the preference of their board and their specific type of investment.

The performance of a venture capital fund can be calculated via at least one of the following metrics:

IRR: The annualized effective return rate which can be earned on the contributed (invested) capital, i.e. the yield on the investment.

DPI: The ratio of cumulative distributions to limited partners divided by the amount of capital contributed by the limited partners.

TVPI: The sum of cumulative distributions to limited partners and the net asset value of their investment, divided by the capital contributed by the limited partners.



All three metrics can result in a biased assessment of fund performance due to the way each is calculated. For instance, the calculation of IRR is greatly influenced by the timing of returns in a fund, or more specifically, short holding periods.³ The example above shows two funds of identical size and capital call timing. Fund A provides a steady return of 2.0x to its investors during the last four years of the fund with an ending IRR of 14 percent. Fund B returns only 1.1x, but with an IRR of more than 2000 percent due to the large returns early in the fund’s life, soon after the investment was made.

This example shows that funds with lower IRRs can still provide higher

multiples on returned capital—that is, more money back into the investor’s pocket. This example also shows that big returns during the first few years of a fund’s life can lead to misleadingly high TVPI and DPI multiples early in the fund. In this example, Fund B showed TVPI and DPI figures above 5.0x in the first year in the life of the fund, but the fund ultimately returned only 1.1x at termination.

The built-in bias of the performance metrics may have greater implications for certain types of funds, particularly funds that focus on certain stages or sectors. For instance, funds with investments concentrated in sectors

requiring large amounts of capital very early in a company’s life cycle, and requiring longer investment periods, may inherently generate lower IRRs. Larger capital calls would occur earlier and returns would be realized later in the life of this type of fund as compared to other funds. Companies in life sciences may fit this profile, while quicker exits might come from Web 2.0 companies.

Likewise, later-stage investments potentially would generate returns after a shorter time period than early-stage funds, with a potentially higher IRR due to the timing of the returns, assuming equal performance.

OVERVIEW OF INDUSTRY BENCHMARK SOURCES

The most commonly used industry benchmarks are published by Cambridge Associates and Thomson Reuters Venture Economics. Cambridge Associates is a consulting firm that provides advisory services to institutional investors and in doing so, has access to financial information for a large number of funds. Thomson Reuters (formerly Thomson Financial) publishes a range of financial news and information, such as *Private Equity Week* and the *Venture Capital Journal*. A third benchmarking source, Private Equity Intelligence (known as “Preqin”), creates benchmarks using its Performance Analyst database of fund financials. Preqin also provides access to separate databases of funds in the market and limited partner information.

These organizations are more different than they are similar, not only in their business structure, but in how they gather, analyze and report benchmarks. Specifically:

1. *The benchmarks use different methodologies for data collection*
2. *The benchmarks use different data samples*
3. *The benchmarks provide different performance results*

Let’s explore each one of these differences in more detail.

1. The benchmarks use different methodologies for data collection

Performance metrics vary widely from one benchmarking source to another. One factor is the different methodologies for collecting data from the funds. Cambridge Associates collects financial information from its clients’ investments as well as by soliciting information from managers, which it aggregates into its database for calculating performance benchmarks. Thomson Reuters Venture Economics uses surveys sent to private equity and venture funds relying on self-reporting. These surveys are not audited, but the information collected reveals cash flow information. Both organizations collect this information on a confidential basis.

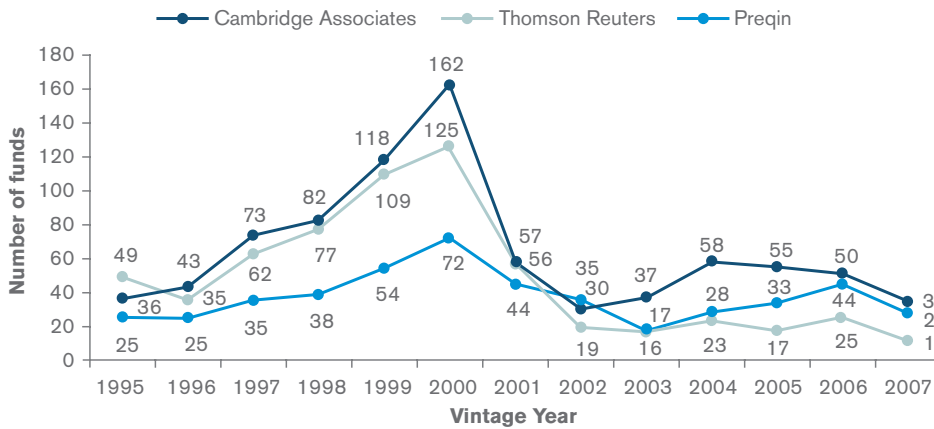
By contrast, Preqin collects data on fund performance based on public data sources, typically reports from pension funds and other institutions that must provide their financial performance reports as mandated by the U.S. Freedom of Information Act (FOIA) or similar legislation in foreign countries. These organizations report performance, rather than cash flows, which form the basis of calculations by Thomson Reuters and Cambridge Associates.

Because the data are gathered from public sources, Preqin publishes the performance metrics for specific funds and firms. That is, it does not keep the fund or firm name confidential for performance on individual funds. Cambridge Associates and Thomson Reuters aggregate fund performance information and do not identify fund or firm names. Preqin advertises that its data have less selection bias than samples collected via surveys or client investments because Preqin’s information would not omit better funds or worse-performing funds or be skewed upwards by institutional clients’ investment picks. However, some in the industry assume that since Preqin gathers data from funds subject to disclosure, these investors cannot access the best performing funds and therefore, Preqin’s results will be skewed downward.

2. The benchmarks use different data samples

One reason why the performance benchmarks from each of the providers are so different is because they use different samples of funds for their calculations. Simply put, different samples of funds yield different benchmarks. The graph below compares the number of funds per vintage year from 1995 to 2007 for each of the benchmark providers.

NUMBER OF U.S. VENTURE FUNDS SAMPLED BY VINTAGE YEAR



Sources: Cambridge Associates, Thomson Reuters, and Private Equity Intelligence. Cambridge Associates and Thomson Reuters data are as of December 31, 2007; Preqin data are as of various dates but are the most recent obtained. Cambridge Associates data were provided at no charge.

While Cambridge Associates typically uses the largest sample size to calculate benchmarks for almost all of the vintage years during 1995 to 2007, it is questionable whether even its sample size of funds per vintage year is large enough to provide efficient and unbiased estimators of performance.⁴ In other words, does a summary statistic of performance based on these sample sizes reflect actual performance of venture funds in the market?

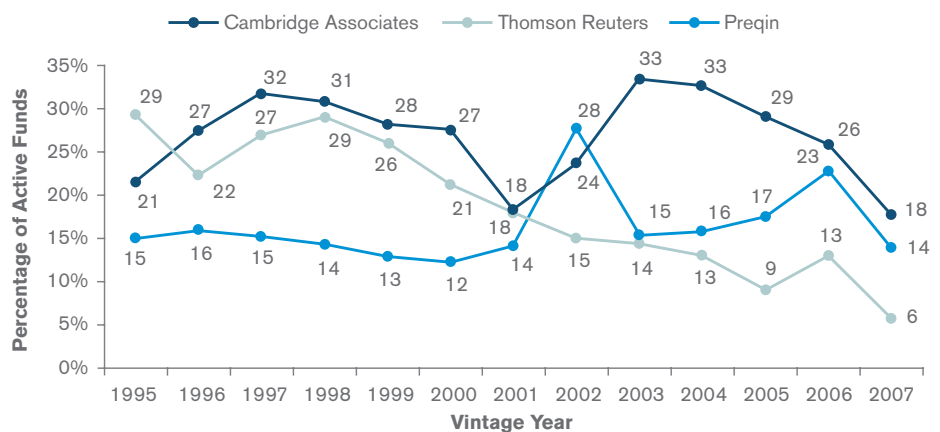
In statistics, the amount of variance in the population must be known or estimated in order to determine the appropriate sample size. The performance of venture funds is known to have a large amount of variability because the dispersion of returns is large. And the greater the variation, the larger the sample size required for the sample's metrics to be

statistically significant. Because there is not a precise estimate of variation of funds' performance, it's difficult to estimate an accurate sample size for

venture. However, it is known that these samples are small percentages of funds in the U.S. market. The graph below shows the sample size for each of the benchmark providers as a percentage of funds invested.

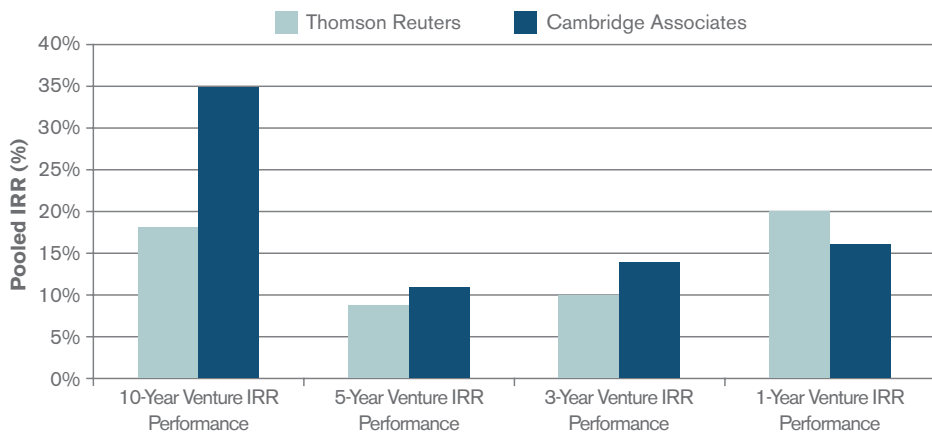
The available sample sizes seem small given the perceived variance in fund performance, but this is beyond the control of the organizations providing the benchmarks. In one survey of private equity firm CFOs, almost 40 percent of respondents stated that they did not send financial information to Thomson Reuters because there was "no reason to do so."⁵ In fact, there is little incentive for funds to complete and return surveys of their performance, particularly if the fund is one of the best or one of the worst performing.

SAMPLE SIZE AS A PERCENTAGE OF ACTIVE U.S. VENTURE FUNDS



Sources: Cambridge Associates, Thomson Reuters, and Private Equity Intelligence. Cambridge Associates and Thomson Reuters data are as of December 31, 2007; Preqin data are as of various dates but are the most recent obtained. The number of funds in each vintage year is the number of active funds based on Thomson Reuters Fund Statistics Report. Cambridge Associates data were provided at no charge.

COMPARISON OF INVESTMENT HORIZON BENCHMARKS



Sources: Cambridge Associates and Thomson Reuters. Note that Preqin does not provide cumulative benchmarks over specific time horizons. Pooled IRR is calculated based on cash flows of all funds regardless of vintage year during the specified time horizons. All data are as of December 31, 2007. Cambridge Associates data were provided at no charge.

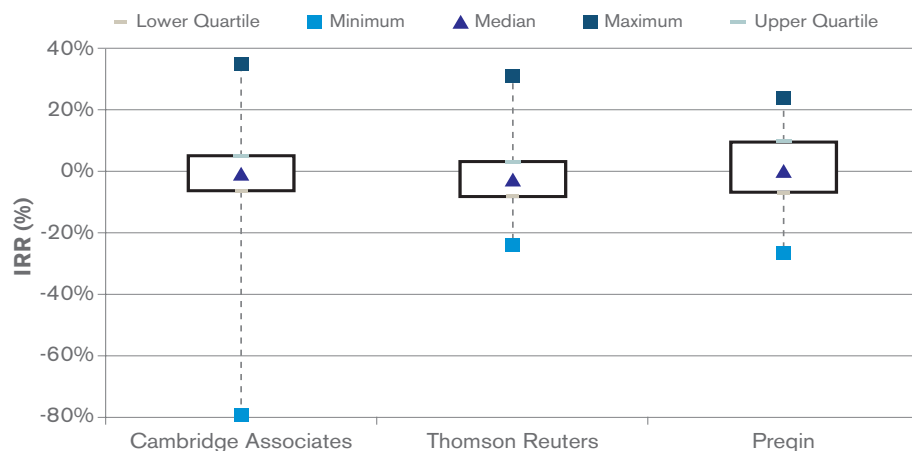
3. The benchmarks provide different performance results

While each benchmarking source purports to report on the performance of the industry, there is a large variation in performance metrics among the three providers. The bar graph above compares pooled IRR performance metrics between Cambridge Associates and Thomson Reuters. Preqin does not provide benchmark metrics over these time horizons; rather the data are provided by fund, firm or vintage year. Note that Cambridge Associates' 10-year pooled IRR figure is almost double the same metric published by Thomson Reuters. Given that the pooled 10-year IRR metric is more stable than, for instance, a short-term one-year metric, the large difference in the long-term benchmark is surprising.

Large differences also remain in the three-year pooled IRR performance benchmarks.

Do the differences in aggregated performance indicate that these sources contain completely different collections of funds? An examination of the sampling distributions and the sample means, or averages, would provide a definitive answer to this question. However, the data for individual funds in Cambridge Associates and Thomson Reuters's samples are not available to conduct these statistical tests. As a proxy, box and whisker plots help show the quartile ranges of funds and the best and worst performing funds. The chart below shows the maximum, top quartile, median, lower quartile and minimum fund performance for vintage year 2000.⁶ The top quartile and lower quartile provide the top and bottom edges of the box; the median is the line in the middle; the minimum and maximum are dots connected by extended lines.

COMPARISON OF IRR RANGES FOR VINTAGE 2000



Sources: Cambridge Associates, Thomson Reuters, and Private Equity Intelligence. Cambridge Associates and Thomson Reuters data are as of December 31, 2007; Preqin data are as of various dates but are the most recent obtained. Cambridge Associates data were provided at no charge.

This simple analysis confirms the wide range of performance across venture capital funds—not only within samples, but also across different benchmarking sources. This disparity in performance between the best and worst funds is exceptionally large—particularly for Cambridge Associates’ funds in 2000—but the performance of these funds may be outliers compared to other funds in each sample. Nonetheless, the benchmarking sources show ranges of more than 10 percentage points between the upper quartile and lower quartile IRRs and almost 20 percentage points’ difference in Prequin’s sample.

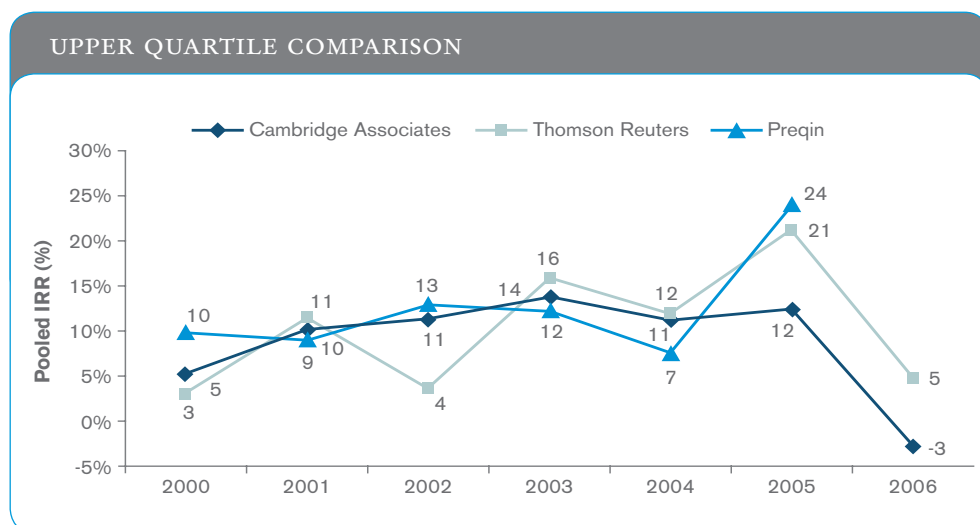
For vintage year 2000, the median fund performance is similar across the three benchmarking sources, although the IRR is positive according to Prequin and negative according to Cambridge Associates and Thomson Reuters.⁷

Many in the venture industry would argue that a fund’s performance must place it in the top quartile in order to achieve attractive, risk-adjusted returns over time. The box and whisker plots above show how high the performance can be for some of the funds in the top quartile (represented by the extended lines on top of the boxes). The graph below shows the variation in the IRR performance of the top quartile

fund in samples from Cambridge Associates, Thomson Reuters and Prequin. The difference in IRR metrics of the sources’ top quartile funds was narrow (2 percent) in 2001 and wide (12 percent) in 2005. The graph also shows that no one benchmark has an upper quartile fund performance that is consistently higher or lower than the other benchmarks; moreover, the benchmarks do not trend together.

OVERCOMING BENCHMARK LIMITATIONS

While benchmarks can provide a quick comparison of one investment to the performance of another in the same asset class, many LPs invest in venture capital and private equity to add diversification to their portfolio and to provide returns that are not correlated to public



Sources: Cambridge Associates, Thomson Reuters, and Private Equity Intelligence. Cambridge Associates and Thomson Reuters data are as of December 31, 2007; Prequin data are as of various dates but are the most recent obtained. Prequin does not provide IRR benchmarks for vintage 2007 funds. Cambridge Associates data were provided at no charge. Note: IRR performance during the first three years of a fund is typically considered not meaningful.

In the process of benchmarking performance, LPs must decide the objective of an investment. Which is it?

- Provide a return commensurate with the added risk and illiquidity of the investment
- Provide more dollars back to the fund
- Outperform public investments by a certain margin

Determining the primary goal of the investment will help to guide LPs to find the appropriate benchmarking tool.

markets. These LPs often compare the IRR of the venture portion of their portfolio to the performance of public investments, with an expectation that the venture portion will return a certain level higher than public market investments. The logic of this assessment is based on risk and reward. Venture investing presents greater risks to an investor than investing in public markets, in part, because it is a long-term and relatively illiquid investment; likewise, investors expect greater returns from their venture investments.

The business of benchmarking venture capital funds has many complications simply because it is

hard to collect accurate financial data on private investments. It's also difficult to report consistently on performance due to the metrics, the sample sizes and the collection methodologies.

With clear shortcomings and inconsistencies in industry benchmarks, how can investors assess the performance of their funds? Given the long-term nature of the investment and the lack of access to information on returns in the private market, accurately benchmarking venture capital remains elusive.

While individual funds may have little incentive to contribute their financial

information to benchmarking organizations, SVB Capital believes that the venture industry as a whole should have an incentive to create more credible and statistically reliable performance metrics. With more accurate benchmarks, the venture industry could assess more fully how funds are performing, especially as compared to other asset classes, and communicate these results with current and potential investors.

Today it's commonplace to study automotive industry benchmarks that yield meaningful insights as a basis for decisions. Tomorrow it's possible we will be able to say the same about venture capital.

Recognizing the limitations of venture capital benchmarking for assessing performance, SVB Capital recommends supplementing benchmark analysis with other information. Consider the following:

- Gain a better understanding of portfolio companies and the return potential of the active portfolio. Annual meetings can typically be the place to obtain this information. It is widely known that one “home run” in a venture capital portfolio can move the fund into top-tier territory. Returns to the top-tier venture capital funds are typically driven by a few deals.
- Become part of the conversation. Those closest to the business of the fund have good information and instincts about current and future performance. Discuss the performance of the fund with the fund managers and learn the details of the companies in the portfolios that drive—or drag—performance.
- Look at the track record of individual venture investors, many of whom have made previous investments at other funds. The performance of past investments—including which sectors provided the returns—might help to inform expected performance.

TELL US WHAT YOU THINK

Send your comments and suggestions for topics to Bronwyn Bailey at bbailey@svb.com.

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¹ Net Asset Value is the market value of the portfolio plus any cash held by the fund.

² See Austin M. Long and Craig J. Nickels, "A Method for Comparing Private Market Internal Rates of Return to Public Market Index Returns." Manuscript. The University of Texas System, August 28, 1995.

³ The IRR calculation assumes that distributed capital is reinvested at the same IRR over the life of the fund, when in fact, investors may not find similar investment opportunities for each distribution. See Oliver Gottschalg and Ludovic Phalippou, "The Truth about Private Equity Performance," *Harvard Business Review*, December 2007 for this analysis. For a detailed discussion on the benefits and drawbacks of using IRR as a performance metric, see Paul Gompers and Josh Lerner, "Assessing the Performance of Private Equity Funds." Manuscript. Harvard Business School, January 2003.

⁴ The game of darts can be used as an analogy for the quality of a sample statistic. The darts of an efficient and unbiased player would land clustered closely together on the bulls' eye of the target. The darts of a less efficient player would land scattered around the dartboard, and the darts of a biased player would be tightly clustered outside the bulls' eye.

⁵ Results from an informal survey conducted by Thomson Reuters (formerly Thomson Financial) presented at the Private Equity CFO Conference, July 2007. Respondents were attendees at the conference.

⁶ Vintage year 2000 was chosen due to the large number of funds in each sample, which would provide a more conservative estimate of variation in fund performance. This analysis is limited to IRR performance because Cambridge Associates does not publish quartile ranges for DPI and TVPI calculations.

⁷ This finding for vintage year 2000 does not support the notion that public institutions, Preqin's data source, have problems accessing better performing funds.

SVB  *Find a way*

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