Goldman Sachs

Historical Distributions of IRR in Private Equity

INVESTMENT MANAGEMENT RESEARCH

- A private equity fund-of-funds partnership that had access to the top 10-20% of funds in the studied data set shown herein should have been able to achieve approximately a 20% net internal rate of return according to our analysis.
- The available data suggests that average returns in private equity may not outperform the long-term average return of the public equity markets.
- The distributions of U.S. and European manager returns are similar in shape with a significant bias towards higher returns (i.e., a skew).
- The available data suggests that approximately 15-20% of managers have final internal rates of return that are zero or negative.
- The return of European managers is nominally 400 bps less than for U.S. managers for both median and upper quartile returns.
- Top quartile follow-on funds appear to have done better than the top quartile first-time funds. However, this relationship may not apply to funds not in the top quartile.

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Introduction and Summary

When investing in any asset class, the investor would like to understand ahead of time its historical performance in order to make informed decisions about asset allocation and benchmarks. Private equity is no exception. At a minimum, it is desirable to assess the range of returns that have historically come from private equity funds.

Unfortunately, precisely because private equity is private, published data is generally unreliable. Significant issues of sample size, self-selection, survivor bias, and data consistency remain. However, even though the particular values of published statistics for private equity must be considered questionable, it may be possible to use these data to achieve some qualitative understanding of the private equity market.

In this memorandum we examine some of the available data aggregated by Venture Economics (using the VentureXpert database). This organization reports net cash-on-cash internal rate of return (IRR), which is generally accepted as the most relevant measure of return to the limited partners. It will be seen that the data, although limited, leads to several interesting conclusions.

Distributions of Liquidated vs. Unliquidated Funds

In the past, studies have typically used the aggregate statistics from the Venture Economics database. In this analysis, we break out the performance of liquidated and unliquidated funds (which base performance on GP valuation).[1] The liquidated funds have distributed all assets and have terminated. Consequently, this data set covers 1980-1994 vintage year funds (with a couple of outlier funds to this year range). The unliquidated data includes funds that have not legally terminated by March 31, 2001, typically having 1990s vintage years (again, there are several outliers).

We believe that the "liquidated" funds form a better sample for what the asset class has ultimately returned to investors.[2] The "unliquidated" sample is based on GP expectations and may sometimes lag true market value. In the current post-bubble environment, it is possible that many GPs have been slow to react in revaluating portfolio companies. In fact, the data seems to indicate that the spread between interim (unliquidated funds) and actual IRRs (liquidated funds) can be in the hundreds of basis points. However, the unliquidated and liquidated numbers are essentially over different time periods, so an apples-to-apples comparison is not possible. Exhibits 1 and 2 show the actual distributions of the fund return data in VentureXpert.[3]

[1] The performance of liquidated funds is computed on the actual cash flows to and from investors (the limited partners). The unliquidated funds may be very early in their life, such that not all commitments have been drawn down for investment. Furthermore, for invested deals that have not exited, the unliquidated return metric uses the general partner's valuation as a proxy for the value of a deal.

[2] The standard error on the U.S. measurements are from 1.3 — 1.5. Since the sample size of liquidated European managers is so low, we focus our analysis on the U.S. data set.

[3] The distributions are normalized to unit area such that the U.S. and Europe distributions can be compared one-to-one.

The target return that is usually quoted for private equity investors is 20% net. As we see in Table 1, the top decile U.S. managers in this data set have achieved 25.6% net returns. If one layers in fund-of-fund fees, this translates to approximately 22-23% net-net to investor. There can be no assurance that access to the top 10-20% of private equity funds will ensure a 20% net return under any circumstances. If this data set is suggestive of the private equity universe going forward, then access to the top 10-20% of funds may be crucial in meeting return expectations.

Table 1. Net IRR (%) of U.S. and European Private Equity

	U.S. Liquidated	U.S. Unliquidated	Europe Liq.	Europe Unliq.
Sample Size	315	1115	75	495
Maximum	243.9	774.9	87.9	270.1
Upper Decile	**25.6**	61.5	**19.4**	35.2
Upper Quartile	**17.1**	23.8	**12.9**	17.1
Median	**9.5**	10.7	**5.2**	6.0
Lower Quartile	2.5	0.5	-2.8	0.0
Minimum	-72.6	-100.0	-24.6	-100.0
Standard Error	1.3	1.5	1.8	1.4

Exhibit 1. Distribution of U.S. Private Equity

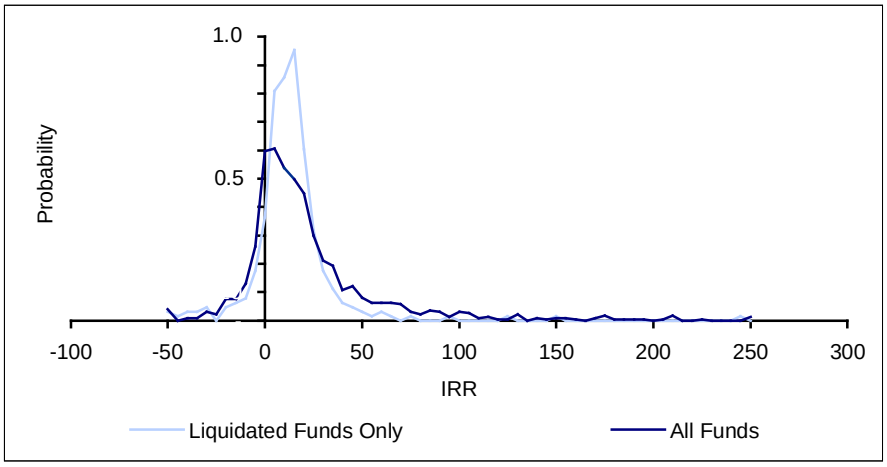
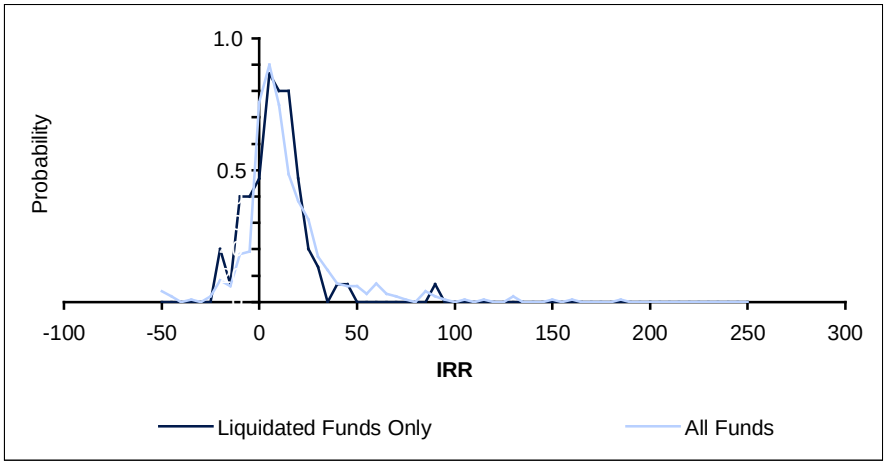


Exhibit 2. Distribution of European Private Equity



It is clear that each distribution in Exhibits 1 and 2 has a strong central tendency at a relatively small value of IRR. This observation suggests that the asset class as a whole may not outperform the public equity markets. The long-term annualized return of the S&P 500 is approximately 11% (Source: Wilshire Associates).

The distribution is strongly skewed to the right, with 10-20% of cases in excess of 20% net IRR and a significant number of cases out to or in excess of 100%.

A significant feature of these distributions is that there is a non-zero sample of funds that have lost money, i.e., negative IRRs. In fact, as shown in Table 1, the bottom quartile returns are all at or near 0% net IRR.

Venture vs. Buyout (U.S. only)

An instructive exercise is to compare the venture capital and leveraged buyout fund returns. During the Internet bubble, many venture firms attained (or at least reported) extraordinarily high IRRs compared to historical levels. But we believe that again looking at liquidated fund returns is more indicative of the venture market — in essence ignoring the bubble returns as an anomaly, since the liquidated funds data set harvested the bulk of their assets before the markets peaked in 1999-2000.

Table 2. Net IRR (%) of U.S. Venture and Buyout Funds

	Buyout Liquidated	Venture Liquidated	Buyout Unliquidated	Venture Unliquidated
Sample Size	70	245	392	723
Maximum	243.9	74.1	112.0	774.9
Upper Quartile	**22.6**	**15.8**	19.4	33.1
Median	**13.0**	**8.8**	8.3	12.4
Lower Quartile	4.5	2.4	-1.9	1.0
Minimum	-42.2	-72.6	-100.0	-97.5
Standard Error	4.7	1.0	1.1	2.2

The historical median and upper quartile buyout returns appear to have been 400 to 600 bps more than for venture capital. This result is significant if true. However, as is apparent, the number of data samples is very limited in this case.[4] Furthermore, the exact opposite observation is seen with the unliquidated data, which consists of many more funds. The unliquidated data may be higher since it includes many funds that were able to effectively exit deals during the Internet bubble. Since this data consists of valuations that are as of March 31, 2001, many of the unrealized deals that were marked up in 1999-2000 should have been marked down to more appropriate levels (however, some overvaluations certainly still persist).

We do not attempt to draw conclusions in this section, but it will be interesting to revisit this comparison in several years time.

Track Record

The argument is often made that first time funds are more likely to result in lower returns. Using the data set, we used the liquidated fund returns to look for any trends. Given the limited sample size, it is difficult to draw any firm conclusions. As is evident in Table 3, the differences between new and follow-on funds may not be significant. The 200 bps differences are well within the uncertainty of the data and should not be interpreted as indicative of any trend.

[4] The standard error of the liquidated buyout fund sample is 4.7, which is indicative of poor statistical results.

Table 3. Net IRR (%) of First-time and Follow-on Funds

	First-time Liquidated	Follow-on Liquidated
Sample Size	105	198
Maximum	146.7	243.9
Upper Quartile	**16.3**	**18.2**
Median	**10.8**	**8.8**
Lower Quartile	3.4	3.0
Minimum	-35.9	-72.6

However, when examining only the top quartile manager subsets, the follow-on funds appear to have significantly higher returns. The spread is on the order of 400 bps for both the median and upper quartile returns. This subset is in essence the best-of-the-best pool of funds — within our sample of the population.

Table 4. Net IRR (%) of Top Quartile Funds

	Top Quartile First-time Liquidated	Top Quartile Follow-on Liquidated
Sample Size	26	50
Maximum	146.7	243.9
Upper Quartile	**26.9**	**30.8**
Median	**17.6**	**21.3**
Lower Quartile	13.6	16.1
Minimum	9.2	9.4

Once again, it is difficult to draw concrete conclusions from such small sample sizes (i.e., the standard errors are larger than 2). However, this data is not inconsistent with the hypothesis that good fund managers remain good managers — the existence of a momentum effect.

Summary

Given the data presented here, the average private equity manager does not beat the public markets (And why would a manager underrepresent performance to Venture Economics?). Assuming that this is true, then it is neither possible nor desirable to create a private equity index. It is not possible because of the minimum investments, investment costs, and general partner preferences that prevail in the private equity market. It is not desirable because an investor who can select and access superior managers will generally wind up in the right-hand tail; there is no advantage to selecting systematically inferior managers.

As a result, the relevant distribution for an investor in private equity is not a distribution made up of all funds from the entire private equity universe, as found in this memorandum. Instead, it would be made of only the funds that this particular investor can select and has access to. Even given this restricted IRR distribution, it is not guaranteed that the investor will achieve the mean IRR. Investors who participate in funds that are presented to them will often end up with below-average returns. This is because so-called "marquee funds," whose managers have well-known, highly successful track records, typically do not actively solicit new investors. Conversely, investors who can find and access superior fund managers will typically have a returns distribution that is skewed far to the right compared with the universe depicted in the figures.

Appendix

The private equity market, because it is private, has no requirements to report its results as do the public markets. In fact, information has become a valuable asset in the private equity industry; possessing better information helps improve investment decisions. For this reason, many firms shy away from sharing substantial information about their returns.

There are organizations that attempt to gather information from a large number of private equity firms and compile historical benchmarks. Among these are Venture Economics and the British Venture Capital Association. They gather this information with the promise of presenting it only in the aggregate form, thus decreasing some of the reluctance of firms to release performance numbers. However, the validity of the data gathered by these organizations must be considered.

The reliability of the numbers reported by the private equity firms is a fundamental issue. Even if all the numbers reported are true and accurate, it is possible that top firms feel no need to participate, and thus withhold their performance. If enough firms did this, the distributions would not truly be representative of the actual market. The second involves the transmission of the information from the collecting organization to the general world. The data becomes proprietary to these organizations, which analyze it and present summary statistics of various data aggregates to their customers. Frequently the generalities do not really include the statistics an investor wishes to know.

The final limitation of the data is actually the most important. Any investor in private equity will have IRR results that differ from those presented in this report. Due to the prevalence of private information in the field of private equity, it is generally believed that superior managers will tend to repeat. The result of this momentum effect is that the same fund managers frequently tend to obtain returns in the right-hand tail of those distributions. Of course, the past performance of fund managers is no guarantee of future results. Any fund can do badly, regardless of previous performance by the same managers.

General Disclosures

This memo is delivered solely as reference material with respect to private equity market historical distributions.

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No representation is made that a client will achieve performance results similar to those shown herein.

Important: as conditions in the market can change rapidly, an actual portfolio's return might look very different from the returns depicted herein. These returns should not be construed as providing any assurance or guarantee as to returns that may be realized in the future from investments in the private equity market.

Past performance is not indicative of future results, which may vary.