PORTFOLIO INSIGHTS

Addressing the benchmarking challenge

Private equity

June 2018

IN BRIEF

Private equity (PE) does not readily lend itself to benchmarking in the way that public equity does, as there is no clearly defined private equity universe for comparison. PE investments are not publicly traded and are generally illiquid. Additionally, private equity cash flows vary over a lengthy investment cycle and private companies are valued only quarterly, lagging public markets.

There are, however, a wide range of benchmarking methodologies and indices available to PE investors. While each has its own limitations, when carefully selected and appropriately applied, these tools can help investors determine strategic allocations to private equity, track the performance of PE investments and evaluate PE managers.

PE investors should bear in mind that there is no perfect benchmark; the "best" choice depends on the characteristics of the PE investments—as defined by geography, sector, style and life cycle stage—as well as the investor's purpose in using the benchmark.

It is equally important to remember that no benchmark, or combination of benchmarks, can substitute for in-depth knowledge of the PE managers themselves.

INVESTORS MAKE LONG-TERM COMMITMENTS TO PRIVATE EQUITY INVESTMENTS WITH THE EXPECTATION OF EARNING RETURNS IN EXCESS OF THOSE AVAILABLE IN THE PUBLIC MARKET, OVER AN EXTENDED INVESTMENT HORIZON.

PE investors, therefore, rely on a number of available public and private equity market indices to:

- inform private equity strategic allocation decisions and objective-setting
- monitor performance of total private equity programs relative to target returns
- assess individual fund manager performance relative to peers and objectives

Due to the very nature of the private equity market, benchmarking private equity performance inevitably involves complexity and compromise. In this paper we discuss:

- distinguishing features of the PE market and its investments, and the benchmarking issues these characteristics present
- types of indices available for PE benchmarking
- effective use of benchmarks, despite their limitations, to address the aforementioned investor needs

FOR MORE INFORMATION

Please contact your local J.P. Morgan Asset Management or Private Equity Group representative with any questions, or email PEG_Questions@jpmorgan.com

AT THE CORE OF THE PE BENCHMARKING PUZZLE

The definition of "private equity" itself explains the PE benchmarking challenge: Private equity is equity capital invested in private companies through a negotiated process that is not quoted on a public exchange. PE investments are generally illiquid and typically have complex cash flows and long investment cycles. As a result, an aggregation of these investments into a composite does not fulfill some of the established criteria for an "ideal" benchmark. For example, private equity benchmarks are not:[1]

- **Unambiguous:** The private equity universe is constantly changing and difficult to define; it consists of opportunities not uniformly accessible across investors.
- **Investible:** Unlike public equity markets, private equity markets have no true "market index" or passive investible alternative.
- **Measurable:** Private equity investments are not priced daily, unlike public market investments. Values are available on a quarterly basis and lag the public equity market.

In addition, given the cash flow characteristics of private equity, where cash is called when needed for investments and distributed when companies are exited, performance is most appropriately measured by an internal rate of return (IRR). This calculation takes the unique size and irregular timing of contributions and distributions and the quarterly value of current portfolio investments into account. The IRR, however, is generally less meaningful for funds in the early years of their life cycle, due to the J-curve effect, and is not directly comparable to the geometric returns commonly used in measuring the performance of public equity indices (see "Distinct characteristics of private equity investments," next page).

WHAT'S A PRIVATE EQUITY INVESTOR TO DO?

While there is no "pure" or "ideal" PE benchmark, investors need a way to make allocation decisions, set investment objectives and monitor the performance of their PE investments. The good news is there are many available performance indices, both public and private market-related, that, while not perfect, can provide valuable input to PE investment decisions and tracking. We summarize these types of indices below and in the following section describe where and how they can be most effectively put to use.

[1] John L. Maginn, Donald L. Tuttle, Jerald E. Pinto and Dennis W. McLeavey, *Managing Investment Portfolios: A Dynamic Process* (CFA Institute Investment Series), Third edition, (John Wiley & Sons, 2007).

Public equity market indices

Public equity markets, which, in contrast to private equity markets, are definable, investible and frequently priced, offer two tools for assessing relative performance for private vs. public equity investments:

- **Equity market return indices,** published by sources such as S&P, Dow Jones, MSCI, FTSE and Russell, provide geometric rates of return for broad global equity markets (for example, the MSCI World) as well as for specific geographic regions, sectors and styles (such as emerging markets, large cap/small cap, growth/value). These annualized total returns for public equity indices indicate the growth rate of a dollar invested in the passive benchmark portfolio over some period of time, with dividends reinvested. Such returns do not incorporate the timing of an investor's inflows and outflows and therefore provide an imperfect comparison with private equity IRRs.

- **Calculated private equity comparables** use public equity indices along with the size and timing of cash flows for a private equity investment to compute an estimated public market equivalent to the private equity performance experienced. As an example, in benchmarking our own fund performance vs. public indices, the Private Equity Group uses three benchmark methodologies:
  - **Long-Nickels Index Comparison Methodology (ICM):**[2] This methodology determines how much the private equity cash flows would have earned if invested in the public index. It does this by calculating an IRR and multiple of invested capital equivalent for that index using the PE investment's cash flows and corresponding transaction dates to buy/sell the index.
  - **Kaplan-Schoar Public Market Equivalent (PME):**[3] This ratio-based methodology results in a market-adjusted multiple for performance of private equity above or below a public index. All distributions and the residual value of the fund are discounted using the respective public equity index, and the resulting value is divided by the sum of all contributions to the fund, also discounted using that index. A resulting PME of less than one implies private equity underperformance, exactly one indicates performance precisely in line with the public market, and greater than one signifies outperformance.

[2] Austin Long and Craig Nickels. "A Method for Comparing Private Market Internal Rates of Return to Public Market Index Returns," (as presented at the AIMR [now ICFA] Conference on Venture Capital Investing, February 1996).

[3] Steve Kaplan and Antoinette Schoar, *Private equity performance: Returns, persistence and capital flows* (MIT Sloan School of Management, Working Paper 4446-03, November 2003).

– **Gredil-Griffiths-Stucke Direct Alpha:**[4] This IRR-based methodology generates, as the word "alpha" implies, annualized excess returns of private investments over a public market index. Alpha is calculated directly, by discounting each PE cash flow using an associated public index return factor, rather than indirectly, by first estimating a public market equivalent IRR (as in the ICM approach) and subtracting this from the private equity IRR.

These methodologies can each incorporate a wide variety of public market indices, including customized public equity composite benchmarks.

DISTINCT CHARACTERISTICS OF PRIVATE EQUITY INVESTMENTS

The issues that arise in evaluating the suitability of different private equity benchmarks are due, in large part, to the life cycle of PE fund cash flows and performance. It is helpful, therefore, to keep the following "PE basics" in mind when evaluating benchmarks.

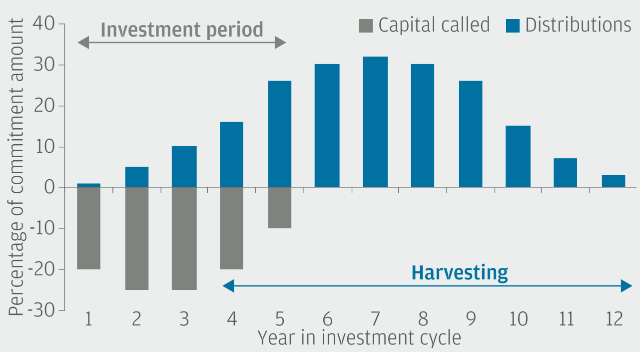
The J-curve effect

The J-curve depicts the tendency of a private equity fund to generate negative performance and cash flows in the early years and, as the fund matures, to generate investment gains and positive performance. During the early years of the life cycle, start-up costs, fees and other expenses can have a disproportionate negative impact on investment performance. In the later years, as portfolio companies mature and exit the portfolio, generally through sales or public market events, distributions typically more than offset contributions, resulting in positive net cash flows and performance.

The life cycle of a private equity fund is generally about 12 years, consisting of two potentially overlapping phases:

- **Investment phase:** typically the first four to five years, during which most capital calls are made
- **Harvesting phase:** during which contributions decline while distributions increase, peak and decrease as the fund winds down

TYPICAL ANNUAL CASH FLOWS OF A SINGLE PRIVATE EQUITY FUND



Source: J.P. Morgan Asset Management—Private Equity Group. The charts and/or graphs shown above and throughout the presentation are for illustrative purposes only. Past performance is no guarantee of future results.

Measuring private equity performance—two widely used measures

MULTIPLE OF INVESTED CAPITAL (MOIC, or multiple) is simply the ratio of the distributions already received plus the estimated remaining value of portfolio holdings to the contributions paid into the fund:

$$\text{MOIC} = \frac{\text{distributions + remaining value}}{\text{contributions}}$$

A fund has a positive return if its multiple is greater than one. This measure alone is inadequate as an indicator of true performance, as it ignores the time value of money.

INTERNAL RATE OF RETURN (IRR) is defined as the **annual implied discount rate** that equates the present value of the fund's contributions to the present value of its distributions. IRRs can be calculated over the fund's full life cycle:

Present value (contributions) = present value (distributions) over the life of the fund

IRRs can also be calculated at points during the life cycle of the fund:

Present value (contributions) = present value (distributions + remaining value) to date

IRR can be a more meaningful measure of return than MOIC, as it recognizes both the *size* and *timing* of a private equity fund's contributions and distributions. However, given the J-curve effect, IRRs in the early years can be negative and are less meaningful as an indication of fund performance than IRRs at later stages in the investment cycle.

[4] Oleg Gredil, Barry Griffiths and Rüdiger Stucke, *Benchmarking Private Equity: The Direct Alpha Method* (February 2014).

Private equity indices

There is also an assortment of private equity indices (published by third parties such as Burgiss, Cambridge, Preqin and State Street) that aim to address the PE investor's benchmarking needs. Using a variety of methods, cash flow and performance data are gathered from private equity firms to create a "simulated" private equity universe. The resulting indices have their flaws, however, including: data capture (inability to gather information on all PE funds in the market), survivorship bias (the exclusion of performance data for funds no longer in existence), non-reporting funds (how unavailable data is treated varies across providers) and frequent modifications (some providers will adjust historical performance figures when new information is received, making the benchmark a moving target). Private equity benchmarks include:

- **Aggregate indices,** which attempt to capture the "whole" global private equity market, providing returns over specified time horizons, such as 3, 5, 10, 15 and 20 years, across a "universe" of firms representing a mix of vintage years.
- **Peer group indices,** which provide IRRs for specific classifications of funds by type, size, geography and, perhaps most important, vintage year.

WHAT'S THE "RIGHT" BENCHMARK TO USE?

The "right" benchmarking methodology, of course, depends on what the investor is trying to accomplish, such as:

1. informing strategic allocation decisions and objective-setting
2. monitoring performance at the total private equity portfolio level
3. assessing individual fund manager performance relative to peers and program objectives

More often than not, the appropriate choice will be some combination of available benchmarks, used with an awareness of the limitations of each. Importantly, investors should always consider the investment life cycle and time horizon of PE investments. Performance early in the life of a PE investment is often not meaningful or indicative of the ultimate lifetime performance, regardless of the benchmark used in its evaluation.

Informing strategic allocation decisions and objective-setting

Strategic asset allocation decisions involve weighing opportunity costs. In the case of an investor contemplating an allocation to private equity, this typically means assessing the expected return advantage of private vs. public equity—and whether the anticipated excess return is sufficient to compensate the investor for incremental risks associated with private equity investing.

APPROACH

In terms of benchmarks, the most straightforward approach to addressing the strategic allocation decision and setting realistic return targets is through a comparison of historical returns, over a long period of time, for an aggregate private equity index relative to a broad public equity index.

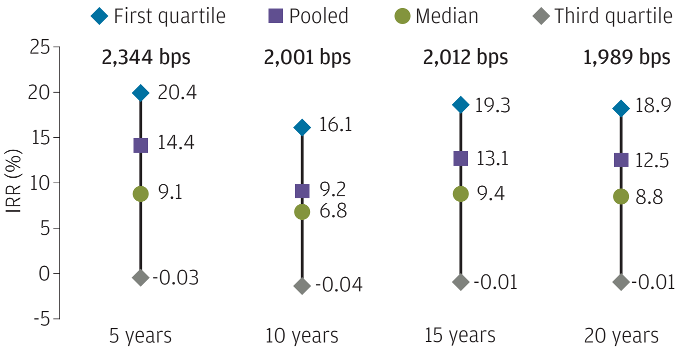
CHALLENGES

While simple and reasonable, this approach does have its limitations:

- **Different return calculations:** As discussed, there is an "apples-to-oranges" concern in the comparison of PE IRRs to geometric public index returns. However, comparability is less of a concern when the private equity index chosen represents a blending across vintage years (dampening the J-curve effect) and returns are evaluated over an extended period (10 to 20 years).
- **Composition of indices:** Indices should be chosen to reflect comparable sector and regional composition. For example, the MSCI World equity index can be an appropriate choice for those building a global private equity program. Other public market indices—or a customized blend of indices—may be more appropriate, depending on the industry, capitalization, geography and capital structure of the PE portfolio. For example, a venture capital portfolio is likely to have investments concentrated in information technology and communications—a characteristic its benchmark should reflect.
- **Return dispersion:** When considering a strategic allocation to private equity, investors need to be aware of the large dispersion in returns across PE managers (**EXHIBIT 1**, next page). Average historical private equity returns may or may not reflect the PE fund managers and/or direct investment opportunities a specific institutional investor will have access to in building a private equity program. An analysis of returns by quartile can provide additional insight.

The dispersion between top- and bottom-quartile private equity IRRs is often wide

EXHIBIT 1: PRIVATE EQUITY IRRS FOR A UNIVERSE OF GLOBAL PE FUNDS



Source: Burgiss. The dispersion results are sourced from the Burgiss manager universe and are based on the individual internal rates of return as of December 31, 2017, for the global corporate finance and venture capital funds. Past performance is no guarantee of future results.

Monitoring performance at the total private equity portfolio level

Monitoring the performance of an existing private equity portfolio is intended to address three questions:

- whether the strategic allocation decision is paying off as expected
- how the portfolio is performing relative to its stated return objectives
- how the portfolio is performing relative to similar private equity portfolios

APPROACH

Public equity indices: One common return target for a PE portfolio is 300 to 500 basis points above the return of a public market index—a direct measure for validating the strategic allocation decision and/or assessing the performance of the portfolio management team relative to an investment committee-approved PE benchmark. The use of calculated private equity comparables (see page 2) is advisable, as it can help to address the "apples-to-oranges" issues involved in comparing PE IRRs with standard public equity index returns.

Private equity "peer group" indices: Third-party private equity indices or a customized blend of indices reflecting the characteristics of the private equity portfolio—including strategy, geography and vintage year—offer a more comparable evaluation. These indices reflect the performance of managers facing similar PE investment environments and opportunities. In addition, since this involves an "IRR-to-IRR" comparison, the comparability of return calculations is addressed.

CHALLENGES

Both public and private equity indices, carefully chosen or constructed, can be effective tools for monitoring performance at the total PE portfolio level over the long term. However, there are caveats.

Data limitations: While peer group indices address some of the shortcomings of public equity indices, they are still subject to the weaknesses, as outlined above, of the underlying reported data (for example, sample size, survivorship bias). In constructing a customized peer group index, for instance, there is often a clear trade-off between a nuanced matching of the characteristics of the index to those of the portfolio being evaluated and the ability to report meaningful results at the subsector level given the fund manager sample size.

Assessing individual fund manager performance relative to peers and program objectives

As with the assessment of total PE portfolio performance, both public and private equity indices have a role to play in assessing individual fund manager performance, with "peer group" indices able to address some public equity index shortcomings.

APPROACH

Private equity "peer group" indices: Private equity indices offer a closer look at the investment selection and management skills of the general partner (GP) relative to those of GPs seeking opportunities in a similar private equity arena at a similar point in time. In particular, a vintage year peer group is important when assessing a specific fund of a private equity manager.

Public equity indices: For individual private equity fund managers, public equity benchmarks offer a reference point for assessing whether a manager is contributing to the achievement of the private equity return target and is able to create value beyond returns generally achievable in the public markets. Again, calculated private equity comparables help provide more equitable return comparisons.

CHALLENGES

At the individual fund level, some of the shortcomings of benchmark comparisons become even more pronounced. Each fund is unique—in investment focus, style, life-cycle stage, the environment in which it is most challenged or tends to thrive—making the definition of a comparable "peer group" more critical and more difficult.

Pronounced J-curve effect: The differences in returns between a fund in the early years of the private equity cycle (when net cash flows may be negative) and a fund in the late years of the cycle (when profits are being realized) can be large and can obscure the assessment of a GP's relative management skills. To be meaningful, a fund's performance should be compared with that of an index of funds with the same vintage year.

Performance manipulation: Managers within vintage year peer groups may be incented to take actions that boost their returns and rankings in the short term, despite the potential for an adverse impact on returns in the long term. Examples include ceasing or reducing new commitments today to increase returns (due to fewer outflows), or committing additional capital to what might be a current momentum segment of the industry.

LESSONS LEARNED

In summary, here are key takeaways for private equity investors searching for the most appropriate benchmarks for evaluating their PE investments and managers:

Don't expect perfection: The very nature of the private equity market and investments implies that there is no perfect way to track portfolio and manager performance. Using multiple benchmarks is generally advisable.

Keep a long-term perspective: In the early stages of building a private equity program or investing in a recent vintage year fund, there are no reliable statistics for tracking short-term performance.

Consider the trade-offs: Too fine a definition of a comparable peer group may leave too small a sample for statistically meaningful results.

Use what you've got: Public indices are the natural benchmarks for the long-term evaluation of strategic allocation decisions and tracking progress toward PE portfolio objectives; peer group indices are needed to address the relative skill and performance of fund managers. For the most effective assessment, use a combination of indices, with an awareness of the characteristics, strengths and limitations of each (**EXHIBIT 2**).

Know your managers: No set of benchmarks can substitute for understanding your managers' strategies, practices, strengths and weaknesses.

The "right" benchmark depends on how it is to be used

EXHIBIT 2: MATCHING PE BENCHMARKING NEEDS WITH THE APPROPRIATE INDEX TYPE*

	Public equity		Private equity	
Benchmarking need	Return indices	Calculated PE comparables	Aggregate indices	Peer group indices
Inform strategic allocation decisions and objective-setting	√		√	
Monitor performance at the total PE portfolio level		√	√	√
Assess individual fund manager performance relative to peers and program objectives		√	√	√

Source: J.P. Morgan Asset Management—Private Equity Group; for illustrative purposes only.
*Checkmarks denote most appropriate benchmarking tools for a given need.

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