PitchBook

PitchBook Benchmarks

PRIVATE MARKETS DATA

AS OF 3Q 2018

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Introduction

PitchBook Benchmarks aim to help both LPs and GPs better understand private market fund performance relative to broader asset classes and other PE and VC strategies. Performance is presented through several lenses—including IRRs and cash multiples—to provide a holistic view for assessing performance within and between strategies, as well as across vintage years. Furthermore, the alpha of private market funds is measured relative to easily accessible public market substitutes using a PME metric. Each edition of our Benchmarks also includes a section that highlights a specific aspect of fund performance.

Below you'll find detailed benchmark statistics across PE, VC, debt, real assets, funds-of-funds and secondaries strategies. To easily access all of the data points found in this PDF, along with benchmark statistics for a host of other sub-strategies and geographies, be sure to download the accompanying Excel data packs (PE, VC, Debt & Real Assets and Alternative Access Strategies). Through these data packs, subscribers to the PitchBook Platform can also gain direct access to all the underlying funds and performance metrics used to calculate our Benchmarks.

Our goal is to provide the most transparent, comprehensive and useful fund performance data for private market professionals. We hope that our Benchmarks prove useful in your practice, and we welcome any and all feedback that may arise as you make your way through our various benchmark groupings. Should there be any additional benchmark categories or data points you would like to see included in the future, please contact us directly at benchmarks@pitchbook.com.

Methodology

Data composition

PitchBook's fund returns data is primarily composed of individual LP reports, serving as the baseline for our estimates of activity across an entire fund. For any given fund, return profiles will vary for LPs due to a range of factors, including fee discounts, timing of commitments and inclusion of co-investments. This granularity of LP-reported returns—all available on the PitchBook Platform—provides helpful insight to industry practitioners but results in discrepancies that must be addressed when calculating fund-level returns.

To be included in pooled calculations, a fund must have: (i) at least one LP report within two years of the fund's vintage, and (ii) LP reports in at least 45% of applicable reporting periods. To mitigate discrepancies among multiple LPs reporting, the PitchBook Benchmarks (iii) determine returns for each fund based on data from all LP reports in a given period. For periods that lack an LP report, (iv) a straight-line interpolation calculation is used to populate the missing data; interpolated data is used for approximately 10% of reporting periods.

Beginning in 2Q 2019, PitchBook Benchmarks also include funds for which we have reported IRRs but no cash flow data. We strive to maintain consistency in each edition of PitchBook Benchmarks, but fund classifications will change occasionally and new funds will be incorporated into the dataset as we gather additional information.

All returns data in this report is net of fees.

Definitions

Vintage year:
The vintage year is based on the year of first investment. If year of first investment is unknown, the year of the final close is used as the vintage year. However, if a firm publicly declares via press release or a notice on their website a fund to be of a particular vintage different than either of the first conditions, the firm's classification takes precedence.

Internal rate of return (IRR):
IRR represents the rate at which a series of cash flows are discounted so that the net present value of cash flows equals zero. For pooled calculations, any remaining value in the fund is treated as a distribution in the most recent reporting period. This explains why some vintages show high IRRs but low DPI values.

Distributions to paid-in (DPI):
A measurement of the capital that has been distributed back to LPs as a proportion of the total paid-in, or contributed, capital. DPI is also known as the cash-on-cash multiple or the realization multiple.

Remaining value to paid-in (RVPI):
A measurement of the unrealized return of a fund as a proportion of the total paid-in, or contributed, capital.

Total value to paid-in (TVPI):
A measurement of both the realized and unrealized value of a fund as a proportion of the total paid-in, or contributed, capital. Also known as the investment multiple, TVPI can be found by adding together the DPI and RVPI of a fund.

Fund count:
Some funds in our dataset have a reported IRR but lack sufficient cash flow information to be included in pooled calculations.

Methodology

Median calculations:
Shows the middle data point for a sample group.

Pooled calculations:
All cash flows and NAVs for the sample group are aggregated in the calculation. For vintage-specific calculations, we begin the calculation in 1Q of the vintage year. In cases where the sample has unrealized value, the ending NAV is treated as a cash outflow in the last reporting period.

Equal-weighted pooled calculations:
Each fund's cash flows and ending NAV are expressed as a ratio of fund size. Each fund's ratios are then used to compute pooled calculations for IRR and cash multiples using the methodology outlined above. Regardless of fund size, each fund in these calculations has an equal impact on the output.

Horizon IRR:
Horizon IRR is a capital-weighted pooled calculation that shows the IRR from a certain point in time. For example, the one-year horizon IRR figures in a report may show the IRR performance for the one-year period beginning in 4Q 2017 through the end of 3Q 2018, while the three-year horizon IRR is for the period beginning in 4Q 2015 through the end of 3Q 2018.

Quarterly NAV change:
The percentage change in aggregate NAV is calculated for each group of funds in a sample, considering contributions and distributions during the quarter.

Standard deviation:
Calculated using the sample-based standard deviation methodology.

Public market index returns:
Instances where the return of a public market index is cited, we have calculated the annualized return for the given period. All public indices are total return and denominated in US dollars.

Public market equivalent (PME) calculations:
PME metrics benchmark the performance of a fund (or group of funds) against an index. A white paper detailing the calculations and methodology behind the PME benchmarks can be found at pitchbook.com. PitchBook News & Analysis also contains several articles with PME benchmarks and analysis. These can be read here. All PME figures are calculated using the Kaplan-Schoar PME method:

$$\mathrm{PME}_{\mathrm{KS-TVPI,\,T}} = \frac{\frac{\mathrm{NAV}_T}{I_T} + \sum_{t=0}^{T}\left(\frac{\mathrm{distribution}_t}{I_t}\right)}{\sum_{t=0}^{T}\left(\frac{\mathrm{contribution}_t}{I_t}\right)}$$

When using a KS-PME, a value greater than 1.0 implies outperformance of the public index (net of all fees).

Fund classifications

Private equity
Buyout
Growth/expansion
Mezzanine
Restructuring/turnaround
Diversified PE

Debt
Direct lending
Bridge financing
Distressed debt
Credit special situations
Infrastructure debt
Venture debt
Real estate debt

Real assets
Real estate core
Real estate core plus
Real estate distressed
Real estate opportunistic
Real estate value added
Energy
Infrastructure
Timber
Mining

Venture capital

Secondaries

Fund-of-funds

Spotlight: Direct Alpha

Key takeaways

- While IRR is susceptible to manipulation, Direct Alpha is more resistant to exploitation due to the external factor of a public market index. As such, we think it provides a better way to gauge the annualized returns of private market funds with the added benefit of accounting for the macro environment in which the fund is operating.

- PE funds of the early 2000s significantly outperformed the S&P 500, based on the Direct Alpha metric. Performance suffered for vintages in the mid-to-late 2000s but has been positive for each PE vintage since 2011; however, the recent outperformance is a fraction of what it has been in the past.

- We find that the distribution of Direct Alpha has been fairly static over the last decade, with the only notable exception occurring in the top-decile hurdle of Direct Alpha values, which is above 15% for recent vintages after being in the single digits for many crisis-era vintages. When considered in conjunction with the rising pooled Direct Alpha figures, this suggests that the uptick in aggregate alpha is largely being driven by improved performance from the top tier of funds.

Overview

In previous editions of PitchBook Benchmarks, we cast doubt on many of the generally accepted methods for measuring private market fund performance: cash multiples fail to account for the time value of money; simple annualized returns do not consider the erratic timing of cash flows; and the most common gauge of private market performance, IRR, is prone to manipulation and plagued by a plethora of other shortcomings.

For decades, academics and industry professionals have sought a better formula to holistically evaluate performance, leading to the development of public market equivalent (PME) metrics. The first iterations of PME were relatively complex, involving the creation of a hypothetical vehicle based on a fund's cash flows, and they produced unusable results when performance of the private market fund was particularly strong or weak. Improvements were made on the margin to make PME compute in all scenarios, but the calculations remained arcane and generally have been used only by academics.

The thinking around PMEs changed with the introduction of KS-PME. Developed by Steven Kaplan—a board member of Morningstar, PitchBook's parent company—and Antoinette Schoar, KS-PME is a simple cash multiple metric calculated by discounting private capital fund's cash flows by the returns of a reference public equity index, rather than creating a hypothetical PME vehicle against which to compare performance. But while KS-PME is simple and accounts for activity in public markets, it suffers from the same drawback as traditional cash multiples in that the length of the investment period is not considered.

This issue was not insurmountable, however. Subsequent research applied the basic IRR calculation to the adjusted cash flows of the KS-PME to produce a new metric, "Direct Alpha," that shows "the precise rate of excess return between the cash flows of illiquid assets and the time series of returns of a reference benchmark." At its most basic level, "one can think of Direct Alpha as an annualized KS-PME taking into account both the performance of the reference benchmark and the precise times at which capital is actually employed." Not only does this account for the opportunity cost of investing in a private market fund, it also captures the impact of investment period length.

Note: The S&P 500 TR is the reference index for all calculations.

Performance panacea?

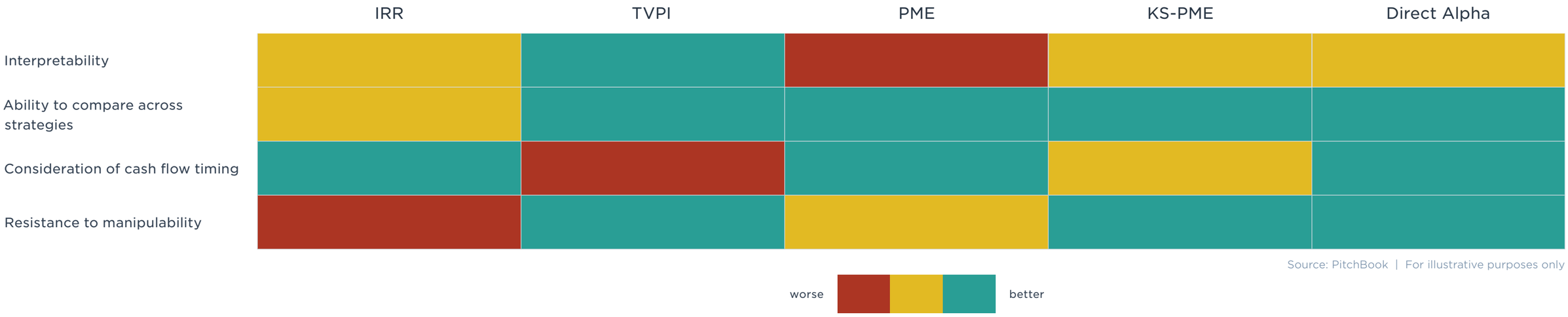
Like PME calculations, Direct Alpha does not tell an investor anything about the absolute return of the fund, but rather how it performed relative to the index. Theoretically, this means that a private market fund could produce strong returns on an absolute basis but still have a negative Direct Alpha if the reference index produced superior returns over the period. Conversely, Direct Alpha may be positive when the private market fund has negative absolute returns.

As we detailed last quarter, IRR is fraught with issues, including its susceptibility to manipulation. While we did not find evidence of widescale distortion of IRRs, devious practices certainly have the potential to skew the IRR of individual funds. Direct Alpha is not a silver bullet, but it does have characteristics that make it more difficult to manipulate. Traditional IRR is prone to chicanery because cash flow timing is germane to the calculation, and the relationship is straightforward (i.e. shorter investment timeframe equates to higher IRR). Accordingly, if a GP knows it can delay calling capital or expedite distributions (which can be easily achieved with capital call loans), this will certainly have a favorable impact on IRR. The influence of additional variables and external factors does not need to be considered.

While the specific timing of cash flows is also of paramount importance for Direct Alpha, GPs trying to game Direct Alpha will have a greater challenge due to the external factor of a public market index. Direct Alpha will be higher if the private market fund is calling capital during times in which the index is relatively high and distributing while it is low, which is difficult to predict. As a result, artificially manipulating the cash flows could have unexpected consequences on Direct Alpha.

Take, for example, a GP that uses a subscription credit line to delay a capital call to LPs for 90 days. Without knowing the specifics of the fund, we can be certain this will lead to a relatively higher IRR and lower TVPI than if a subscription line was not used because: (i) capital calls from LPs will occur at a later date than they would otherwise, meaning that capital will be invested for a shorter period; and (ii) interest accrued on the subscription line will be charged to the fund, resulting in lower cash-on-cash returns (i.e. TVPI). The impact on the Direct Alpha calculation, however, is less clear.

The merits of metric



Source: PitchBook | For illustrative purposes only

The accompanying tables and charts provide a simple, illustrative example of how market movements can affect Direct Alpha. In the base case scenario, the GP acquires a company for $100 million and exits after three years at $150 million (ignoring leverage, fees, etc.). Under scenario 1, the same investment is considered but with the GP delaying the initial capital call by 90 days, during which the public market index depreciates by 5%. As can be seen, this has a deleterious effect on the Direct Alpha calculation because the contribution amount is adjusted for a lower public index value, which is tantamount to buying the public index at a discounted level (i.e. if the public index is purchased at a discount, it is accretive to the public equity side of the equation, translating to lower relative performance and Direct Alpha for the private market fund). The inverse is also true; if the index were to appreciate during the delay in the capital call, it would prove accretive to Direct Alpha because the private market cash flows will be adjusted for a period in which the public equity index was at a premium.

Delaying capital calls has unpredictable effects on Direct Alpha

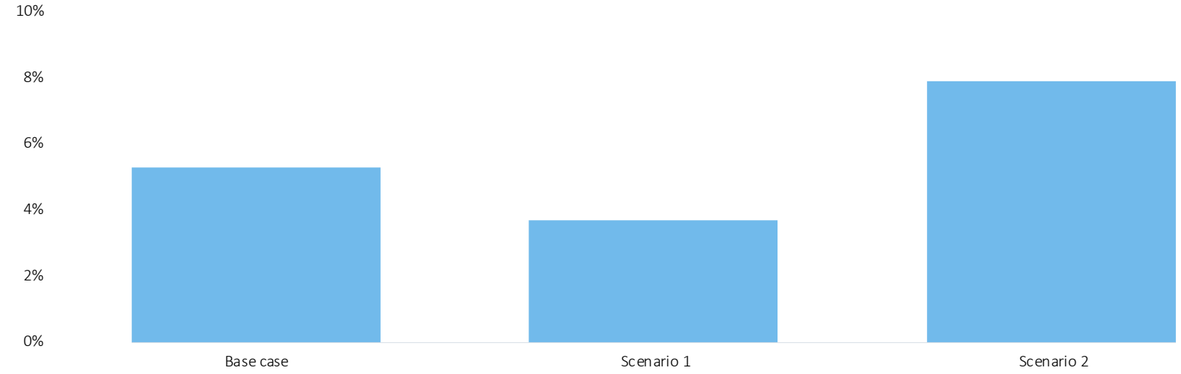
Base case	Hypothetical scenario 1	Hypothetical scenario 2
Company acquired for $100M and sold in three years for $150M	Initial capital call delayed by 90 days, during which the reference public market index decreases 5%	Initial capital call delayed by 90 days, during which the reference public market index increases 5%

Note: Each scenario assumes that the reference public market index rises to the same level in the final period.

Alpha on the rise?

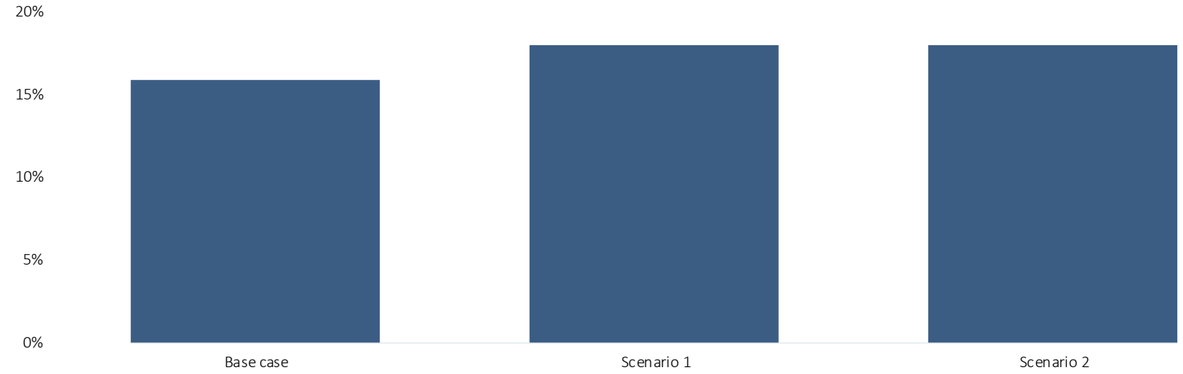
Absolute returns of PE funds have rebounded strongly since the global financial crisis (GFC), but a persistent question is how much of these returns can be explained by public market tailwinds. In prior research, we analyzed KS-PME values across more than two decades of private market fund performance and found a substantial downturn in the level of outperformance for recent vintages, suggesting that manager skill (i.e. alpha) is playing a smaller role in return creation. But this does not tell the whole story, since value creation takes time and KS-PME does not account for how long capital was put to work. Since an IRR calculation is embedded in the methodology, Direct Alpha is a useful tool to account for the time value and to fill in the gaps.

Direct Alpha



Source: PitchBook | For illustrative purposes only

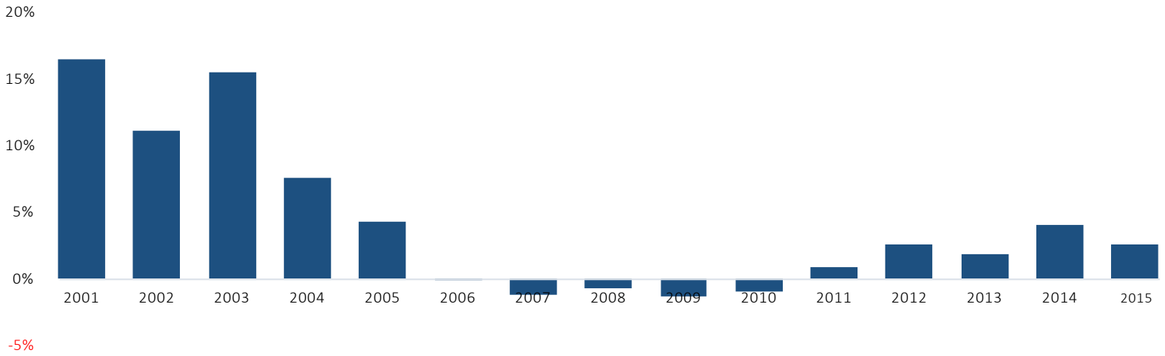
IRR



Source: PitchBook | For illustrative purposes only

Alpha is on the rise for newer vintages, but continues to lag historically

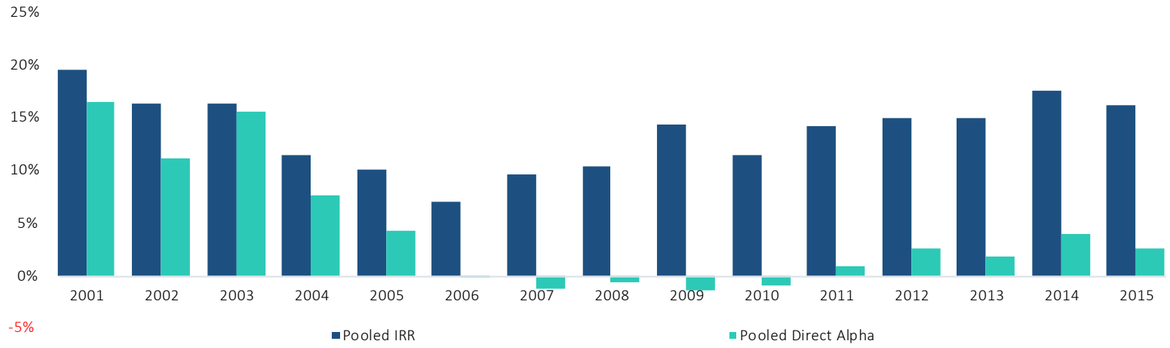
Inception to date pooled Direct Alpha for PE funds by vintage year



Source: PitchBook | Geography: Global
*As of September 30, 2018

Pooled IRR and Direct Alpha can vary widely ...

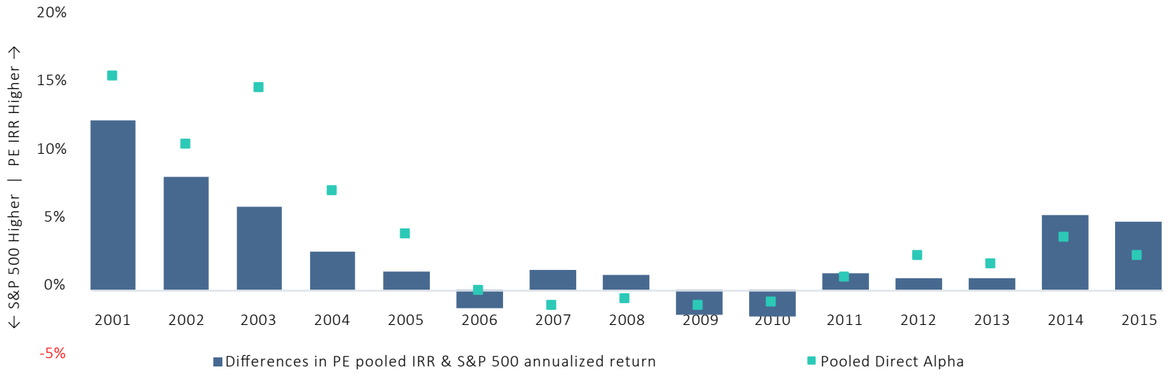
Inception to date performance by vintage year



Source: PitchBook | Geography: Global
*As of September 30, 2018

... depending on the performance of public markets

Inception to date performance by vintage year/start of CAGR



Source: PitchBook | Geography: Global
*As of September 30, 2018

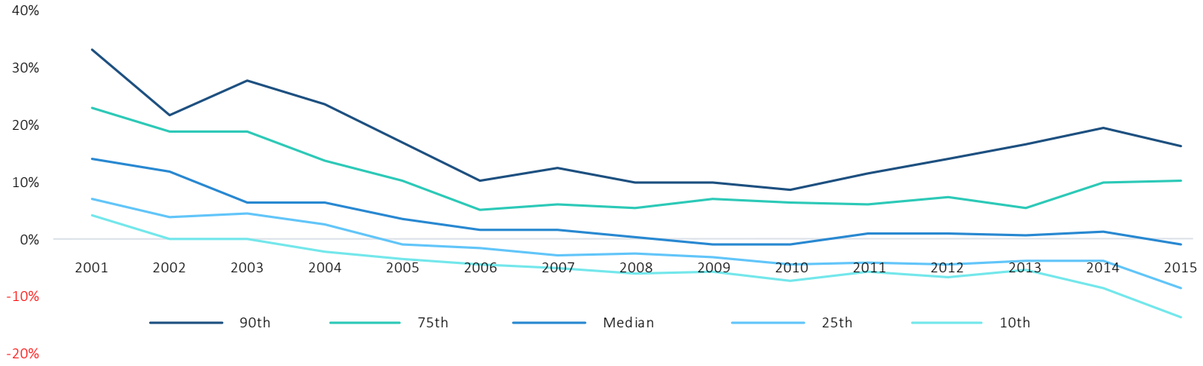
For vintages in the early 2000s, PE funds in aggregate generated Direct Alpha values ranging from 7.5% to 16.4%. This outperformance began a downward trajectory in 2003, however, and crossed over into negative territory in 2006—a vintage that comprises funds investing at the peak of the pre-crisis bubble. The pooled Direct Alpha figure continues to languish in negative territory for the next several vintages. While pooled Direct Alpha has been positive for vintages since 2011, the level of outperformance is less than half what it was at the turn of the century.

To better understand why relative performance has evolved in this manner, we compared absolute returns for private and public markets by juxtaposing pooled IRRs by vintage with the annualized total return of the S&P 500 from the beginning of the designated year. As can be seen, public equity and PE returns have been highly correlated over time, which our prior research has also shown. In the early 2000s, the superior Direct Alpha figures produced by PE funds is due to a combination of below-average returns from public equities and above-average gains generated by PE funds. The period of most challenging relative performance in and around the GFC coincides with some of the lowest points of absolute performance in both public and private markets.

The evolution of performance most recently warrants a closer look. While public equity markets continue to climb, they have lost some steam after nearly a decade, and the annualized total return of the S&P 500 has been slipping when the calculation begins in more recent years. At the same time, newer PE vintages are posting the strongest absolute returns since the early 2000s on an IRR basis. These trends have combined to push Direct Alpha positive for vintages since 2011, but the outperformance is a fraction of what it was in the past.

Direct Alpha is improving for the top tier of funds in newer vintages

Direct Alpha percentiles for PE funds by vintage



Source: PitchBook
*As of September 30, 2018

Digging beyond the headline figures, we find that the distribution of Direct Alpha has been fairly static over the last decade, with the median stagnating around 0% and the lower bounds also barely budging. Even the top-quartile rate has been relatively unchanged. The only notable exception is in the top-decile hurdle of Direct Alpha values, which is above 15% for recent vintages after being in the single digits for many crisis-era vintages. When considered in conjunction with the rising pooled Direct Alpha figures cited previously, this suggests that the uptick in aggregate alpha is largely driven by improved performance from the top tier of funds.

It is worth noting here that, like all metrics, Direct Alpha provides the most value when evaluating a fully liquidated fund. Similar to other metrics, the calculation assumes that any remaining value in the fund can be treated as an immediate distribution, which can have outsized effect on the output because distributions are such a critical component of the calculation. This is particularly pertinent in the newer vintages that are showing better relative performance, as these vehicles are often holding two-thirds to three-quarters of their value in unrealized gains.

Additionally, while Direct Alpha addresses many of the shortcomings of other metrics, it does not account for illiquidity or leverage. Still, Direct Alpha is a useful tool for assessing performance of private markets, particularly for an analysis of individual funds, as well as comparing performance to other alternative investment strategies, namely hedge funds.

Alpha is harder to find

Alpha is a familiar concept in hedge fund investing, where it can be precisely measured by decomposing returns and attributing performance to specific factors. As investors have developed a penchant for passive strategies over the last decade, hedge funds have come under fire for failing to deliver alpha. Top-performing hedge funds certainly continue to beat the broader market, with most of the criticism coming through the lens of aggregate hedge fund performance. Perhaps the most high-profile example is the decade-long wager between Warren Buffet and Protégé Partners, with the Oracle of Omaha betting that a plain vanilla index fund would outperform a basket of hedge funds. With the wager initiated in 2007, the equity index returned an annually compounded 7.1%, compared to a paltry 2.2% for the hedge funds.

Admittedly, the last decade experienced one of the longest bull runs in history (the initial market crash notwithstanding), and as such, it has been a particularly favorable environment for equity-oriented portfolios. Despite this headwind, many investors believe the recent inability for hedge funds to produce alpha en masse is a categorical shift that will persist. The common rationale for the relative performance struggles of hedge funds mirrors recent critiques of actively managed strategies: new tools and an influx of managers have evaporated arbitrage opportunities; a deluge of data has minimized information asymmetries; and fewer publicly traded companies has limited scalable investment options.

As the merit of active public market strategies has been called into question, PE investors have claimed they can produce alpha that is irreplaceable in public markets. One reason commonly asserted is that private market managers wield a high degree of influence and control that allows them to dictate the course of a business. Another purported driver of alpha in private markets is the idiosyncratic nature of the underlying investments; while investors have a multitude of options for accessing asset classes such as public equities, fixed income, currencies and other liquid securities, a private company is inherently unique. But these seeming advantages have been called into question, as the return profiles of some private market strategies have been replicated through relatively basic levered public equity strategies.

Deconstructing returns and conducting performance attribution is fairly straightforward for many hedge funds, which tend to invest in relatively liquid securities that enable returns to be deconstructed on a granular level. While the term “alpha” is often used colloquially in private markets to discuss manager skill or a general ability to “outperform,” it tends to not be quantified, which is one reason why Direct Alpha is valuable.

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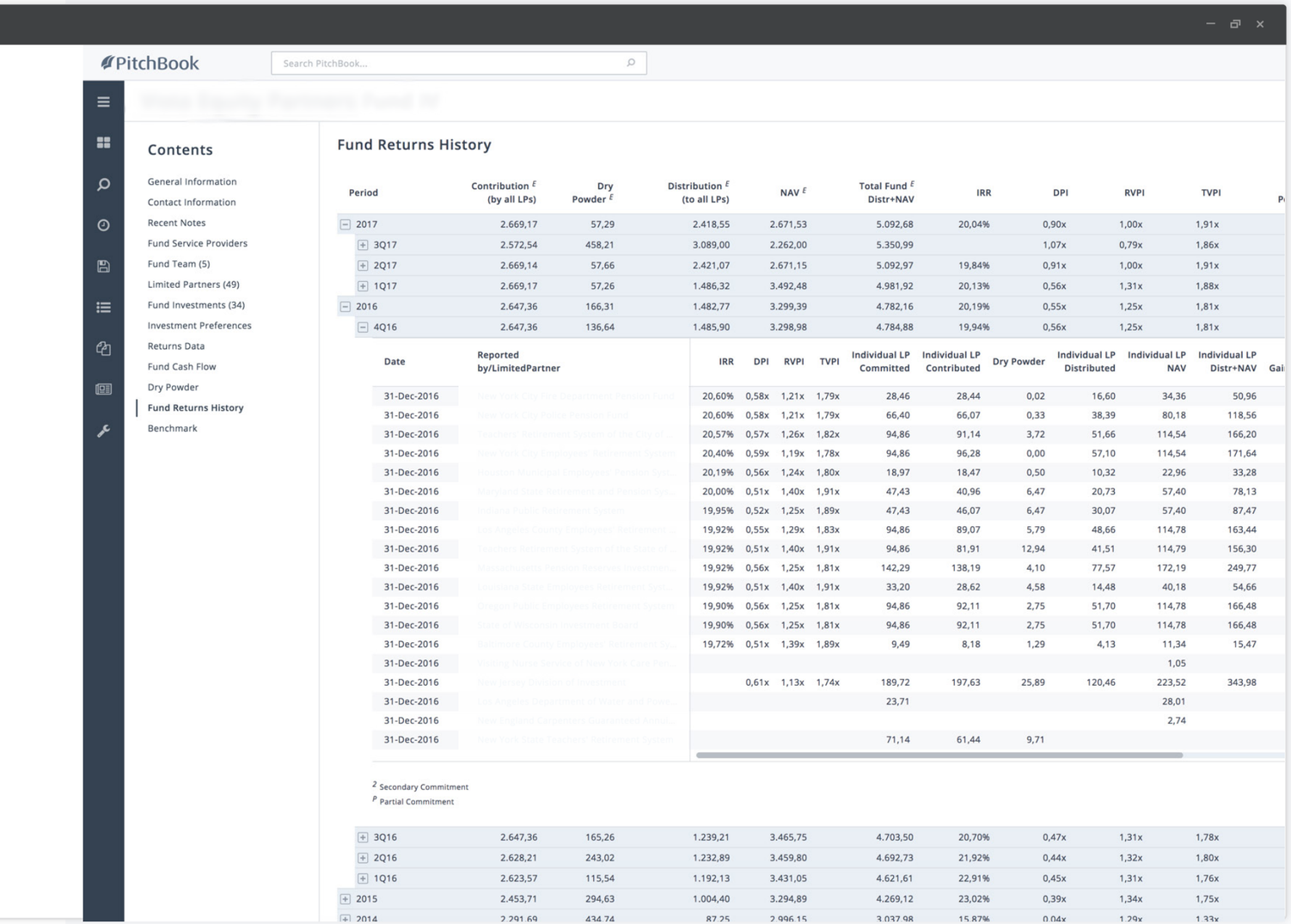

Period	Contribution E (by all LPs)	Dry Powder E	Distribution E (to all LPs)	NAV E	Total Fund E Distr+NAV	IRR	DPI	RVPI	TVPI
2017	2.669,17	57,29	2.418,55	2.671,53	5.092,68	20,04%	0,90x	1,00x	1,91x
3Q17	2.572,54	458,21	3.089,00	2.262,00	5.350,99		1,07x	0,79x	1,86x
2Q17	2.669,14	57,66	2.421,07	2.671,15	5.092,97	19,84%	0,91x	1,00x	1,91x
1Q17	2.669,17	57,26	1.486,32	3.492,48	4.981,92	20,13%	0,56x	1,31x	1,88x
2016	2.647,36	166,31	1.482,77	3.299,39	4.782,16	20,19%	0,55x	1,25x	1,81x
4Q16	2.647,36	136,64	1.485,90	3.298,98	4.784,88	19,94%	0,56x	1,25x	1,81x

Date	Reported by/LimitedPartner	IRR	DPI	RVPI	TVPI	Individual LP Committed	Individual LP Contributed	Dry Powder	Individual LP Distributed	Individual LP NAV	Individual LP Distr+NAV	Gai
31-Dec-2016	New York City Fire Department Pension Fund	20,60%	0,58x	1,21x	1,79x	28,46	28,44	0,02	16,60	34,36	50,96	
31-Dec-2016	New York City Police Pension Fund	20,60%	0,58x	1,21x	1,79x	66,40	66,07	0,33	38,39	80,18	118,56	
31-Dec-2016	Teachers' Retirement System of the City of...	20,57%	0,57x	1,26x	1,82x	94,86	91,14	3,72	51,66	114,54	166,20	
31-Dec-2016	New York City Employees' Retirement System	20,40%	0,59x	1,19x	1,78x	94,86	96,28	0,00	57,10	114,54	171,64	
31-Dec-2016	Houston Municipal Employees Pension Syst...	20,19%	0,56x	1,24x	1,80x	18,97	18,47	0,50	10,32	22,96	33,28	
31-Dec-2016	Maryland State Retirement and Pension Sys...	20,00%	0,51x	1,40x	1,91x	47,43	40,96	6,47	20,73	57,40	78,13	
31-Dec-2016	Indiana Public Retirement System	19,95%	0,52x	1,25x	1,89x	47,43	46,07	6,47	30,07	57,40	87,47	
31-Dec-2016	Los Angeles County Employees Retirement ...	19,92%	0,55x	1,29x	1,83x	94,86	89,07	5,79	48,66	114,78	163,44	
31-Dec-2016	Teachers Retirement System of the State of ...	19,92%	0,51x	1,40x	1,91x	94,86	81,91	12,94	41,51	114,79	156,30	
31-Dec-2016	Massachusetts Pension Reserves Investment ...	19,92%	0,56x	1,25x	1,81x	142,29	138,19	4,10	77,57	172,19	249,77	
31-Dec-2016	Louisiana State Employees Retirement Syst...	19,92%	0,51x	1,40x	1,91x	33,20	28,62	4,58	14,48	40,18	54,66	
31-Dec-2016	Oregon Public Employees Retirement System	19,90%	0,56x	1,25x	1,81x	94,86	92,11	2,75	51,70	114,78	166,48	
31-Dec-2016	State of Wisconsin Investment Board	19,90%	0,56x	1,25x	1,81x	94,86	92,11	2,75	51,70	114,78	166,48	
31-Dec-2016	Baltimore County Employees Retirement Sy...	19,72%	0,51x	1,39x	1,89x	9,49	8,18	1,29	4,13	11,34	15,47	
31-Dec-2016	Visiting Nurse Service of New York Care Per...									1,05		
31-Dec-2016	New Jersey Division of Investment		0,61x	1,13x	1,74x	189,72	197,63	25,89	120,46	223,52	343,98	
31-Dec-2016	Los Angeles Department of Water and Powe...					23,71				28,01		
31-Dec-2016	New England Carpenters Guaranteed Annu...									2,74		
31-Dec-2016	New York State Teachers' Retirement System					71,14	61,44	9,71				

[2] Secondary Commitment
[P] Partial Commitment

3Q16	2.647,36	165,26	1.239,21	3.465,75	4.703,50	20,70%	0,47x	1,31x	1,78x
2Q16	2.628,21	243,02	1.232,89	3.459,80	4.692,73	21,92%	0,44x	1,32x	1,80x
1Q16	2.623,57	115,54	1.192,13	3.431,05	4.621,61	22,91%	0,45x	1,31x	1,76x
2015	2.453,71	294,63	1.004,40	3.294,89	4.269,12	23,02%	0,39x	1,34x	1,75x
2014	2.291,69	434,74	87,25	2.996,15	3.037,98	15,87%	0,04x	1,29x	1,33x

PitchBook clients get greater insight into underlying fund data

Get aggregate fund-level performance at a glance.

Get access to individual LP reports and the underlying fund performance data that is used to construct our benchmarks.

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Private capital

Private capital

Horizon IRRs

Strategy	1-year	3-year	5-year	10-year	15-year	18-year
Private capital	13.16%	12.43%	12.93%	10.24%	11.49%	9.95%
Private equity	13.30%	14.58%	14.65%	11.60%	13.50%	11.58%
Venture capital	18.93%	9.44%	13.83%	9.77%	9.31%	5.40%
Real assets	10.91%	10.54%	10.40%	7.26%	7.74%	7.69%
Debt	9.47%	7.85%	7.72%	9.42%	9.32%	9.27%
Fund-of-funds	15.39%	10.85%	12.65%	8.70%	9.57%	8.27%
Secondaries	16.92%	11.16%	12.98%	10.64%	11.99%	11.37%
S&P 500	11.06%	13.69%	12.19%	14.43%	9.03%	6.22%
Russell 2000 Growth	11.32%	13.73%	11.86%	14.68%	9.23%	6.57%
Russell 3000	13.48%	14.99%	10.26%	14.71%	9.44%	8.72%
Morningstar US Real Assets	4.71%	3.63%	2.04%	5.13%	6.06%	7.08%
Bloomberg Barclays US Corporate High Yield	1.47%	7.49%	4.76%	11.53%	7.42%	7.61%

Source: PitchBook. Data as of September 30, 2018
Note: All public index values are CAGRs.

Private capital

Equal-weighted horizon IRRs

Strategy	1-year	3-year	5-year	10-year	15-year	18-year
Private capital	14.22%	11.33%	12.34%	9.68%	10.62%	8.16%
Private equity	14.71%	13.94%	13.28%	10.78%	13.25%	10.47%
Venture capital	17.51%	7.66%	12.73%	9.12%	8.09%	4.01%
Real assets	10.84%	10.61%	10.41%	7.32%	8.27%	8.26%
Debt	9.60%	7.57%	8.44%	8.93%	9.37%	9.51%
Fund-of-funds	16.69%	11.59%	13.37%	10.56%	10.59%	9.36%
Secondaries	15.88%	9.34%	11.48%	9.58%	11.56%	10.29%
S&P 500	11.06%	13.69%	12.19%	14.43%	9.03%	6.22%
Russell 2000 Growth	11.32%	13.73%	11.86%	14.68%	9.23%	6.57%
Russell 3000	13.48%	14.99%	10.26%	14.71%	9.44%	8.72%
Morningstar US Real Assets	4.71%	3.63%	2.04%	5.13%	6.06%	7.08%
Bloomberg Barclays US Corporate High Yield	1.47%	7.49%	4.76%	11.53%	7.42%	7.61%

Source: PitchBook. Data as of September 30, 2018
Note: All public index values are CAGRs.

Private equity

Private equity

IRRs by vintage

	Pooled IRRs			IRR hurdle rates						
Vintage year	Pooled IRR	Equal-weighted pooled IRR	Number of funds	Top decile	Top quartile	Median IRR	Bottom quartile	Bottom decile	Standard deviation	Number of funds
Pre-2001	11.14%	9.20%	187	24.53%	17.81%	9.97%	2.83%	-6.14%	13.02%	234
2001	23.68%	19.14%	30	38.74%	29.42%	16.44%	10.79%	8.18%	19.01%	32
2002	18.39%	16.25%	36	34.48%	28.05%	17.15%	7.00%	2.39%	18.29%	35
2003	23.38%	16.33%	22	36.96%	24.03%	13.00%	7.94%	1.98%	25.79%	27
2004	12.55%	11.13%	52	25.62%	15.91%	9.21%	4.24%	0.32%	17.52%	52
2005	9.67%	9.37%	77	18.24%	13.89%	8.89%	3.81%	-0.32%	9.21%	81
2006	7.20%	6.97%	111	15.39%	11.61%	7.81%	4.67%	-1.81%	10.54%	115
2007	9.28%	9.73%	110	20.60%	15.93%	9.85%	4.75%	0.68%	9.57%	115
2008	12.38%	10.27%	109	22.15%	16.23%	10.50%	5.19%	-2.50%	10.61%	110
2009	14.35%	14.31%	47	26.11%	22.05%	14.12%	10.07%	5.94%	9.57%	46
2010	13.21%	11.32%	64	27.90%	16.90%	11.18%	6.14%	-1.55%	13.11%	60
2011	15.18%	13.60%	80	27.45%	21.80%	14.25%	9.53%	3.22%	16.15%	78
2012	16.71%	14.60%	112	32.21%	22.04%	14.37%	8.20%	1.85%	15.16%	108
2013	15.36%	14.30%	94	29.29%	20.26%	13.61%	8.75%	6.27%	9.97%	88
2014	18.13%	17.62%	99	29.68%	22.10%	14.06%	8.50%	2.54%	13.77%	93
2015	18.66%	15.51%	134	30.04%	21.58%	13.52%	5.45%	0.01%	14.52%	116
2016	17.82%	17.91%	108	40.39%	21.50%	11.65%	0.35%	-9.43%	21.87%	97
2017	10.09%	9.97%	100	33.44%	10.92%	-0.31%	-13.53%	-32.90%	35.92%	81

Source: PitchBook. Data as of September 30, 2018

Private equity

Multiples by vintage

	Pooled multiples			Equal-weighted pooled multiples			
Vintage year	TVPI	DPI	RVPI	TVPI	DPI	RVPI	Number of funds
Pre-2001	1.63x	1.62x	0.01x	1.52x	1.50x	0.02x	187
2001	2.17x	2.14x	0.03x	1.99x	1.97x	0.02x	30
2002	1.90x	1.86x	0.04x	1.78x	1.74x	0.04x	36
2003	2.02x	1.97x	0.06x	1.82x	1.76x	0.06x	22
2004	1.73x	1.66x	0.07x	1.64x	1.54x	0.10x	52
2005	1.60x	1.50x	0.10x	1.57x	1.46x	0.11x	77
2006	1.45x	1.33x	0.12x	1.42x	1.26x	0.16x	111
2007	1.51x	1.25x	0.26x	1.56x	1.28x	0.28x	110
2008	1.61x	1.31x	0.31x	1.52x	1.20x	0.32x	109
2009	1.68x	1.40x	0.28x	1.68x	1.35x	0.33x	47
2010	1.56x	1.00x	0.56x	1.50x	0.91x	0.59x	64
2011	1.64x	0.82x	0.82x	1.58x	0.76x	0.82x	80
2012	1.57x	0.68x	0.89x	1.50x	0.65x	0.85x	112
2013	1.39x	0.46x	0.93x	1.40x	0.45x	0.96x	94
2014	1.40x	0.39x	1.01x	1.39x	0.40x	0.99x	99
2015	1.29x	0.19x	1.10x	1.27x	0.20x	1.07x	134
2016	1.19x	0.13x	1.06x	1.22x	0.16x	1.05x	108
2017	1.06x	0.09x	0.97x	1.07x	0.11x	0.96x	100

Source: PitchBook. Data as of September 30, 2018

Private equity

Multiples by vintage

	TVPI					DPI					
Vintage year	Top decile	Top quartile	Median TVPI	Bottom quartile	Bottom decile	Top decile	Top quartile	Median DPI	Bottom quartile	Bottom decile	Number of funds
Pre-2001	2.26x	1.92x	1.50x	1.14x	0.69x	2.26x	1.92x	1.50x	1.10x	0.69x	187
2001	2.93x	2.56x	1.90x	1.57x	1.25x	2.92x	2.53x	1.90x	1.51x	1.18x	30
2002	2.62x	2.15x	1.78x	1.33x	1.21x	2.44x	2.14x	1.74x	1.32x	1.17x	36
2003	3.00x	1.95x	1.69x	1.48x	0.88x	2.84x	1.94x	1.69x	1.42x	0.81x	22
2004	2.54x	1.98x	1.59x	1.30x	0.95x	2.50x	1.94x	1.53x	1.16x	0.68x	52
2005	2.29x	1.82x	1.50x	1.21x	0.91x	2.26x	1.76x	1.40x	1.09x	0.77x	77
2006	1.96x	1.67x	1.39x	1.14x	0.74x	1.80x	1.55x	1.31x	1.00x	0.50x	111
2007	2.23x	1.89x	1.49x	1.17x	0.97x	1.98x	1.68x	1.21x	0.89x	0.64x	110
2008	2.11x	1.84x	1.48x	1.15x	0.94x	1.83x	1.50x	1.21x	0.86x	0.53x	109
2009	2.48x	2.15x	1.59x	1.30x	0.96x	2.14x	1.74x	1.28x	0.97x	0.67x	47
2010	2.12x	1.73x	1.45x	1.17x	0.90x	1.58x	1.28x	0.86x	0.57x	0.37x	64
2011	2.31x	1.84x	1.45x	1.24x	0.99x	1.39x	1.05x	0.70x	0.34x	0.15x	80
2012	2.00x	1.74x	1.45x	1.24x	1.02x	1.18x	0.88x	0.61x	0.37x	0.13x	112
2013	1.82x	1.54x	1.36x	1.21x	1.11x	0.94x	0.67x	0.35x	0.15x	0.03x	94
2014	1.86x	1.52x	1.31x	1.17x	1.02x	0.86x	0.54x	0.27x	0.07x	0.01x	99
2015	1.55x	1.41x	1.20x	1.06x	0.96x	0.41x	0.26x	0.13x	0.01x	0.00x	134
2016	1.59x	1.26x	1.14x	0.99x	0.90x	0.44x	0.16x	0.03x	0.00x	0.00x	108
2017	1.21x	1.12x	0.99x	0.90x	0.62x	0.26x	0.07x	0.00x	0.00x	0.00x	100

Source: PitchBook. Data as of September 30, 2018

For RVPI data, please download the supplemental Excel pack

Private equity

PMEs by vintage

	S&P 500 Index			Russell 3000 Index			
Vintage year	PitchBook Benchmark return (%)	Index return (%)	KS-PME	PitchBook Benchmark return (%)	Index return (%)	KS-PME	Number of funds
2001	23.68%	6.81%	1.69	23.68%	7.19%	1.65	30
2002	18.39%	7.91%	1.43	18.39%	8.26%	1.40	36
2003	23.38%	10.25%	1.58	23.38%	10.60%	1.56	22
2004	12.55%	8.79%	1.35	12.55%	8.99%	1.33	52
2005	9.67%	8.91%	1.19	9.67%	9.10%	1.18	77
2006	7.20%	8.85%	0.99	7.20%	8.89%	0.98	111
2007	9.28%	8.49%	0.95	9.28%	8.54%	0.94	110
2008	12.38%	9.69%	0.97	12.38%	9.84%	0.97	109
2009	14.35%	16.62%	0.99	14.35%	16.81%	0.99	47
2010	13.21%	13.91%	0.96	13.21%	13.91%	0.97	64
2011	15.18%	13.35%	1.03	15.18%	13.15%	1.04	80
2012	16.71%	14.57%	1.08	16.71%	14.45%	1.08	112
2013	15.36%	14.52%	1.04	15.36%	14.34%	1.04	94
2014	18.13%	12.56%	1.08	18.13%	12.13%	1.08	99
2015	18.66%	11.93%	1.04	18.66%	11.69%	1.04	134
2016	17.82%	18.74%	1.01	17.82%	19.24%	1.01	108
2017	10.09%	16.74%	0.96	10.09%	16.68%	0.96	100

Source: PitchBook. Data as of September 30, 2018

Note: All public index values are CAGRs from the start of the respective vintage year.

Private equity

Quarterly return

Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)
1Q 2005	2.71%	4Q 2008	-11.17%	3Q 2012	3.78%	2Q 2016	4.53%
2Q 2005	8.38%	1Q 2009	-7.11%	4Q 2012	3.37%	3Q 2016	4.55%
3Q 2005	7.53%	2Q 2009	3.32%	1Q 2013	3.08%	4Q 2016	1.49%
4Q 2005	9.94%	3Q 2009	3.59%	2Q 2013	3.07%	1Q 2017	4.55%
1Q 2006	4.31%	4Q 2009	6.77%	3Q 2013	4.72%	2Q 2017	5.19%
2Q 2006	5.40%	1Q 2010	3.14%	4Q 2013	5.58%	3Q 2017	4.31%
3Q 2006	4.15%	2Q 2010	1.65%	1Q 2014	4.59%	4Q 2017	4.11%
4Q 2006	12.62%	3Q 2010	4.43%	2Q 2014	4.96%	1Q 2018	3.54%
1Q 2007	5.65%	4Q 2010	7.65%	3Q 2014	0.20%	2Q 2018	2.11%
2Q 2007	8.42%	1Q 2011	5.03%	4Q 2014	3.63%	3Q 2018	2.90%
3Q 2007	4.20%	2Q 2011	4.71%	1Q 2015	3.33%		
4Q 2007	3.69%	3Q 2011	-2.83%	2Q 2015	4.93%		
1Q 2008	-0.53%	4Q 2011	1.32%	3Q 2015	0.37%		
2Q 2008	-1.55%	1Q 2012	5.64%	4Q 2015	2.63%		
3Q 2008	-7.76%	2Q 2012	0.71%	1Q 2016	1.81%		

Source: PitchBook. Data as of September 30, 2018

Venture capital

Venture capital

IRRs by vintage

	Pooled IRRs			IRR hurdle rates						
Vintage year	Pooled IRR	Equal-weighted pooled IRR	Number of funds	Top decile	Top quartile	Median IRR	Bottom quartile	Bottom decile	Standard deviation	Number of funds
Pre-2001	1.44%	5.65%	142	31.64%	10.06%	1.50%	-5.30%	-13.13%	31.18%	173
2001	6.22%	3.72%	35	10.14%	6.00%	2.70%	-3.71%	-10.62%	10.49%	36
2002	2.93%	2.92%	17	9.44%	7.70%	3.40%	-6.70%	-10.71%	8.89%	17
2003	4.71%	0.99%	19	7.98%	6.00%	1.25%	-8.21%	-23.80%	20.31%	21
2004	1.40%	-0.13%	20	12.83%	6.03%	1.10%	-8.11%	-13.72%	11.51%	25
2005	9.28%	10.94%	32	14.45%	9.78%	4.30%	2.21%	-4.88%	13.25%	30
2006	5.27%	3.07%	41	16.42%	10.11%	3.93%	-5.98%	-12.30%	12.71%	50
2007	12.76%	11.98%	45	28.13%	16.15%	9.47%	-2.21%	-10.45%	16.60%	48
2008	14.27%	10.89%	55	27.86%	20.64%	8.25%	0.88%	-16.61%	22.32%	54
2009	10.48%	9.43%	20	30.00%	19.60%	13.12%	5.30%	-3.70%	11.10%	21
2010	17.75%	17.76%	25	38.50%	27.60%	12.36%	3.28%	-1.29%	18.51%	26
2011	17.94%	16.42%	21	30.48%	21.59%	16.20%	3.65%	-3.57%	13.87%	30
2012	17.61%	16.74%	17	26.63%	21.70%	17.69%	10.80%	5.07%	11.32%	22
2013	22.93%	16.61%	23	29.10%	24.48%	15.80%	9.35%	4.77%	24.47%	30
2014	20.42%	19.64%	37	34.79%	20.87%	15.40%	8.69%	3.67%	65.80%	39
2015	17.94%	18.46%	39	39.50%	21.95%	14.00%	6.70%	2.14%	17.41%	37
2016	25.62%	33.24%	49	43.35%	34.17%	19.63%	3.10%	-7.67%	22.55%	42
2017	15.73%	13.17%	32	49.97%	38.66%	14.69%	-7.36%	-15.90%	33.39%	28

Source: PitchBook. Data as of September 30, 2018

Venture capital

Multiples by vintage

	Pooled multiples			Equal-weighted pooled multiples			
Vintage year	TVPI	DPI	RVPI	TVPI	DPI	RVPI	Number of funds
Pre-2001	1.08x	1.00x	0.08x	1.22x	1.16x	0.05x	142
2001	1.44x	1.34x	0.10x	1.26x	1.16x	0.10x	35
2002	1.17x	1.15x	0.02x	1.19x	1.09x	0.10x	17
2003	1.33x	1.19x	0.14x	1.06x	0.96x	0.10x	19
2004	1.10x	0.89x	0.21x	0.99x	0.74x	0.25x	20
2005	1.75x	1.33x	0.42x	1.90x	1.44x	0.46x	32
2006	1.35x	1.04x	0.30x	1.21x	0.87x	0.34x	41
2007	1.91x	1.37x	0.53x	1.89x	1.31x	0.57x	45
2008	1.90x	1.18x	0.72x	1.69x	0.98x	0.72x	55
2009	1.72x	0.76x	0.95x	1.63x	0.77x	0.87x	20
2010	2.03x	1.07x	0.97x	2.07x	1.15x	0.92x	25
2011	1.93x	0.72x	1.21x	1.88x	0.53x	1.35x	21
2012	1.90x	0.53x	1.36x	1.82x	0.44x	1.39x	17
2013	1.74x	0.36x	1.38x	1.52x	0.25x	1.27x	23
2014	1.59x	0.18x	1.41x	1.47x	0.22x	1.26x	37
2015	1.33x	0.11x	1.22x	1.33x	0.13x	1.21x	39
2016	1.26x	0.08x	1.18x	1.39x	0.09x	1.30x	49
2017	1.11x	0.01x	1.09x	1.12x	0.02x	1.09x	32

Source: PitchBook. Data as of September 30, 2018

Venture capital

Multiples by vintage

	TVPI					DPI					
Vintage year	Top decile	Top quartile	Median TVPI	Bottom quartile	Bottom decile	Top decile	Top quartile	Median DPI	Bottom quartile	Bottom decile	Number of funds
Pre-2001	1.80x	1.38x	1.01x	0.58x	0.26x	1.76x	1.33x	0.89x	0.52x	0.24x	142
2001	2.03x	1.56x	1.26x	0.76x	0.29x	2.01x	1.38x	1.06x	0.70x	0.26x	35
2002	1.78x	1.74x	1.18x	0.68x	0.50x	1.78x	1.61x	1.13x	0.57x	0.34x	17
2003	1.57x	1.45x	1.08x	0.61x	0.39x	1.44x	1.19x	1.06x	0.61x	0.38x	19
2004	1.73x	1.35x	1.05x	0.52x	0.36x	1.50x	1.10x	0.75x	0.41x	0.09x	20
2005	2.37x	1.74x	1.34x	1.14x	0.67x	2.06x	1.57x	1.01x	0.53x	0.40x	32
2006	2.12x	1.67x	1.10x	0.61x	0.39x	1.62x	1.19x	0.82x	0.47x	0.12x	41
2007	3.08x	2.29x	1.63x	0.83x	0.47x	2.33x	1.62x	1.25x	0.44x	0.10x	45
2008	2.75x	2.10x	1.50x	1.02x	0.34x	2.38x	1.50x	0.73x	0.31x	0.14x	55
2009	2.45x	2.01x	1.64x	1.23x	0.85x	1.34x	0.99x	0.63x	0.28x	0.22x	20
2010	3.38x	2.45x	1.73x	1.28x	0.82x	2.06x	1.50x	1.01x	0.41x	0.33x	25
2011	2.85x	2.40x	1.80x	1.40x	1.03x	1.08x	0.73x	0.59x	0.11x	0.07x	21
2012	2.72x	2.03x	1.60x	1.14x	0.93x	0.84x	0.52x	0.36x	0.10x	0.00x	17
2013	2.03x	1.81x	1.38x	1.30x	0.97x	0.68x	0.38x	0.12x	0.01x	0.00x	23
2014	2.05x	1.56x	1.37x	1.16x	1.06x	0.44x	0.22x	0.09x	0.00x	0.00x	37
2015	1.58x	1.36x	1.26x	1.11x	0.98x	0.32x	0.15x	0.00x	0.00x	0.00x	39
2016	1.65x	1.35x	1.16x	0.98x	0.92x	0.25x	0.05x	0.00x	0.00x	0.00x	49
2017	1.48x	1.21x	1.01x	0.94x	0.84x	0.02x	0.00x	0.00x	0.00x	0.00x	32

For RVPI data, please download the supplemental Excel pack

Source: PitchBook. Data as of September 30, 2018

Venture capital

PMEs by vintage

	S&P 500 Index			Russell 2000 Growth Index			
Vintage year	PitchBook Benchmark return (%)	Index return (%)	KS-PME	PitchBook Benchmark return (%)	Index return (%)	KS-PME	Number of funds
2001	6.22%	6.81%	0.99	6.22%	8.93%	0.90	35
2002	2.93%	7.91%	0.86	2.93%	9.34%	0.80	17
2003	4.71%	10.25%	0.88	4.71%	11.79%	0.85	19
2004	1.40%	8.79%	0.67	1.40%	9.10%	0.66	20
2005	9.28%	8.91%	1.04	9.28%	9.14%	1.03	32
2006	5.27%	8.85%	0.80	5.27%	8.48%	0.79	41
2007	12.76%	8.49%	1.06	12.76%	8.28%	1.05	45
2008	14.27%	9.69%	1.03	14.27%	10.38%	1.04	55
2009	10.48%	16.62%	0.82	10.48%	17.10%	0.84	20
2010	17.75%	13.91%	1.13	17.75%	13.65%	1.18	25
2011	17.94%	13.35%	1.15	17.94%	11.97%	1.20	21
2012	17.61%	14.57%	1.15	17.61%	13.68%	1.19	17
2013	22.93%	14.52%	1.26	22.93%	13.45%	1.27	23
2014	20.42%	12.56%	1.15	20.42%	10.28%	1.14	37
2015	17.94%	11.93%	1.04	17.94%	11.61%	1.01	39
2016	25.62%	18.74%	1.08	25.62%	23.27%	1.05	49
2017	15.73%	16.74%	1.00	15.73%	16.61%	0.98	32

Source: PitchBook. Data as of September 30, 2018

Note: All public index values are CAGRs from the start of the respective vintage year.

Venture capital

Quarterly return

Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)
1Q 2005	-1.70%	4Q 2008	-8.49%	3Q 2012	-0.22%	2Q 2016	0.11%
2Q 2005	0.54%	1Q 2009	-3.57%	4Q 2012	2.07%	3Q 2016	2.23%
3Q 2005	4.89%	2Q 2009	-0.50%	1Q 2013	2.15%	4Q 2016	0.45%
4Q 2005	2.92%	3Q 2009	0.57%	2Q 2013	4.47%	1Q 2017	2.46%
1Q 2006	3.09%	4Q 2009	2.96%	3Q 2013	5.02%	2Q 2017	2.09%
2Q 2006	1.13%	1Q 2010	1.02%	4Q 2013	7.16%	3Q 2017	4.01%
3Q 2006	2.04%	2Q 2010	0.20%	1Q 2014	5.81%	4Q 2017	2.96%
4Q 2006	6.26%	3Q 2010	3.17%	2Q 2014	3.91%	1Q 2018	5.99%
1Q 2007	2.18%	4Q 2010	5.71%	3Q 2014	2.71%	2Q 2018	5.63%
2Q 2007	4.64%	1Q 2011	4.49%	4Q 2014	6.51%	3Q 2018	3.21%
3Q 2007	2.53%	2Q 2011	4.48%	1Q 2015	4.44%		
4Q 2007	3.47%	3Q 2011	-0.14%	2Q 2015	5.80%		
1Q 2008	2.24%	4Q 2011	1.62%	3Q 2015	0.33%		
2Q 2008	1.37%	1Q 2012	4.17%	4Q 2015	2.42%		
3Q 2008	-2.54%	2Q 2012	0.97%	1Q 2016	-3.19%		

Source: PitchBook. Data as of September 30, 2018

Real assets

Real assets

IRRs by vintage

	Pooled IRRs			IRR hurdle rates						
Vintage year	Pooled IRR	Equal-weighted pooled IRR	Number of funds	Top decile	Top quartile	Median IRR	Bottom quartile	Bottom decile	Standard deviation	Number of funds
Pre-2001	11.82%	11.40%	31	24.04%	19.14%	12.96%	6.38%	2.09%	8.82%	38
2001	35.74%	34.25%	4		31.07%	30.00%	16.60%		15.72%	5
2002	23.98%	25.92%	5		26.67%	16.60%	4.68%		19.68%	9
2003	19.28%	19.98%	6	33.21%	27.94%	16.51%	11.73%	8.31%	55.23%	12
2004	9.61%	8.82%	9	32.69%	12.86%	9.70%	-0.38%	-3.08%	22.06%	15
2005	2.36%	2.63%	32	14.31%	6.21%	1.07%	-4.23%	-9.08%	12.53%	36
2006	-0.90%	-1.24%	38	8.02%	3.52%	-1.30%	-8.98%	-14.87%	10.06%	49
2007	3.18%	3.09%	64	13.12%	10.80%	5.61%	-0.20%	-10.52%	9.47%	73
2008	5.55%	5.04%	60	16.89%	11.78%	5.50%	-1.18%	-6.85%	9.24%	65
2009	7.54%	6.87%	35	20.68%	14.80%	9.30%	0.83%	-12.82%	14.61%	35
2010	11.68%	9.82%	35	18.07%	13.27%	10.34%	6.63%	1.55%	8.75%	41
2011	12.47%	10.88%	53	24.32%	19.73%	14.06%	7.25%	-1.24%	10.88%	58
2012	12.51%	11.75%	71	22.57%	17.30%	12.10%	8.92%	1.51%	16.44%	78
2013	13.19%	12.33%	71	20.62%	15.27%	11.84%	7.50%	2.96%	7.82%	63
2014	14.15%	15.41%	80	28.58%	17.48%	13.29%	10.55%	8.58%	9.24%	74
2015	17.02%	15.71%	103	32.26%	17.25%	13.00%	9.79%	6.29%	24.31%	87
2016	14.53%	20.12%	81	38.68%	19.06%	9.62%	4.60%	-7.37%	28.56%	78
2017	8.07%	9.79%	50	25.89%	18.09%	8.64%	-0.39%	-12.49%	25.02%	40

Source: PitchBook. Data as of September 30, 2018

Real assets

Multiples by vintage

	Pooled multiples			Equal-weighted pooled multiples			
Vintage year	TVPI	DPI	RVPI	TVPI	DPI	RVPI	Number of funds
Pre-2001	1.58x	1.56x	0.02x	1.66x	1.59x	0.07x	31
2001	2.22x	2.17x	0.05x	2.28x	2.17x	0.11x	4
2002	1.63x	1.62x	0.00x	1.68x	1.67x	0.00x	5
2003	1.66x	1.63x	0.02x	1.82x	1.74x	0.08x	6
2004	1.40x	1.39x	0.01x	1.43x	1.39x	0.04x	9
2005	1.15x	1.05x	0.09x	1.16x	1.05x	0.11x	32
2006	0.95x	0.82x	0.13x	0.93x	0.78x	0.15x	38
2007	1.17x	1.07x	0.10x	1.17x	1.04x	0.13x	64
2008	1.27x	0.99x	0.27x	1.25x	0.99x	0.26x	60
2009	1.33x	1.00x	0.33x	1.32x	0.98x	0.34x	35
2010	1.51x	1.00x	0.51x	1.46x	0.89x	0.57x	35
2011	1.48x	0.88x	0.60x	1.44x	0.91x	0.53x	53
2012	1.42x	0.73x	0.69x	1.40x	0.78x	0.62x	71
2013	1.38x	0.60x	0.78x	1.36x	0.55x	0.81x	71
2014	1.30x	0.41x	0.90x	1.38x	0.40x	0.98x	80
2015	1.28x	0.34x	0.94x	1.30x	0.33x	0.97x	103
2016	1.17x	0.19x	0.98x	1.24x	0.31x	0.93x	81
2017	1.06x	0.05x	1.01x	1.08x	0.06x	1.02x	50

Source: PitchBook. Data as of September 30, 2018

Real assets

Multiples by vintage

	TVPI					DPI					
Vintage year	Top decile	Top quartile	Median TVPI	Bottom quartile	Bottom decile	Top decile	Top quartile	Median DPI	Bottom quartile	Bottom decile	Number of funds
Pre-2001	2.47x	2.04x	1.49x	1.28x	1.08x	2.42x	1.90x	1.46x	1.28x	1.07x	31
2001		2.86x	2.42x	1.87x			2.48x	2.18x	1.87x		4
2002		2.07x	1.81x	1.38x			2.07x	1.81x	1.38x		5
2003		2.00x	1.67x	1.36x			1.99x	1.66x	1.36x		6
2004		1.91x	1.47x	1.02x			1.64x	1.47x	1.02x		9
2005	1.98x	1.32x	1.01x	0.73x	0.60x	1.73x	1.30x	0.99x	0.65x	0.46x	32
2006	1.52x	1.16x	0.90x	0.56x	0.41x	1.32x	0.99x	0.73x	0.50x	0.21x	38
2007	1.69x	1.44x	1.18x	0.93x	0.52x	1.60x	1.36x	1.11x	0.71x	0.32x	64
2008	1.78x	1.54x	1.23x	0.93x	0.65x	1.60x	1.32x	0.99x	0.65x	0.40x	60
2009	2.01x	1.52x	1.32x	1.13x	0.62x	1.65x	1.34x	1.05x	0.44x	0.27x	35
2010	1.82x	1.68x	1.50x	1.21x	1.04x	1.51x	1.29x	0.84x	0.61x	0.23x	35
2011	2.00x	1.71x	1.48x	1.24x	0.92x	1.68x	1.37x	0.95x	0.49x	0.16x	53
2012	1.84x	1.50x	1.39x	1.29x	1.04x	1.36x	1.02x	0.73x	0.46x	0.10x	71
2013	1.59x	1.50x	1.35x	1.18x	1.07x	1.20x	0.89x	0.34x	0.23x	0.14x	71
2014	1.58x	1.42x	1.29x	1.20x	1.11x	0.81x	0.60x	0.30x	0.11x	0.03x	80
2015	1.54x	1.36x	1.25x	1.15x	1.06x	0.74x	0.48x	0.20x	0.07x	0.01x	103
2016	1.49x	1.25x	1.13x	0.99x	0.88x	0.55x	0.29x	0.09x	0.02x	0.00x	81
2017	1.25x	1.17x	1.05x	0.99x	0.79x	0.14x	0.06x	0.01x	0.00x	0.00x	50

For RVPI data, please download the supplemental Excel pack

Source: PitchBook. Data as of September 30, 2018

Real assets

PMEs by vintage

	S&P 500 Index			Morningstar US Real Assets Index			
Vintage year	PitchBook Benchmark return (%)	Index return (%)	KS-PME	PitchBook Benchmark return (%)	Index return (%)	KS-PME	Number of funds
2001	35.74%	6.81%	1.80	35.74%	6.93%	1.63	4
2002	23.98%	7.91%	1.27	23.98%	6.89%	1.24	5
2003	19.28%	10.25%	1.37	19.28%	6.56%	1.28	6
2004	9.61%	8.79%	1.16	9.61%	5.76%	1.08	9
2005	2.36%	8.91%	0.79	2.36%	5.20%	0.84	32
2006	-0.90%	8.85%	0.65	-0.90%	4.79%	0.72	38
2007	3.18%	8.49%	0.72	3.18%	4.53%	0.91	64
2008	5.55%	9.69%	0.74	5.55%	3.60%	1.05	60
2009	7.54%	16.62%	0.78	7.54%	5.61%	1.16	35
2010	11.68%	13.91%	0.91	11.68%	3.94%	1.34	35
2011	12.47%	13.35%	0.95	12.47%	2.32%	1.40	53
2012	12.51%	14.57%	0.97	12.51%	1.62%	1.35	71
2013	13.19%	14.52%	1.00	13.19%	1.52%	1.32	71
2014	14.15%	12.56%	1.00	14.15%	2.08%	1.24	80
2015	17.02%	11.93%	1.02	17.02%	1.63%	1.21	103
2016	14.53%	18.74%	0.98	14.53%	4.90%	1.11	81
2017	8.07%	16.74%	0.94	8.07%	4.41%	1.02	50

Source: PitchBook. Data as of September 30, 2018

Note: All public index returns are CAGRs from the start of the respective vintage year.

Real assets

Quarterly return

Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)
1Q 2005	2.98%	4Q 2008	-12.41%	3Q 2012	3.33%	2Q 2016	3.51%
2Q 2005	14.88%	1Q 2009	-14.13%	4Q 2012	2.41%	3Q 2016	3.02%
3Q 2005	8.87%	2Q 2009	-7.98%	1Q 2013	3.30%	4Q 2016	3.15%
4Q 2005	9.85%	3Q 2009	-3.52%	2Q 2013	2.36%	1Q 2017	3.37%
1Q 2006	3.26%	4Q 2009	-2.17%	3Q 2013	2.13%	2Q 2017	3.13%
2Q 2006	7.65%	1Q 2010	-3.91%	4Q 2013	4.52%	3Q 2017	2.68%
3Q 2006	7.99%	2Q 2010	0.85%	1Q 2014	3.27%	4Q 2017	1.82%
4Q 2006	20.24%	3Q 2010	4.92%	2Q 2014	3.92%	1Q 2018	2.67%
1Q 2007	0.79%	4Q 2010	9.44%	3Q 2014	3.14%	2Q 2018	2.33%
2Q 2007	1.42%	1Q 2011	4.68%	4Q 2014	-0.01%	3Q 2018	3.70%
3Q 2007	3.36%	2Q 2011	4.16%	1Q 2015	0.48%		
4Q 2007	7.07%	3Q 2011	0.38%	2Q 2015	3.91%		
1Q 2008	-3.96%	4Q 2011	2.66%	3Q 2015	0.44%		
2Q 2008	-2.14%	1Q 2012	3.40%	4Q 2015	-0.17%		
3Q 2008	-4.82%	2Q 2012	-0.06%	1Q 2016	1.17%		

Source: PitchBook. Data as of September 30, 2018

Debt

Debt

IRRs by vintage

	Pooled IRRs			IRR hurdle rates						
Vintage year	Pooled IRR	Equal-weighted pooled IRR	Number of funds	Top decile	Top quartile	Median IRR	Bottom quartile	Bottom decile	Standard deviation	Number of funds
Pre-2001	10.08%	10.32%	10	11.79%	9.38%	5.71%	3.65%	-6.61%	9.77%	12
2001	27.52%	29.86%	3		33.25%	27.37%	25.39%		12.09%	4
2002	23.03%	27.65%	3		18.53%	15.60%	8.71%		30.11%	5
2003	11.58%	10.01%	5		11.89%	8.94%	7.05%		9.17%	6
2004	14.61%	13.79%	3		14.49%	12.39%	10.73%		2.58%	4
2005	6.14%	5.90%	7		8.42%	5.10%	3.59%		6.26%	8
2006	5.95%	3.68%	13	9.11%	6.71%	3.85%	0.87%	-2.29%	5.94%	14
2007	6.79%	5.68%	22	12.55%	8.96%	6.22%	2.24%	-1.50%	8.24%	25
2008	13.60%	14.08%	15	18.14%	15.61%	13.10%	8.79%	7.46%	13.22%	18
2009	8.32%	7.90%	12	14.57%	13.12%	8.78%	4.45%	2.81%	4.94%	12
2010	11.50%	11.97%	17	17.71%	14.39%	12.98%	9.17%	7.24%	4.25%	16
2011	9.96%	10.52%	16	13.24%	11.12%	9.10%	7.50%	6.17%	3.98%	21
2012	7.69%	8.95%	26	16.01%	12.36%	10.27%	7.56%	2.76%	5.31%	27
2013	6.08%	7.22%	33	13.20%	10.60%	9.26%	6.69%	5.32%	4.48%	41
2014	7.52%	6.96%	41	15.54%	12.00%	9.51%	6.93%	3.48%	6.88%	38
2015	11.24%	10.55%	47	16.26%	13.35%	10.73%	8.24%	5.95%	4.55%	41
2016	5.60%	4.85%	25	17.03%	11.88%	9.80%	7.49%	-1.69%	17.58%	20
2017	8.87%	10.63%	38	18.40%	14.77%	9.70%	6.60%	3.87%	15.43%	31

Source: PitchBook. Data as of September 30, 2018

Debt

Multiples by vintage

	Pooled multiples			Equal-weighted pooled multiples			
Vintage year	TVPI	DPI	RVPI	TVPI	DPI	RVPI	Number of funds
Pre-2001	1.52x	1.50x	0.02x	1.55x	1.48x	0.07x	10
2001	2.08x	2.08x	0.00x	2.15x	2.15x	0.00x	3
2002	1.71x	1.71x	0.00x	1.83x	1.83x	0.00x	3
2003	1.66x	1.65x	0.01x	1.55x	1.54x	0.01x	5
2004	1.76x	1.73x	0.03x	1.73x	1.70x	0.03x	3
2005	1.36x	1.34x	0.03x	1.30x	1.26x	0.05x	7
2006	1.41x	1.29x	0.13x	1.22x	1.15x	0.06x	13
2007	1.35x	1.28x	0.07x	1.28x	1.21x	0.07x	22
2008	1.63x	1.58x	0.05x	1.64x	1.60x	0.04x	15
2009	1.37x	1.18x	0.19x	1.32x	1.13x	0.19x	12
2010	1.50x	1.31x	0.19x	1.46x	1.25x	0.20x	17
2011	1.46x	1.05x	0.41x	1.43x	1.12x	0.31x	16
2012	1.27x	0.86x	0.41x	1.33x	0.87x	0.46x	26
2013	1.18x	0.64x	0.54x	1.22x	0.64x	0.58x	33
2014	1.20x	0.38x	0.83x	1.16x	0.40x	0.76x	41
2015	1.18x	0.26x	0.92x	1.18x	0.30x	0.88x	47
2016	1.07x	0.22x	0.85x	1.06x	0.30x	0.77x	25
2017	1.08x	0.14x	0.94x	1.09x	0.15x	0.94x	38

Source: PitchBook. Data as of September 30, 2018

Debt

Multiples by vintage

	TVPI					DPI					
Vintage year	Top decile	Top quartile	Median TVPI	Bottom quartile	Bottom decile	Top decile	Top quartile	Median DPI	Bottom quartile	Bottom decile	Number of funds
Pre-2001	1.81x	1.49x	1.46x	1.08x	0.88x	1.75x	1.49x	1.43x	1.07x	0.88x	10
2001			1.88x					1.88x			3
2002			1.69x					1.69x			3
2003		1.58x	1.49x	1.49x			1.58x	1.49x	1.48x		5
2004			1.65x					1.64x			3
2005		1.50x	1.34x	1.26x			1.47x	1.33x	1.14x		7
2006	1.61x	1.36x	1.19x	1.06x	0.95x	1.54x	1.24x	1.12x	1.06x	0.92x	13
2007	1.68x	1.48x	1.32x	1.13x	0.97x	1.68x	1.40x	1.24x	1.06x	0.96x	22
2008	2.08x	1.79x	1.50x	1.37x	1.25x	2.04x	1.70x	1.48x	1.30x	1.21x	15
2009	1.55x	1.50x	1.25x	1.16x	1.12x	1.55x	1.41x	1.13x	1.05x	0.68x	12
2010	1.76x	1.63x	1.40x	1.23x	1.19x	1.60x	1.45x	1.24x	1.17x	0.82x	17
2011	1.81x	1.61x	1.33x	1.24x	1.15x	1.52x	1.32x	1.10x	0.89x	0.69x	16
2012	1.57x	1.49x	1.28x	1.19x	1.08x	1.34x	1.22x	0.87x	0.63x	0.45x	26
2013	1.44x	1.35x	1.18x	1.12x	0.95x	0.96x	0.89x	0.72x	0.44x	0.22x	33
2014	1.34x	1.24x	1.16x	1.11x	0.98x	0.68x	0.53x	0.36x	0.16x	0.05x	41
2015	1.32x	1.28x	1.17x	1.13x	1.04x	0.59x	0.42x	0.26x	0.16x	0.05x	47
2016	1.21x	1.16x	1.09x	0.99x	0.90x	0.53x	0.32x	0.24x	0.09x	0.04x	25
2017	1.21x	1.12x	1.07x	1.03x	0.98x	0.38x	0.19x	0.07x	0.00x	0.00x	38

Source: PitchBook. Data as of September 30, 2018

For RVPI data, please download the supplemental Excel pack

Debt

PMEs by vintage

	S&P 500 Index			Bloomberg Barclays US Corporate High Yield Index			
Vintage year	PitchBook Benchmark return (%)	Index return (%)	KS-PME	PitchBook Benchmark return (%)	Index return (%)	KS-PME	Number of funds
2001	27.52%	6.81%	1.60	27.52%	7.55%	1.42	3
2002	23.03%	7.91%	1.26	23.03%	8.07%	1.26	3
2003	11.58%	10.25%	1.25	11.58%	8.49%	1.15	5
2004	14.61%	8.79%	1.49	14.61%	7.34%	1.33	3
2005	6.14%	8.91%	1.17	6.14%	7.20%	0.91	7
2006	5.95%	8.85%	0.90	5.95%	7.43%	0.81	13
2007	6.79%	8.49%	0.99	6.79%	7.06%	0.85	22
2008	13.60%	9.69%	1.03	13.60%	8.00%	0.95	15
2009	8.32%	16.62%	0.81	8.32%	11.61%	0.95	12
2010	11.50%	13.91%	0.89	11.50%	7.41%	1.15	17
2011	9.96%	13.35%	0.85	9.96%	6.33%	1.12	16
2012	7.69%	14.57%	0.83	7.69%	6.38%	1.06	26
2013	6.08%	14.52%	0.84	6.08%	5.13%	1.01	33
2014	7.52%	12.56%	0.88	7.52%	4.64%	1.05	41
2015	11.24%	11.93%	0.95	11.24%	5.32%	1.07	47
2016	5.60%	18.74%	0.89	5.60%	10.45%	1.00	25
2017	8.87%	16.74%	0.93	8.87%	4.49%	1.03	38

Source: PitchBook. Data as of September 30, 2018

Note: All public index returns are CAGRs from the start of the respective vintage year.

Debt

Quarterly return

Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)
1Q 2005	6.35%	4Q 2008	-17.91%	3Q 2012	4.92%	2Q 2016	0.97%
2Q 2005	-3.57%	1Q 2009	-4.54%	4Q 2012	2.95%	3Q 2016	4.13%
3Q 2005	9.67%	2Q 2009	10.29%	1Q 2013	4.16%	4Q 2016	0.87%
4Q 2005	5.51%	3Q 2009	11.36%	2Q 2013	2.72%	1Q 2017	1.97%
1Q 2006	2.84%	4Q 2009	8.24%	3Q 2013	2.59%	2Q 2017	2.64%
2Q 2006	7.52%	1Q 2010	4.46%	4Q 2013	2.62%	3Q 2017	2.02%
3Q 2006	0.71%	2Q 2010	0.25%	1Q 2014	3.19%	4Q 2017	3.27%
4Q 2006	10.39%	3Q 2010	2.10%	2Q 2014	2.76%	1Q 2018	1.12%
1Q 2007	2.19%	4Q 2010	8.02%	3Q 2014	2.94%	2Q 2018	3.91%
2Q 2007	7.86%	1Q 2011	3.46%	4Q 2014	-0.16%	3Q 2018	0.88%
3Q 2007	-0.73%	2Q 2011	2.50%	1Q 2015	5.98%		
4Q 2007	0.31%	3Q 2011	-4.06%	2Q 2015	-1.54%		
1Q 2008	-1.34%	4Q 2011	8.89%	3Q 2015	-0.82%		
2Q 2008	-0.67%	1Q 2012	-2.02%	4Q 2015	-0.43%		
3Q 2008	-7.86%	2Q 2012	0.77%	1Q 2016	1.49%		

Source: PitchBook. Data as of September 30, 2018

Fund-of-funds

Fund-of-funds

IRRs by vintage

	Pooled IRRs			IRR hurdle rates						
Vintage year	Pooled IRR	Equal-weighted pooled IRR	Number of funds	Top decile	Top quartile	Median IRR	Bottom quartile	Bottom decile	Standard deviation	Number of funds
Pre-2001	5.35%	3.85%	21	15.36%	11.77%	7.15%	2.94%	1.00%	8.29%	40
2001	13.89%	8.66%	7	14.13%	12.37%	9.36%	6.10%	4.79%	4.63%	18
2002	8.16%	6.53%	4	10.39%	9.55%	8.60%	5.24%	4.40%	4.03%	11
2003	7.71%	5.71%	5	10.70%	9.70%	9.00%	7.52%	3.10%	3.74%	11
2004	7.87%	7.60%	11	11.17%	9.12%	7.25%	6.10%	5.65%	2.73%	23
2005	7.41%	7.42%	18	11.20%	9.50%	7.50%	5.22%	3.57%	15.31%	29
2006	8.09%	7.51%	26	12.34%	10.65%	8.90%	6.45%	3.61%	4.49%	43
2007	9.57%	8.45%	32	14.78%	11.73%	9.78%	7.37%	3.92%	4.51%	40
2008	3.54%	11.95%	35	15.90%	14.74%	12.20%	7.80%	3.80%	5.94%	41
2009	13.53%	13.28%	20	17.82%	16.05%	13.68%	11.61%	8.08%	4.06%	23
2010	12.19%	12.22%	32	15.09%	14.56%	11.67%	9.72%	8.02%	3.31%	35
2011	12.83%	13.62%	40	19.54%	17.01%	13.50%	11.50%	9.22%	6.37%	43
2012	13.77%	14.49%	33	20.59%	16.16%	12.26%	9.42%	5.51%	6.34%	32
2013	16.30%	14.04%	46	20.62%	18.04%	12.88%	10.53%	7.68%	9.76%	42
2014	16.11%	15.75%	36	20.40%	19.02%	14.81%	10.35%	7.86%	5.91%	38
2015	16.29%	15.55%	35	27.70%	25.56%	14.03%	10.47%	5.83%	9.81%	30
2016	10.21%	6.68%	26	19.72%	16.97%	11.89%	5.27%	2.40%	7.47%	23
2017	10.13%	4.37%	13	27.00%	13.96%	8.66%	3.39%	-2.28%	27.87%	11

Source: PitchBook. Data as of September 30, 2018

Fund-of-funds

Multiples by vintage

	Pooled multiples			Equal-weighted pooled multiples			
Vintage year	TVPI	DPI	RVPI	TVPI	DPI	RVPI	Number of funds
Pre-2001	1.33x	1.30x	0.03x	1.25x	1.22x	0.03x	21
2001	1.69x	1.65x	0.05x	1.53x	1.40x	0.13x	7
2002	1.47x	1.37x	0.10x	1.36x	1.26x	0.10x	4
2003	1.60x	1.45x	0.14x	1.41x	1.27x	0.14x	5
2004	1.52x	1.33x	0.19x	1.54x	1.29x	0.26x	11
2005	1.52x	1.26x	0.26x	1.50x	1.21x	0.29x	18
2006	1.59x	1.16x	0.42x	1.56x	1.11x	0.44x	26
2007	1.64x	1.12x	0.51x	1.53x	1.09x	0.44x	32
2008	1.19x	0.67x	0.51x	1.71x	0.85x	0.86x	35
2009	1.71x	0.84x	0.87x	1.68x	0.89x	0.79x	20
2010	1.61x	0.77x	0.84x	1.62x	0.68x	0.94x	32
2011	1.51x	0.53x	0.98x	1.58x	0.53x	1.04x	40
2012	1.51x	0.32x	1.19x	1.54x	0.35x	1.19x	33
2013	1.42x	0.36x	1.06x	1.38x	0.23x	1.14x	46
2014	1.35x	0.24x	1.11x	1.36x	0.22x	1.14x	36
2015	1.25x	0.15x	1.10x	1.26x	0.15x	1.11x	35
2016	1.12x	0.09x	1.04x	1.08x	0.10x	0.98x	26
2017	1.09x	0.04x	1.05x	1.04x	0.05x	0.99x	13

Source: PitchBook. Data as of September 30, 2018

Fund-of-funds

Multiples by vintage

	TVPI					DPI					
Vintage year	Top decile	Top quartile	Median TVPI	Bottom quartile	Bottom decile	Top decile	Top quartile	Median DPI	Bottom quartile	Bottom decile	Number of funds
Pre-2001	1.73x	1.56x	1.24x	1.09x	0.74x	1.70x	1.56x	1.22x	0.98x	0.73x	21
2001		1.73x	1.65x	1.40x			1.67x	1.56x	1.29x		7
2002		1.49x	1.42x	1.29x			1.41x	1.38x	1.24x		4
2003		1.59x	1.59x	1.28x			1.45x	1.38x	1.14x		5
2004	1.74x	1.57x	1.51x	1.44x	1.40x	1.54x	1.40x	1.27x	1.22x	1.03x	11
2005	1.73x	1.59x	1.48x	1.40x	1.28x	1.46x	1.32x	1.21x	1.08x	0.99x	18
2006	1.91x	1.77x	1.55x	1.45x	1.20x	1.30x	1.22x	1.17x	1.08x	0.94x	26
2007	1.96x	1.75x	1.53x	1.33x	1.02x	1.42x	1.24x	1.08x	0.93x	0.69x	32
2008	2.35x	1.91x	1.64x	1.43x	1.20x	1.17x	1.03x	0.85x	0.58x	0.49x	35
2009	1.98x	1.79x	1.64x	1.53x	1.41x	1.20x	1.17x	0.81x	0.70x	0.68x	20
2010	1.86x	1.76x	1.56x	1.45x	1.40x	1.04x	0.87x	0.65x	0.45x	0.34x	32
2011	2.00x	1.65x	1.51x	1.37x	1.19x	0.90x	0.66x	0.48x	0.35x	0.24x	40
2012	1.96x	1.62x	1.40x	1.27x	1.16x	0.73x	0.46x	0.28x	0.15x	0.06x	33
2013	1.64x	1.55x	1.32x	1.22x	1.17x	0.50x	0.29x	0.15x	0.07x	0.02x	46
2014	1.55x	1.46x	1.32x	1.19x	1.11x	0.40x	0.22x	0.13x	0.07x	0.00x	36
2015	1.46x	1.31x	1.22x	1.12x	1.03x	0.31x	0.20x	0.14x	0.02x	0.00x	35
2016	1.24x	1.21x	1.11x	1.03x	0.90x	0.20x	0.09x	0.05x	0.00x	0.00x	26
2017	1.30x	1.22x	1.04x	0.99x	0.81x	0.10x	0.04x	0.00x	0.00x	0.00x	13

For RVPI data, please download the supplemental Excel pack

Source: PitchBook. Data as of September 30, 2018

Fund-of-funds

PMEs by vintage

	S&P 500 Index			Russell 3000 Index			
Vintage year	PitchBook Benchmark return (%)	Index return (%)	KS-PME	PitchBook Benchmark return (%)	Index return (%)	KS-PME	Number of funds
2001	13.89%	6.81%	1.20	13.89%	7.19%	1.18	7
2002	8.16%	7.91%	1.06	8.16%	8.26%	1.04	4
2003	7.71%	10.25%	1.04	7.71%	10.60%	1.03	5
2004	7.87%	8.79%	1.00	7.87%	8.99%	0.99	11
2005	7.41%	8.91%	0.94	7.41%	9.10%	0.94	18
2006	8.09%	8.85%	0.87	8.09%	8.89%	0.86	26
2007	9.57%	8.49%	0.88	9.57%	8.54%	0.87	32
2008	3.54%	9.69%	0.60	3.54%	9.84%	0.60	35
2009	13.53%	16.62%	0.96	13.53%	16.81%	0.96	20
2010	12.19%	13.91%	0.93	12.19%	13.91%	0.94	32
2011	12.83%	13.35%	0.95	12.83%	13.15%	0.96	40
2012	13.77%	14.57%	1.01	13.77%	14.45%	1.01	33
2013	16.30%	14.52%	1.05	16.30%	14.34%	1.05	46
2014	16.11%	12.56%	1.04	16.11%	12.13%	1.04	36
2015	16.29%	11.93%	1.01	16.29%	11.69%	1.01	35
2016	10.21%	18.74%	0.93	10.21%	19.24%	0.93	26
2017	10.13%	16.74%	0.94	10.13%	16.68%	0.94	13

Source: PitchBook. Data as of September 30, 2018

Note: All public index returns are CAGRs from the start of the respective vintage year.

Fund-of-funds

Quarterly return

Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)
1Q 2005	1.37%	4Q 2008	-9.32%	3Q 2012	0.53%	2Q 2016	0.94%
2Q 2005	5.88%	1Q 2009	-2.72%	4Q 2012	1.75%	3Q 2016	3.61%
3Q 2005	4.95%	2Q 2009	-4.51%	1Q 2013	1.26%	4Q 2016	0.69%
4Q 2005	6.31%	3Q 2009	4.50%	2Q 2013	3.29%	1Q 2017	3.59%
1Q 2006	4.03%	4Q 2009	2.26%	3Q 2013	3.37%	2Q 2017	3.46%
2Q 2006	5.86%	1Q 2010	4.38%	4Q 2013	4.20%	3Q 2017	3.33%
3Q 2006	3.96%	2Q 2010	0.35%	1Q 2014	2.47%	4Q 2017	2.45%
4Q 2006	8.63%	3Q 2010	-4.49%	2Q 2014	6.31%	1Q 2018	5.28%
1Q 2007	-0.55%	4Q 2010	4.41%	3Q 2014	1.41%	2Q 2018	4.31%
2Q 2007	10.33%	1Q 2011	3.80%	4Q 2014	2.65%	3Q 2018	2.58%
3Q 2007	2.83%	2Q 2011	5.59%	1Q 2015	3.39%		
4Q 2007	3.04%	3Q 2011	-2.24%	2Q 2015	5.87%		
1Q 2008	9.03%	4Q 2011	-0.43%	3Q 2015	2.13%		
2Q 2008	-3.05%	1Q 2012	4.81%	4Q 2015	0.35%		
3Q 2008	-6.78%	2Q 2012	1.28%	1Q 2016	1.61%		

Source: PitchBook. Data as of September 30, 2018

Secondaries

Secondaries

IRRs by vintage

	Pooled IRRs			IRR hurdle rates						
Vintage year	Pooled IRR	Equal-weighted pooled IRR	Number of funds	Top decile	Top quartile	Median IRR	Bottom quartile	Bottom decile	Standard deviation	Number of funds
Pre-2001	11.96%	12.16%	11	23.56%	15.94%	10.90%	7.92%	4.29%	18.18%	14
2001	14.19%	14.81%	2		23.17%	19.53%	15.85%		7.32%	3
2002	15.60%	17.30%	3		36.42%	18.83%	15.17%		22.72%	3
2003	37.89%	37.89%	1		26.00%	16.89%	11.60%		10.28%	5
2004	12.51%	10.40%	6		19.70%	9.10%	5.91%		12.81%	6
2005	6.22%	5.08%	8		6.56%	6.37%	4.90%		4.76%	9
2006	6.10%	6.94%	9		8.65%	5.45%	3.14%		3.56%	8
2007	6.11%	6.60%	10	10.59%	9.09%	8.00%	5.81%	-1.11%	4.96%	11
2008	11.33%	11.10%	13	27.59%	13.51%	11.55%	8.52%	4.95%	8.98%	12
2009	11.98%	12.64%	9		14.39%	11.64%	9.82%		7.45%	9
2010	14.49%	12.86%	7	18.30%	16.71%	14.20%	8.28%	2.80%	6.02%	11
2011	15.64%	14.41%	9	21.28%	19.36%	16.70%	13.35%	8.71%	5.01%	14
2012	13.99%	14.98%	11	21.81%	18.65%	16.97%	14.05%	12.88%	4.50%	12
2013	11.35%	11.55%	13	22.05%	21.10%	17.96%	13.84%	9.26%	4.91%	16
2014	22.26%	18.94%	10	26.99%	25.71%	22.00%	19.52%	12.71%	8.05%	11
2015	25.05%	26.71%	9		29.93%	24.30%	17.10%		10.86%	9
2016	33.37%	28.72%	17	60.19%	39.55%	29.60%	18.58%	9.22%	25.36%	18
2017	39.59%	34.97%	12	54.70%	44.42%	34.98%	19.40%	16.40%	22.55%	11

Source: PitchBook. Data as of September 30, 2018

Secondaries

Multiples by vintage

	Pooled multiples			Equal-weighted pooled multiples			
Vintage year	TVPI	DPI	RVPI	TVPI	DPI	RVPI	Number of funds
Pre-2001	1.47x	1.47x	0.00x	1.43x	1.43x	0.00x	11
2001	1.52x	1.49x	0.02x	1.51x	1.49x	0.02x	2
2002	1.49x	1.49x	0.01x	1.52x	1.51x	0.01x	3
2003	1.83x	1.83x	0.00x	1.83x	1.83x	0.00x	1
2004	1.48x	1.41x	0.07x	1.40x	1.34x	0.06x	6
2005	1.34x	1.24x	0.10x	1.26x	1.15x	0.11x	8
2006	1.34x	1.17x	0.17x	1.41x	1.23x	0.19x	9
2007	1.28x	1.14x	0.14x	1.32x	1.16x	0.16x	10
2008	1.54x	1.28x	0.26x	1.56x	1.23x	0.33x	13
2009	1.54x	1.26x	0.28x	1.57x	1.25x	0.33x	9
2010	1.57x	1.27x	0.31x	1.49x	1.12x	0.37x	7
2011	1.58x	1.17x	0.41x	1.53x	0.95x	0.58x	9
2012	1.49x	0.94x	0.55x	1.46x	0.82x	0.64x	11
2013	1.35x	0.47x	0.88x	1.35x	0.54x	0.81x	13
2014	1.42x	0.52x	0.90x	1.41x	0.38x	1.03x	10
2015	1.34x	0.30x	1.04x	1.40x	0.55x	0.85x	9
2016	1.29x	0.20x	1.10x	1.31x	0.20x	1.10x	17
2017	1.23x	0.22x	1.01x	1.25x	0.22x	1.02x	12

Source: PitchBook. Data as of September 30, 2018

Secondaries

Multiples by vintage

	TVPI					DPI					
Vintage year	Top decile	Top quartile	Median TVPI	Bottom quartile	Bottom decile	Top decile	Top quartile	Median DPI	Bottom quartile	Bottom decile	Number of funds
Pre-2001	1.74x	1.50x	1.41x	1.27x	1.20x	1.74x	1.50x	1.40x	1.26x	1.20x	11
2001			1.51x					1.49x			2
2002			1.53x					1.53x			3
2003			1.83x					1.83x			1
2004		1.58x	1.52x	1.37x			1.48x	1.47x	1.30x		6
2005		1.38x	1.32x	1.26x			1.30x	1.24x	1.12x		8
2006		1.42x	1.28x	1.23x			1.29x	1.11x	1.08x		9
2007	1.69x	1.47x	1.41x	1.21x	0.88x	1.36x	1.33x	1.27x	1.01x	0.82x	10
2008	1.72x	1.56x	1.53x	1.33x	1.27x	1.52x	1.42x	1.29x	1.03x	0.84x	13
2009		1.69x	1.60x	1.39x			1.34x	1.30x	1.21x		9
2010		1.65x	1.59x	1.40x			1.36x	1.18x	0.94x		7
2011		1.66x	1.57x	1.33x			1.21x	0.82x	0.75x		9
2012	1.67x	1.55x	1.46x	1.37x	1.31x	1.09x	1.07x	0.80x	0.71x	0.43x	11
2013	1.54x	1.52x	1.41x	1.19x	1.09x	0.73x	0.60x	0.53x	0.45x	0.38x	13
2014	1.68x	1.47x	1.37x	1.33x	1.25x	0.71x	0.55x	0.34x	0.26x	0.19x	10
2015		1.39x	1.34x	1.30x			0.64x	0.38x	0.21x		9
2016	1.48x	1.38x	1.34x	1.16x	1.05x	0.39x	0.26x	0.17x	0.08x	0.00x	17
2017	1.59x	1.50x	1.24x	1.17x	1.02x	0.61x	0.25x	0.20x	0.13x	0.01x	12

For RVPI data, please download the supplemental Excel pack

Source: PitchBook. Data as of September 30, 2018

Secondaries

PMEs by vintage

	S&P 500 Index			Russell 3000 Index			
Vintage year	PitchBook Benchmark return (%)	Index return (%)	KS-PME	PitchBook Benchmark return (%)	Index return (%)	KS-PME	Number of funds
2001	14.19%	6.81%	1.18	14.19%	7.19%	1.16	2
2002	15.60%	7.91%	1.23	15.60%	8.26%	1.21	3
2003	37.89%	10.25%	1.57	37.89%	10.60%	1.55	1
2004	12.51%	8.79%	1.17	12.51%	8.99%	1.16	6
2005	6.22%	8.91%	0.93	6.22%	9.10%	0.92	8
2006	6.10%	8.85%	0.91	6.10%	8.89%	0.90	9
2007	6.11%	8.49%	0.82	6.11%	8.54%	0.82	10
2008	11.33%	9.69%	0.89	11.33%	9.84%	0.89	13
2009	11.98%	16.62%	0.91	11.98%	16.81%	0.91	9
2010	14.49%	13.91%	1.01	14.49%	13.91%	1.01	7
2011	15.64%	13.35%	1.02	15.64%	13.15%	1.02	9
2012	13.99%	14.57%	0.99	13.99%	14.45%	0.99	11
2013	11.35%	14.52%	0.96	11.35%	14.34%	0.96	13
2014	22.26%	12.56%	1.13	22.26%	12.13%	1.13	10
2015	25.05%	11.93%	1.12	25.05%	11.69%	1.12	9
2016	33.37%	18.74%	1.13	33.37%	19.24%	1.13	17
2017	39.59%	16.74%	1.12	39.59%	16.68%	1.12	12

Source: PitchBook. Data as of September 30, 2018

Note: All public index returns are CAGRs from the start of the respective vintage year.

secondaries

Quarterly return

Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)	Quarter end	1-quarter benchmark return (%)
1Q 2005	6.25%	4Q 2008	-4.58%	3Q 2012	5.20%	2Q 2016	2.47%
2Q 2005	4.44%	1Q 2009	-10.94%	4Q 2012	2.49%	3Q 2016	1.16%
3Q 2005	4.47%	2Q 2009	-4.44%	1Q 2013	0.16%	4Q 2016	2.59%
4Q 2005	1.92%	3Q 2009	-0.53%	2Q 2013	1.27%	1Q 2017	3.78%
1Q 2006	9.17%	4Q 2009	0.51%	3Q 2013	2.23%	2Q 2017	4.15%
2Q 2006	4.56%	1Q 2010	1.12%	4Q 2013	4.45%	3Q 2017	3.42%
3Q 2006	4.11%	2Q 2010	6.24%	1Q 2014	3.77%	4Q 2017	3.80%
4Q 2006	7.21%	3Q 2010	6.58%	2Q 2014	3.38%	1Q 2018	2.73%
1Q 2007	2.85%	4Q 2010	6.44%	3Q 2014	3.54%	2Q 2018	5.78%
2Q 2007	10.19%	1Q 2011	7.69%	4Q 2014	2.79%	3Q 2018	3.68%
3Q 2007	9.03%	2Q 2011	4.04%	1Q 2015	2.82%		
4Q 2007	4.79%	3Q 2011	7.12%	2Q 2015	6.84%		
1Q 2008	1.96%	4Q 2011	-4.20%	3Q 2015	1.45%		
2Q 2008	-2.29%	1Q 2012	4.40%	4Q 2015	0.11%		
3Q 2008	-0.60%	2Q 2012	3.05%	1Q 2016	-0.32%		

Source: PitchBook. Data as of September 30, 2018

PitchBook