

# PitchBook Benchmarks

PRIVATE MARKETS  
AS OF 4Q 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](mailto: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.

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 2Q 2018 through the end of 1Q 2019, while the three-year horizon IRR is for the period beginning in 2Q 2016 through the end of 1Q 2019.

### 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](http://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:

$$PME_{KS-TVPI, T} = \frac{NAV_T + \sum_{t=0}^T \left( \frac{\text{distribution}_t}{I_t} \right)}{\sum_{t=0}^T \left( \frac{\text{contribution}_t}{I_t} \right)}$$

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: Basics of cash flow management: Contributions

## Series summary

Analyses of private market performance tend to focus on how the GP generates returns—and understandably so. But while selecting top-tier managers and funds is paramount, the treatment of uncalled capital is also critical when evaluating the total return of a private market allocation, which is what truly matters to investors. An LP's decision to commit to a fund often comes several years before that capital is ever transferred to the GP to be invested. This creates a challenge for LPs, who must balance the need to meet capital calls with the desire to maximize return.

Effective management of uninvested capital, primarily minimizing the amount of capital held in reserve while maximizing its return, can have a material impact on the ultimate performance of a private market allocation. Conversely, LPs need to formulate a strategy to efficiently redeploy capital as it is distributed back.

Warren Buffett and his vice chair at Berkshire Hathaway, Charlie Munger, thrust this rather arcane aspect of private markets into the spotlight in the first half of 2019 when they criticized the PE industry for not accounting for this potential drag from uninvested capital. “We have seen a number of proposals from private equity funds where the returns are really not calculated in a manner that I would regard as honest,” Buffett said. “It makes their return look better if you sit there for a long time in Treasury bills. It's not as good as it looks.”

A thorough understanding of cash flow patterns will allow LPs to better plan for both capital calls and distributions, enabling them to enhance returns by keeping a smaller portion of their uncalled commitment in low-yielding liquid assets. But even the most sophisticated LPs, who can reliably predict their capital calls and distributions, will inevitably have to allocate some portion of uncalled capital to an asset with inferior returns to private market funds. The precise timing of contributions and distributions is impossible to know in advance, but historical data can offer helpful insight. In this series, we'll explore various aspects of private market funds to help investors better understand how to manage a private market allocation and evaluate its true overall performance.

In this first installment, we'll use cash flow data from PE funds to help answer some of these questions and highlight some of the main variables to consider when evaluating cash flows.

## Key takeaways

- On average, PE funds call down about 5% of committed capital per quarter during the heart of the investment period, but the size of contributions can swing widely; half of all PE funds historically have made a capital call of at least 18.9% of the total commitment size at some point in the fund's life, but a fund may also experience multiple consecutive quarters without capital being called.
- When trying to anticipate capital calls, fund age and dry powder prove to be the most reliable indicators. Capital calls taper off during a fund's third year, which typically corresponds with dry powder falling to 25% of the fund size.
- Drawdown rates evolve throughout the market cycle, with PE funds calling capital more quickly during economic expansions. Furthermore, we observe a structural slowdown in the pace of capital deployment for more recent vintages.

## Introduction

Investing in private funds is unique in that the investment decision isn't accompanied by an immediate deployment of capital. In fact, when an LP commits to a fund, it now typically takes more than five years for a GP to call down all that capital. This creates a challenge for LPs, who must balance the need to meet capital calls with the desire to maximize return. Threading the needle between risk and return while maintaining adequate liquidity is a fundamental challenge of allocating to private market funds. The worst-case scenario is failing to make a capital call, which has serious repercussions, but a sin nearly as egregious for an LP is to simply let uncalled capital sit idly in a cash account. Most LPs are willing to go out a little further on the risk spectrum than a simple cash allocation, with many opting to park uncalled capital in Treasuries, but this still leaves much to be desired. Indeed, even incremental improvement to the management of uncalled capital can reap major returns for LPs, particularly those with large and mature portfolios.

It is unrealistic to think that an LP could ever perfectly time cash flows, but LPs can more effectively manage their portfolio by better understanding the mechanics of how funds tend to function. How often do capital calls tend to occur? What is the biggest capital call that can be expected? Does the business cycle have an impact on cash flows? Additionally, LPs need to consider how their unique circumstances affect portfolio management. What is the total expected return, and how will uncalled capital be managed accordingly? How much risk can and will be assumed?



### Understanding cash flow patterns

#### Age and dry powder

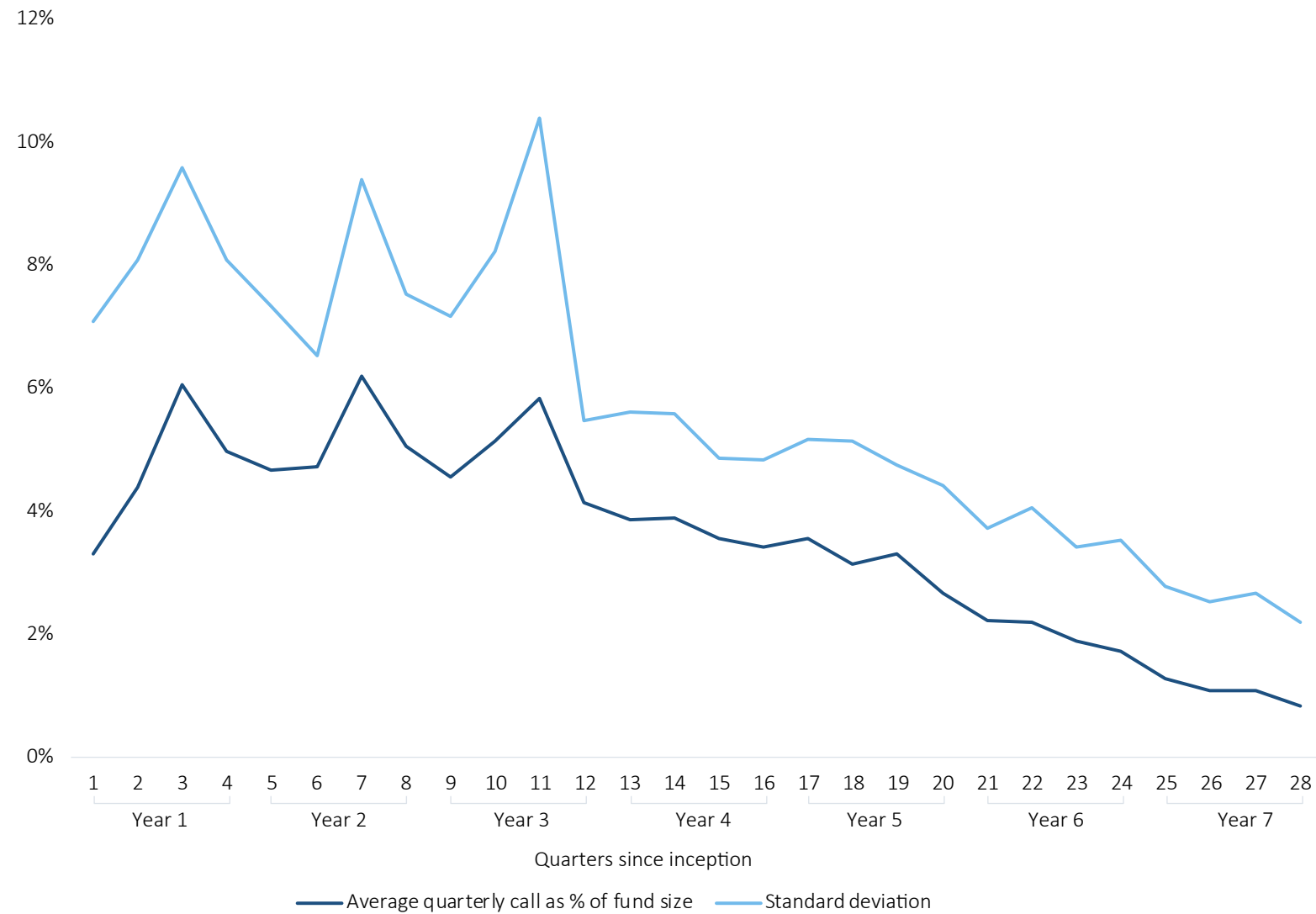
On average, PE funds call down about 5% of committed capital each quarter through the heart of the investment period, which has continued to lengthen—as we will examine in the next section. Keep in mind this is only on average, and the size of capital calls can vary widely. While most tend to be relatively small, LPs need to be prepared to write larger checks because half of all PE funds historically have made a capital call of at least 18.9% of the total commitment size at some point in the fund’s life. Furthermore, one quarter of PE funds have made a capital call of at least 24.6% of the total commitment size. These large capital calls naturally tend to occur toward the initiation of the fund’s investment period, when the fund is most likely to be executing large platform deals. The standard deviation of capital calls is also significantly higher at the early part of the investment period, steadily declining as the fund ages. A fund’s age is a straightforward way to gauge its maturity, but incorporating its dry powder into the

equation provides a better way for investors to anticipate the magnitude of capital calls. As to be expected, funds with more dry powder tend to make larger capital calls. The average and median sizes of a capital call hover around 5% of the commitment size until 75% of the fund is invested, at which point the average tapers off. This is in part because funds simply have less capital to deploy, but PE funds also tend to transition their strategy during the investment period. Particularly in recent years, many GPs have emphasized add-on deals as a cornerstone of value creation strategies. These transactions naturally come later in the fund’s investment period and require smaller checks, as the businesses are intended to be bolted on to larger platforms.

Even though the size of capital calls begins to taper once 75% of a fund has been called, we find the frequency of capital calls stays relatively consistent. It is not until more than 90% of a fund is called that we see a precipitous drop in the frequency of capital calls.

### The size of capital calls drops sharply during a fund’s third year

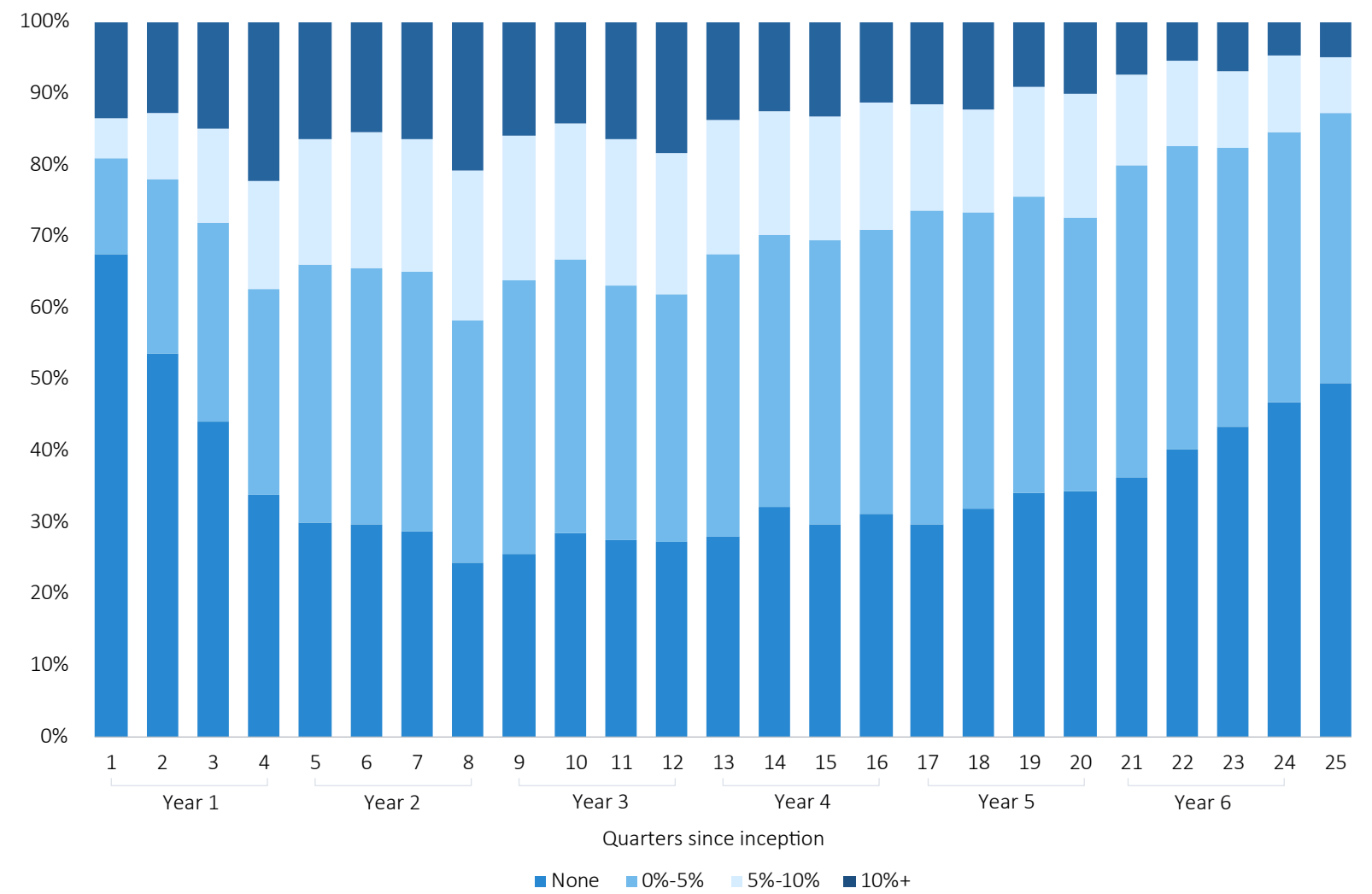
Average capital call as % of fund size by quarters since inception



Source: PitchBook  
\*As of December 31, 2018

### Capital calls are largest and most frequent in a fund’s second and third year

Capital calls (#) as percentage of fund size by quarters since inception



Source: PitchBook  
\*As of December 31, 2018



### Vintage and cyclicalty

The prior charts and analyses have amalgamated PE funds across every vintage year; however, vintage year proves to be pivotal in determining the trajectory of cash flows for two reasons. The first is that drawdown rates of PE funds have fundamentally changed over the last two decades. Prior to 2000, on average, PE funds hit the 75% drawdown mark during their third year. More recently, however, it has taken nearly five years for funds to reach that mark, with the trend of slower drawdowns consistent throughout the stages of the investment period. We have certainly seen funds extending their investment periods in order to fully deploy their lot of capital, with most funds now calling capital well into their sixth year.

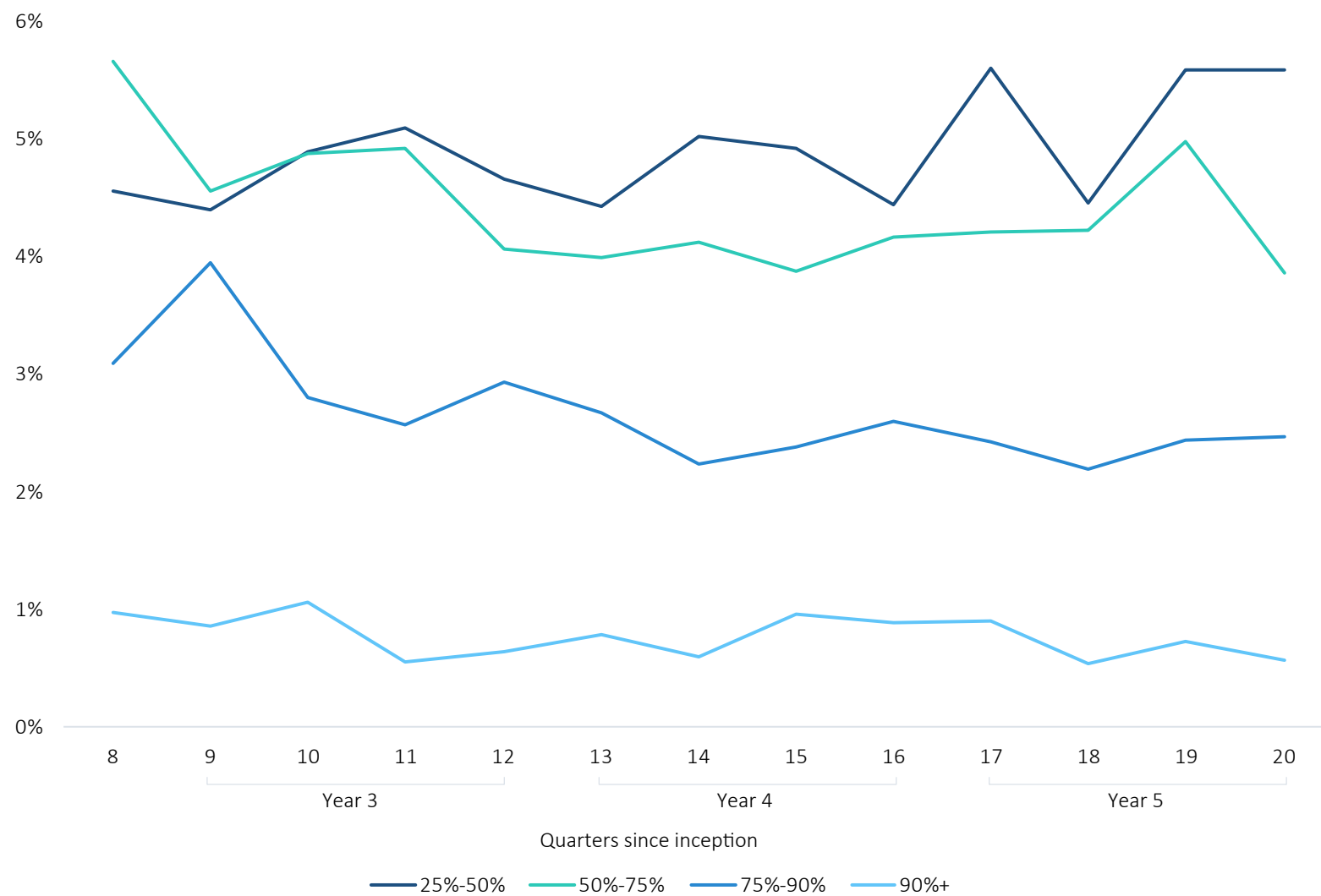
Bucketing funds by vintage year helps remove some of the noise and identify long-term trends, but assessing the drawdown patterns of individual vintages also proves interesting. In addition to long-term structural changes in drawdown rates, we found that the pace of PE investment ebbs and flows with

the broader investment cycle. This cyclicalty can be seen by taking a snapshot of how much capital different vintages had called at the three-year mark, juxtaposed with global GDP growth data from the subsequent three-year period to illustrate the prevailing market environment during the heart of the investment period.

Broadly speaking, PE funds deploy capital more quickly in positive economic environments, particularly in the run-ups to major downturns such as the dotcom bubble and global financial crisis. The inverse is also true, with funds that are active through the depths of recessions deploying capital more slowly. This aligns with broader trends in M&A markets and makes sense from an intuitive perspective. But it also seems to suggest that PE firms are prone to the same foibles as all investors, exuberant when prices are high but reluctant in tumultuous times when bargains are likely to be found. That said, the best GPs are likely to be those willing and able to invest through those turbulent times, as many of the top-performing funds historically have been those that were able to identify opportunities in the aftermath of downturns.

### The size of capital calls drops once funds are about 75% invested

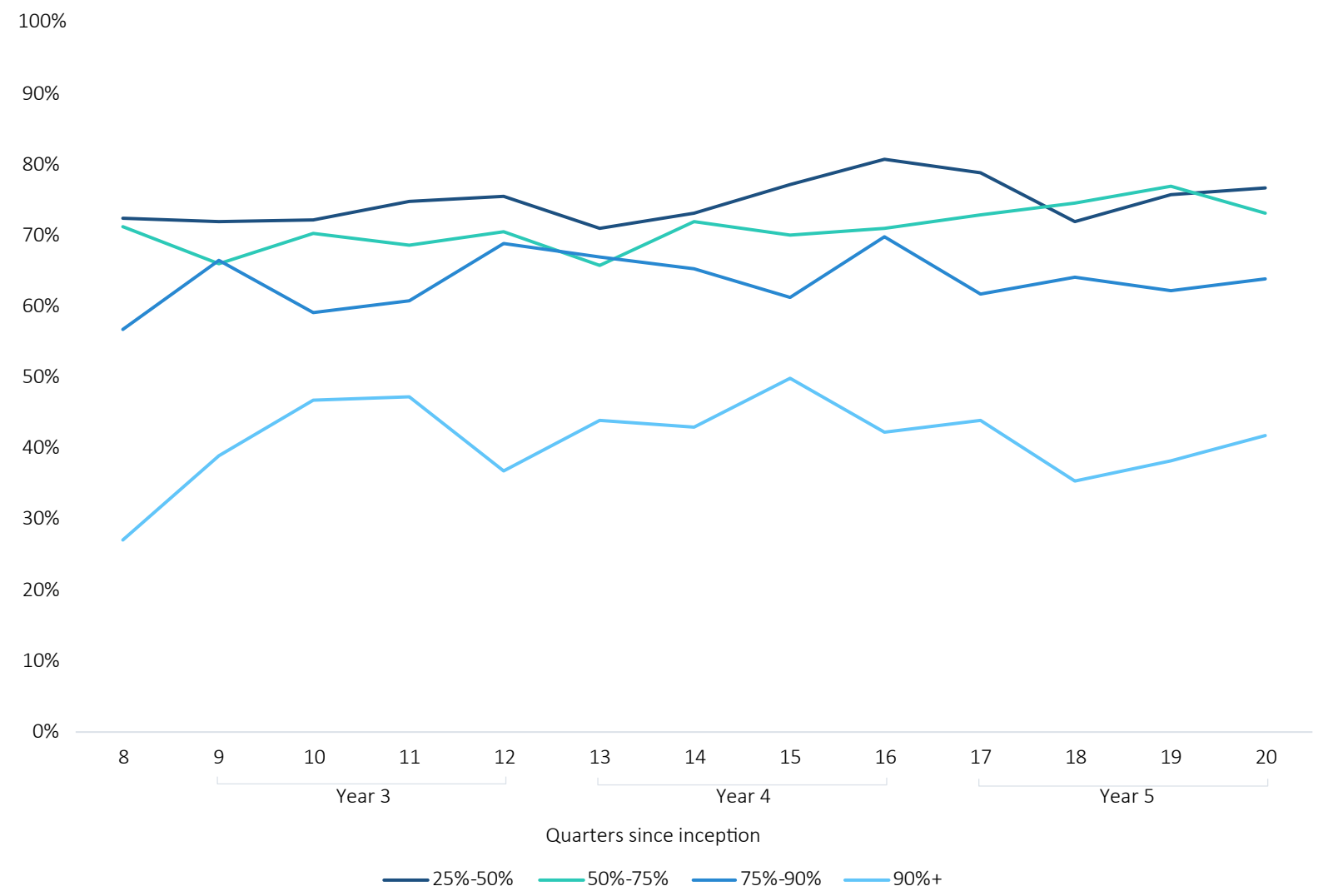
Average capital call size as % of commitments by total capital called



Source: PitchBook  
\*As of December 31, 2018

### The frequency of capital calls plummets after funds are 90% deployed

Percentage of funds with a capital call in the quarter by total capital called



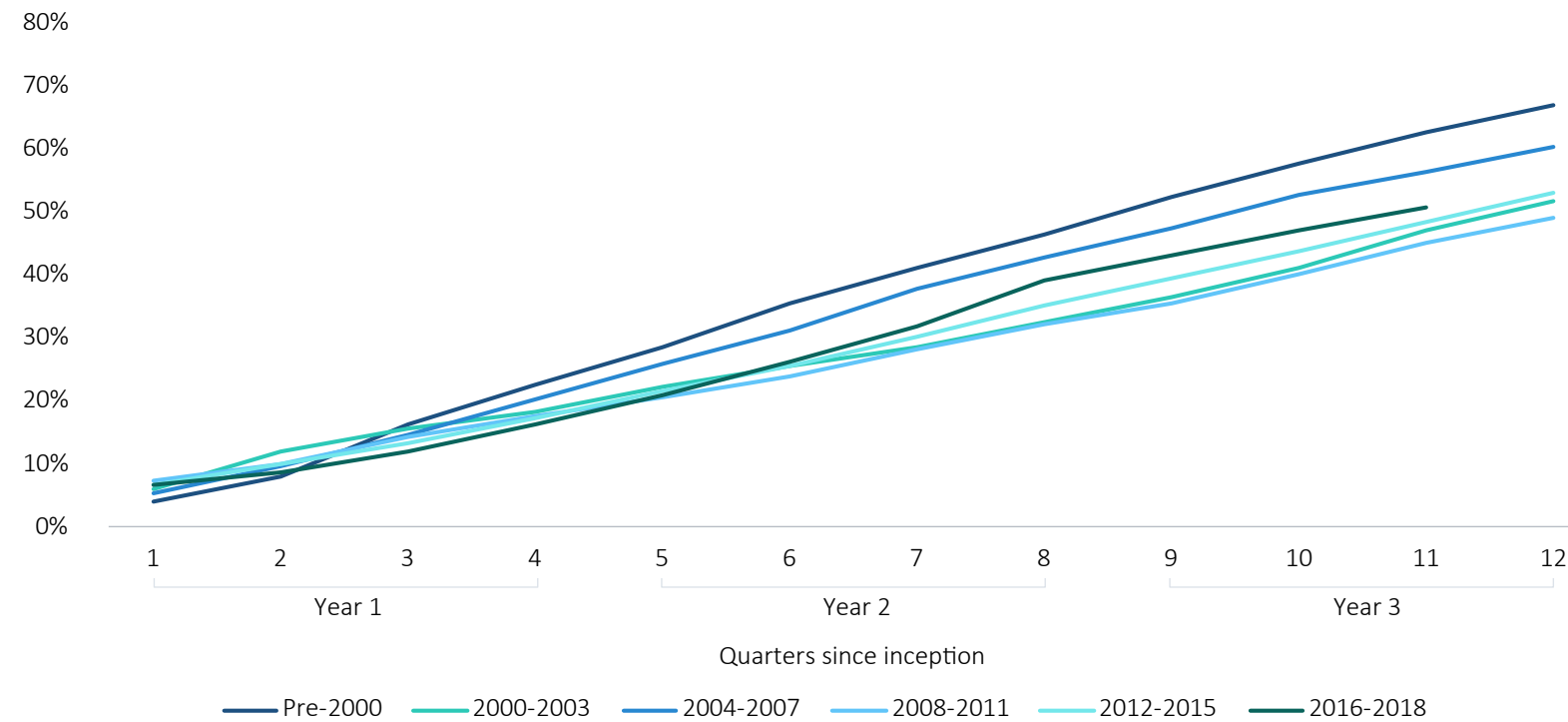
Source: PitchBook  
\*As of December 31, 2018





### Newer vintages have been calling capital more slowly

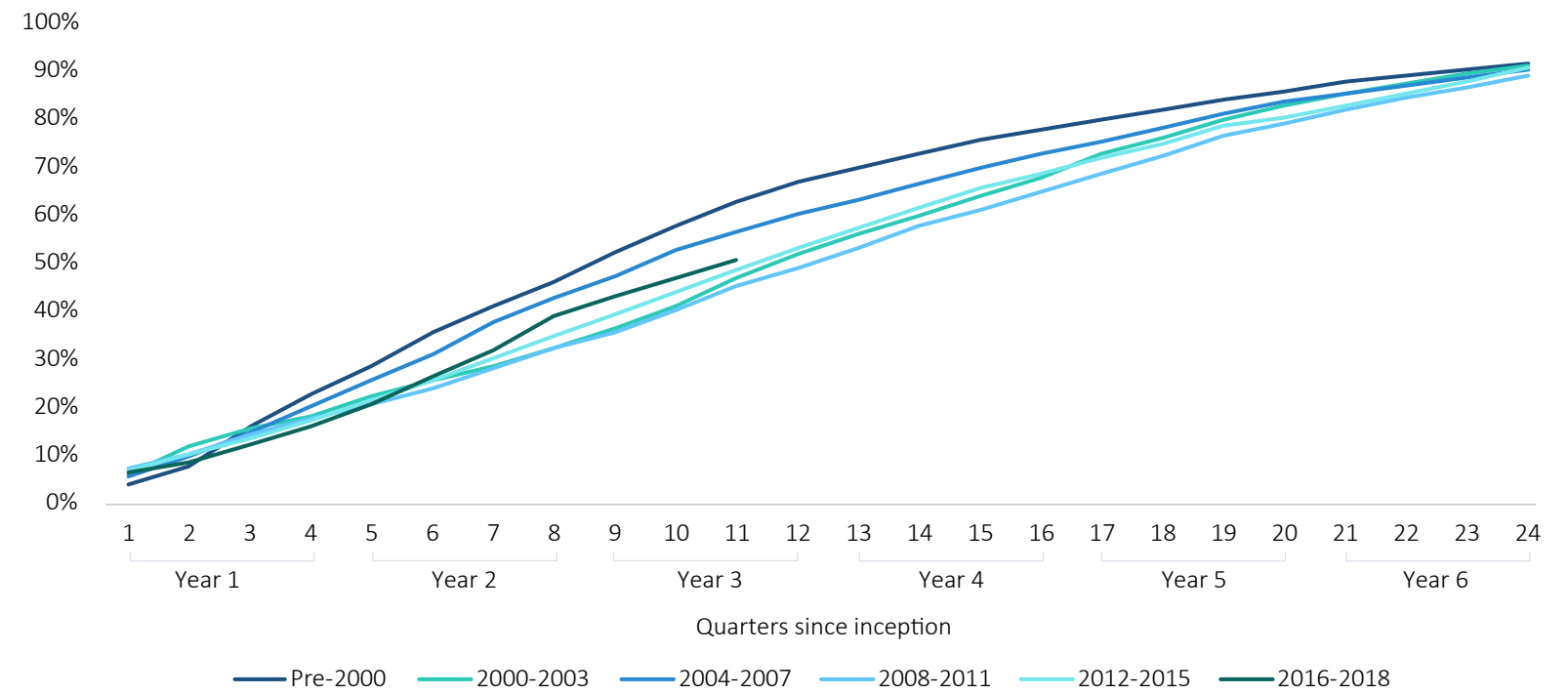
Total capital called by vintage bucket by quarter since inception



Source: PitchBook  
\*As of December 31, 2018

### Most funds now call capital well into their sixth year

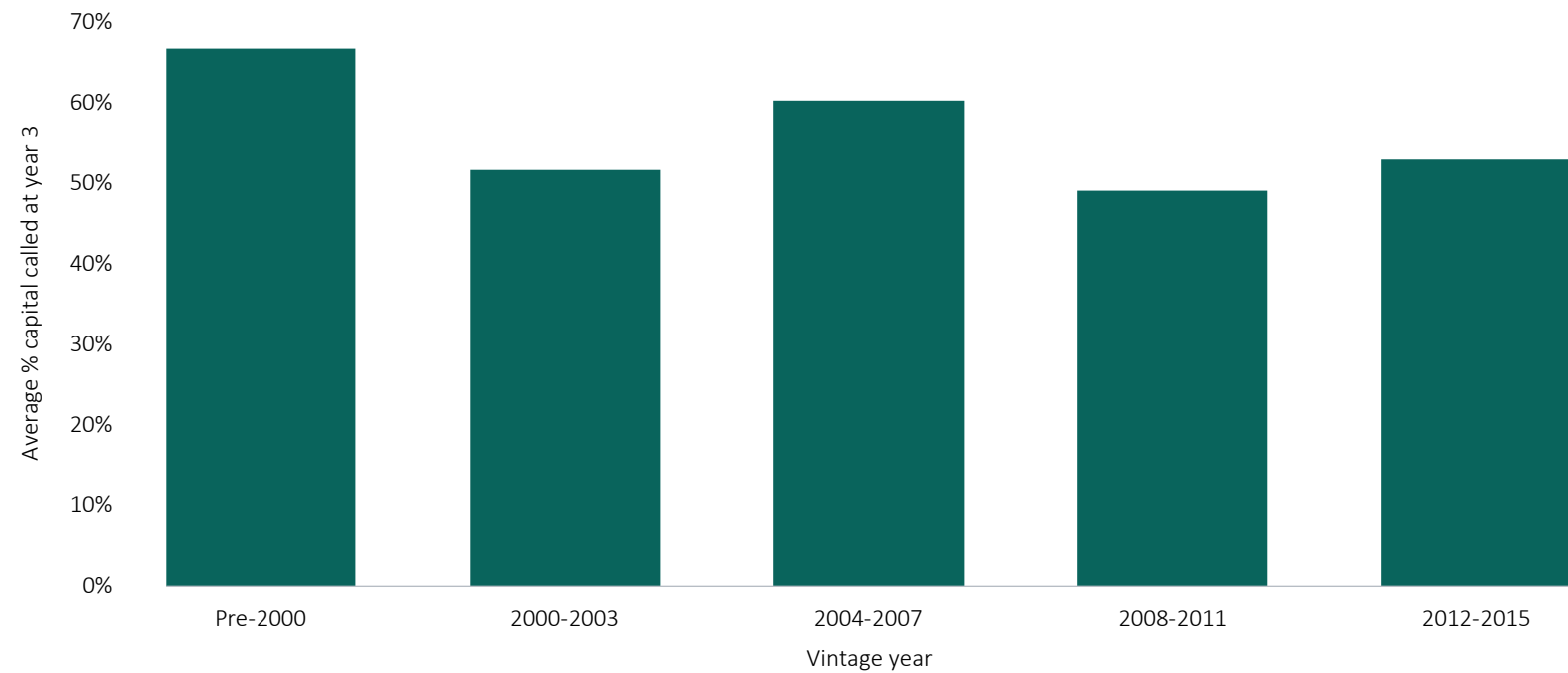
Total capital called by vintage bucket by quarter since inception



Source: PitchBook  
\*As of December 31, 2018

### It now takes about three years for a fund to be 50% called

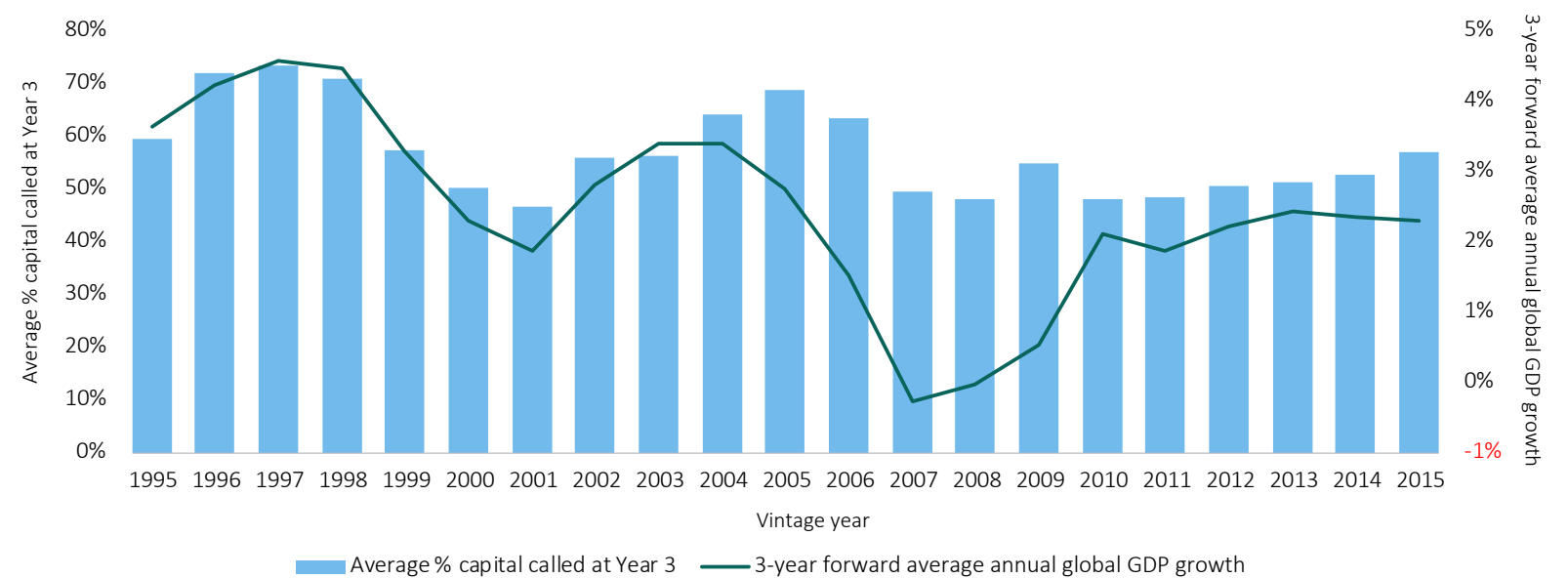
Average PE capital called at 3-year mark by vintage



Source: PitchBook  
\*As of December 31, 2018

### Drawdown rates exhibit a high level of cyclicity

Average PE capital called at 3-year mark by vintage, with 3-year forward average annual global GDP growth



Source: PitchBook  
\*As of December 31, 2018



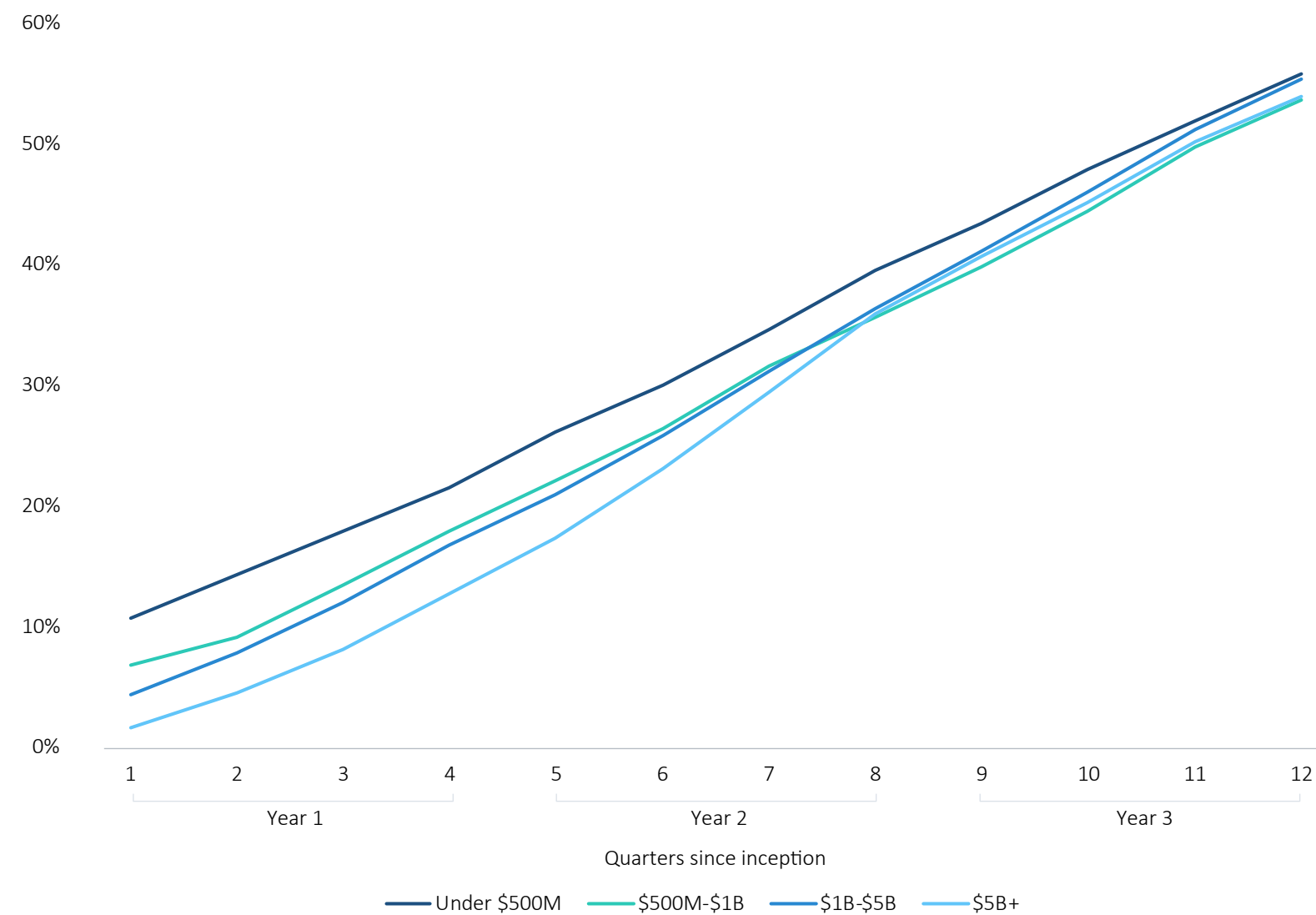
### Size

Regardless of the strategy, it's an investing truism that larger pools of capital are more difficult to deploy—and private markets are no exception. Fund size is negatively correlated with drawdown rates (i.e. larger funds call capital more slowly), particularly in the first two years of the investment period. The gap is particularly pronounced for the largest and smallest vehicles. On the smaller end of the spectrum, GPs often execute fewer deals per fund, which translates large checks relative to the fund size and more concentrated portfolios. They also tend to rely less on buy-and-build strategies, diminishing the need to maintain reserve capital.

Conversely, mega-funds are almost uniformly raised by massive GPs that are in perpetual fundraising mode for all intents and purposes. This means that GPs often have dry powder remaining to be deployed in one fund when the successor fund has already been raised, which can be a drag on early capital deployment. Importantly, however, larger funds accelerate their pace of investment through the back half of the investment period, with total capital called converging with smaller vehicles at the midway point of their fourth year.

### Larger funds take longer to deploy capital ...

Total capital called by fund size bucket by quarter since inception



Source: PitchBook  
\*As of December 31, 2018

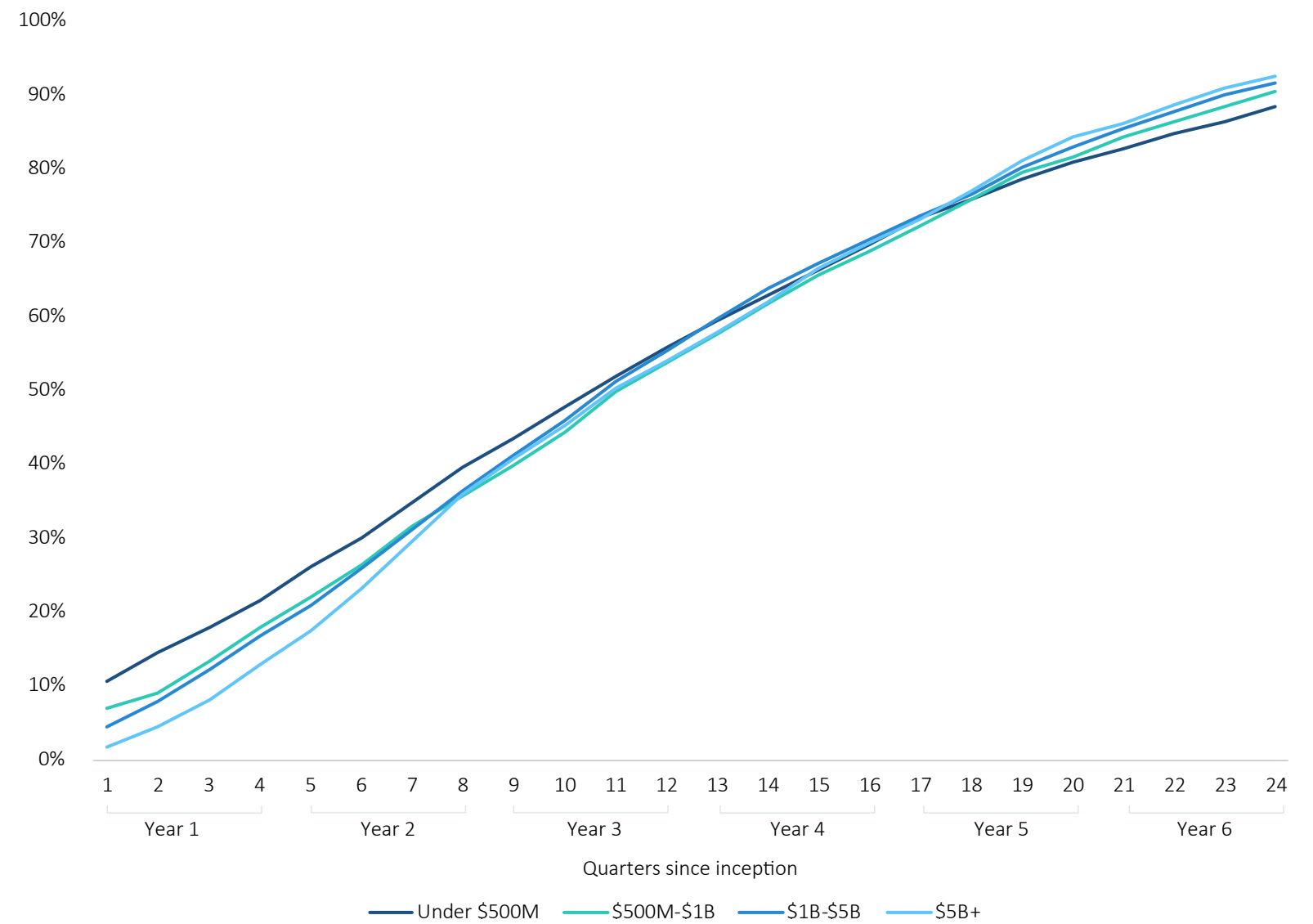
### Diversification

Understanding the general mechanics of private market funds can provide insight into how a fund's cash flows are likely to materialize. But even in the best-case scenario, cash flow predictions for any individual fund are likely to conform only loosely to reality. An investor can remove some of the volatility in cash flows, however, by diversifying their private market exposure across a variety of funds. Just as adding more stocks to an equity portfolio dampens volatility, the addition of new fund commitments to a private market allocation results in smoother, more predictable cash flow patterns.

But diversification is inherently limited if investors restrict themselves to a single private market strategy. To that end, similar to how investors in public markets would be ill-served to allocate entirely to stocks, bonds or commodities, investors in the private markets benefit from expanding their purview beyond a single strategy, as we will explore in a future installment in the series.

### ... and have relatively more activity in their fourth and fifth year

Total capital called by fund size bucket by quarter since inception



Source: PitchBook  
\*As of December 31, 2018

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### Fund Returns History

Period	Contribution £ (by all LPs)	Dry Powder £	Distribution £ (to all LPs)	NAV £	Total Fund £ Distr+NAV	IRR	DPI	RVPI	TVPI	Dry Powder %
2017	2,669,17	57,29	2,418,55	2,671,53	5,092,68	20,04%	0,90x	1,00x	1,91x	2,10%
3Q17	2,572,54	458,21	3,089,00	2,262,00	5,350,99		1,07x	0,79x	1,86x	16,81%
2Q17	2,669,14	57,66	2,421,07	2,671,15	5,092,97	19,84%	0,91x	1,00x	1,91x	2,12%
1Q17	2,669,17	57,26	1,486,32	3,492,48	4,981,92	20,13%	0,56x	1,31x	1,88x	2,10%
2016	2,647,36	166,31	1,482,77	3,299,39	4,782,16	20,19%	0,55x	1,25x	1,81x	6,10%
4Q16	2,647,36	136,64	1,485,90	3,298,98	4,784,88	19,94%	0,56x	1,25x	1,81x	5,01%

Date	Reported by/Limited Partner	IRR	DPI	RVPI	TVPI	Individual LP Committed	Individual LP Contributed	Dry Powder	Individual LP Distributed	Individual LP NAV	Individual LP Distr+NAV	Individual Gain Since Inc
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	2
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	5
31-Dec-2016	Tennessee 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	7
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	7
31-Dec-2016	Michigan Retirement Employees' Pension Sp...	20,19%	0,56x	1,24x	1,80x	18,97	18,47	0,50	10,32	22,96	33,28	1
31-Dec-2016	Michigan State Retirement and Pension Sp...	20,00%	0,51x	1,40x	1,91x	47,43	40,96	6,47	20,73	57,40	78,13	3
31-Dec-2016	Indiana State Retirement System	19,95%	0,52x	1,25x	1,89x	47,43	46,07	6,47	30,07	57,40	87,47	4
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	7
31-Dec-2016	Tennessee 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	7
31-Dec-2016	Massachusetts Pension Services Trust	19,92%	0,56x	1,25x	1,81x	142,29	138,19	4,10	77,57	172,19	249,77	11
31-Dec-2016	California State Employees' Retirement Sp...	19,92%	0,51x	1,40x	1,91x	33,20	28,62	4,58	14,48	40,18	54,66	2
31-Dec-2016	Illinois State Employees' Retirement System	19,90%	0,56x	1,25x	1,81x	94,86	92,11	2,75	51,70	114,78	166,48	7
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	7
31-Dec-2016	Michigan County Employees' Retirement Sp...	19,72%	0,51x	1,39x	1,89x	9,49	8,18	1,29	4,13	11,34	15,47	
31-Dec-2016	Working Women Service of New York State									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	14
31-Dec-2016	Los Angeles Department of Water and Power					23,71				28,01		
31-Dec-2016	New England Companies Guaranteed Annu...									2,74		
31-Dec-2016	New York State Teachers' Retirement System					71,14	61,44	9,71				

<sup>2</sup> Secondary Commitment  
<sup>P</sup> 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	6,06%
2Q16	2,628,21	243,02	1,232,89	3,459,80	4,692,73	21,92%	0,44x	1,32x	1,80x	8,91%
1Q16	2,623,57	115,54	1,192,13	3,431,05	4,621,61	22,91%	0,45x	1,31x	1,76x	4,24%
2015	2,453,71	294,63	1,004,40	3,294,89	4,269,12	23,02%	0,39x	1,34x	1,75x	10,81%

# 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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The image features a series of parallel, slightly curved lines in a muted blue-grey color, sloping downwards from left to right. These lines are set against a plain white background. The lines are of varying thickness and are positioned at different vertical levels, creating a sense of depth and movement. The overall composition is minimalist and modern.

**Private capital**



Private capital

# Horizon IRRs

Strategy	1-year	3-year	5-year	10-year	15-year	18-year
Private capital	10.31%	12.32%	12.00%	11.48%	11.17%	10.00%
Private equity	10.51%	14.38%	13.75%	13.22%	13.13%	11.76%
Venture capital	19.02%	9.77%	12.80%	11.07%	9.46%	5.67%
Real assets	6.05%	9.67%	8.95%	7.67%	7.21%	7.26%
Debt	7.22%	8.54%	7.50%	10.94%	9.09%	9.23%
Fund-of-funds	16.06%	11.87%	12.30%	9.68%	9.61%	8.51%
Secondaries	15.10%	12.05%	12.46%	11.07%	11.63%	11.17%
S&P 500	-4.36%	9.25%	8.49%	13.11%	7.76%	5.70%
Russell 2000 Growth	-6.06%	9.57%	8.11%	12.84%	7.90%	6.18%
Russell 3000	-10.28%	8.25%	5.37%	13.30%	7.91%	6.61%
Morningstar US Real Assets	-3.16%	1.78%	0.99%	4.51%	5.43%	6.52%
Bloomberg Barclays US Corporate High Yield	-2.07%	7.22%	3.83%	11.12%	6.99%	7.52%

Source: PitchBook. Data as of December 31, 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	12.36%	11.44%	11.68%	10.68%	10.44%	8.27%
Private equity	11.60%	13.83%	12.60%	11.91%	12.97%	10.64%
Venture capital	17.65%	8.46%	11.56%	10.38%	8.35%	4.31%
Real assets	8.07%	10.22%	9.99%	7.98%	7.87%	7.98%
Debt	7.51%	8.45%	8.24%	10.25%	8.92%	9.56%
Fund-of-funds	16.54%	12.46%	13.16%	11.46%	10.66%	9.66%
Secondaries	13.21%	10.19%	11.37%	10.21%	11.12%	10.05%
S&P 500	-4.36%	9.25%	8.49%	13.11%	7.76%	5.70%
Russell 2000 Growth	-6.06%	9.57%	8.11%	12.84%	7.90%	6.18%
Russell 3000	-10.28%	8.25%	5.37%	13.30%	7.91%	6.61%
Morningstar US Real Assets	-3.16%	1.78%	0.99%	4.51%	5.43%	6.52%
Bloomberg Barclays US Corporate High Yield	-2.07%	7.22%	3.83%	11.12%	6.99%	7.52%

Source: PitchBook. Data as of December 31, 2018  
 Note: All public index values are CAGRs.

The background features a series of parallel, slightly curved lines in a muted blue-grey color, sloping downwards from left to right. The lines are of varying thickness and are spaced out across the frame, creating a sense of depth and movement.

**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-1996	19.98%	10.49%	6	43.95%	25.47%	10.96%	5.24%	-5.84%	21.47%	35
1996	12.23%	9.55%	23	24.12%	18.03%	6.70%	2.45%	-6.09%	14.23%	27
1997	9.29%	6.75%	24	17.09%	13.30%	7.60%	1.47%	-4.12%	10.53%	23
1998	6.34%	5.13%	41	19.53%	13.75%	8.44%	0.36%	-9.02%	11.98%	45
1999	9.69%	10.69%	42	22.87%	16.66%	11.19%	4.25%	-3.44%	11.29%	47
2000	16.06%	12.59%	52	24.97%	21.85%	11.17%	4.40%	-3.39%	12.36%	60
2001	23.60%	19.12%	30	37.74%	28.69%	16.45%	10.06%	5.15%	18.89%	34
2002	18.61%	16.21%	35	36.06%	29.18%	19.49%	7.61%	3.79%	17.95%	36
2003	22.89%	15.75%	22	37.16%	21.74%	13.18%	6.65%	-3.60%	26.37%	26
2004	12.96%	11.29%	51	25.62%	15.68%	9.30%	3.91%	-0.55%	17.04%	52
2005	9.49%	9.31%	77	18.93%	13.80%	8.77%	3.92%	-0.11%	9.75%	87
2006	7.51%	7.15%	110	16.09%	11.63%	7.94%	4.43%	-2.16%	9.64%	123
2007	9.19%	9.59%	110	20.30%	15.80%	9.45%	4.72%	0.70%	9.67%	121
2008	12.36%	10.07%	111	21.80%	16.35%	10.60%	5.25%	-3.40%	10.84%	111
2009	13.77%	13.89%	46	26.00%	21.88%	13.95%	9.93%	5.84%	9.39%	46
2010	13.39%	11.37%	64	25.54%	18.10%	11.57%	6.70%	0.77%	12.55%	63
2011	14.83%	13.25%	79	28.90%	21.54%	13.89%	9.08%	3.26%	14.25%	73
2012	16.18%	14.24%	111	32.53%	21.72%	14.06%	8.76%	1.68%	13.15%	106
2013	14.54%	13.94%	93	28.96%	19.80%	13.47%	8.25%	5.39%	10.88%	94
2014	16.89%	16.96%	100	32.05%	21.88%	14.35%	8.06%	2.31%	14.31%	92
2015	18.07%	15.52%	128	27.52%	22.70%	13.60%	6.75%	3.18%	14.54%	115
2016	15.82%	17.59%	104	32.65%	22.20%	9.50%	1.90%	-4.90%	20.69%	93
2017	10.82%	13.52%	108	32.41%	13.88%	2.43%	-15.36%	-34.83%	35.04%	80

Source: PitchBook. Data as of December 31, 2018



Private equity

# Multiples by vintage

## Pooled multiples

## Equal-weighted pooled multiples

Vintage year	TVPI	DPI	RVPI	TVPI	DPI	RVPI	Number of funds
Pre-1996	1.69x	1.67x	0.02x	1.47x	1.40x	0.07x	6
1996	1.58x	1.58x	0.01x	1.44x	1.43x	0.01x	23
1997	1.58x	1.58x	0.00x	1.38x	1.38x	0.00x	24
1998	1.38x	1.38x	0.00x	1.28x	1.27x	0.01x	41
1999	1.52x	1.51x	0.01x	1.61x	1.59x	0.02x	42
2000	1.83x	1.82x	0.02x	1.72x	1.70x	0.02x	52
2001	2.16x	2.14x	0.02x	1.98x	1.97x	0.01x	30
2002	1.89x	1.88x	0.02x	1.77x	1.74x	0.03x	35
2003	2.00x	1.96x	0.04x	1.78x	1.74x	0.04x	22
2004	1.76x	1.70x	0.06x	1.65x	1.58x	0.07x	51
2005	1.58x	1.50x	0.08x	1.57x	1.47x	0.10x	77
2006	1.49x	1.36x	0.13x	1.44x	1.28x	0.15x	110
2007	1.50x	1.26x	0.24x	1.54x	1.31x	0.23x	110
2008	1.62x	1.36x	0.25x	1.51x	1.23x	0.27x	111
2009	1.64x	1.41x	0.23x	1.66x	1.37x	0.29x	46
2010	1.59x	1.07x	0.52x	1.52x	0.98x	0.54x	64
2011	1.65x	0.91x	0.74x	1.58x	0.84x	0.74x	79
2012	1.57x	0.74x	0.83x	1.51x	0.71x	0.81x	111
2013	1.38x	0.49x	0.89x	1.41x	0.50x	0.91x	93
2014	1.39x	0.43x	0.96x	1.39x	0.43x	0.97x	100
2015	1.30x	0.22x	1.08x	1.29x	0.23x	1.06x	128
2016	1.18x	0.16x	1.03x	1.23x	0.19x	1.04x	104
2017	1.07x	0.08x	0.99x	1.11x	0.10x	1.00x	108

Source: PitchBook. Data as of December 31, 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-1996		1.82x	1.39x	0.96x			1.82x	1.20x	0.79x		6
1996	2.35x	1.83x	1.42x	1.09x	0.67x	2.35x	1.83x	1.30x	1.09x	0.67x	23
1997	1.95x	1.73x	1.44x	1.02x	0.74x	1.95x	1.73x	1.44x	1.02x	0.74x	24
1998	1.88x	1.58x	1.34x	0.92x	0.58x	1.88x	1.58x	1.29x	0.92x	0.57x	41
1999	2.25x	1.97x	1.58x	1.23x	0.97x	2.25x	1.94x	1.55x	1.19x	0.97x	42
2000	2.42x	2.16x	1.66x	1.34x	0.91x	2.42x	2.08x	1.66x	1.34x	0.84x	52
2001	2.93x	2.57x	1.90x	1.54x	1.22x	2.93x	2.54x	1.90x	1.51x	1.22x	30
2002	2.66x	2.16x	1.74x	1.32x	1.21x	2.65x	2.15x	1.69x	1.32x	1.16x	35
2003	3.02x	1.94x	1.69x	1.44x	0.80x	2.84x	1.94x	1.69x	1.38x	0.75x	22
2004	2.54x	2.02x	1.59x	1.28x	0.95x	2.54x	1.96x	1.51x	1.19x	0.78x	51
2005	2.29x	1.82x	1.49x	1.21x	0.91x	2.26x	1.76x	1.40x	1.13x	0.77x	77
2006	2.02x	1.66x	1.39x	1.17x	0.74x	1.82x	1.56x	1.33x	1.01x	0.49x	110
2007	2.22x	1.87x	1.50x	1.17x	0.95x	2.00x	1.69x	1.25x	0.93x	0.64x	110
2008	2.14x	1.73x	1.52x	1.19x	0.89x	1.90x	1.52x	1.26x	0.90x	0.53x	111
2009	2.47x	2.07x	1.55x	1.29x	0.95x	2.25x	1.76x	1.28x	0.99x	0.75x	46
2010	2.11x	1.80x	1.49x	1.18x	0.90x	1.66x	1.30x	0.92x	0.64x	0.42x	64
2011	2.34x	1.86x	1.47x	1.21x	0.97x	1.46x	1.07x	0.82x	0.40x	0.18x	79
2012	1.99x	1.73x	1.50x	1.21x	1.02x	1.22x	0.98x	0.65x	0.40x	0.17x	111
2013	1.82x	1.53x	1.35x	1.22x	1.07x	1.04x	0.80x	0.38x	0.18x	0.07x	93
2014	1.87x	1.50x	1.29x	1.17x	1.04x	0.84x	0.63x	0.32x	0.11x	0.01x	100
2015	1.56x	1.41x	1.24x	1.08x	0.97x	0.50x	0.31x	0.15x	0.04x	0.00x	128
2016	1.62x	1.28x	1.14x	1.02x	0.91x	0.53x	0.22x	0.06x	0.00x	0.00x	104
2017	1.30x	1.11x	1.01x	0.91x	0.78x	0.23x	0.07x	0.00x	0.00x	0.00x	108

Source: PitchBook. Data as of December 31, 2018

For RVPI data, please download the supplemental Excel pack





Private equity

# PMEs by vintage

## S&amp;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
1996	12.23%	8.58%	1.41	12.23%	8.65%	1.38	23
1997	9.29%	7.84%	1.37	9.29%	8.00%	1.32	24
1998	6.34%	6.77%	1.30	6.34%	6.97%	1.24	41
1999	9.69%	5.92%	1.36	9.69%	6.34%	1.31	42
2000	16.06%	5.51%	1.49	16.06%	5.77%	1.45	52
2001	23.60%	6.41%	1.69	23.60%	6.73%	1.65	30
2002	18.61%	7.47%	1.43	18.61%	7.75%	1.41	35
2003	22.89%	9.74%	1.56	22.89%	10.01%	1.54	22
2004	12.96%	8.27%	1.38	12.96%	8.40%	1.36	51
2005	9.49%	8.35%	1.18	9.49%	8.46%	1.17	77
2006	7.51%	8.25%	1.00	7.51%	8.20%	1.00	110
2007	9.19%	7.85%	0.95	9.19%	7.81%	0.95	110
2008	12.36%	8.95%	0.98	12.36%	9.00%	0.98	111
2009	13.77%	15.56%	0.98	13.77%	15.64%	0.98	46
2010	13.39%	12.85%	0.99	13.39%	12.73%	1.00	64
2011	14.83%	12.17%	1.06	14.83%	11.85%	1.07	79
2012	16.18%	13.15%	1.11	16.18%	12.89%	1.12	111
2013	14.54%	12.87%	1.08	14.54%	12.52%	1.08	93
2014	16.89%	10.70%	1.12	16.89%	10.08%	1.13	100
2015	18.07%	9.63%	1.11	18.07%	9.14%	1.11	128
2016	15.82%	14.80%	1.07	15.82%	14.86%	1.07	104
2017	10.82%	10.99%	1.03	10.82%	10.36%	1.03	108

Source: PitchBook. Data as of December 31, 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 2001	-6.04%	3Q 2006	4.12%	1Q 2012	5.63%	3Q 2017	4.28%
2Q 2001	-0.23%	4Q 2006	12.57%	2Q 2012	0.71%	4Q 2017	4.44%
3Q 2001	-3.60%	1Q 2007	5.57%	3Q 2012	3.77%	1Q 2018	4.08%
4Q 2001	-4.05%	2Q 2007	8.35%	4Q 2012	3.38%	2Q 2018	2.76%
1Q 2002	-0.69%	3Q 2007	4.15%	1Q 2013	3.07%	3Q 2018	3.31%
2Q 2002	-2.76%	4Q 2007	3.66%	2Q 2013	3.07%	4Q 2018	-0.04%
3Q 2002	-2.39%	1Q 2008	-0.50%	3Q 2013	4.75%		
4Q 2002	-0.38%	2Q 2008	-1.48%	4Q 2013	5.53%		
1Q 2003	0.46%	3Q 2008	-7.71%	1Q 2014	4.62%		
2Q 2003	5.69%	4Q 2008	-11.12%	2Q 2014	4.99%		
3Q 2003	4.04%	1Q 2009	-7.09%	3Q 2014	0.19%		
4Q 2003	9.11%	2Q 2009	3.29%	4Q 2014	3.58%		
1Q 2004	8.64%	3Q 2009	3.58%	1Q 2015	3.31%		
2Q 2004	0.74%	4Q 2009	6.81%	2Q 2015	4.92%		
3Q 2004	3.07%	1Q 2010	3.13%	3Q 2015	0.35%		
4Q 2004	12.70%	2Q 2010	1.66%	4Q 2015	2.64%		
1Q 2005	2.64%	3Q 2010	4.44%	1Q 2016	1.90%		
2Q 2005	8.54%	4Q 2010	7.67%	2Q 2016	4.46%		
3Q 2005	7.61%	1Q 2011	5.03%	3Q 2016	4.47%		
4Q 2005	10.06%	2Q 2011	4.72%	4Q 2016	1.55%		
1Q 2006	4.32%	3Q 2011	-2.81%	1Q 2017	4.55%		
2Q 2006	5.47%	4Q 2011	1.34%	2Q 2017	5.21%		

Source: PitchBook. Data as of December 31, 2018

The background features a series of parallel, slightly downward-sloping lines in a muted blue-grey color. These lines are interrupted by horizontal segments, creating a stepped or zig-zag pattern that moves from the top-left towards the bottom-right.

**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-1996	61.44%	74.32%	3	79.60%	40.14%	14.73%	8.00%	3.75%	33.29%	43
1996	91.72%	143.96%	8	135.58%	72.93%	24.30%	8.91%	6.68%	63.40%	11
1997	5.93%	13.06%	15	65.24%	28.45%	7.93%	0.13%	-4.69%	38.40%	15
1998	6.12%	4.92%	21	53.59%	15.75%	8.68%	-8.07%	-11.09%	39.31%	20
1999	-2.73%	-3.98%	37	9.82%	3.20%	-4.81%	-12.40%	-20.04%	13.24%	41
2000	0.18%	-1.03%	57	5.42%	2.29%	-1.50%	-6.24%	-15.20%	9.54%	60
2001	6.10%	3.63%	35	13.45%	5.83%	2.25%	-5.13%	-15.26%	11.80%	36
2002	3.39%	3.04%	17	10.08%	8.37%	3.50%	-6.85%	-14.98%	11.78%	19
2003	5.72%	1.47%	18	12.23%	5.95%	0.79%	-7.59%	-22.95%	20.11%	22
2004	1.26%	-0.27%	20	8.89%	5.36%	1.10%	-10.46%	-13.89%	11.56%	23
2005	9.35%	11.04%	32	15.65%	9.72%	4.40%	1.99%	-8.20%	22.33%	36
2006	4.96%	2.72%	40	17.63%	10.31%	4.22%	-6.63%	-12.64%	13.92%	48
2007	12.67%	11.85%	45	28.01%	15.91%	8.60%	-2.03%	-10.45%	17.32%	48
2008	13.82%	10.44%	55	28.08%	19.32%	5.20%	-0.90%	-17.71%	22.26%	55
2009	10.20%	9.06%	20	30.61%	20.15%	11.68%	5.19%	-3.81%	17.21%	20
2010	17.56%	17.80%	25	38.58%	27.20%	13.23%	4.08%	0.85%	18.79%	23
2011	17.72%	15.96%	21	28.47%	20.93%	15.63%	0.40%	-3.46%	13.23%	27
2012	17.46%	16.30%	19	30.25%	23.61%	14.89%	10.30%	2.72%	12.27%	20
2013	21.27%	16.28%	23	35.48%	27.08%	16.00%	8.73%	-2.68%	26.51%	29
2014	22.39%	21.89%	38	33.95%	24.15%	16.46%	9.75%	4.81%	15.11%	34
2015	17.54%	19.93%	42	41.02%	22.94%	14.49%	9.25%	4.06%	14.91%	39
2016	24.59%	29.50%	50	44.82%	31.73%	12.87%	5.54%	0.50%	20.88%	44
2017	20.73%	17.85%	33	48.25%	39.69%	17.08%	1.70%	-7.00%	34.54%	31

Source: PitchBook. Data as of December 31, 2018



Venture capital

# Multiples by vintage

## Pooled multiples

## Equal-weighted pooled multiples

Vintage year	TVPI	DPI	RVPI	TVPI	DPI	RVPI	Number of funds
Pre-1996	2.68x	2.68x	0.00x	2.98x	2.98x	0.00x	3
1996	3.43x	3.41x	0.02x	4.46x	4.44x	0.02x	8
1997	1.23x	1.23x	0.00x	1.41x	1.41x	0.00x	15
1998	1.26x	1.25x	0.01x	1.19x	1.18x	0.02x	21
1999	0.82x	0.73x	0.09x	0.75x	0.69x	0.06x	37
2000	1.01x	0.93x	0.09x	0.93x	0.86x	0.07x	57
2001	1.43x	1.34x	0.08x	1.26x	1.17x	0.08x	35
2002	1.21x	1.17x	0.04x	1.20x	1.10x	0.10x	17
2003	1.42x	1.28x	0.14x	1.09x	0.98x	0.11x	18
2004	1.09x	0.89x	0.20x	0.98x	0.74x	0.24x	20
2005	1.77x	1.39x	0.38x	1.93x	1.51x	0.42x	32
2006	1.33x	1.06x	0.27x	1.18x	0.87x	0.31x	40
2007	1.91x	1.44x	0.47x	1.88x	1.37x	0.51x	45
2008	1.87x	1.25x	0.62x	1.66x	1.04x	0.63x	55
2009	1.71x	0.83x	0.88x	1.62x	0.79x	0.83x	20
2010	2.05x	1.09x	0.96x	2.11x	1.18x	0.94x	25
2011	1.96x	0.77x	1.20x	1.89x	0.58x	1.31x	21
2012	1.94x	0.61x	1.33x	1.83x	0.44x	1.39x	19
2013	1.73x	0.38x	1.34x	1.55x	0.28x	1.27x	23
2014	1.71x	0.18x	1.53x	1.62x	0.17x	1.45x	38
2015	1.34x	0.12x	1.22x	1.39x	0.16x	1.23x	42
2016	1.28x	0.14x	1.13x	1.38x	0.11x	1.27x	50
2017	1.16x	0.02x	1.15x	1.18x	0.03x	1.16x	33

Source: PitchBook. Data as of December 31, 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-1996			2.13x					2.13x			3
1996		4.15x	1.87x	1.41x			4.15x	1.82x	1.40x		8
1997	2.43x	1.71x	1.14x	0.87x	0.64x	2.43x	1.71x	1.14x	0.87x	0.64x	15
1998	1.80x	1.65x	1.23x	0.69x	0.47x	1.80x	1.58x	1.23x	0.69x	0.44x	21
1999	1.47x	1.04x	0.68x	0.38x	0.19x	1.33x	0.86x	0.68x	0.36x	0.19x	37
2000	1.48x	1.19x	0.94x	0.63x	0.37x	1.43x	1.12x	0.87x	0.54x	0.30x	57
2001	2.02x	1.54x	1.21x	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	1.18x	0.57x	0.34x	17
2003	1.69x	1.46x	1.15x	0.58x	0.37x	1.44x	1.22x	1.07x	0.58x	0.36x	18
2004	1.71x	1.35x	1.03x	0.51x	0.34x	1.50x	1.10x	0.75x	0.41x	0.09x	20
2005	2.35x	1.84x	1.36x	1.16x	0.67x	2.11x	1.57x	1.08x	0.65x	0.43x	32
2006	2.14x	1.63x	1.09x	0.56x	0.36x	1.63x	1.27x	0.81x	0.47x	0.11x	40
2007	2.84x	2.28x	1.78x	0.84x	0.46x	2.33x	1.70x	1.28x	0.53x	0.10x	45
2008	2.67x	2.06x	1.38x	0.96x	0.28x	2.38x	1.55x	0.74x	0.35x	0.20x	55
2009	2.45x	1.89x	1.60x	1.26x	0.85x	1.40x	1.00x	0.63x	0.30x	0.22x	20
2010	3.30x	2.40x	1.81x	1.31x	0.81x	2.09x	1.50x	1.01x	0.51x	0.39x	25
2011	2.97x	2.44x	1.79x	1.40x	0.97x	1.14x	0.73x	0.63x	0.18x	0.10x	21
2012	2.86x	2.03x	1.68x	1.24x	0.90x	0.81x	0.62x	0.31x	0.12x	0.00x	19
2013	2.16x	1.95x	1.40x	1.30x	1.07x	0.72x	0.44x	0.13x	0.01x	0.00x	23
2014	2.49x	1.70x	1.50x	1.18x	1.09x	0.43x	0.23x	0.08x	0.00x	0.00x	38
2015	1.82x	1.43x	1.29x	1.16x	1.06x	0.50x	0.23x	0.00x	0.00x	0.00x	42
2016	1.72x	1.34x	1.16x	1.03x	0.97x	0.30x	0.13x	0.00x	0.00x	0.00x	50
2017	1.52x	1.26x	1.05x	0.98x	0.86x	0.04x	0.00x	0.00x	0.00x	0.00x	33

Source: PitchBook. Data as of December 31, 2018

For RVPI data, please download the supplemental Excel pack



Venture capital

# PMEs by vintage

## S&amp;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
1996	91.72%	8.58%	2.65	91.72%	8.47%	2.93	8
1997	5.93%	7.84%	1.08	5.93%	8.15%	0.96	15
1998	6.12%	6.77%	1.16	6.12%	7.38%	0.94	21
1999	-2.73%	5.92%	0.70	-2.73%	8.24%	0.55	37
2000	0.18%	5.51%	0.73	0.18%	6.99%	0.61	57
2001	6.10%	6.41%	0.98	6.10%	8.07%	0.90	35
2002	3.39%	7.47%	0.88	3.39%	8.42%	0.81	17
2003	5.72%	9.74%	0.92	5.72%	10.75%	0.89	18
2004	1.26%	8.27%	0.67	1.26%	8.06%	0.66	20
2005	9.35%	8.35%	1.06	9.35%	8.02%	1.06	32
2006	4.96%	8.25%	0.79	4.96%	7.29%	0.80	40
2007	12.67%	7.85%	1.07	12.67%	7.00%	1.08	45
2008	13.82%	8.95%	1.03	13.82%	8.90%	1.06	55
2009	10.20%	15.56%	0.84	10.20%	15.20%	0.89	20
2010	17.56%	12.85%	1.16	17.56%	11.68%	1.25	25
2011	17.72%	12.17%	1.20	17.72%	9.84%	1.30	21
2012	17.46%	13.15%	1.22	17.46%	11.13%	1.32	19
2013	21.27%	12.87%	1.30	21.27%	10.49%	1.38	23
2014	22.39%	10.70%	1.31	22.39%	6.97%	1.37	38
2015	17.54%	9.63%	1.11	17.54%	7.29%	1.16	42
2016	24.59%	14.80%	1.16	24.59%	15.75%	1.21	50
2017	20.73%	10.99%	1.11	20.73%	6.49%	1.16	33

Source: PitchBook. Data as of December 31, 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 2001	-11.92%	3Q 2006	1.94%	1Q 2012	4.19%	3Q 2017	4.10%
2Q 2001	-9.47%	4Q 2006	6.23%	2Q 2012	1.04%	4Q 2017	2.98%
3Q 2001	-12.78%	1Q 2007	2.23%	3Q 2012	-0.21%	1Q 2018	6.35%
4Q 2001	-11.63%	2Q 2007	4.68%	4Q 2012	2.11%	2Q 2018	6.32%
1Q 2002	-8.24%	3Q 2007	2.59%	1Q 2013	2.19%	3Q 2018	3.25%
2Q 2002	-12.21%	4Q 2007	3.56%	2Q 2013	4.43%	4Q 2018	1.91%
3Q 2002	-9.14%	1Q 2008	2.29%	3Q 2013	4.96%		
4Q 2002	-9.97%	2Q 2008	1.37%	4Q 2013	7.31%		
1Q 2003	-7.76%	3Q 2008	-2.54%	1Q 2014	5.85%		
2Q 2003	-2.15%	4Q 2008	-8.61%	2Q 2014	3.86%		
3Q 2003	-2.64%	1Q 2009	-3.64%	3Q 2014	2.70%		
4Q 2003	1.31%	2Q 2009	-0.50%	4Q 2014	6.56%		
1Q 2004	0.65%	3Q 2009	0.58%	1Q 2015	4.44%		
2Q 2004	0.95%	4Q 2009	2.99%	2Q 2015	5.79%		
3Q 2004	-0.86%	1Q 2010	1.01%	3Q 2015	0.28%		
4Q 2004	2.76%	2Q 2010	0.24%	4Q 2015	2.31%		
1Q 2005	-1.70%	3Q 2010	3.17%	1Q 2016	-3.17%		
2Q 2005	0.55%	4Q 2010	5.75%	2Q 2016	-0.07%		
3Q 2005	5.00%	1Q 2011	4.56%	3Q 2016	2.50%		
4Q 2005	2.92%	2Q 2011	4.53%	4Q 2016	0.53%		
1Q 2006	3.09%	3Q 2011	-0.17%	1Q 2017	2.48%		
2Q 2006	1.07%	4Q 2011	1.73%	2Q 2017	2.06%		

Source: PitchBook. Data as of December 31, 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-1996	18.01%	18.01%	1		20.02%	17.35%	13.26%		5.30%	4
1996	10.65%	10.14%	3		16.06%	11.16%	7.89%		8.35%	4
1997	15.59%	12.52%	6		16.00%	10.89%	6.31%		7.88%	6
1998	9.81%	9.89%	9	25.26%	15.50%	10.29%	7.40%	-1.72%	10.91%	10
1999	12.19%	12.29%	3		18.10%	14.80%	8.70%		9.09%	5
2000	11.92%	10.89%	9	22.29%	20.29%	17.00%	7.19%	3.25%	8.90%	11
2001	35.75%	33.99%	3		30.54%	27.60%	12.88%		14.67%	7
2002	23.99%	25.92%	5		27.76%	11.38%	3.63%		26.88%	8
2003	19.27%	19.93%	6	30.64%	25.25%	16.40%	10.64%	8.84%	9.12%	12
2004	9.56%	8.75%	9	30.34%	14.44%	10.13%	3.72%	-2.97%	20.91%	16
2005	2.33%	2.47%	32	16.00%	5.70%	1.37%	-3.23%	-7.89%	17.54%	43
2006	-1.05%	-1.32%	38	6.23%	3.50%	-1.96%	-8.89%	-16.06%	10.20%	52
2007	3.16%	3.03%	64	12.69%	10.16%	4.26%	-0.63%	-10.49%	9.39%	74
2008	5.33%	5.05%	60	17.14%	11.47%	6.60%	0.12%	-6.64%	9.10%	71
2009	6.68%	6.48%	35	20.01%	13.50%	9.07%	2.23%	-10.35%	12.55%	35
2010	9.92%	9.31%	34	18.94%	14.48%	10.65%	6.72%	0.49%	11.34%	38
2011	12.05%	10.43%	52	23.23%	19.42%	12.87%	7.97%	-3.44%	10.87%	54
2012	11.44%	11.11%	72	22.47%	15.54%	11.86%	8.64%	1.81%	16.48%	76
2013	11.97%	11.62%	71	19.14%	14.79%	11.05%	6.25%	1.75%	7.71%	68
2014	12.99%	14.82%	79	27.08%	16.40%	12.74%	9.96%	2.30%	9.31%	75
2015	15.10%	14.29%	105	21.46%	16.42%	12.84%	8.42%	5.30%	22.19%	92
2016	13.83%	18.11%	83	32.51%	20.28%	11.47%	4.55%	-1.01%	27.66%	74
2017	4.49%	11.73%	54	28.66%	18.45%	8.84%	-0.80%	-20.37%	20.71%	39

Source: PitchBook. Data as of December 31, 2018





Real assets

# Multiples by vintage

## Pooled multiples

## Equal-weighted pooled multiples

Vintage year	TVPI	DPI	RVPI	TVPI	DPI	RVPI	Number of funds
Pre-1996	2.47x	2.47x	0.00x	2.47x	2.47x	0.00x	1
1996	1.48x	1.48x	0.00x	1.65x	1.65x	0.00x	3
1997	1.98x	1.86x	0.12x	2.12x	1.76x	0.36x	6
1998	1.50x	1.49x	0.01x	1.53x	1.53x	0.01x	9
1999	1.93x	1.92x	0.01x	1.87x	1.83x	0.03x	3
2000	1.47x	1.47x	0.00x	1.41x	1.41x	0.00x	9
2001	2.16x	2.16x	0.00x	2.13x	2.13x	0.00x	3
2002	1.63x	1.63x	0.00x	1.68x	1.68x	0.00x	5
2003	1.66x	1.63x	0.02x	1.81x	1.74x	0.07x	6
2004	1.40x	1.39x	0.01x	1.43x	1.39x	0.04x	9
2005	1.14x	1.06x	0.08x	1.15x	1.05x	0.10x	32
2006	0.94x	0.82x	0.12x	0.92x	0.78x	0.15x	38
2007	1.17x	1.08x	0.09x	1.16x	1.04x	0.12x	64
2008	1.25x	1.00x	0.26x	1.26x	1.00x	0.26x	60
2009	1.28x	1.00x	0.29x	1.30x	0.99x	0.32x	35
2010	1.41x	1.05x	0.36x	1.44x	0.94x	0.49x	34
2011	1.47x	0.94x	0.53x	1.43x	0.94x	0.48x	52
2012	1.39x	0.77x	0.62x	1.39x	0.82x	0.56x	72
2013	1.36x	0.64x	0.72x	1.35x	0.61x	0.75x	71
2014	1.29x	0.44x	0.86x	1.39x	0.45x	0.94x	79
2015	1.26x	0.34x	0.92x	1.30x	0.37x	0.93x	105
2016	1.17x	0.20x	0.97x	1.24x	0.32x	0.92x	83
2017	1.03x	0.02x	1.01x	1.11x	0.08x	1.03x	54

Source: PitchBook. Data as of December 31, 2018



Real assets

# Multiples by vintage

Vintage year	TVPI					DPI					Number of funds
	Top decile	Top quartile	Median TVPI	Bottom quartile	Bottom decile	Top decile	Top quartile	Median DPI	Bottom quartile	Bottom decile	
Pre-1996			2.47x					2.47x			1
1996			1.46x					1.46x			3
1997		2.19x	1.81x	1.32x			2.04x	1.60x	1.32x		6
1998		1.63x	1.47x	1.29x			1.63x	1.42x	1.29x		9
1999			2.20x					2.19x			3
2000		1.60x	1.46x	1.34x			1.60x	1.46x	1.34x		9
2001			1.99x					1.99x			3
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	1.97x	1.32x	1.03x	0.74x	0.59x	1.73x	1.30x	0.99x	0.67x	0.43x	32
2006	1.51x	1.14x	0.89x	0.57x	0.40x	1.32x	1.00x	0.73x	0.50x	0.21x	38
2007	1.67x	1.44x	1.18x	0.93x	0.52x	1.59x	1.36x	1.11x	0.71x	0.33x	64
2008	1.85x	1.55x	1.19x	0.99x	0.61x	1.60x	1.32x	0.99x	0.65x	0.45x	60
2009	2.02x	1.51x	1.32x	1.14x	0.58x	1.67x	1.34x	1.05x	0.45x	0.27x	35
2010	1.80x	1.68x	1.48x	1.21x	1.12x	1.52x	1.31x	0.96x	0.63x	0.29x	34
2011	2.02x	1.71x	1.44x	1.26x	0.90x	1.70x	1.41x	1.04x	0.48x	0.24x	52
2012	1.85x	1.51x	1.41x	1.29x	1.05x	1.48x	1.12x	0.77x	0.51x	0.12x	72
2013	1.63x	1.51x	1.34x	1.15x	1.02x	1.23x	1.00x	0.51x	0.26x	0.16x	71
2014	1.64x	1.43x	1.30x	1.18x	1.14x	0.88x	0.66x	0.37x	0.13x	0.03x	79
2015	1.53x	1.39x	1.27x	1.13x	1.03x	0.85x	0.54x	0.21x	0.07x	0.01x	105
2016	1.48x	1.30x	1.14x	1.04x	0.91x	0.66x	0.31x	0.13x	0.03x	0.00x	83
2017	1.26x	1.16x	1.06x	0.96x	0.77x	0.23x	0.11x	0.02x	0.00x	0.00x	54

Source: PitchBook. Data as of December 31, 2018

For RVPI data, please download the supplemental Excel pack



Real assets

# PMEs by vintage

## S&amp;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
1996	10.65%	8.58%	1.16	10.65%			3
1997	15.59%	7.84%	1.62	15.59%			6
1998	9.81%	6.77%	1.47	9.81%			9
1999	12.19%	5.92%	1.72	12.19%			3
2000	11.92%	5.51%	1.32	11.92%			9
2001	35.75%	6.41%	1.78	35.75%	6.71%	1.60	3
2002	23.99%	7.47%	1.27	23.99%	6.66%	1.24	5
2003	19.27%	9.74%	1.37	19.27%	6.33%	1.28	6
2004	9.56%	8.27%	1.16	9.56%	5.52%	1.08	9
2005	2.33%	8.35%	0.79	2.33%	4.95%	0.84	32
2006	-1.05%	8.25%	0.65	-1.05%	4.54%	0.72	38
2007	3.16%	7.85%	0.72	3.16%	4.27%	0.91	64
2008	5.33%	8.95%	0.74	5.33%	3.34%	1.05	60
2009	6.68%	15.56%	0.77	6.68%	5.24%	1.12	35
2010	9.92%	12.85%	0.88	9.92%	3.61%	1.26	34
2011	12.05%	12.17%	0.96	12.05%	2.00%	1.40	52
2012	11.44%	13.15%	0.97	11.44%	1.29%	1.34	72
2013	11.97%	12.87%	1.01	11.97%	1.11%	1.31	71
2014	12.99%	10.70%	1.03	12.99%	1.57%	1.25	79
2015	15.10%	9.63%	1.05	15.10%	1.00%	1.22	105
2016	13.83%	14.80%	1.03	13.83%	3.60%	1.14	83
2017	4.49%	10.99%	1.01	4.49%	2.27%	1.02	54

Source: PitchBook. Data as of December 31, 2018  
 Note: All public index returns are CAGRs from the start of the respective vintage year.  
 \*The Morningstar US Real Assets Index only goes back to 2001.



## 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 2001	2.95%	3Q 2006	8.25%	1Q 2012	3.40%	3Q 2017	2.70%
2Q 2001	1.75%	4Q 2006	20.50%	2Q 2012	-0.08%	4Q 2017	2.16%
3Q 2001	-1.00%	1Q 2007	0.65%	3Q 2012	3.38%	1Q 2018	2.64%
4Q 2001	3.56%	2Q 2007	1.17%	4Q 2012	2.40%	2Q 2018	2.81%
1Q 2002	4.16%	3Q 2007	3.43%	1Q 2013	3.29%	3Q 2018	1.89%
2Q 2002	1.05%	4Q 2007	7.18%	2Q 2013	2.36%	4Q 2018	-0.87%
3Q 2002	0.00%	1Q 2008	-3.97%	3Q 2013	2.14%		
4Q 2002	0.00%	2Q 2008	-2.17%	4Q 2013	4.54%		
1Q 2003	-2.35%	3Q 2008	-4.85%	1Q 2014	3.22%		
2Q 2003	2.03%	4Q 2008	-12.43%	2Q 2014	3.98%		
3Q 2003	3.26%	1Q 2009	-14.18%	3Q 2014	3.19%		
4Q 2003	11.04%	2Q 2009	-8.00%	4Q 2014	-0.11%		
1Q 2004	-1.49%	3Q 2009	-3.54%	1Q 2015	0.59%		
2Q 2004	4.56%	4Q 2009	-2.15%	2Q 2015	3.87%		
3Q 2004	1.50%	1Q 2010	-3.92%	3Q 2015	0.76%		
4Q 2004	20.73%	2Q 2010	0.84%	4Q 2015	-0.31%		
1Q 2005	3.02%	3Q 2010	4.95%	1Q 2016	1.21%		
2Q 2005	15.21%	4Q 2010	9.47%	2Q 2016	3.44%		
3Q 2005	9.02%	1Q 2011	4.68%	3Q 2016	3.19%		
4Q 2005	10.00%	2Q 2011	4.17%	4Q 2016	3.20%		
1Q 2006	3.43%	3Q 2011	0.37%	1Q 2017	3.43%		
2Q 2006	6.69%	4Q 2011	2.64%	2Q 2017	3.16%		

Source: PitchBook. Data as of December 31, 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-1996						1.49%			12.37%	2
1996	6.01%	6.01%	1			5.41%				1
1997	10.99%	16.73%	3			5.31%			1.88%	3
1998						6.01%				1
1999	11.58%	11.01%	2			10.52%			2.01%	2
2000	7.16%	-1.10%	4		7.97%	1.82%	-5.22%		15.49%	4
2001	27.52%	29.86%	3			26.70%			3.47%	3
2002	17.47%	22.65%	4		17.40%	15.81%	15.60%		29.00%	5
2003	11.57%	10.01%	5		11.90%	8.85%	8.09%		9.06%	6
2004	8.31%	10.21%	4		14.05%	10.69%	9.94%		16.69%	5
2005	6.09%	5.85%	7		8.71%	5.10%	3.51%		6.29%	8
2006	5.93%	3.47%	12	9.14%	5.61%	3.28%	0.75%	-2.67%	6.05%	13
2007	6.71%	5.64%	21	12.59%	8.96%	6.22%	2.30%	-11.53%	9.90%	25
2008	13.55%	14.08%	14	17.70%	14.99%	13.00%	11.00%	7.60%	6.34%	17
2009	8.13%	7.67%	12	13.50%	12.76%	8.71%	4.30%	2.56%	5.08%	12
2010	11.58%	11.97%	17	19.15%	15.86%	12.71%	9.08%	7.18%	4.82%	18
2011	9.79%	10.57%	16	12.86%	10.94%	8.70%	7.00%	5.78%	4.04%	21
2012	7.59%	9.00%	27	16.17%	12.04%	9.16%	6.88%	2.56%	5.13%	30
2013	7.22%	8.12%	35	12.39%	10.44%	8.50%	6.78%	4.82%	3.97%	43
2014	6.80%	6.95%	38	12.98%	10.65%	8.37%	6.30%	3.36%	5.33%	37
2015	9.60%	9.74%	48	14.14%	11.28%	9.51%	7.46%	4.76%	3.97%	42
2016	6.80%	6.35%	27	16.29%	11.40%	8.90%	6.81%	0.69%	14.96%	24
2017	10.76%	13.45%	43	25.07%	15.46%	11.72%	7.69%	5.28%	29.74%	33

Source: PitchBook. Data as of December 31, 2018





## Debt

# Multiples by vintage

## Pooled multiples

## Equal-weighted pooled multiples

Vintage year	TVPI	DPI	RVPI	TVPI	DPI	RVPI	Number of funds
Pre-1996							
1996	1.45x	1.45x	0.00x	1.45x	1.45x	0.00x	1
1997	1.75x	1.69x	0.06x	2.38x	2.18x	0.20x	3
1998							
1999	1.49x	1.48x	0.01x	1.48x	1.45x	0.03x	2
2000	1.20x	1.20x	0.00x	0.96x	0.96x	0.00x	4
2001	2.08x	2.08x	0.00x	2.15x	2.15x	0.00x	3
2002	1.70x	1.70x	0.00x	1.80x	1.79x	0.00x	4
2003	1.66x	1.65x	0.01x	1.55x	1.54x	0.01x	5
2004	1.34x	1.31x	0.03x	1.47x	1.44x	0.02x	4
2005	1.36x	1.34x	0.02x	1.30x	1.26x	0.04x	7
2006	1.43x	1.30x	0.13x	1.21x	1.16x	0.05x	12
2007	1.34x	1.28x	0.06x	1.29x	1.22x	0.07x	21
2008	1.63x	1.60x	0.04x	1.65x	1.62x	0.03x	14
2009	1.36x	1.19x	0.17x	1.31x	1.13x	0.18x	12
2010	1.50x	1.35x	0.15x	1.45x	1.28x	0.18x	17
2011	1.46x	1.06x	0.40x	1.44x	1.14x	0.30x	16
2012	1.27x	0.91x	0.37x	1.33x	0.91x	0.42x	27
2013	1.22x	0.76x	0.47x	1.25x	0.73x	0.52x	35
2014	1.19x	0.41x	0.79x	1.17x	0.41x	0.76x	38
2015	1.17x	0.30x	0.87x	1.19x	0.35x	0.84x	48
2016	1.09x	0.29x	0.80x	1.09x	0.33x	0.76x	27
2017	1.10x	0.13x	0.97x	1.12x	0.16x	0.96x	43

Source: PitchBook. Data as of December 31, 2018



## Debt

## Multiples by vintage

Vintage year	TVPI					DPI					Number of funds
	Top decile	Top quartile	Median TVPI	Bottom quartile	Bottom decile	Top decile	Top quartile	Median DPI	Bottom quartile	Bottom decile	
Pre-1996											
1996			1.45x					1.45x			1
1997			1.49x					1.49x			3
1998											
1999			1.48x					1.44x			2
2000		1.11x	0.96x	0.79x			1.11x	0.96x	0.79x		4
2001			1.88x					1.88x			3
2002		1.88x	1.69x	1.60x			1.88x	1.69x	1.60x		4
2003		1.58x	1.49x	1.49x			1.58x	1.49x	1.48x		5
2004		1.70x	1.64x	1.39x			1.68x	1.63x	1.38x		4
2005		1.49x	1.34x	1.26x			1.47x	1.33x	1.14x		7
2006	1.63x	1.38x	1.15x	1.06x	0.93x	1.57x	1.27x	1.12x	1.06x	0.90x	12
2007	1.68x	1.50x	1.30x	1.20x	0.96x	1.68x	1.45x	1.24x	1.06x	0.96x	21
2008	2.10x	1.82x	1.50x	1.36x	1.23x	2.08x	1.71x	1.49x	1.30x	1.21x	14
2009	1.60x	1.48x	1.25x	1.14x	1.09x	1.60x	1.42x	1.13x	1.05x	0.68x	12
2010	1.76x	1.64x	1.40x	1.22x	1.19x	1.62x	1.45x	1.25x	1.17x	0.88x	17
2011	1.81x	1.62x	1.33x	1.22x	1.15x	1.56x	1.32x	1.10x	0.89x	0.75x	16
2012	1.60x	1.49x	1.27x	1.15x	1.07x	1.34x	1.20x	0.91x	0.69x	0.49x	27
2013	1.42x	1.31x	1.21x	1.14x	1.03x	1.07x	0.95x	0.77x	0.54x	0.28x	35
2014	1.34x	1.25x	1.17x	1.11x	0.97x	0.73x	0.58x	0.38x	0.19x	0.07x	38
2015	1.32x	1.26x	1.16x	1.14x	1.07x	0.63x	0.46x	0.29x	0.17x	0.10x	48
2016	1.23x	1.18x	1.10x	1.04x	0.92x	0.58x	0.38x	0.28x	0.11x	0.04x	27
2017	1.25x	1.14x	1.10x	1.05x	0.99x	0.43x	0.24x	0.09x	0.04x	0.00x	43

Source: PitchBook. Data as of December 31, 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
1996	6.01%	8.58%	1.36	6.01%			1
1997	10.99%	7.84%	1.56	10.99%			3
1998							
1999	11.58%	5.92%	1.76	11.58%	6.71%	1.19	2
2000	7.16%	5.51%	1.18	7.16%	6.99%	0.93	4
2001	27.52%	6.41%	1.60	27.52%	7.40%	1.42	3
2002	17.47%	7.47%	1.28	17.47%	7.90%	1.19	4
2003	11.57%	9.74%	1.25	11.57%	8.30%	1.15	5
2004	8.31%	8.27%	1.14	8.31%	7.16%	1.05	4
2005	6.09%	8.35%	1.16	6.09%	7.00%	0.91	7
2006	5.93%	8.25%	0.89	5.93%	7.22%	0.81	12
2007	6.71%	7.85%	0.99	6.71%	6.84%	0.86	21
2008	13.55%	8.95%	1.03	13.55%	7.74%	0.95	14
2009	8.13%	15.56%	0.81	8.13%	11.21%	0.95	12
2010	11.58%	12.85%	0.90	11.58%	7.10%	1.16	17
2011	9.79%	12.17%	0.86	9.79%	6.02%	1.12	16
2012	7.59%	13.15%	0.84	7.59%	6.02%	1.06	27
2013	7.22%	12.87%	0.89	7.22%	4.76%	1.05	35
2014	6.80%	10.70%	0.90	6.80%	4.23%	1.04	38
2015	9.60%	9.63%	0.98	9.60%	4.75%	1.07	48
2016	6.80%	14.80%	0.95	6.80%	9.16%	1.03	27
2017	10.76%	10.99%	1.02	10.76%	3.40%	1.06	43

Source: PitchBook. Data as of December 31, 2018.  
 Note: All public index returns are CAGRs from the start of the respective vintage year.  
 \*The Bloomberg Barclays US Corporate High Yield Index only goes back to 1999.



## 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 2001	1.59%	3Q 2006	1.63%	1Q 2012	-2.06%	3Q 2017	1.96%
2Q 2001	4.57%	4Q 2006	10.88%	2Q 2012	0.77%	4Q 2017	3.45%
3Q 2001	0.62%	1Q 2007	3.26%	3Q 2012	4.97%	1Q 2018	1.62%
4Q 2001	2.29%	2Q 2007	8.99%	4Q 2012	2.90%	2Q 2018	2.78%
1Q 2002	3.26%	3Q 2007	0.29%	1Q 2013	4.21%	3Q 2018	1.20%
2Q 2002	1.51%	4Q 2007	0.87%	2Q 2013	2.56%	4Q 2018	1.44%
3Q 2002	-1.47%	1Q 2008	-1.56%	3Q 2013	2.46%		
4Q 2002	1.34%	2Q 2008	-1.44%	4Q 2013	2.95%		
1Q 2003	3.26%	3Q 2008	-8.08%	1Q 2014	3.01%		
2Q 2003	7.30%	4Q 2008	-17.46%	2Q 2014	2.64%		
3Q 2003	-1.42%	1Q 2009	-4.88%	3Q 2014	3.02%		
4Q 2003	9.92%	2Q 2009	10.11%	4Q 2014	-0.06%		
1Q 2004	7.54%	3Q 2009	11.24%	1Q 2015	5.97%		
2Q 2004	7.21%	4Q 2009	7.92%	2Q 2015	-1.43%		
3Q 2004	4.75%	1Q 2010	4.51%	3Q 2015	-1.18%		
4Q 2004	13.13%	2Q 2010	0.28%	4Q 2015	-0.20%		
1Q 2005	6.60%	3Q 2010	1.96%	1Q 2016	1.70%		
2Q 2005	-3.74%	4Q 2010	7.89%	2Q 2016	1.24%		
3Q 2005	7.75%	1Q 2011	3.36%	3Q 2016	4.11%		
4Q 2005	3.87%	2Q 2011	2.52%	4Q 2016	0.55%		
1Q 2006	3.02%	3Q 2011	-4.15%	1Q 2017	2.28%		
2Q 2006	5.69%	4Q 2011	8.68%	2Q 2017	2.60%		

Source: PitchBook. Data as of December 31, 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-1996					8.78%	8.53%	6.80%		3.57%	4
1996						15.28%				1
1997	-13.56%	-13.60%	2			-13.50%				1
1998	7.87%	7.65%	3		8.60%	7.90%	6.51%		2.66%	5
1999	5.41%	4.63%	8	11.78%	9.39%	3.62%	2.37%	0.02%	4.72%	11
2000	4.64%	5.25%	8	11.68%	10.39%	6.21%	3.45%	1.17%	5.36%	12
2001	13.91%	8.65%	7	14.14%	12.40%	8.98%	5.75%	4.70%	4.88%	17
2002	8.06%	6.24%	4		9.89%	9.10%	8.53%		3.54%	7
2003	7.58%	5.78%	6	10.58%	9.13%	8.03%	6.27%	3.26%	3.58%	12
2004	7.88%	7.60%	11	10.93%	8.46%	7.16%	6.24%	5.68%	2.75%	22
2005	7.37%	7.46%	17	10.86%	9.03%	7.41%	5.44%	3.64%	3.31%	27
2006	8.06%	7.51%	29	12.25%	10.45%	7.49%	5.30%	2.86%	5.61%	45
2007	9.50%	8.71%	32	13.89%	11.44%	9.30%	7.19%	4.26%	3.86%	43
2008	3.46%	11.81%	35	17.69%	14.89%	12.44%	9.29%	4.12%	5.07%	38
2009	14.50%	14.76%	23	17.96%	15.32%	13.58%	10.57%	7.60%	4.52%	23
2010	12.27%	12.13%	32	15.06%	14.05%	11.68%	9.17%	7.93%	3.89%	32
2011	12.83%	13.85%	39	18.69%	17.09%	13.30%	11.22%	8.63%	6.17%	40
2012	14.29%	14.41%	33	19.26%	16.30%	12.30%	9.00%	7.24%	5.42%	29
2013	16.62%	14.19%	47	23.90%	19.23%	14.16%	10.85%	9.01%	8.72%	36
2014	14.95%	13.83%	37	21.54%	17.30%	13.69%	10.60%	6.15%	5.99%	37
2015	17.29%	15.52%	34	26.48%	23.13%	15.40%	7.90%	5.94%	9.06%	33
2016	11.09%	7.98%	24	17.00%	15.72%	11.54%	7.81%	4.44%	8.01%	21
2017	9.58%	9.29%	17	31.01%	24.73%	12.84%	6.52%	1.13%	22.29%	15

Source: PitchBook. Data as of December 31, 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-1996							
1996							
1997	0.31x	0.31x	0.00x	0.32x	0.32x	0.00x	2
1998	1.48x	1.48x	0.01x	1.51x	1.50x	0.02x	3
1999	1.34x	1.33x	0.02x	1.29x	1.28x	0.01x	8
2000	1.28x	1.23x	0.04x	1.32x	1.28x	0.03x	8
2001	1.70x	1.66x	0.04x	1.53x	1.40x	0.13x	7
2002	1.46x	1.39x	0.08x	1.33x	1.29x	0.05x	4
2003	1.58x	1.46x	0.12x	1.41x	1.29x	0.12x	6
2004	1.52x	1.34x	0.18x	1.55x	1.30x	0.25x	11
2005	1.50x	1.29x	0.21x	1.49x	1.25x	0.25x	17
2006	1.59x	1.19x	0.40x	1.56x	1.15x	0.41x	29
2007	1.64x	1.17x	0.47x	1.56x	1.15x	0.41x	32
2008	1.19x	0.70x	0.49x	1.72x	0.90x	0.82x	35
2009	1.81x	0.97x	0.85x	1.84x	1.10x	0.74x	23
2010	1.64x	0.84x	0.80x	1.63x	0.75x	0.89x	32
2011	1.53x	0.57x	0.96x	1.61x	0.58x	1.03x	39
2012	1.56x	0.42x	1.13x	1.56x	0.46x	1.09x	33
2013	1.45x	0.40x	1.05x	1.41x	0.28x	1.13x	47
2014	1.35x	0.26x	1.10x	1.34x	0.28x	1.06x	37
2015	1.27x	0.18x	1.10x	1.27x	0.20x	1.08x	34
2016	1.15x	0.09x	1.06x	1.11x	0.10x	1.01x	24
2017	1.08x	0.08x	1.00x	1.08x	0.08x	1.00x	17

Source: PitchBook. Data as of December 31, 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-1996											
1996											
1997			0.32x					0.32x			2
1998			1.56x					1.56x			3
1999		1.48x	1.24x	1.12x			1.46x	1.21x	1.11x		8
2000		1.52x	1.36x	1.08x			1.50x	1.33x	1.01x		8
2001		1.72x	1.62x	1.40x			1.67x	1.53x	1.29x		7
2002		1.49x	1.42x	1.27x			1.41x	1.38x	1.26x		4
2003		1.59x	1.52x	1.32x			1.43x	1.40x	1.20x		6
2004	1.74x	1.57x	1.51x	1.44x	1.41x	1.55x	1.44x	1.29x	1.23x	1.06x	11
2005	1.76x	1.60x	1.45x	1.38x	1.28x	1.62x	1.35x	1.23x	1.08x	1.01x	17
2006	1.92x	1.76x	1.55x	1.37x	1.20x	1.33x	1.29x	1.19x	1.09x	0.97x	29
2007	1.99x	1.79x	1.56x	1.40x	1.02x	1.46x	1.34x	1.18x	1.03x	0.69x	32
2008	2.34x	1.90x	1.64x	1.41x	1.16x	1.28x	1.12x	0.86x	0.71x	0.51x	35
2009	2.42x	2.03x	1.77x	1.54x	1.43x	1.94x	1.23x	0.92x	0.75x	0.71x	23
2010	1.92x	1.71x	1.58x	1.48x	1.40x	1.08x	0.92x	0.70x	0.54x	0.41x	32
2011	2.05x	1.70x	1.54x	1.38x	1.24x	0.95x	0.70x	0.55x	0.38x	0.29x	39
2012	2.03x	1.67x	1.42x	1.31x	1.19x	0.83x	0.58x	0.36x	0.22x	0.11x	33
2013	1.66x	1.58x	1.39x	1.23x	1.17x	0.62x	0.37x	0.18x	0.09x	0.02x	47
2014	1.57x	1.49x	1.32x	1.18x	1.06x	0.61x	0.24x	0.16x	0.07x	0.00x	37
2015	1.56x	1.34x	1.24x	1.14x	1.07x	0.36x	0.21x	0.14x	0.05x	0.01x	34
2016	1.24x	1.19x	1.14x	1.07x	1.04x	0.21x	0.10x	0.03x	0.00x	0.00x	24
2017	1.24x	1.16x	1.08x	1.02x	0.89x	0.17x	0.11x	0.03x	0.00x	0.00x	17

Source: PitchBook. Data as of December 31, 2018

For RVPI data, please download the supplemental Excel pack



Fund-of-funds

# PMEs by vintage

## S&amp;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
1996							
1997	-13.56%	7.84%	0.27	-13.56%	8.00%	0.25	2
1998	7.87%	6.77%	1.25	7.87%	6.97%	1.21	3
1999	5.41%	5.92%	1.05	5.41%	6.34%	1.02	8
2000	4.64%	5.51%	0.96	4.64%	5.77%	0.93	8
2001	13.91%	6.41%	1.20	13.91%	6.73%	1.19	7
2002	8.06%	7.47%	1.06	8.06%	7.75%	1.04	4
2003	7.58%	9.74%	1.03	7.58%	10.01%	1.02	6
2004	7.88%	8.27%	1.01	7.88%	8.40%	1.00	11
2005	7.37%	8.35%	0.95	7.37%	8.46%	0.94	17
2006	8.06%	8.25%	0.88	8.06%	8.20%	0.88	29
2007	9.50%	7.85%	0.89	9.50%	7.81%	0.89	32
2008	3.46%	8.95%	0.61	3.46%	9.00%	0.62	35
2009	14.50%	15.56%	1.03	14.50%	15.64%	1.03	23
2010	12.27%	12.85%	0.97	12.27%	12.73%	0.97	32
2011	12.83%	12.17%	1.00	12.83%	11.85%	1.01	39
2012	14.29%	13.15%	1.08	14.29%	12.89%	1.10	33
2013	16.62%	12.87%	1.12	16.62%	12.52%	1.13	47
2014	14.95%	10.70%	1.09	14.95%	10.08%	1.10	37
2015	17.29%	9.63%	1.10	17.29%	9.14%	1.11	34
2016	11.09%	14.80%	1.00	11.09%	14.86%	1.01	24
2017	9.58%	10.99%	1.01	9.58%	10.36%	1.02	17

Source: PitchBook. Data as of December 31, 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 2001	-13.20%	3Q 2006	3.95%	1Q 2012	4.73%	3Q 2017	3.24%
2Q 2001	-6.85%	4Q 2006	8.64%	2Q 2012	1.27%	4Q 2017	2.46%
3Q 2001	-10.06%	1Q 2007	-0.61%	3Q 2012	0.46%	1Q 2018	5.30%
4Q 2001	-5.83%	2Q 2007	10.42%	4Q 2012	1.61%	2Q 2018	4.63%
1Q 2002	-8.33%	3Q 2007	2.91%	1Q 2013	1.18%	3Q 2018	3.17%
2Q 2002	-4.54%	4Q 2007	2.99%	2Q 2013	3.48%	4Q 2018	1.96%
3Q 2002	-7.24%	1Q 2008	9.00%	3Q 2013	3.27%		
4Q 2002	-5.12%	2Q 2008	-3.03%	4Q 2013	4.14%		
1Q 2003	-8.91%	3Q 2008	-6.79%	1Q 2014	2.47%		
2Q 2003	4.12%	4Q 2008	-9.31%	2Q 2014	6.36%		
3Q 2003	0.16%	1Q 2009	-2.49%	3Q 2014	1.38%		
4Q 2003	5.41%	2Q 2009	-4.51%	4Q 2014	2.73%		
1Q 2004	4.34%	3Q 2009	4.49%	1Q 2015	3.33%		
2Q 2004	1.19%	4Q 2009	2.30%	2Q 2015	5.80%		
3Q 2004	5.21%	1Q 2010	4.49%	3Q 2015	2.09%		
4Q 2004	5.44%	2Q 2010	0.30%	4Q 2015	0.32%		
1Q 2005	1.39%	3Q 2010	-3.25%	1Q 2016	1.55%		
2Q 2005	5.91%	4Q 2010	4.34%	2Q 2016	1.11%		
3Q 2005	4.94%	1Q 2011	3.77%	3Q 2016	3.60%		
4Q 2005	6.32%	2Q 2011	5.48%	4Q 2016	0.65%		
1Q 2006	4.06%	3Q 2011	-2.21%	1Q 2017	3.55%		
2Q 2006	5.85%	4Q 2011	-0.44%	2Q 2017	3.51%		

Source: PitchBook. Data as of December 31, 2018



**Secondaries**



## Secondaries

## IRR 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-1996						25.45%			13.63%	2
1996	18.56%	18.56%	1			13.16%				1
1997	15.70%	15.70%	1			15.95%				1
1998	8.95%	11.55%	3			8.17%			10.85%	3
1999	7.32%	5.51%	3			8.64%			9.58%	3
2000	17.09%	15.99%	3			19.57%			36.49%	3
2001	14.16%	14.78%	2			12.87%			9.42%	2
2002	15.53%	17.26%	3			15.03%			4.97%	2
2003	37.90%	37.90%	1		21.08%	13.96%	11.40%		11.29%	4
2004	12.36%	10.29%	6		20.42%	9.03%	5.89%		13.00%	6
2005	6.20%	4.97%	8	7.41%	6.60%	5.79%	4.55%	3.03%	4.47%	10
2006	6.36%	7.03%	9		5.76%	5.25%	2.26%		2.49%	5
2007	5.99%	6.43%	10	10.60%	9.33%	8.15%	4.67%	-1.31%	5.13%	10
2008	11.46%	11.12%	13	28.70%	12.99%	11.52%	7.66%	5.17%	9.30%	11
2009	12.19%	12.84%	9		14.58%	14.33%	10.77%		7.26%	8
2010	13.21%	12.37%	7		16.98%	14.05%	8.89%		6.26%	7
2011	15.71%	14.18%	9	19.65%	18.51%	16.89%	13.15%	8.98%	4.28%	11
2012	13.97%	14.47%	11	20.76%	19.40%	15.57%	12.98%	12.05%	4.38%	14
2013	10.50%	11.18%	13	20.94%	19.25%	14.34%	12.49%	7.98%	5.11%	12
2014	23.29%	19.63%	12	24.40%	23.45%	19.39%	16.58%	11.60%	5.37%	11
2015	19.42%	23.39%	8		24.80%	21.37%	18.30%		10.92%	9
2016	33.63%	26.69%	15	57.32%	38.54%	28.39%	18.65%	15.45%	17.22%	15
2017	34.71%	39.06%	12	60.10%	46.34%	28.33%	18.90%	16.40%	45.70%	11

Source: PitchBook. Data as of December 31, 2018



## Secondaries

# Multiples by vintage

## Pooled multiples

## Equal-weighted pooled multiples

Vintage year	TVPI	DPI	RVPI	TVPI	DPI	RVPI	Number of funds
Pre-1996							
1996	1.55x	1.55x	0.00x	1.55x	1.55x	0.00x	1
1997	1.41x	1.40x	0.01x	1.41x	1.40x	0.01x	1
1998	1.33x	1.33x	0.00x	1.35x	1.35x	0.00x	3
1999	1.24x	1.24x	0.00x	1.19x	1.19x	0.00x	3
2000	1.80x	1.80x	0.00x	1.74x	1.74x	0.00x	3
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	1.84x	1.84x	0.00x	1.84x	1.84x	0.00x	1
2004	1.47x	1.41x	0.06x	1.39x	1.33x	0.05x	6
2005	1.34x	1.25x	0.09x	1.25x	1.15x	0.10x	8
2006	1.37x	1.20x	0.17x	1.42x	1.26x	0.16x	9
2007	1.27x	1.14x	0.13x	1.31x	1.17x	0.15x	10
2008	1.56x	1.33x	0.23x	1.57x	1.27x	0.30x	13
2009	1.56x	1.31x	0.25x	1.60x	1.30x	0.30x	9
2010	1.52x	1.27x	0.25x	1.48x	1.15x	0.32x	7
2011	1.60x	1.20x	0.40x	1.54x	0.99x	0.55x	9
2012	1.51x	0.97x	0.54x	1.45x	0.84x	0.61x	11
2013	1.33x	0.50x	0.82x	1.34x	0.57x	0.78x	13
2014	1.40x	0.48x	0.92x	1.41x	0.47x	0.94x	12
2015	1.28x	0.27x	1.01x	1.38x	0.61x	0.77x	8
2016	1.30x	0.20x	1.11x	1.29x	0.22x	1.07x	15
2017	1.22x	0.24x	0.98x	1.32x	0.36x	0.96x	12

Source: PitchBook. Data as of December 31, 2018



## Secondaries

# Multiples by vintage

Vintage year	TVPI					DPI					Number of funds
	Top decile	Top quartile	Median TVPI	Bottom quartile	Bottom decile	Top decile	Top quartile	Median DPI	Bottom quartile	Bottom decile	
Pre-1996											
1996			1.55x					1.55x			1
1997			1.41x					1.40x			1
1998			1.32x					1.32x			3
1999			1.26x					1.25x			3
2000			1.74x					1.74x			3
2001			1.50x					1.49x			2
2002			1.53x					1.53x			3
2003			1.84x					1.84x			1
2004		1.58x	1.49x	1.36x			1.50x	1.46x	1.29x		6
2005		1.34x	1.32x	1.25x			1.32x	1.23x	1.12x		8
2006		1.43x	1.29x	1.23x			1.29x	1.19x	1.10x		9
2007	1.68x	1.44x	1.39x	1.24x	0.88x	1.36x	1.33x	1.27x	1.01x	0.82x	10
2008	1.73x	1.57x	1.53x	1.36x	1.28x	1.59x	1.49x	1.32x	1.03x	0.88x	13
2009		1.69x	1.63x	1.42x			1.37x	1.33x	1.30x		9
2010		1.63x	1.56x	1.36x			1.37x	1.20x	1.03x		7
2011		1.67x	1.59x	1.34x			1.24x	0.87x	0.83x		9
2012	1.68x	1.53x	1.44x	1.34x	1.31x	1.13x	1.11x	0.83x	0.72x	0.47x	11
2013	1.53x	1.47x	1.40x	1.20x	1.09x	0.73x	0.65x	0.60x	0.50x	0.43x	13
2014	1.67x	1.46x	1.39x	1.33x	1.30x	0.86x	0.68x	0.38x	0.29x	0.27x	12
2015		1.43x	1.32x	1.27x			0.69x	0.51x	0.24x		8
2016	1.42x	1.33x	1.28x	1.18x	1.14x	0.53x	0.26x	0.14x	0.03x	0.00x	15
2017	1.67x	1.42x	1.23x	1.17x	1.09x	0.58x	0.38x	0.21x	0.11x	0.01x	12

Source: PitchBook. Data as of December 31, 2018

For RVPI data, please download the supplemental Excel pack



Secondaries

# PMEs by vintage

## S&amp;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
1996	18.56%	8.58%	1.28	18.56%	8.65%	1.26	1
1997	15.70%	7.84%	1.28	15.70%	8.00%	1.28	1
1998	8.95%	6.77%	1.27	8.95%	6.97%	1.24	3
1999	7.32%	5.92%	1.23	7.32%	6.34%	1.20	3
2000	17.09%	5.51%	1.53	17.09%	5.77%	1.49	3
2001	14.16%	6.41%	1.18	14.16%	6.73%	1.16	2
2002	15.53%	7.47%	1.22	15.53%	7.75%	1.21	3
2003	37.90%	9.74%	1.57	37.90%	10.01%	1.55	1
2004	12.36%	8.27%	1.17	12.36%	8.40%	1.16	6
2005	6.20%	8.35%	0.93	6.20%	8.46%	0.93	8
2006	6.36%	8.25%	0.92	6.36%	8.20%	0.91	9
2007	5.99%	7.85%	0.82	5.99%	7.81%	0.82	10
2008	11.46%	8.95%	0.90	11.46%	9.00%	0.90	13
2009	12.19%	15.56%	0.92	12.19%	15.64%	0.92	9
2010	13.21%	12.85%	0.98	13.21%	12.73%	0.99	7
2011	15.71%	12.17%	1.04	15.71%	11.85%	1.04	9
2012	13.97%	13.15%	1.01	13.97%	12.89%	1.02	11
2013	10.50%	12.87%	0.98	10.50%	12.52%	0.99	13
2014	23.29%	10.70%	1.19	23.29%	10.08%	1.20	12
2015	19.42%	9.63%	1.13	19.42%	9.14%	1.13	8
2016	33.63%	14.80%	1.21	33.63%	14.86%	1.22	15
2017	34.71%	10.99%	1.17	34.71%	10.36%	1.18	12

Source: PitchBook. Data as of December 31, 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 2001	-5.21%	3Q 2006	4.10%	1Q 2012	4.39%	3Q 2017	3.39%
2Q 2001	-5.42%	4Q 2006	7.21%	2Q 2012	3.05%	4Q 2017	3.77%
3Q 2001	0.81%	1Q 2007	2.85%	3Q 2012	5.20%	1Q 2018	2.76%
4Q 2001	5.60%	2Q 2007	10.19%	4Q 2012	2.49%	2Q 2018	6.36%
1Q 2002	4.31%	3Q 2007	9.04%	1Q 2013	0.16%	3Q 2018	3.87%
2Q 2002	2.37%	4Q 2007	4.80%	2Q 2013	1.26%	4Q 2018	1.39%
3Q 2002	-5.00%	1Q 2008	1.96%	3Q 2013	2.23%		
4Q 2002	-4.22%	2Q 2008	-2.29%	4Q 2013	4.44%		
1Q 2003	-3.65%	3Q 2008	-0.60%	1Q 2014	3.78%		
2Q 2003	-0.38%	4Q 2008	-4.59%	2Q 2014	3.38%		
3Q 2003	1.14%	1Q 2009	-10.95%	3Q 2014	3.55%		
4Q 2003	17.95%	2Q 2009	-4.44%	4Q 2014	2.79%		
1Q 2004	0.48%	3Q 2009	-0.53%	1Q 2015	2.82%		
2Q 2004	6.17%	4Q 2009	0.51%	2Q 2015	6.83%		
3Q 2004	6.69%	1Q 2010	1.11%	3Q 2015	1.45%		
4Q 2004	7.40%	2Q 2010	6.24%	4Q 2015	0.12%		
1Q 2005	6.25%	3Q 2010	6.59%	1Q 2016	-0.26%		
2Q 2005	4.44%	4Q 2010	6.44%	2Q 2016	2.44%		
3Q 2005	4.47%	1Q 2011	7.69%	3Q 2016	1.19%		
4Q 2005	1.92%	2Q 2011	4.04%	4Q 2016	2.60%		
1Q 2006	9.17%	3Q 2011	7.10%	1Q 2017	3.79%		
2Q 2006	4.56%	4Q 2011	-4.18%	2Q 2017	4.19%		

Source: PitchBook. Data as of December 31, 2018



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