PitchBook

Global Fund Performance Report

as of 1Q 2019

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Introduction

Private capital strategies continued their mild performance decline in 1Q 2019, with most strategies flat to down in the quarter based on a rolling one-year IRR. VC and secondaries were standout performers, not only outshining the other strategies but also outperforming their long-term returns. Real assets lagged, as did debt, likely due to a prolonged low interest rate environment. GPs across strategies returned substantial sums of capital, putting annual distributions on track to top $1 trillion for the first time ever in 2019. Additionally, net cash flows remained firmly in positive territory.

PE returns rebounded following the second negative quarter this decade. A quick recovery in public equity markets likely buoyed results. Cash distributions, which remained robust, accounted for over half of the distributions across the six private market strategies. Despite a solid showing, trailing one-year horizon returns for PE continued to drop off, posting results below its three-, five- and 10-year horizon IRRs.

VC net cash flows are off to a fast start in 1Q 2019. Distributions by VC funds in 1Q 2019 came in at $50.5 billion, higher than annual totals for any year between 2000 and 2013, starting 2019 on strong footing and gearing toward an eighth consecutive year with positive net cash flows. Given the sustained outsized exit flow through the rest of 2019, we expect distribution values to swell to a new record high.

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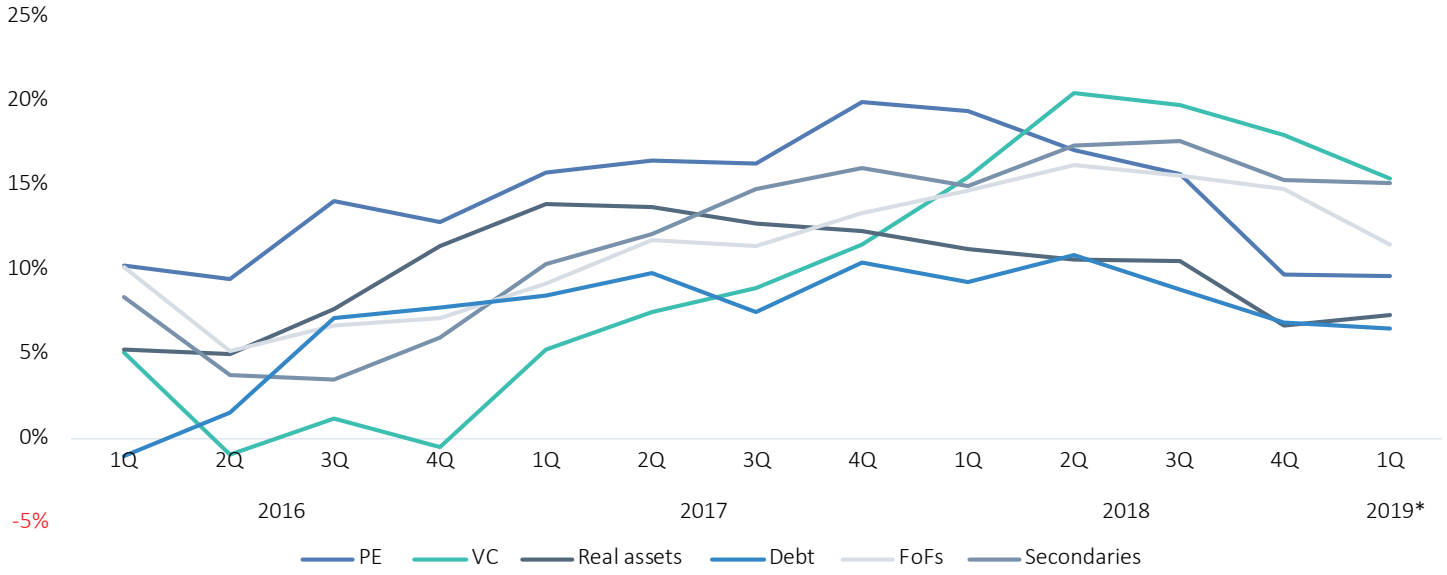
Private capital

Rolling one-year horizon IRRs by fund type

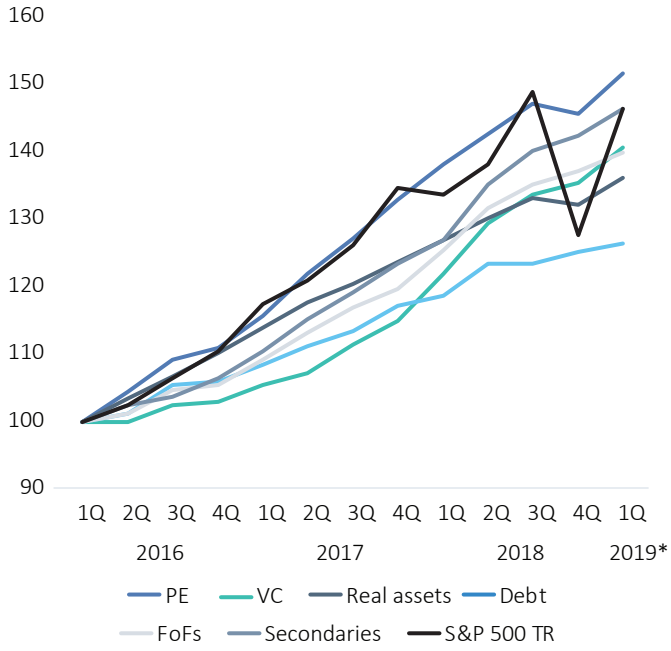


Source: PitchBook | **Geography:** Global
*As of March 31, 2019

Five of the six private market strategies analyzed in this report saw marginal change in their rolling one-year horizon IRRs for the period ending in 1Q 2019. Venture continues to lead the pack with trailing one-year returns of 15.5% while PE's 9.6% one-year return sits well below the strategy's long-term average. The relative steadiness of private strategy returns during 4Q 2018 and 1Q 2019 juxtaposes the volatility seen in public markets. During those two quarters, public indices fell substantially before rebounding while private strategies were relatively flat by comparison.

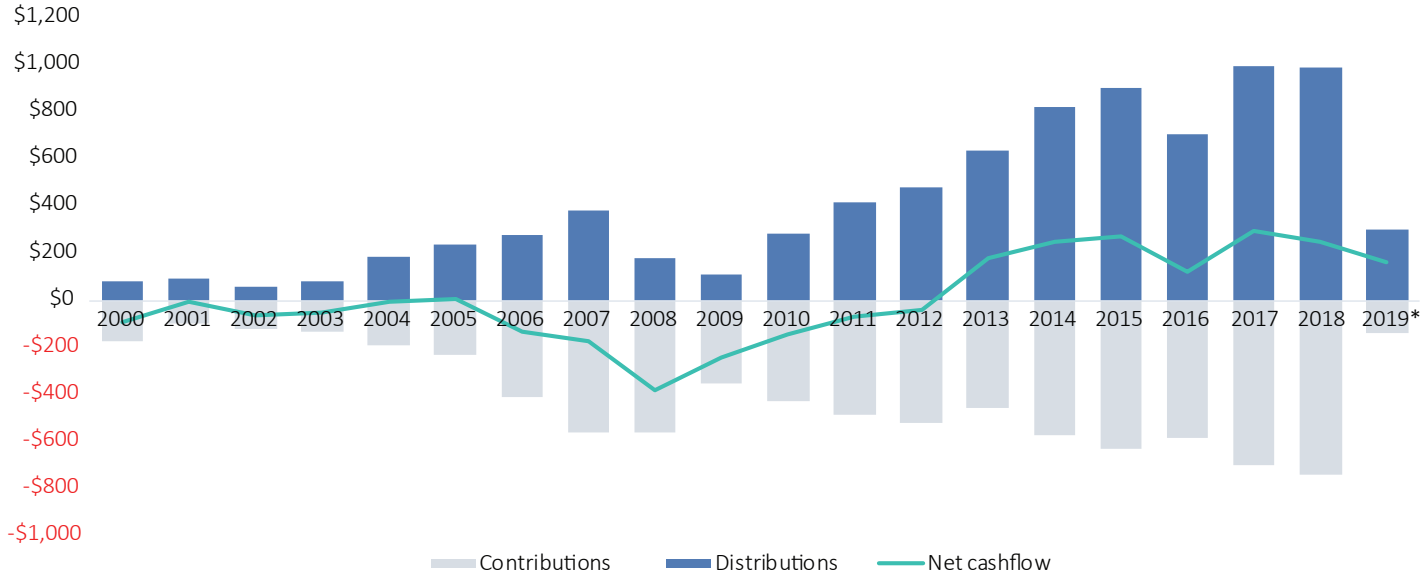
Secondaries also posted a one-year horizon IRR above three-, five- and 10-year horizon figures. The strategy, which has seen activity in fundraising and deal activity go up and to the right, appears set for another healthy year of performance. With the flood of capital committed to new vehicles, industry prognosticators continue to doubt the strategy's future returns; however, the strategy continues to deliver, improving in more recent years. GPs levering their portfolios to juice up returns may have produced some of these results; several estimates pegged average leverage levels at 40.0%. Additionally, it appears the favorable performance of underling strategies and robust pricing in the secondary market allowed investors to mark positions more aggressively than in the past.

NAV rebased to 100 in January 2016



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

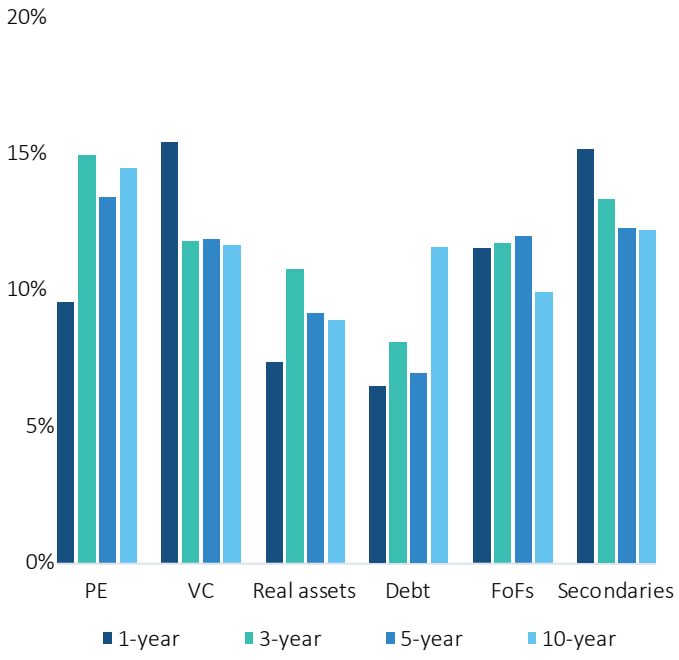
Private capital cash flows ($B)



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

In contrast, private debt and real assets seem to be trending in the opposite direction, with the two strategies recording the lowest relative performance for the past five quarters. Private debt has posted one-, three- and five-year horizon IRRs well below its 10-year horizon figure. With near-zero interest rates for at least a decade, the strategy may be in the process of settling into a more modest return profile in the 6.0% to 8.0% range, as opposed to its 11.6% 10-year horizon IRR. However, private debt—which sits higher on the capital structure than equity investments, has a lower risk profile and exhibits lower volatility—likely still offers investors a compelling risk-reward tradeoff. Real assets returns, which are heavily influenced by real estate and natural resources, are similarly driven by interest rates. Prolonged low rates have compressed real estate yields and returns—which dipped into the negative in late 2018 for just the second time during this recovery[1]—while investors have soured on many oil & gas companies as oil prices slid during 4Q 2018, driving down returns for the sector.[2]

Horizon IRRs by fund type*



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

After back-to-back years in which the private capital markets returned nearly $1 trillion to LPs, distributions have continued on a tear. Through 1Q 2019, private capital funds distributed just over $300 billion, potentially setting LPs up to receive over $1 trillion from private funds for the first time. Most of the distributions stem from PE, which accounts for just over half of the quarterly figure. While this is unsurprising given PE's massive size, VC is having a banner year with healthy distributions to start off 2019. A tsunami of high-profile exits has led to record annual VC exits and, likely, distributions.

1: "Commercial Real Estate Prices for United States," Economic Research, Federal Reserve Bank of St. Louis, December 2, 2019
2: "Crude Oil Prices: West Texas Intermediate (WTI) - Cushing, Oklahoma," Economic Research, Federal Reserve Bank of St. Louis, December 4, 2019

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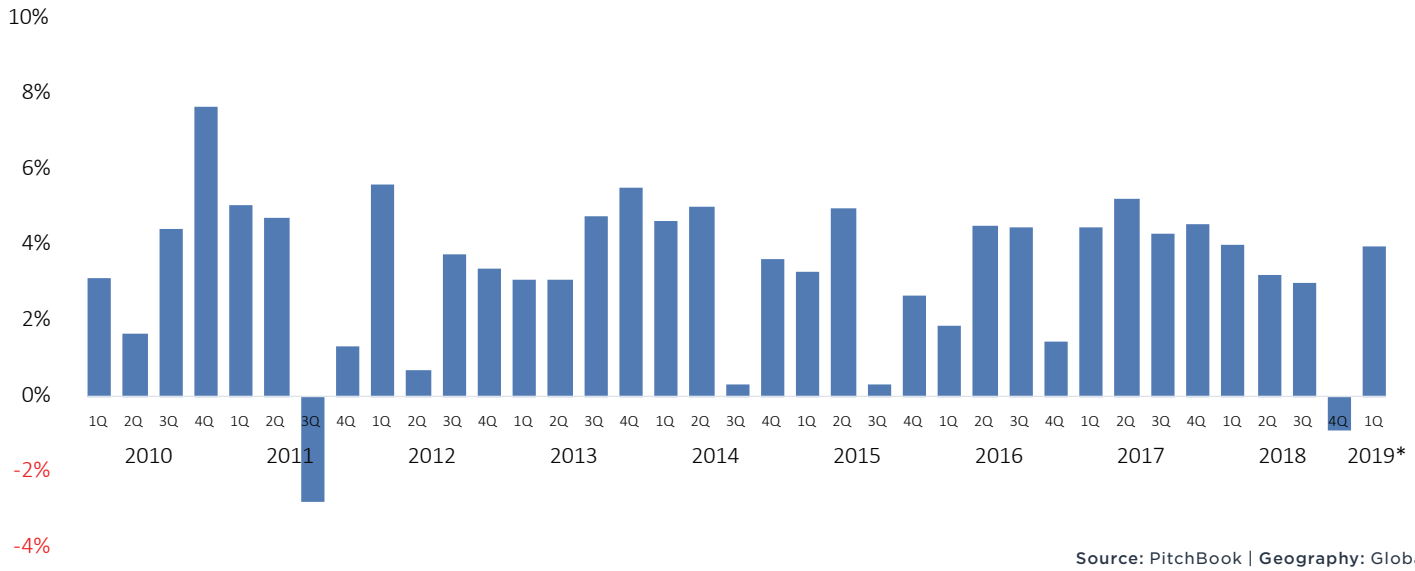
Private equity

PE rolling one-quarter horizon IRRs



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

In 1Q 2019, PE performance bounced back after enduring the second negative quarter this decade. This rebound occurred during a quickly rising public equity market in which the S&P 500 gained 14.6% during the quarter. PE's quarterly horizon IRR of 4.0% puts the strategy's performance back into its normal range. Since 2010, PE has posted one-quarter horizon IRRs between 3% and 6% more than 70% of the time. Returns from the strategy have approximated public equity returns with less volatility over the midterm to long term. While many industry detractors criticize the industry for artificially low volatility, perhaps PE's quarterly fair value estimates are a better representation of company value over time than the wild gyrations seen in the stock market over shorter timeframes, though longer-term correlations between public equities and private equity are high.

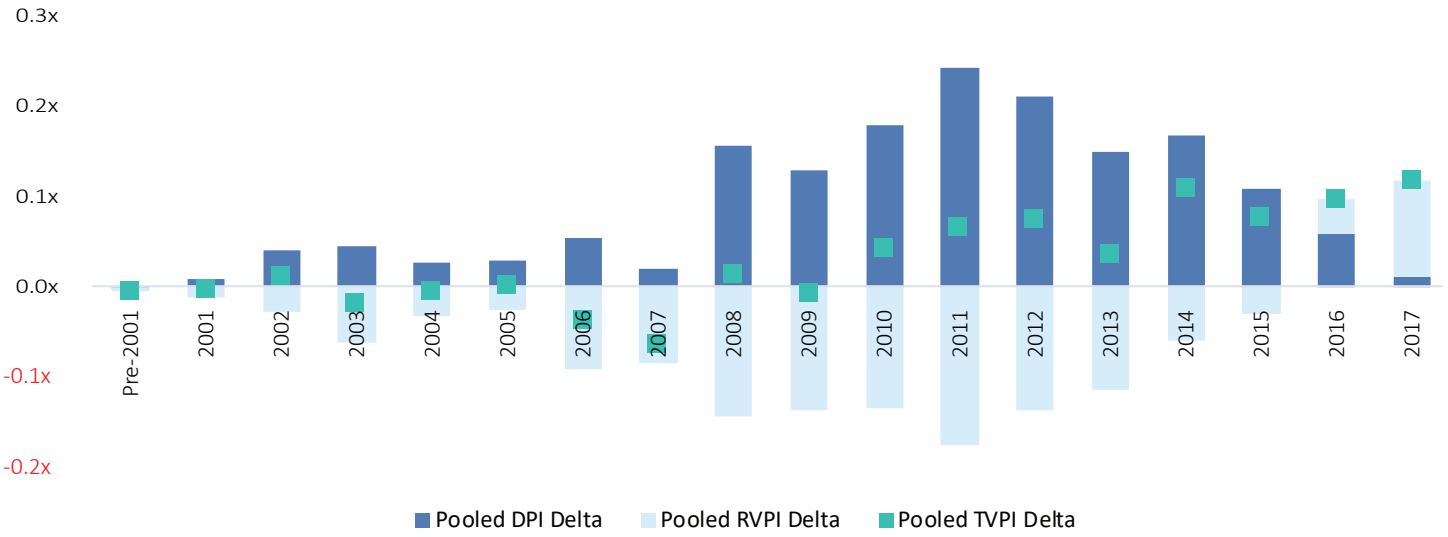
Changes in pooled cash multiples came in approximately as one would expect, with more recent funds seeing high TVPI growth and funds after the four-to-six-year investment period exhibiting top marks for distributions. One interesting point was the drop in TVPI among 2006 and 2007 vintage funds, many of which have liquidated by now; however, the remainders may be suffering from past aggressive markups of portfolio companies that could not be realized upon exit. These funds, which were raised and invested during the peak of the financial crisis, showed worse performance than vintages before or after them and may have tried to overcompensate with portfolio markups. LPs in these older funds should beware of these practices and become knowledgeable on clawback provisions.

Aggregating cash flows across vintage years, 1Q saw gargantuan distributions to LPs with over $150 billion returned. The net cash flow amount shows another firmly positive value. Going through the year, though, we expect contributions to remain healthy, potentially pulling down net cash flows. PE dealmaking continues to sit near all-time highs, and we are seeing similarly fervent activity elsewhere. As these GPs deploy hundreds of billions, capital calls are likely to be frequent, spurring the contribution figure higher.

We saw another quarter in which returns from most fund sizes slid again. The lone size bucket to rise was the $1 billion-plus cohort. Overall, PE continues to perform well, but a constant deluge of cash into the strategy has the cries of "peak" echoing louder than ever. Morgan Stanley's wealth CIO Lisa Shalett recently wrote "we think we have reached a peak in the private equity market." Additionally, CalPERS CIO Ben Meng said, "when you have so much liquidity available, naturally the price for illiquidity will come down."[3] While top-quartile and top-decile funds outperform, the median fund now performs around the public indices. Going forward, we will need to see whether the current fee structure and operational focus allows LPs to outperform public alternatives to the strategy, or whether too much capital has flooded the space, causing returns to dip further.

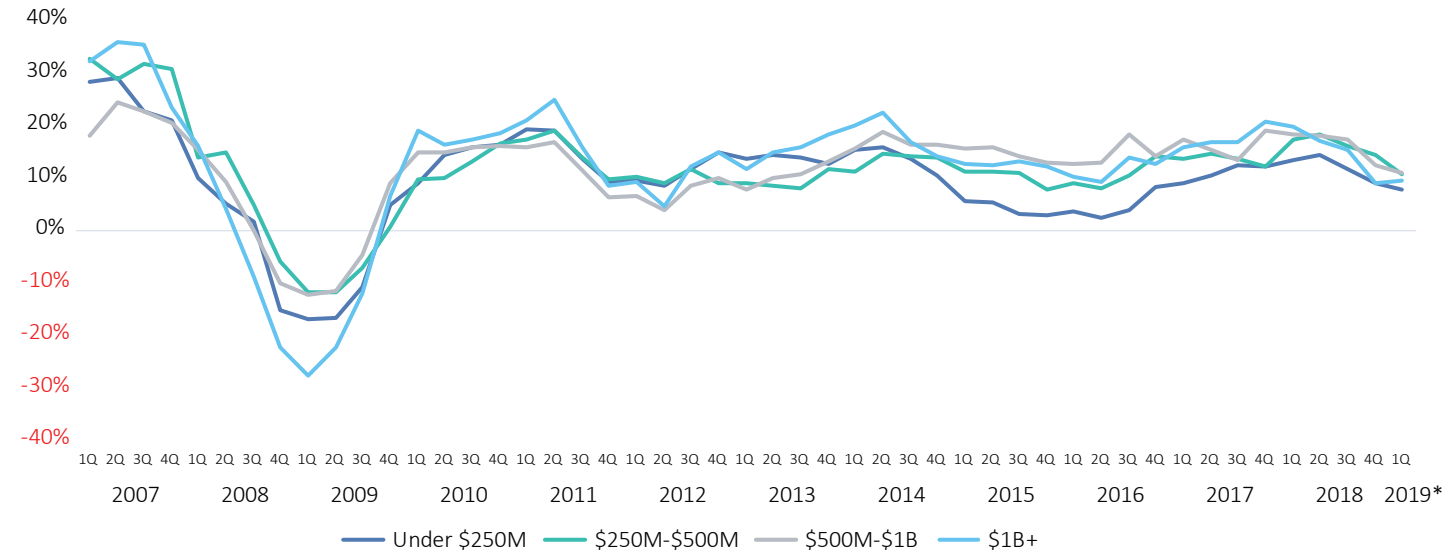
3: "'Peak' Private Equity Fears Are Spreading Across Pension World," Bloomberg, Anchalee Worrachate and John Gittelsohn, December 2, 2019

PE one-year change in pooled cash multiples by vintage*



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

PE rolling one-year horizon IRR by fund size



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

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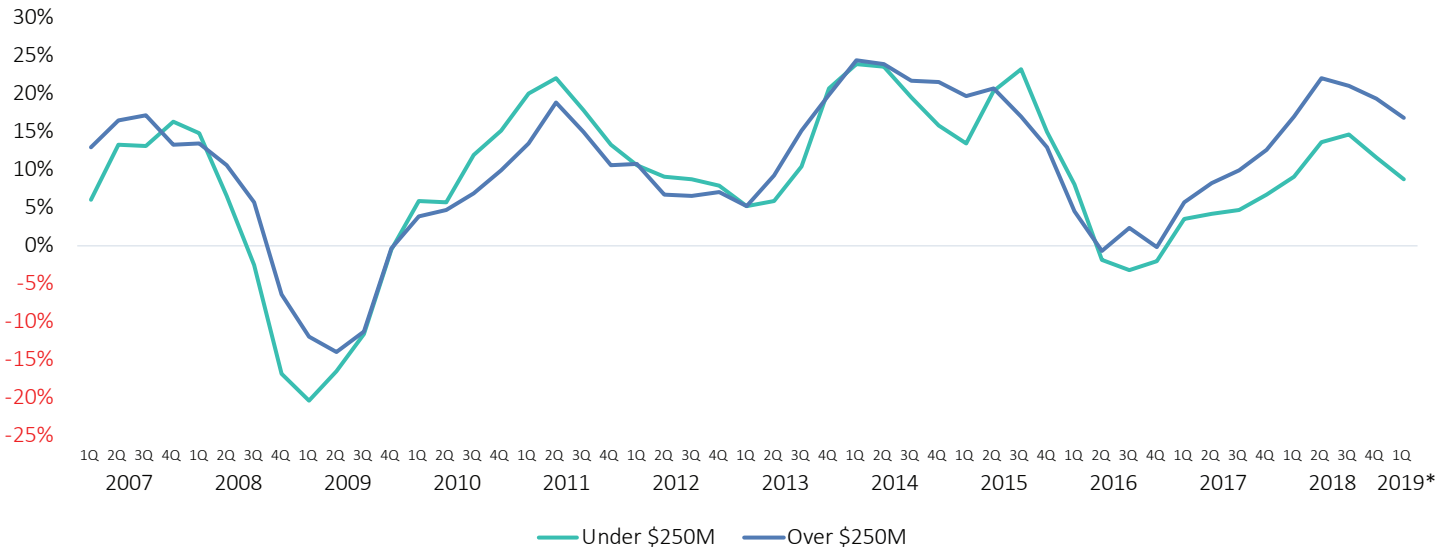
Venture capital

VC rolling one-year horizon IRR by fund size



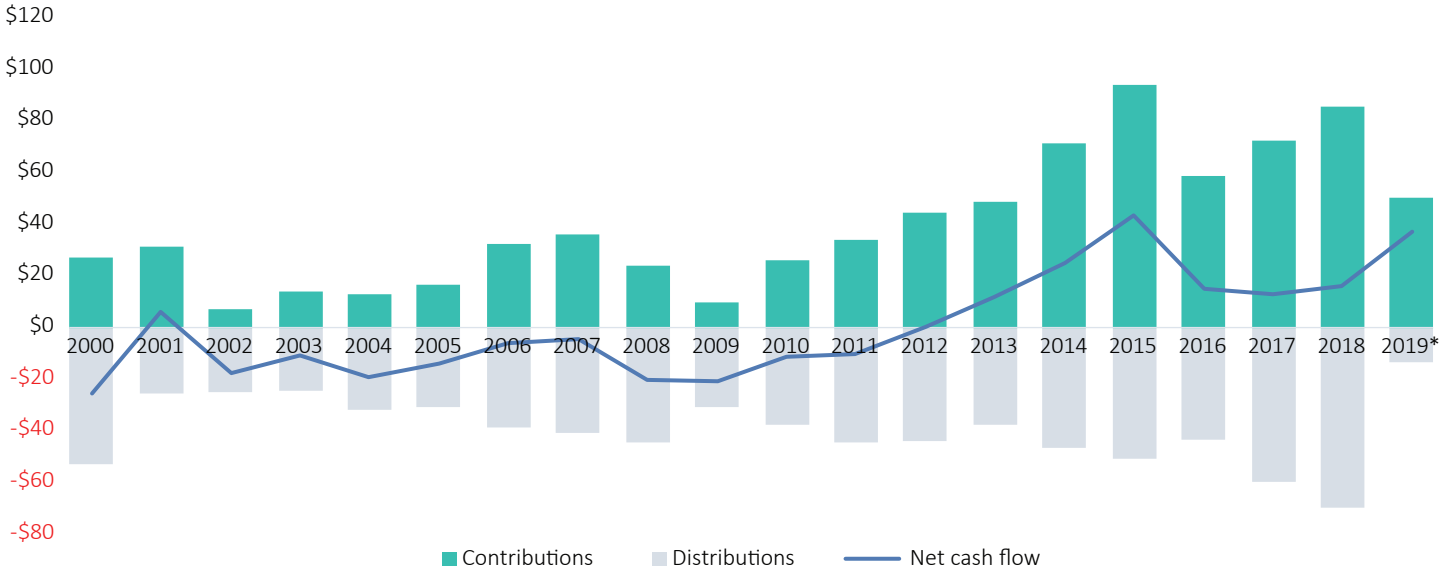
Source: PitchBook | **Geography:** Global
*As of March 31, 2019

VC rolling one-year horizon IRRs retained the top spot amongst all private market strategies in 1Q 2019 at 15.5%, despite a continued slip in the absolute return. The outperformance in VC continues to be buoyed by larger funds, with funds over $250 million posting a rolling one-year horizon IRR of 16.8% while those below $250 million came in at only 8.8%. It's an encouraging sign that large funds have found recent success given the ongoing shift toward bigger funds in VC fundraising. The longer-term performance of funds over $250 million relative to smaller funds will be especially informative as the competitive landscape for large VC funds grows even more crowded. Going forward, we expect a convergence between the two buckets toward the 10-year average performance difference of just over 1.0%.

Along with top-tier performance, net cash flows were positive in the first quarter of 2019, starting the year on strong footing and gearing toward an eighth consecutive year with positive net cash flows. 1Q 2019 cash flows were characterized by a massive distribution total of $50.5 billion, greater than the annual total distribution for any year between 2000 and 2013. This comes on the back of the massive amount of capital exited in 1Q 2019 and a consistently high level of exit flow throughout 2018. Given the sustained record exit flow through the rest of 2019, we expect the distribution values to swell throughout the rest of the year to a new high. Paired with relatively tepid contributions during 1Q, this produced a visible rise in net cash flows. While the pace of VC dealmaking has shown little signs of abating, this dip in contributions points to the elevated participation of non-fund investors in VC. Mega-round investor syndicates are now, more than ever, full of mutual funds, corporates, sovereign wealth funds and others which don't lift contribution cash flows but make up a significant portion of capital investment into VC.

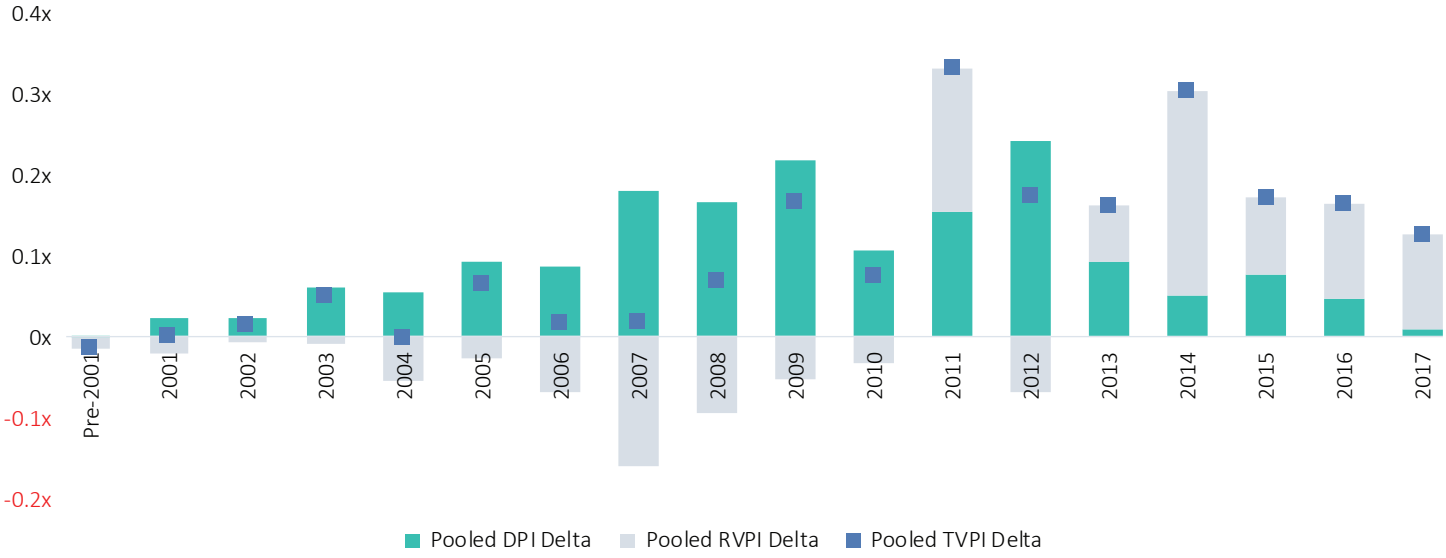
This favorable environment for cash returns and valuation growth from VC funds has translated into impressive one-year pooled TVPI multiples. Every vintage from 2011-2016 recorded a TVPI jump of more than 0.15x over the past 12 months, as of 1Q 2019. For each of these vintages, aside from 2012, the gains in TVPI were driven by moves in RVPI, or the value of unrealized holdings. As the 2019 fund performance picture comes into focus, it will be key to notice how aggressively VCs mark up stakes in startups given the reality check that many highly valued VC-backed companies received during the year. As of now, overzealous markups seem to be contained to a small population of the most highly valued companies, but this will be detrimental to VC cash multiples if this phenomenon becomes more pervasive throughout the VC lifecycle.

VC cash flows ($B)



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

VC one-year change in pooled cash multiples by vintage*



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

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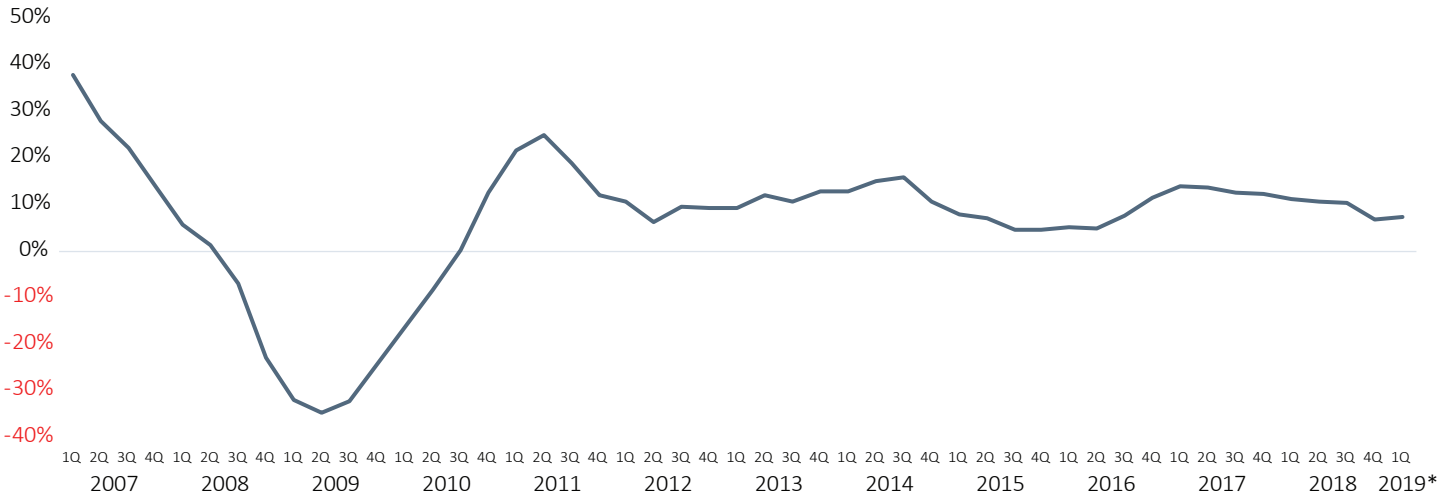
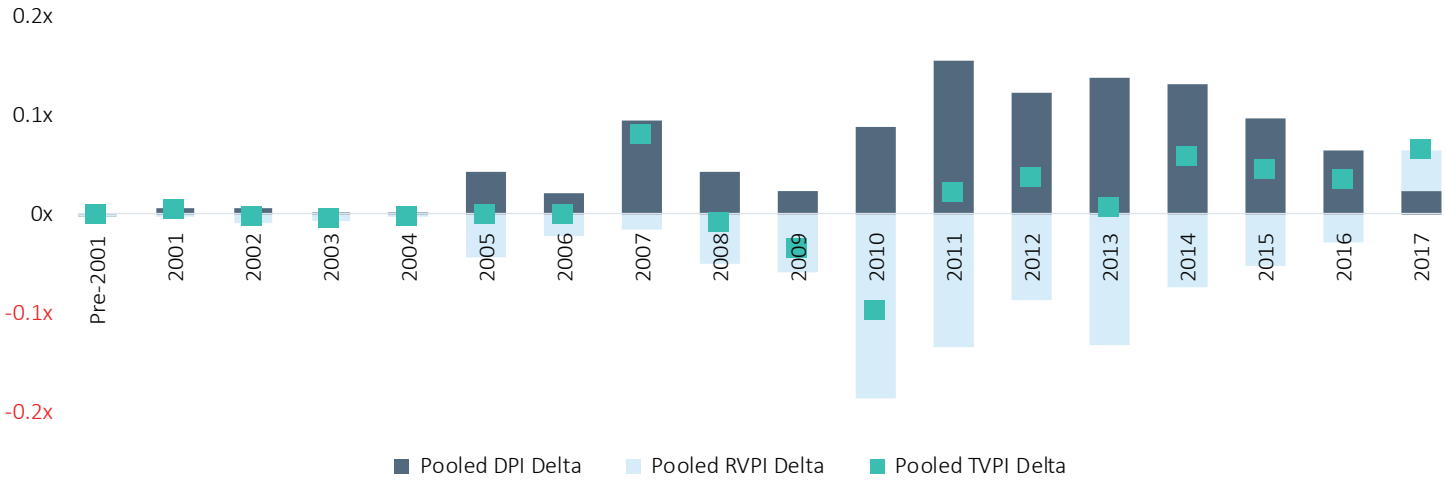
Real assets

Real assets rolling one-year horizon IRR



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

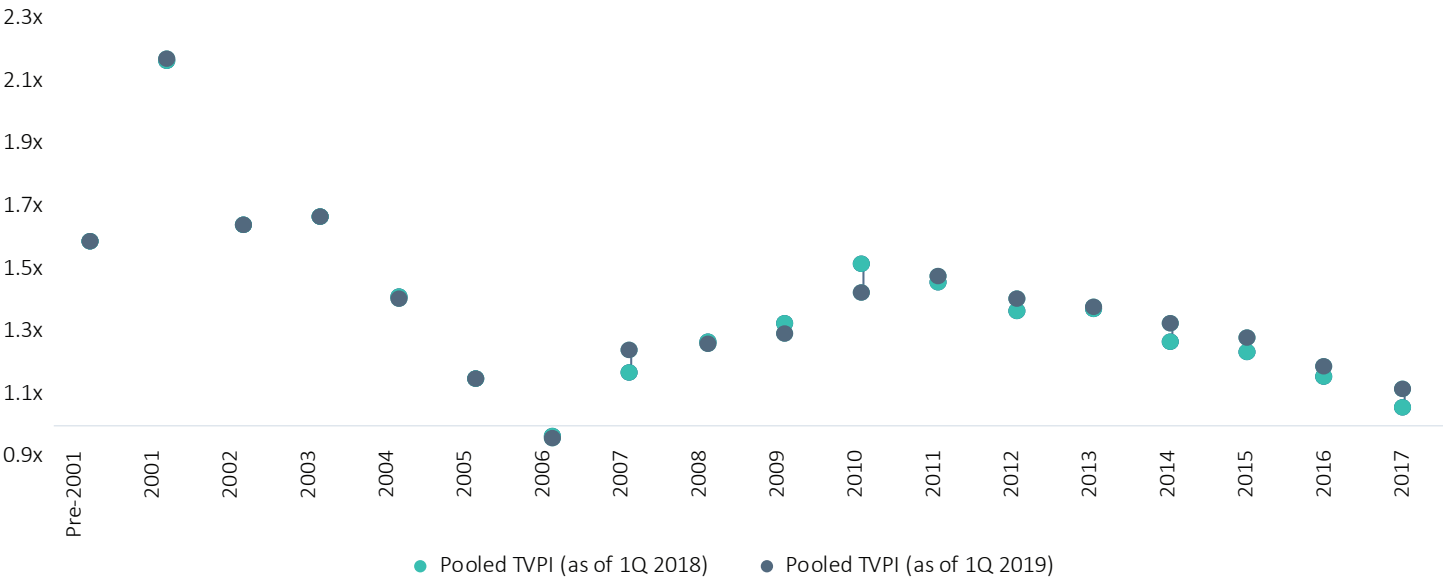
Real assets one-year change in pooled cash multiples by vintage*



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

Real assets funds see modest increases in performance as crude prices surge by more than 30% in 1Q 2019.

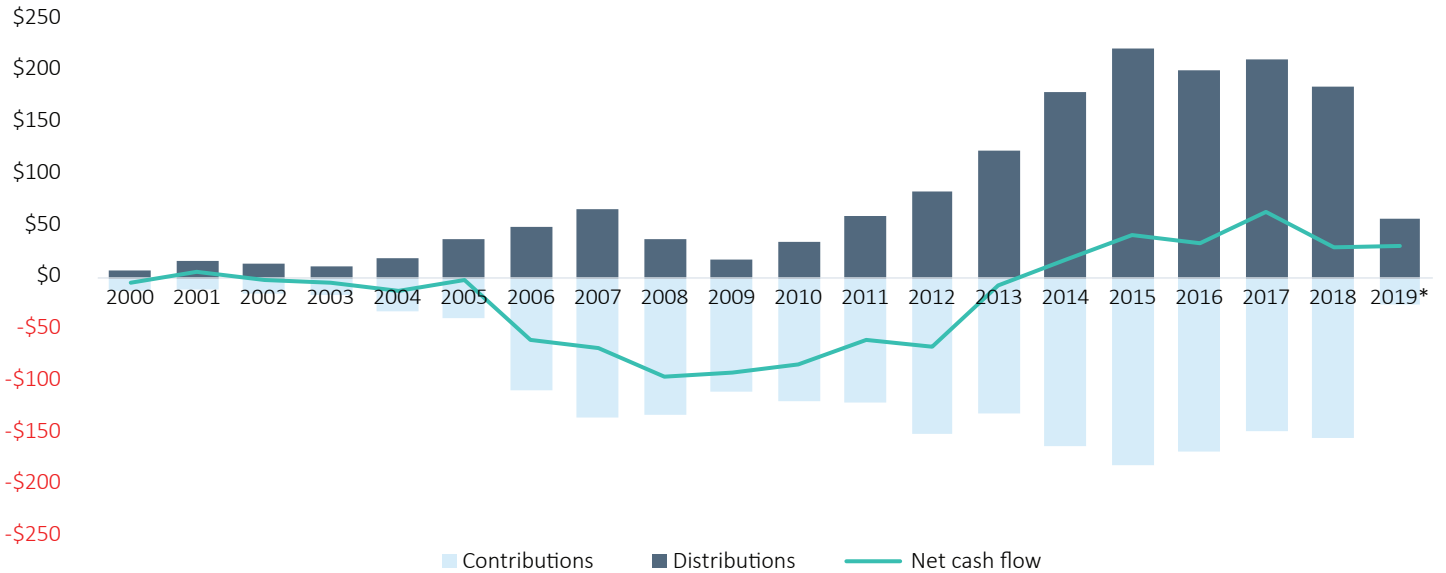
Real assets one-year change in TVPI by vintage*



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

First-quarter net cash flows surpassed full-year 2018 figures. Distributions ($57.0B) more than doubled the level of contributions ($25.3B), which bodes well for future fundraising.

Real assets cash flows ($B)



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

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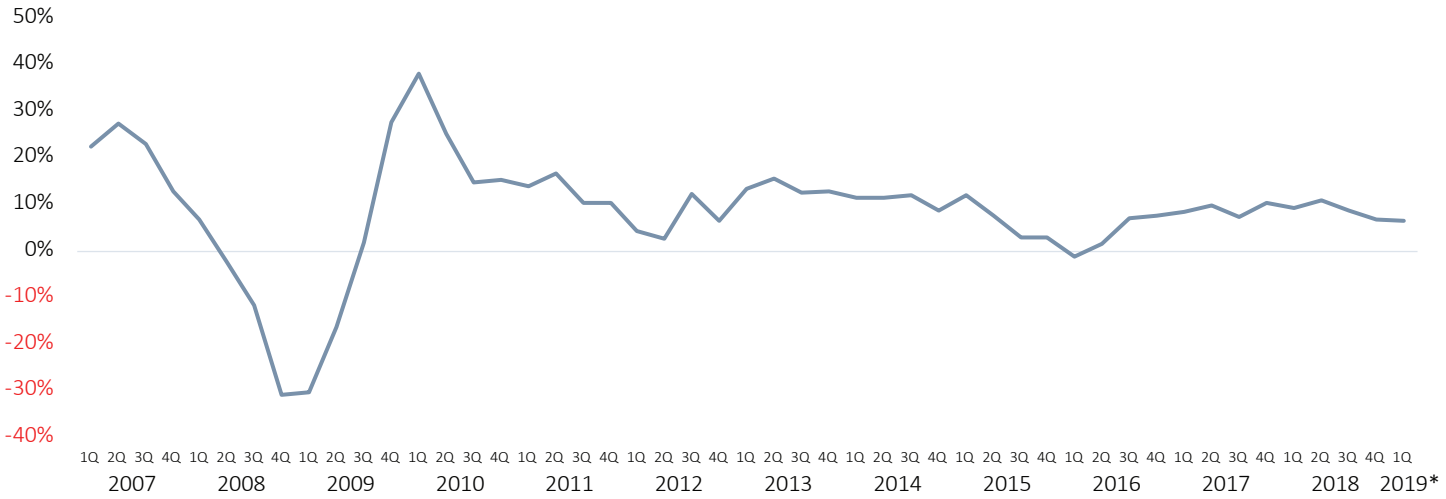
Private debt

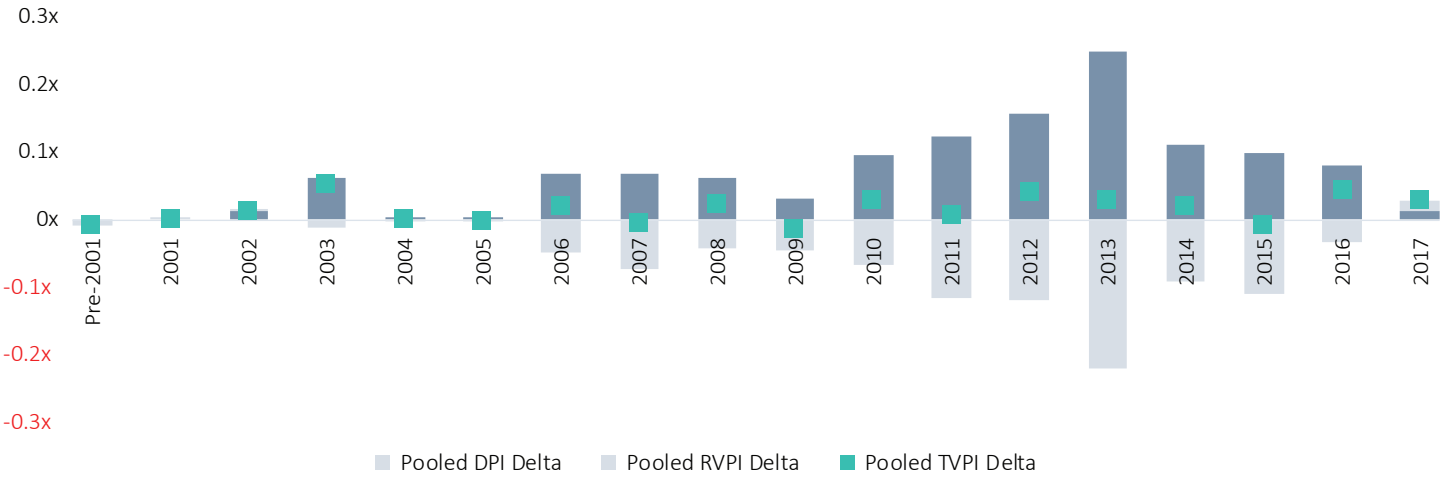
Private debt rolling one-year horizon IRR by fund size



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

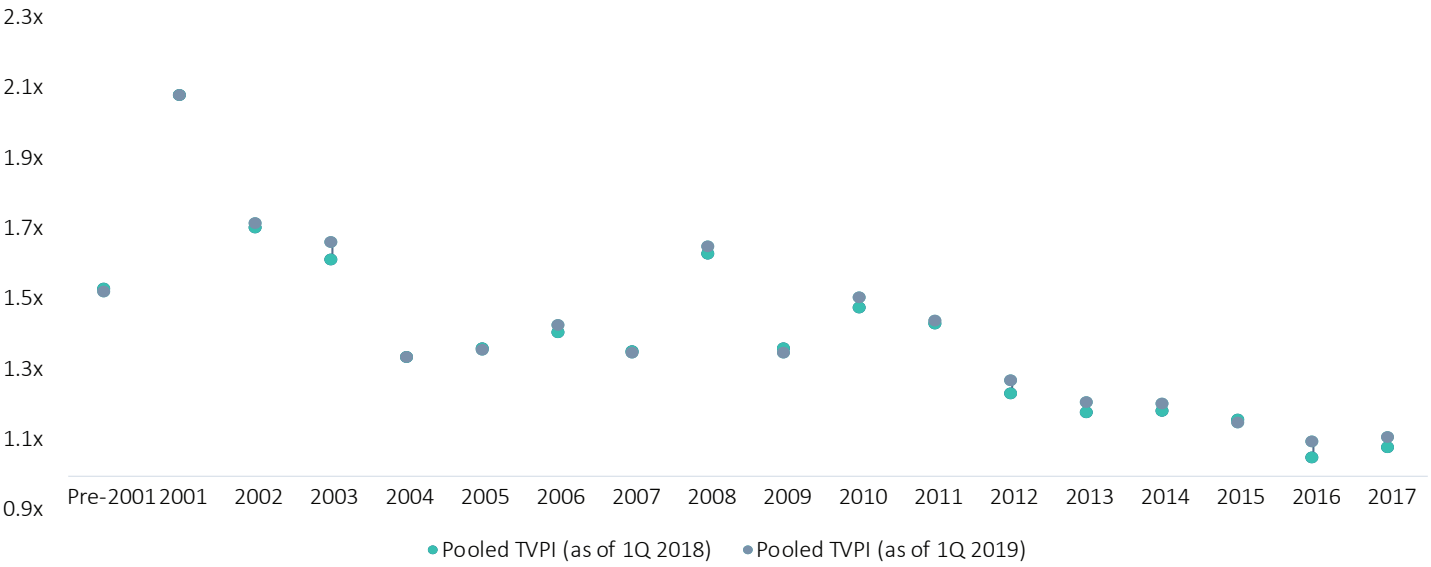
2013 vintage reaches harvest period as one-quarter of paid-in capital was distributed in the last year. Short-term performance remains steady at a 6.5% rolling one-year horizon IRR.

Private debt one-year change in pooled cash multiples by vintage*



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

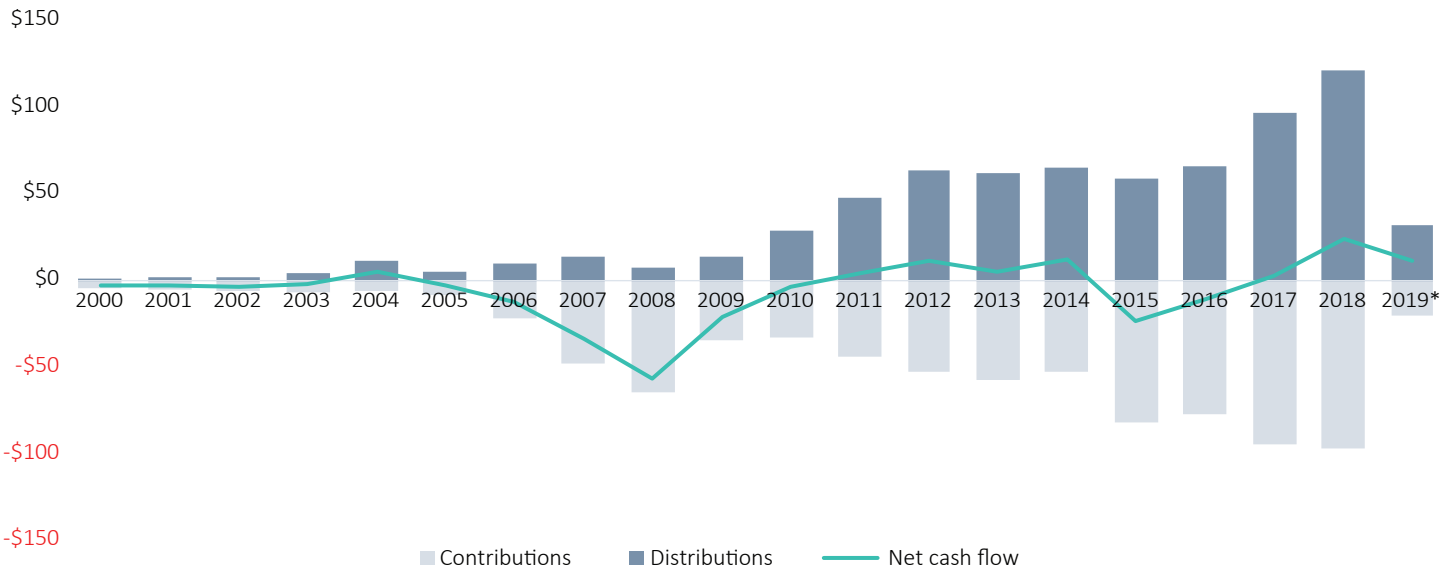
Private debt one-year change in TVPI by vintage*



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

Private debt distributions are off to a strong start in 2019, following a record year which saw $24.6B in net cash flows to LPs.

Private debt cash flows ($B)



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*As of March 31, 2019

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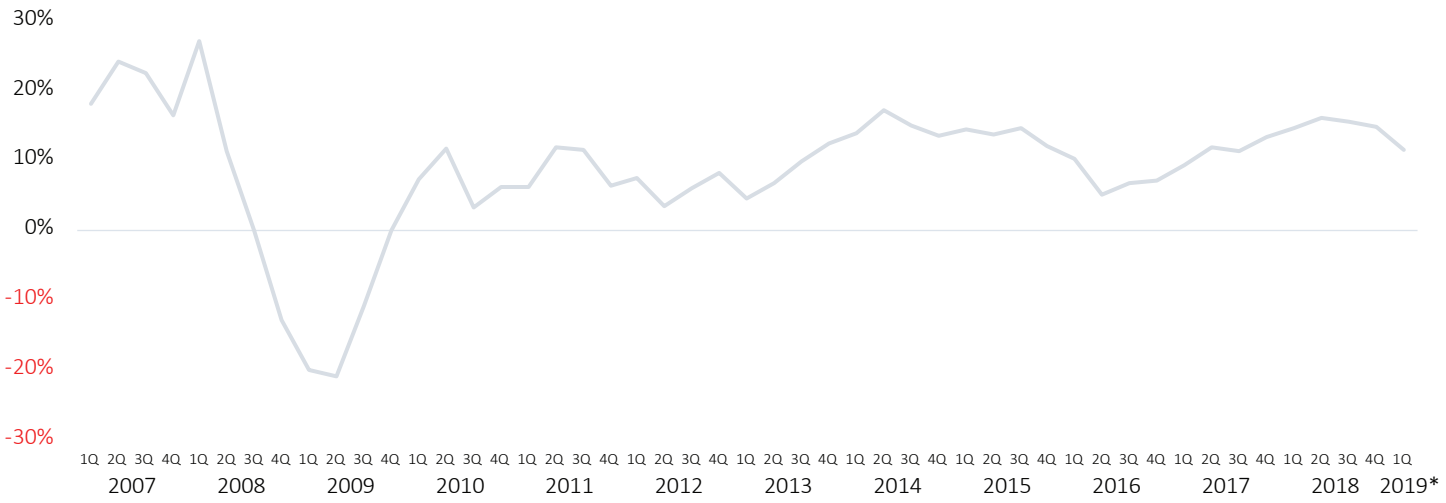
Funds-of-funds

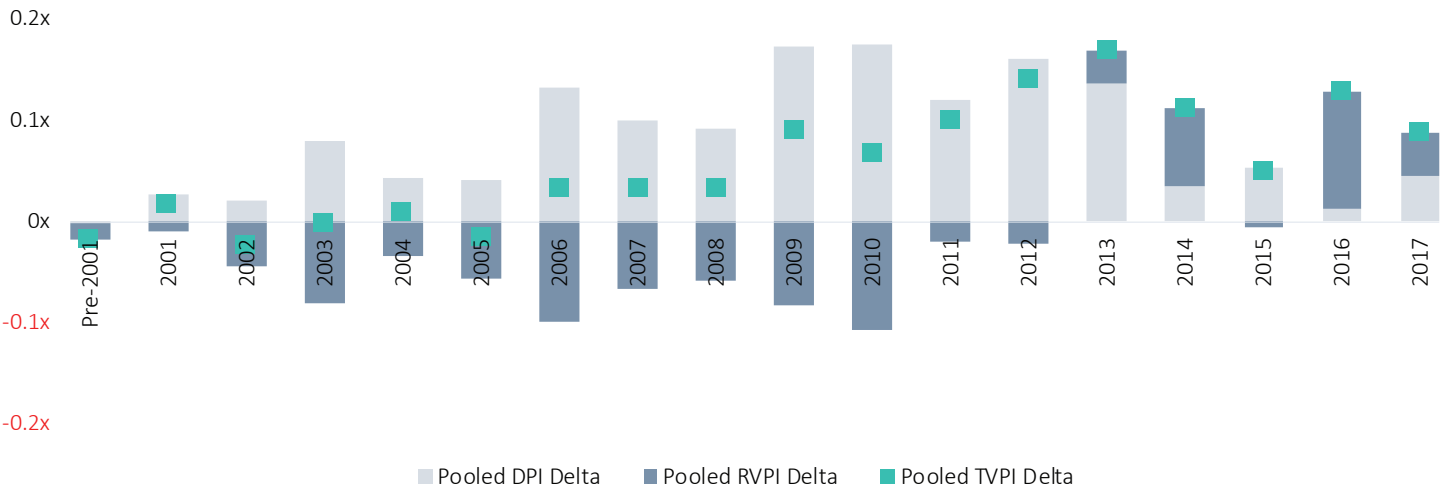
FoFs rolling one-year horizon IRR



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

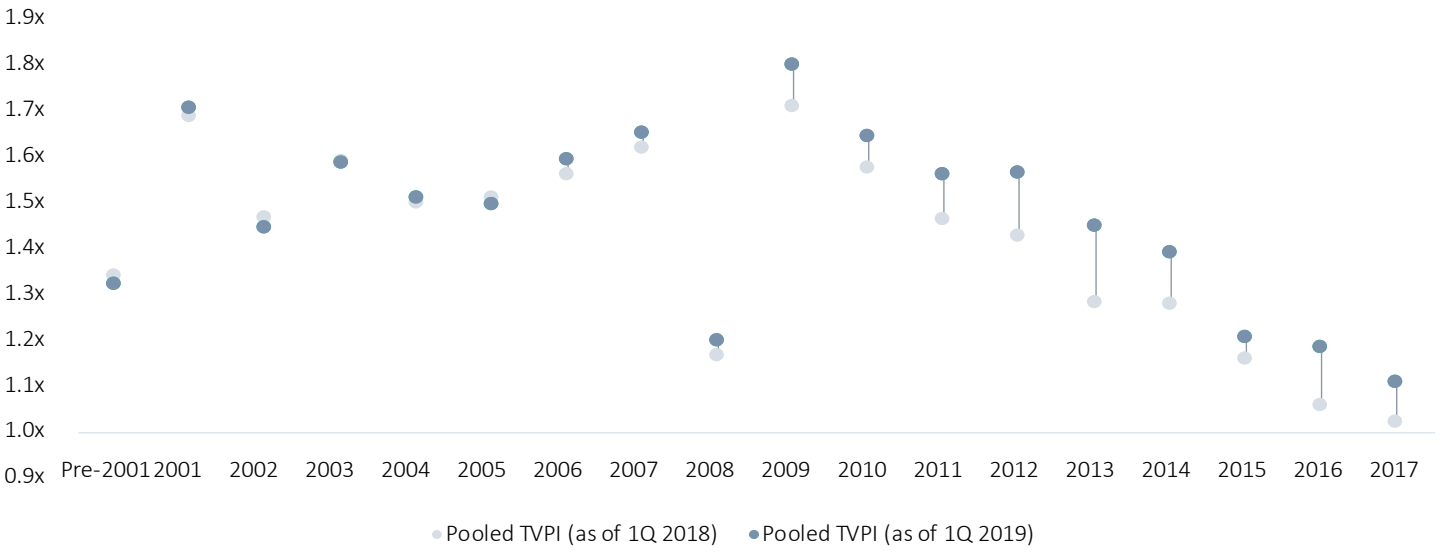
FoFs rolling one-year horizon IRRs give up ground in 1Q 2019 but maintain third position relative to other private market strategies.

FoFs assets one-year change in pooled cash multiples by vintage*



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

FoFs one-year change in TVPI by vintage*



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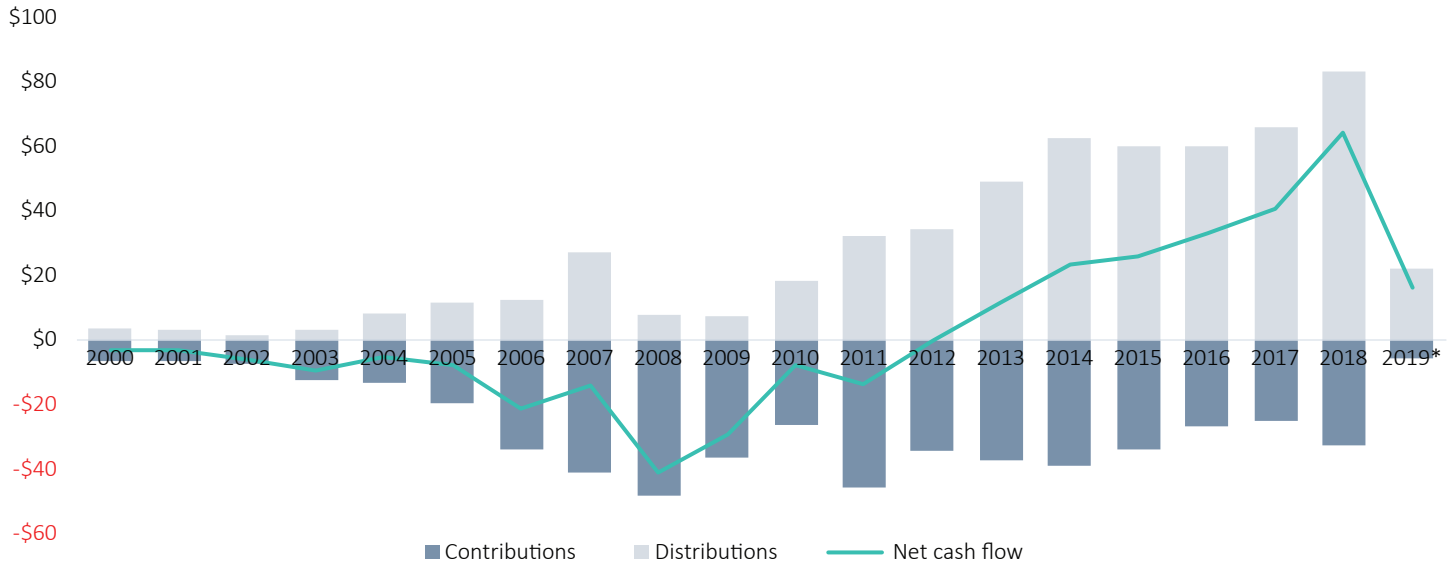
FoFs cash flows ($B)



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

One-year performance throughout the rest of 2019 will likely slip as the exceptional performance of 2018 rolls off.

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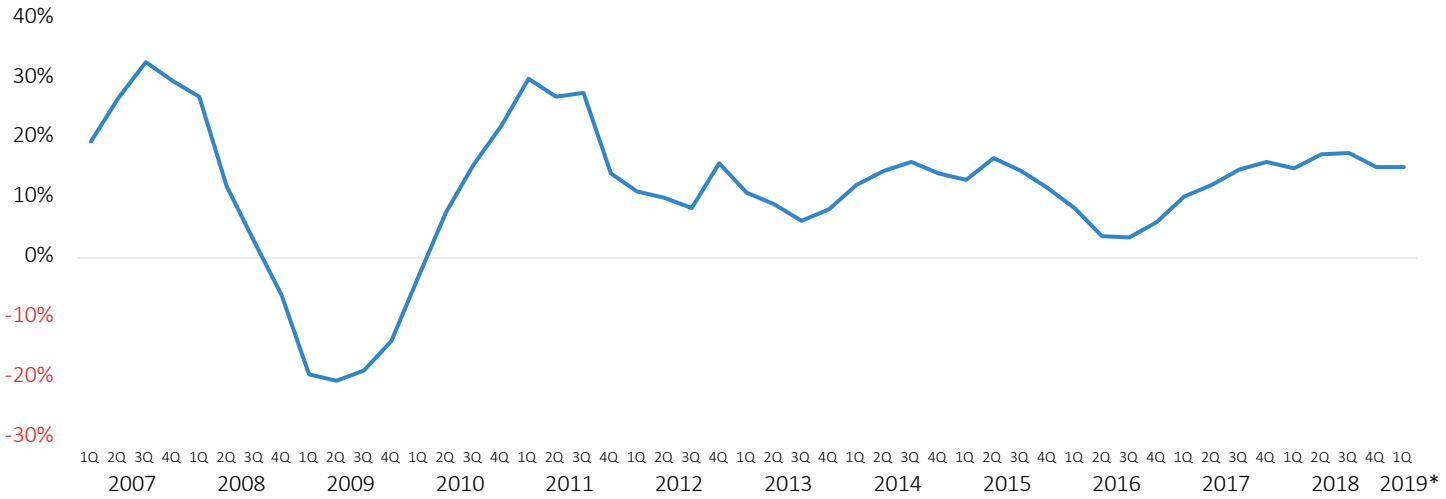
Secondaries

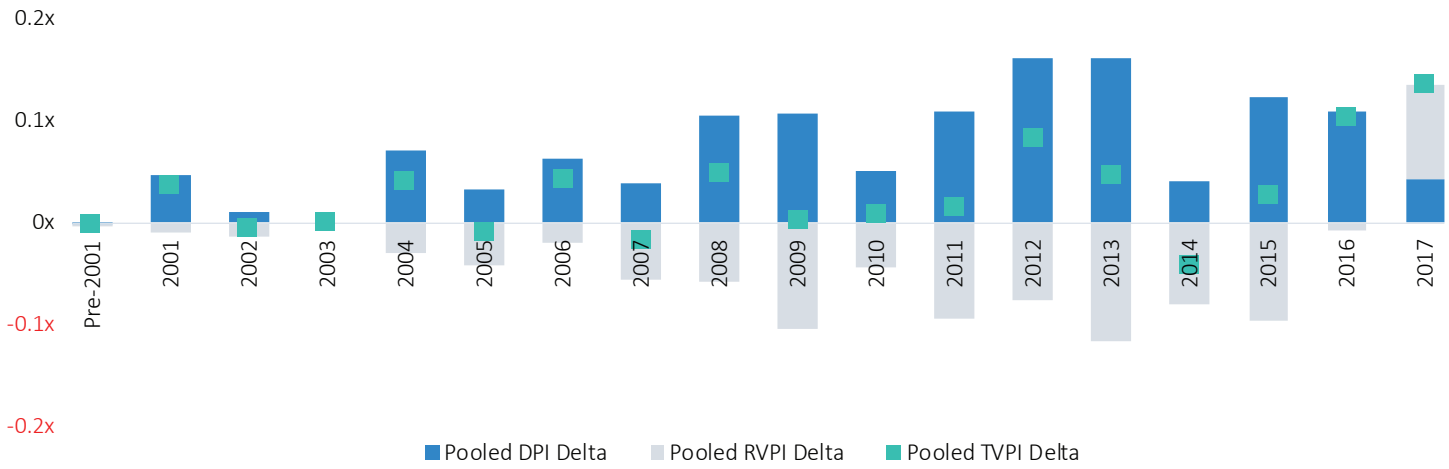
Secondaries rolling one-year horizon IRR



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

Rolling one-year horizon IRRs for secondaries remain strong at 15.2%, second best among all private market strategies.

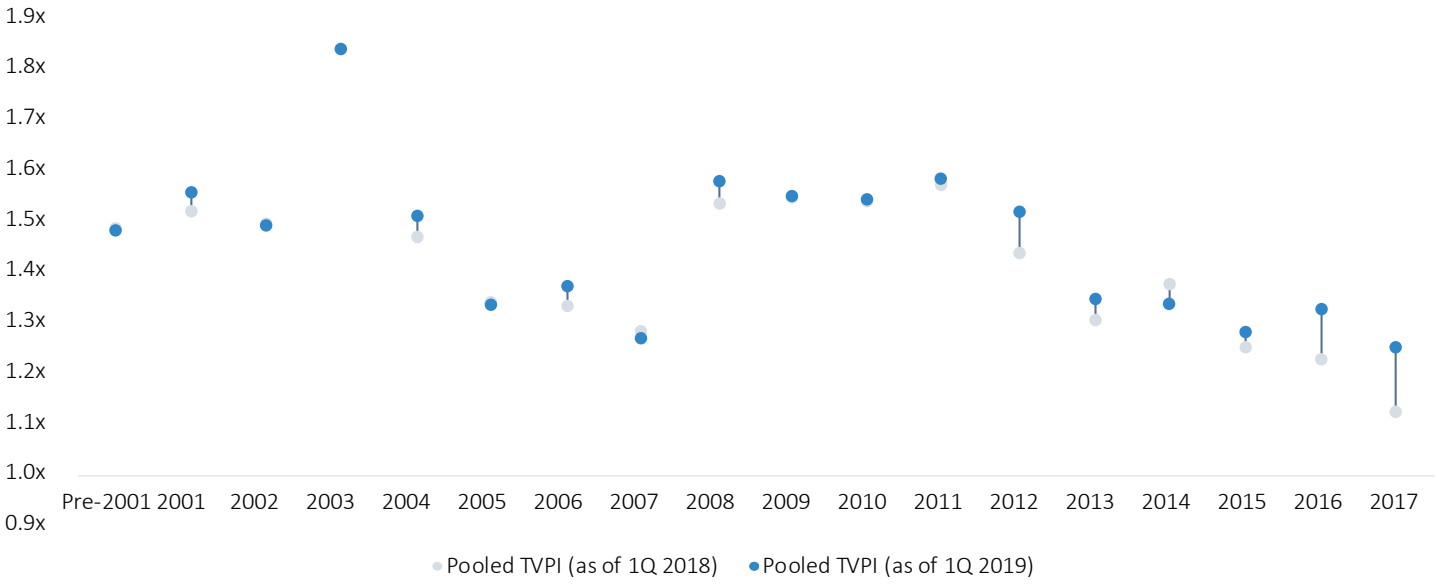
Secondaries one-year change in pooled cash multiples by vintage*



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

Contributions into secondaries funds temper in 1Q 2019 despite surging deal volume, suggesting a more pivotal role from leverage.

Secondaries one-year change in TVPI by vintage*



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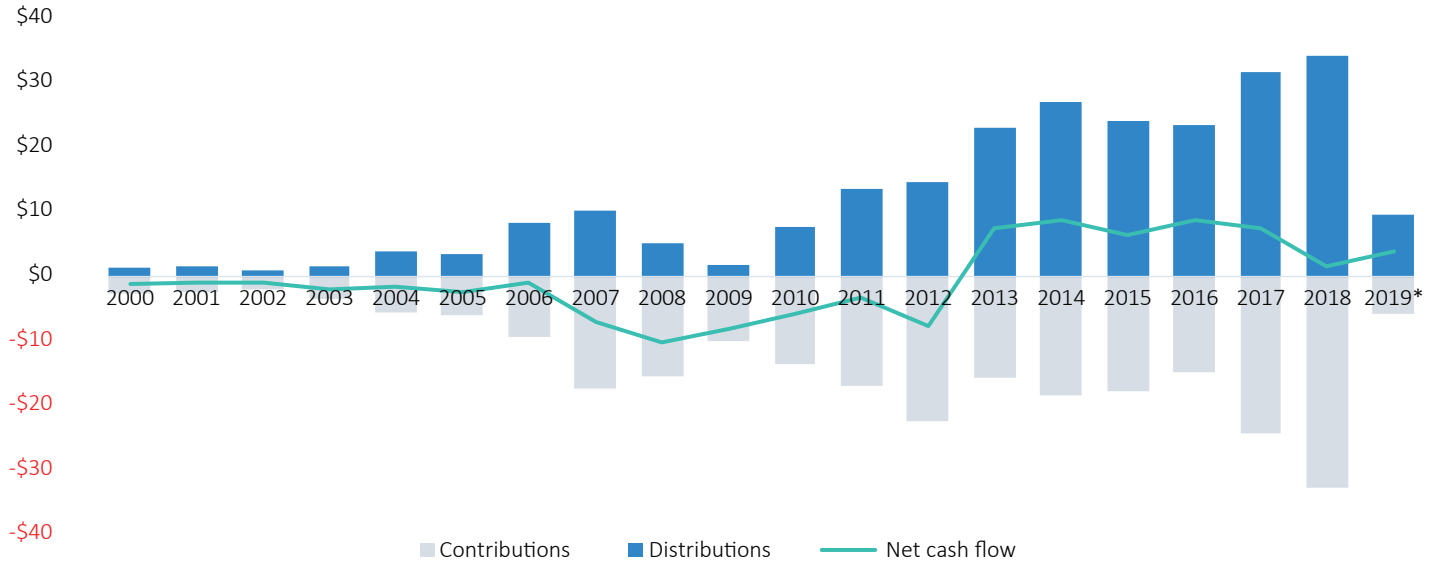
Secondaries cash flows ($B)



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Spotlight: Basics of cash flow management

This section appeared originally in the most recent PitchBook Benchmarks report, written by Senior Strategist James Gelfer and Senior Data Analyst Andy White on December 3, 2019.

Series summary

The first two installments of our Basics of Cash Flow Management series examined contribution and distribution profiles for individual funds in isolation. While this exercise can be helpful in comprehending the general nature of fund cash flows, it does not accurately depict what an LP truly experiences. Few (if any) LPs commit to a single private market fund. Rather, they spread commitments across a range of vehicles of differing sizes, strategies, geographies and vintage years. As such, private market portfolios tend to comprise a variety of funds that are at different points in the fund lifecycle and that have fundamentally disparate cash flow profiles. Balancing these dynamics is a challenge, but when a private market portfolio is built in a thoughtful manner, the various funds can complement one another. This can also lead to a more predictable pattern of capital calls and distributions, allowing the LP to better manage uncalled commitments and their overall allocation to private markets.

Key takeaways

- Spreading annual commitments across 10 funds rather than allocating to a single PE fund can reduce the standard deviation of quarterly capital calls in the first three years from 8.0% to 4.0%.
- When initiating a PE allocation, an initial "ramp" period of relatively larger commitments decreases the time it takes to reach full allocation but can also lead to overshooting the target allocation; however, our model suggests that LPs can prudently incorporate a ramp period that decreases the time to full allocation with limited risk of overshooting.
- Once a target allocation has been met, the unfunded portion of the allocation trends toward 30%.

Picking up the pieces

For LPs initiating a private market allocation, it is important at the outset to think holistically about how the portfolio will be constructed, because it takes several years to build up an allocation and gain diversified exposure. In many ways, constructing a portfolio of private market funds is similar to developing diversified exposure in traditional asset classes such as public equities and fixed income—but there are unique considerations.

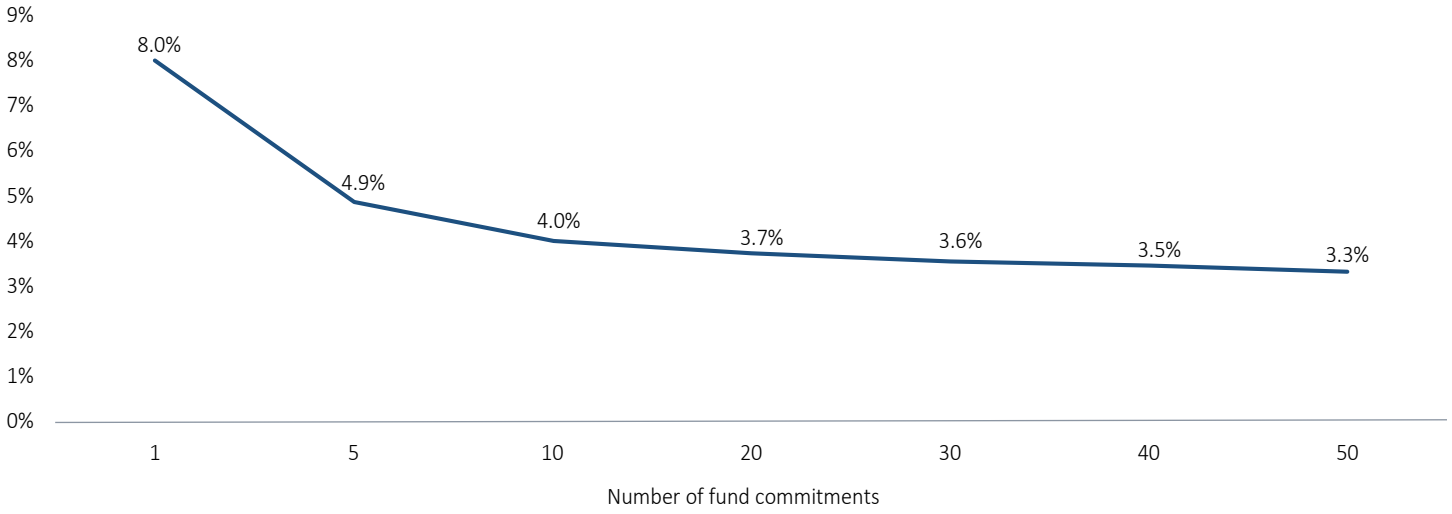
Beginning at the most fundamental level, committing an entire private market allocation to a single fund is akin to putting a whole public equity allocation into a single stock. Concentrating capital in a single position naturally leads to a high level of volatility, which can be dampened as positions are added. While volatility is often thought of in terms of standard deviation of absolute returns, private market investors must also consider volatility in the timing of contributions and distributions. In previous research, we highlighted the high level of variability in capital call profiles for different PE funds and the drag this unpredictability can have on performance.

Diversifying an allocation across funds is one way for LPs to address the volatility in capital calls, with the biggest benefits realized in the initial stages of diversification. Spreading an annual allocation across 10 funds rather than a single fund can reduce the standard deviation of quarterly capital calls in the first three years from 8.0% to 4.0%. That being said, just as adding new names to a stock portfolio quickly reaches a point of diminishing returns, the same is true of private market fund commitments, as illustrated in the accompanying chart.

To comprehend the impact of this lower volatility, consider an LP with a commitment of $100 that wants to be prepared for a capital call that is two standard deviations above the average quarterly call of about $4.80. If an LP committed that sum to a single fund, they would need to keep $20.86 of it available in highly liquid (presumably lowyielding) assets, whereas that amount can be reduced to $12.75 if it is spread across 10 funds thanks to the reduced variation in capital calls.

As commitments are added, capital calls become more predictable—to a point

Standard deviation of quarterly contributions as proportion of commitments



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

In addition to improving the predictability of cash flows from the private market allocation, diversifying exposure across different GPs and funds can reduce idiosyncratic risk; however, this also means sacrificing some upside potential. This point is particularly pertinent when selecting private market funds due to the wide disparity in return outcomes depending on the specific fund(s) chosen. The standard deviation of returns for mid-cap mutual funds was 1.7% from 2008 to 2018,1 whereas for PE funds with vintages in that same period, the standard deviation of returns ranges from around 10% to 31% per vintage. To that end, the rewards for selecting the best managers (and the ramifications of selecting the laggards) are amplified in private markets.

As a result, success in private markets is largely predicated on the ability to select superior managers. That task naturally becomes more difficult as LPs increase their number of commitments and manager relationships. Indeed, many LPs that realized initial success in private markets have found that performance subsequently suffered and dipped toward the average when they spread commitments across more funds and managers. Because of this, some LPs have adjusted their strategy to concentrate more of their allocation with specific GPs, often committing across several different underlying fund strategies managed by the same GP. Another driver of the move by LPs to cull their roster of GPs is that some believe consolidating commitments with fewer managers affords more bargaining power to LPs when it comes to terms and fees, which can erode the performance of a private market allocation.

This begs the question of what the optimal number of funds in an LP's roster should be. The answer is our old standard: "It depends," with the two biggest variables to consider being the size of the private market allocation2 and the resources of the LP. Those on the upper end of the size spectrum will require more fund commitments in order to reach their target allocation, which creates challenges particularly at the onset.

CalPERS serves as a prime example. At its height, CalPERS had active commitments to more than 400 funds, but it reduced that number significantly, concentrating on 30 "core" GPs. Narrowing the amount of commitments inevitably means writing bigger checks, as evidenced by CalPERS closing commitments in excess of $500 million. For many of the largest LPs, including CalPERS, the challenge is to deploy capital in an efficient manner when the allocation may require $10 billion or more in commitments each year. To put capital to work more quickly, many big LPs are more aggressively pursuing direct investing, but this requires significant resources and internal expertise.

For smaller LPs that can more easily reach their allocation, we found that the benefits to cash flow predictability are largely achieved once at least 10 funds are included in the annual allocation. While adding more commitments can further dampen volatility in capital calls, it can be burdensome for LPs with limited resources and internal expertise in private markets to oversee a portfolio of numerous fund commitments.

Getting off the ground

As we previously noted, regardless of the LP's sophistication or asset base, building a private market program from scratch takes time. Consider a new investor/LP that wants to allocate to stocks, bonds and private markets. In public equities, they can easily purchase a basket of stocks with different cyclical characteristics depending on their view of the current economic environment. Furthermore, they can utilize dollar-cost averaging to build up a sizable position without being overly exposed to pricing dynamics during a specific point in the market cycle. Fixed-income investors enjoy a wide range of products with varying durations, allowing virtual turnkey exposure to diversified positions.

In private markets, if an LP were to commit the entirety of the new allocation to vehicles currently fundraising, the capital will inevitably be concentrated in vehicles exposed to a certain period of the business cycle. This is due to the private market funds' well-defined investment periods and fund lives, which can introduce significant market cycle risk. The process of building a private market allocation, making continual commitments to build up an allocation, is akin to dollar-cost averaging. But while investors in many asset classes have the luxury of being able to buy-and-hold, private market funds distribute cash back to LPs, effectively lowering their allocation. The result is that LPs in private markets are engaged in a Sisyphean exercise of continually committing to new funds each year to maintain their allocation and vintage year diversification.

An LP attempting to build an initial allocation to private markets of $1,500, for example, is likely to commit a portion (e.g. 25%) each year during an initial "ramp" period to ensure that capital isn't unduly exposed to certain macro environments. While vintage year diversification remains a challenge for new LPs, the proliferation of the secondary market has provided a convenient shortcut to gain exposure to older vehicles. By using secondary funds as a launch pad to private markets, LPs also benefit from J-curve mitigation due to the tendency of secondary funds to both deploy and return capital more quickly than primary funds. Of course, secondary funds are not a panacea, and the same tenets of diversification hold (i.e. an LP would be ill-advised to use a single secondary fund as a turnkey solution for a new private market allocation).

In addition to recycling distributions into new funds and diversifying across vintage years, LPs must also grapple with the disparity between when capital is committed and when it is called (i.e. unfunded commitments). Once an LP commits to a fund, it will take several years before that capital is called down and fully invested. During that time, the capital earmarked for private markets is typically parked in lower-yielding assets, which serves to dampen overall performance. Citing these various headwinds to implementation, Yngve Slyngstad, the chief executive of Norges Bank Investment Management (which oversees the Norwegian Government Pension Fund), initially dismissed the idea of allocating to private equity in part because "the duration of implementation would be so long."

Sprinting to get ahead

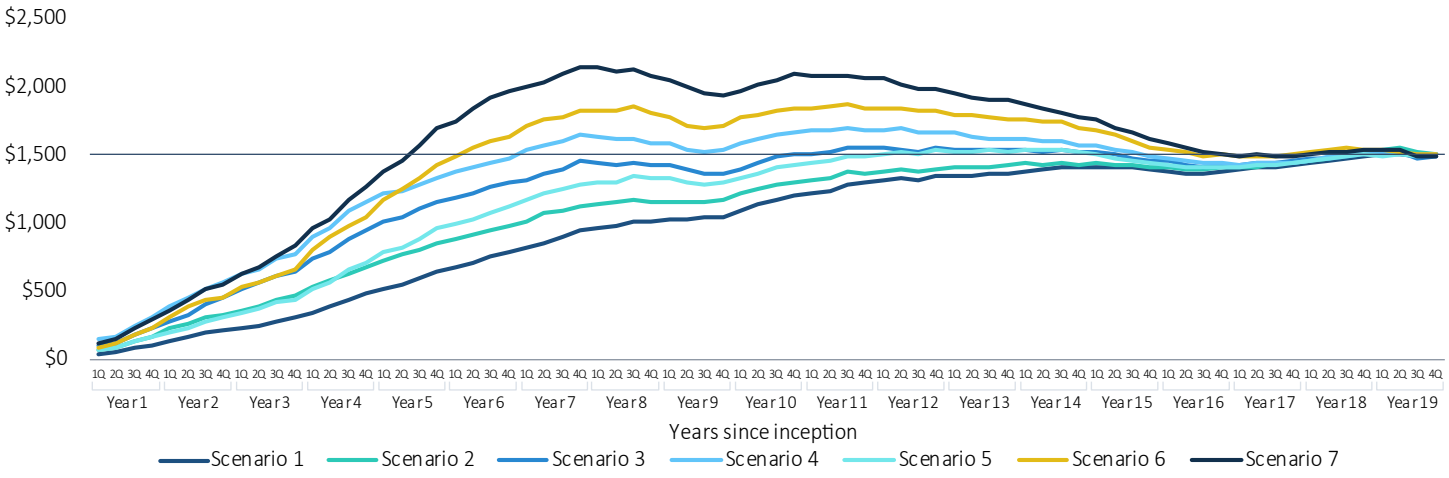
This presents a hurdle for many LPs, but the challenge is not insurmountable. Knowing that the full amount of a fund commitment will never be actively deployed at any given point in time, LPs that wish to reach and maintain their target allocation to private markets must do so by adopting an approach of overallocation and preparing to recycle distributions into new vehicles. In simple terms, developing a PE allocation can be thought of in two phases. The first phase is the implementation as the LP builds up the initial allocation. Second, once the target allocation is met, the LP can reduce the magnitude of commitments during a maintenance phase.

To better understand these dynamics, we developed a Monte Carlo system that creates model portfolios using historical PitchBook data. The goal in our hypothetical scenarios is to show how an investor can build and maintain a private market allocation of $1,500 (roughly $1,000 actively invested and $500 of uncalled commitments). We experimented with a variety of scenarios, adjusting the size of commitments as well as the duration of the ramp period. Regardless of these variables, we programmed the maintenance phase to consist of ongoing annual commitments of 10% of the $1,500 target allocation. To construct the model for each scenario, we aggregated data from 50 portfolios comprised of five randomly selected PE funds from each vintage year starting in 2001 and ending in 2018.

As seen in the accompanying above, LPs can tailor their implementation plan to match their specific goals. The target allocation can obviously be reached more quickly by increasing the size of commitments and duration of the ramp period, but the tradeoff is that the LP is likely to overshoot the target and introduce a higher degree of portfolio concentration. The most extreme example is Scenario 7, wherein 27% of the target allocation is committed each year during a five-year ramp period, allowing an LP to hit the target of $1,500 in 4.5 years; however, the portfolio tends to overshoot the target by a

LPs can tailor approach to minimize overshooting or accelerate time to full allocation

Modeled PE portfolio construction beginning in 2001



Source: PitchBook | **Geography:** Global
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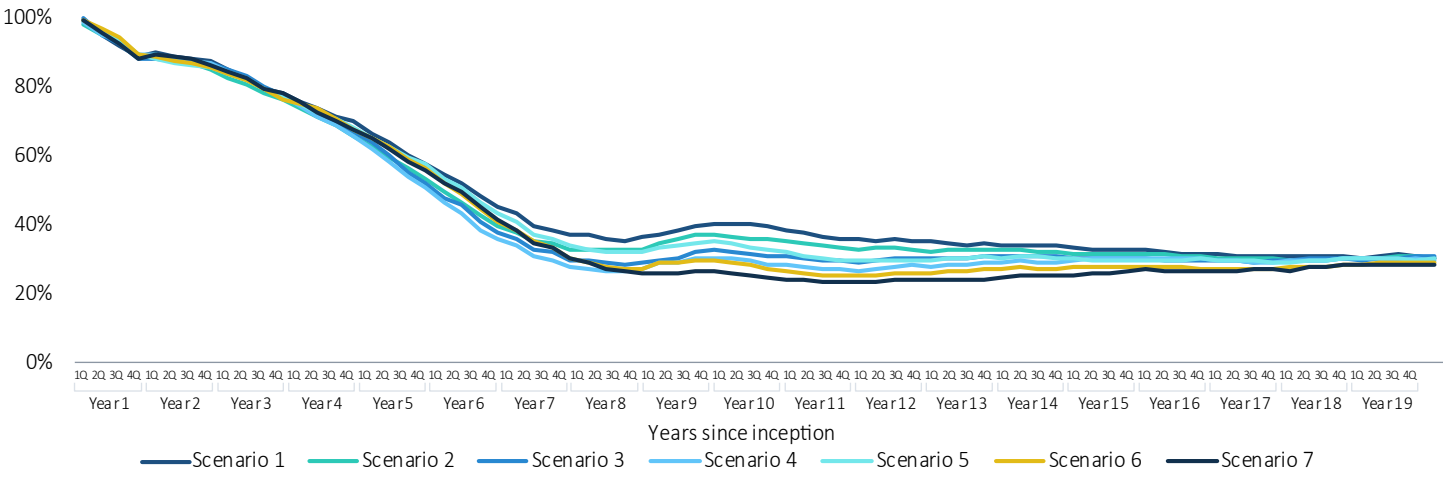
The unfunded portion of the allocation trends towards 30% over time

Unfunded commitments as proportion of PE allocation



Source: PitchBook | **Geography:** Global
*As of March 31, 2019

significant amount for the following decade as a result. Conversely, a slower ramp period leads to a steadier cash flow pattern but will take longer to achieve a target allocation. If the LP were to instead commit 15% of the target during the three-year ramp period, as shown in Scenario 2, it then takes about 17.25 years to reach the full allocation—roughly the same as the steady deployment in Scenario 1.

Overshooting the allocation has serious ramifications for an LP, but as noted earlier, long implementation periods can be viewed as prohibitive. Our model suggests that LPs can prudently incorporate a ramp period that decreases the time to full allocation with limited risk of overshooting. In Scenario 3, for example, the target allocation is achieved in just 9.75 years without the LP ever experiencing overallocation of 10% or more. Regardless of the approach taken, the nature of the maintenance period leads to an eventual convergence of the allocation, with the overshooting portfolios reverting to their target allocations, and vice versa.

We think it is important to deconstruct the allocation between capital actively invested and uncalled commitments when analyzing a private market allocation. At the onset, the entire allocation sits on the uncalled side of the equation. During the ramp period, we see the composition of the allocation shift from uncalled commitments to NAV as

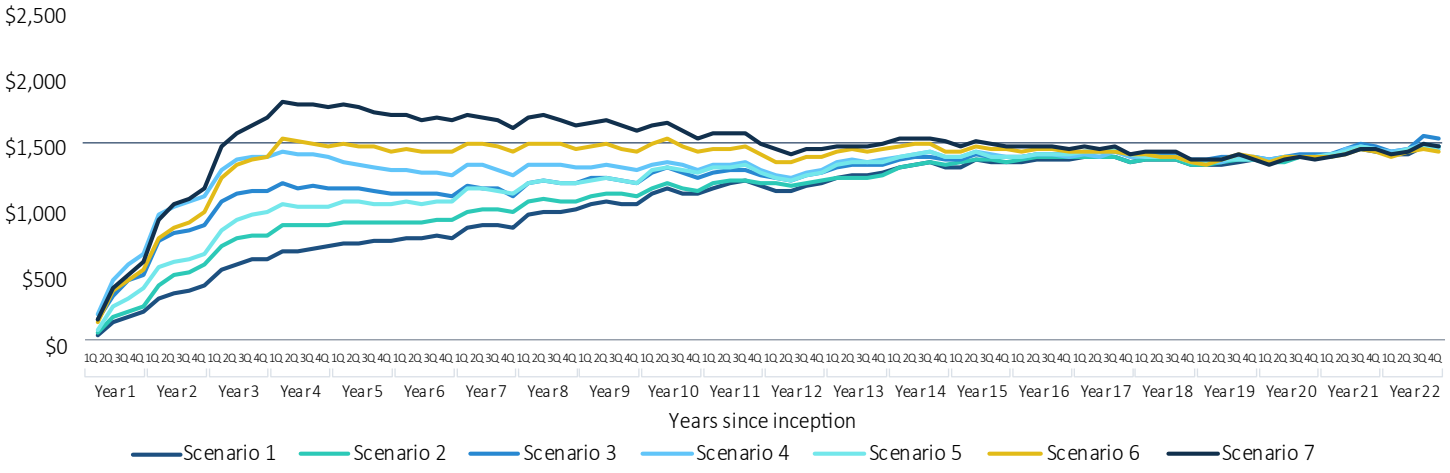
	Ramp period		Maintenance period		
	Length	Annual commitment (% of target allocation)	Annual commitment (% of target allocation)	Years to hit target	Years overallocated by 10%+
Scenario 1	--	--	$150 (10%)	18.00	--
Scenario 2	3 years	$225 (15%)	$150 (10%)	17.25	--
Scenario 3	3 years	$330 (22%)	$150 (10%)	9.75	--
Scenario 4	3 years	$405 (27%)	$150 (10%)	6.00	2.50
Scenario 5	5 years	$225 (15%)	$150 (10%)	11.00	--
Scenario 6	5 years	$330 (22%)	$150 (10%)	5.25	8.25
Scenario 7	5 years	$405 (27%)	$150 (10%)	4.50	10.00

Source: PitchBook | **Geography:** Global
*As of March 31, 2019

capital is called down. Once the maintenance phase is reached, the uncalled portion settles around 30% of the overall allocation regardless of the implementation approach. This is one area where the effects of the ramp period are apparent, with a more intense ramp period resulting in a smaller share of uncalled commitments. How this uncalled capital is managed can have a material impact on fund returns, which is a primary reason we think it warrants consideration.

Cyclical forces are apparent for allocations initiated ahead of dotcom boom

Modeled PE portfolio construction beginning in 1996



Source: PitchBook | **Geography:** Global
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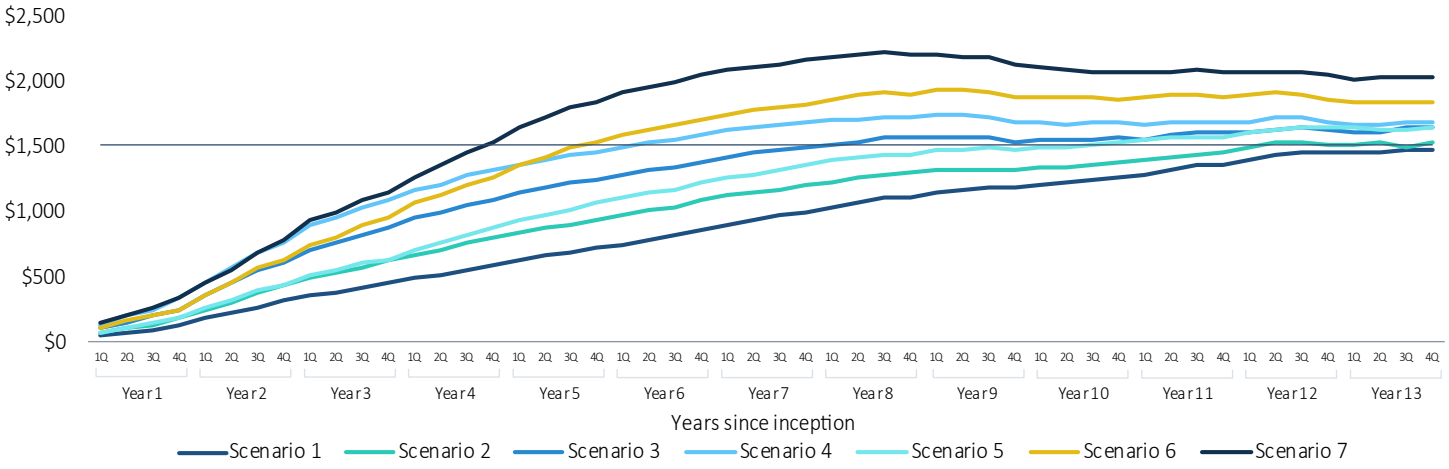
Allocations initiated in the post-crisis era have benefited from a rising tide

Modeled PE portfolio construction beginning in 2007



Source: PitchBook | **Geography:** Global
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Timing matters–but it's not everything

Based on our prior research, we expected cyclical factors to play a role in how a private market allocation is modeled. In addition to the specific analysis featured in the Spotlight, we conducted a similar exercise initiated at different points in time. We found that the relative relationship of each of the scenarios remained fairly constant, but the trajectory can vary—sometimes significantly. When the allocation is initiated in 1996, capital deployed in the ramp period is committed to vehicles investing at the height of the dotcom era. For the most aggressive scenarios, this results in reaching the full allocation exceptionally quickly; however, the slower ramp strategies take longer to reach full allocation because of the subpar performance of those initial funds.

Opposite forces are at play when we set the model to begin in 2007. In these scenarios, capital committed during the ramp period is largely flowing into post-crisis funds, which invested capital more slowly than funds had historically. Theoretically this should lead to a longer time to reach full allocation compared to our 2001 Scenario in the Spotlight, but we actually found the opposite to be the case. The reason for this is that all funds included in this analysis have benefited from a prolonged bull market, supporting strong absolute returns and enabling GPs to continually mark up investments, which in turns lead to higher NAVs.

In practice, an LP will need to incorporate external factors as well, perhaps the most important being their total AUM. Since allocations are expressed as percentages of AUM, the absolute value of the allocation will inevitably evolve over time. In our illustrative example, the LP is attempting to allocate $1,500 based on a target allocation of 8% to a portfolio of $18,750. Our example assumes that these figures remain static, but the total portfolio AUM is likely to be growing over time due to appreciation in various asset classes. As a result, the dollar amount committed to private markets will have to grow in tandem as well.

The allocation treadmill

To be sure, balancing these factors is difficult. CalPERS has engaged outside consultants as it has struggled to manage its PE allocation. The pension system's current consultant, Meketa Investment Group, recently issued a report noting that CalPERS' pace of commitments in recent years has been woefully inadequate to maintain its target allocation. Whereas CalPERS' commitments to PE have ranged from $3.3 billion to $6.7 billion in recent years, Meketa claims it would need to commit in excess of $10 billion each year going forward to reach and maintain its 8% target allocation to the asset class. Interestingly, following CalPERS aforementioned reduction in GP relationships, Meketa has suggested recently that the nation's largest pension fund reverse course, arguing the "expansion of the manager set provides opportunity, not only to increase scale, but also pursue strategies beyond the mega and large buyouts in order to add portfolio diversification."

CalPERS receives more than its fair share of attention, but it serves as a helpful (and relatively transparent) case study into the challenges LPs face when investing in private markets. General guidelines can be developed, but the plan needs to be dynamic to account for idiosyncratic events and the cyclical aspects of the market.