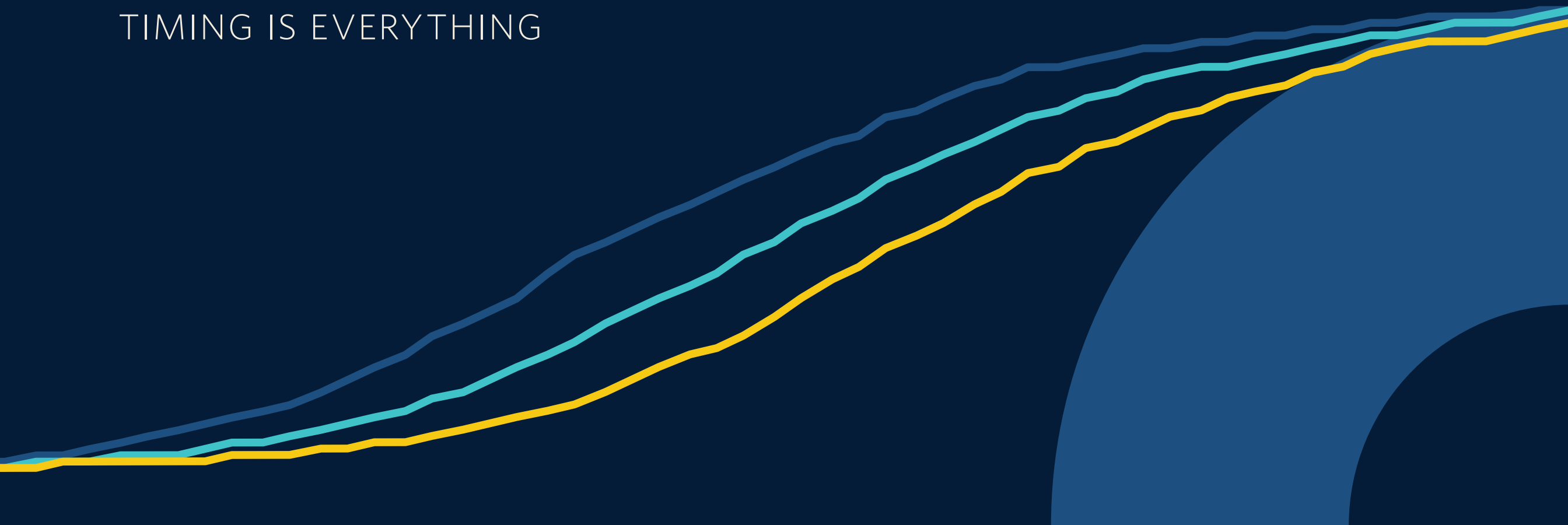


Allocator Solutions

TIMING IS EVERYTHING



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PitchBook Data, Inc.

John Gabbert Founder, CEO

Nizar Tarhuni Vice President, Institutional Research and Editorial

Daniel Cook, CFA Head of Quantitative Research

Institutional Research Group

Analysis



Andy White
Lead Quantitative Research Analyst
andrew.akers@pitchbook.com



Andrew Akers, CFA
Senior Quantitative Research Analyst
andrew.akers@pitchbook.com



Zane Carmean, CFA, CAIA
Lead Analyst, Quantitative and Funds Research
zane.carmean@pitchbook.com

pbinstitutionalresearch@pitchbook.com

Publishing

Report designed by **Joey Schaffer**

Published on September 27, 2023

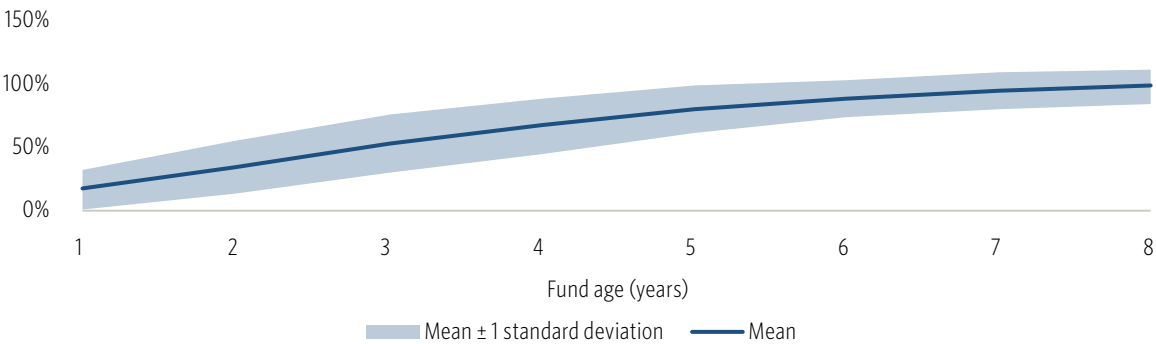
Click [here](#) for PitchBook's report methodologies.

Introduction

Private markets have become an increasingly large part of institutional investor portfolios over the past several decades. Drawn to these asset classes by blockbuster returns and, seemingly, low volatility, LPs have been clamoring to gain access to private capital funds across strategies. This appetite has, in turn, fueled the massive expansion of private markets, with the number of active fund managers, or GPs, expanding from 3,700 in 2007 to 13,000 at the end of 2022.

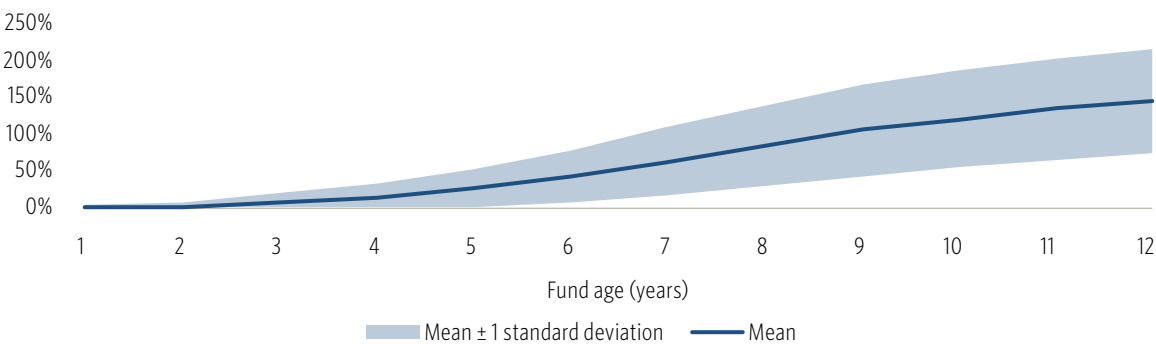
While LP allocations to private markets have continued to gain in popularity, it has simultaneously introduced new challenges related to managing such allocations. Fund structure is one such obstacle, as closed-end funds are the most prevalent format employed by private market firms. These vehicles call and redistribute committed capital over the course of several years, rather than a one-time purchase of an asset, as in most traditional asset classes. While there are contractual stipulations related to how long the investment and harvesting periods are meant to last, the pattern of capital calls and distributions is highly variable, as it hinges upon the fund manager’s ability to source investments, and subsequently, divestments. Thus, LPs deal with a great amount of uncertainty around the timing and size of the capital calls that they will need to fund and the distributions they will receive, making allocation planning a difficult exercise.

PE cumulative share of capital called by fund age*



Source: PitchBook • Geography: Global
*As of December 31, 2022

PE cumulative share of capital distributed by fund age*



Source: PitchBook • Geography: Global
*As of December 31, 2022

Establishing a pattern

Historically, LPs have had very limited ability to anticipate the variance in cash flow patterns that they are likely to experience. We have previously produced a range of [research](#) and [cash flow modeling tools](#) that enable our clients to pursue a more informed portfolio management strategy. To further aid in this task, we have developed the PitchBook Capital Call and Distribution Scores.

It is important to note that although Cash Flow Scores take values from zero to 100, and Z-score values presented in this analysis are low to high, there is no implication of “better” or “worse.” We are simply measuring the speed of cash flows; lower scores correspond to slower speeds and higher scores to higher speeds.

The scores for a GP's distinct funds strategy, or fund family, is composed of individual scores for each qualifying fund in the family. Cumulative cash flow levels are measured at different points during a fund's life, compared against a benchmark, and converted to a Z-score. Each Z-score is then weighted by fund age, giving more weight to more recent funds, as those cash flow patterns are more relevant to prospective LPs. In this analysis, we explore the individual fund Z-scores. For more information on score calculation, please refer to this detailed [methodology document](#).

While quantifying timing scores is possible given the right data, it becomes truly useful when we can establish that a tendency exists and persists. As we see in the scatter plots to the right, there appears to be a loose relationship with the Capital Call Z-score of one fund, and the score of the subsequent fund in the family, with some fund classes showing a stronger relationship.

Though the linear relationship between Z-scores leaves something to be desired, when bucketing Z-scores into quartiles, we see a more interesting pattern take shape.

In a perfectly random setting with no persistence, we would expect to see a symmetrical 25% split between successor fund quartiles regardless of the prior funds' quartiles. The most interesting finding from the transition matrices is that the persistence is strongest at the extremes: For every asset class, both first quartile (fastest) and fourth quartile (slowest) predecessor funds produce first or fourth quartile subsequent funds at the highest rates, far outpacing our baseline expectation of 25%. Funds of funds and real assets showed the strongest persistence, with over half of the funds—60.7% and 56.5%, respectively—ranking in

Predecessor fund versus subsequent fund Capital Call Z-score by asset class*



Source: PitchBook • Geography: Global
*As of December 31, 2022

the fastest quartile, begetting another fast-calling fund. Similarly, funds of funds, private debt, and real estate show the strongest persistence with funds at the slower end of the spectrum, clocking 41.1%, 41.7%, and 46.4% of fourth quartile funds being followed by another fourth quartile fund, respectively.

Interestingly, private equity and venture capital funds show some of the lowest persistence at the fast and slow ends of the spectrum. This may be indicative of the opportunistic nature of investing in operating companies, rather than assets such as debt, real assets, or in the case of funds of funds, making commitments to other investment vehicles.

Further investigation of this barbell effect yielded interesting results when we analyzed the relationship between a prior fund’s presence in the bottom or top quartiles of capital callers and the probability that the successor fund ended up in the bottom or top quartiles using a logistic regression. Here we found that the prior fund’s presence in the top or bottom quartile was a significant predictor of the successor fund following suit—except for secondaries funds, where low data counts yielded insignificant results. Funds in the top quartile have a 2.2x to 4.6x higher probability of being followed by a top-quartile fund. For bottom-quartile funds, those figures stand at 1.6x to 2.9x more likely to be followed by a bottom-quartile fund. The stronger effect at the top quartile (fastest calling funds) suggests that GPs may have a concerted strategy related to deploying capital quickly or have some access to deal flow that allows for quicker calling of capital.

Switching focus to distributions, past scores are a bit less prescriptive than on the capital call side.¹ However, like the Capital Call Scores, we find persistence to be strongest at the faster and slower ends of the spectrum.

On the quick end of the spectrum, funds of funds and private debt showed the strongest persistence, with 47.8% and 49.3%, respectively, ranking in the fastest quartile followed by another fast-distributing fund. These two fund classes also show the strongest persistence on the slower distributing funds, with 48.6% and 42.9% remaining in the slowest quartile, respectively.

Again, applying a logistic regression to the data, we find that a prior fund’s distribution speed being in the top or bottom quartile is a significant predictor of subsequent fund distribution speed, and corresponds to a 1.3x to 2.9x increase in the probability that the subsequent fund will end up in the top or bottom quartile. Again, this result is significant, though to a lesser degree, for all asset classes except secondaries in the fastest quartile analysis; however, the results for venture capital and secondaries were both insignificant on the slow end of the spectrum.

1: Persistence for both Capital Call and Distribution Scores was measured using all data available to date. Though this does not mimic data available at time of next fund raise, data points earlier in a fund’s life cycle are weighted more than later data, resulting in lower drift than return metrics such as IRR.

Capital Call Z-score quartile ranking transition matrix by asset class*

		Successor fund quartile							
		Private equity (n = 860)				Venture capital (n = 335)			
		1st (fast)	2nd	3rd	4th (slow)	1st (fast)	2nd	3rd	4th (slow)
Previous fund quartile	1st (fast)	42.0%	25.9%	15.5%	16.6%	42.9%	23.4%	18.2%	15.6%
	2nd	20.2%	29.0%	29.5%	21.2%	27.6%	25.0%	30.3%	17.1%
	3rd	20.7%	26.9%	25.4%	26.9%	23.7%	22.4%	25.0%	28.9%
	4th (slow)	17.0%	18.0%	29.4%	35.6%	6.5%	28.6%	26.0%	39.0%
		Real estate (n = 334)				Funds of funds (n = 295)			
	1st (fast)	45.8%	25.0%	13.9%	15.3%	60.7%	21.4%	14.3%	3.6%
	2nd	25.0%	29.2%	25.0%	20.8%	22.2%	27.8%	29.6%	20.4%
	3rd	20.8%	26.4%	30.6%	22.2%	10.7%	33.9%	28.6%	26.8%
	4th (slow)	8.3%	19.4%	30.6%	41.7%	7.1%	16.1%	28.6%	48.2%
		Real assets (n = 200)				Debt (n = 313)			
	1st (fast)	56.5%	26.1%	13.0%	4.3%	50.0%	23.6%	16.7%	9.7%
	2nd	21.7%	30.4%	28.3%	19.6%	26.4%	23.6%	23.6%	26.4%
	3rd	15.2%	23.9%	23.9%	37.0%	18.1%	27.8%	30.6%	23.6%
	4th (slow)	6.4%	19.1%	34.0%	40.4%	5.5%	24.7%	28.8%	41.1%
		Secondaries (n = 111)							
	1st (fast)	45.5%	36.4%	9.1%	9.1%				
	2nd	23.8%	23.8%	33.3%	19.0%				
	3rd	13.6%	18.2%	36.4%	31.8%				
	4th (slow)	18.2%	18.2%	22.7%	40.9%				

Source: PitchBook • Geography: Global

*As of December 31, 2022

Note: In a perfectly random setting, the diagonals of the transition matrix would show 25%, as the quartile of the prior fund’s score would have no impact on the subsequent fund’s quartile.

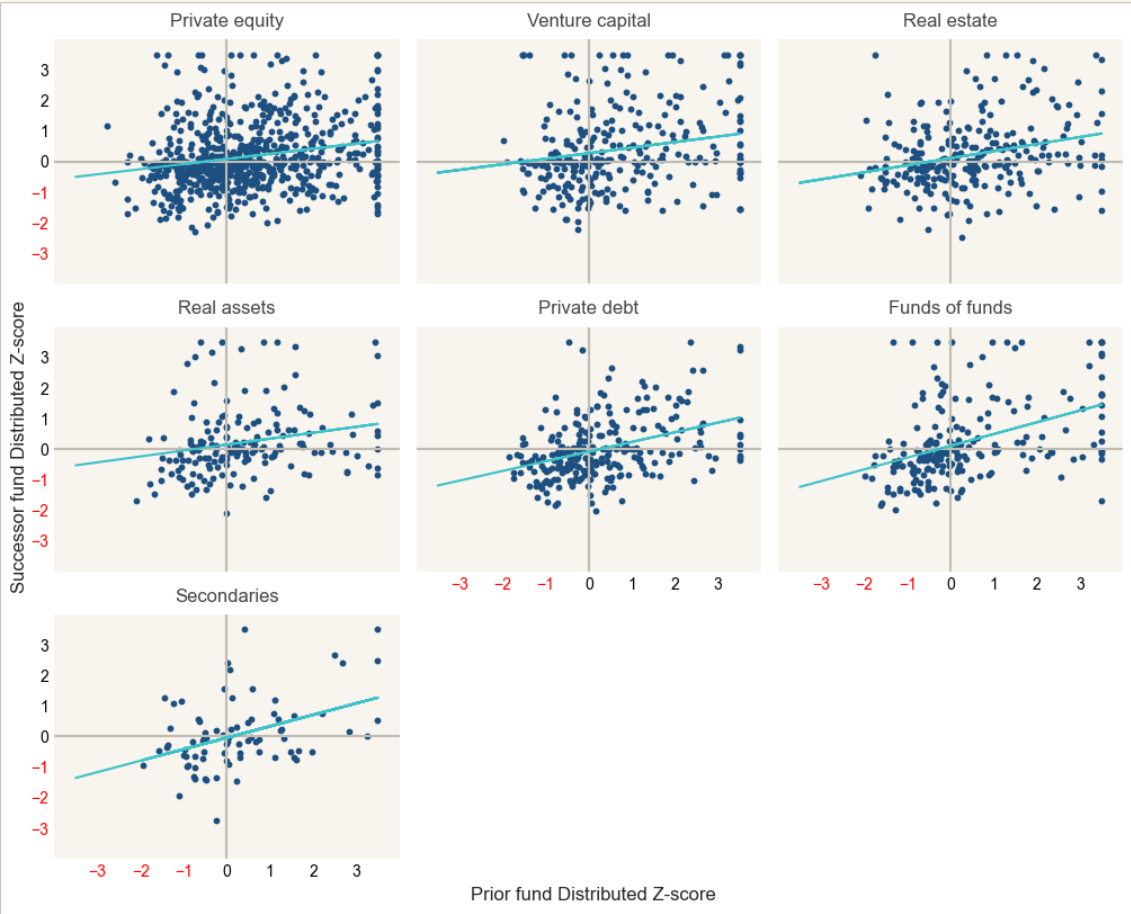
Fund Distributed Z-score quartile ranking transition matrix by asset class*

		Successor fund quartile							
		Private equity (n = 860)				Venture capital (n = 335)			
		1st (fast)	2nd	3rd	4th (slow)	1st (fast)	2nd	3rd	4th (slow)
Previous fund quartile	1st (fast)	38.9%	25.7%	16.0%	19.4%	38.0%	26.8%	19.7%	15.5%
	2nd	25.1%	25.7%	25.7%	23.4%	32.9%	30.0%	15.7%	21.4%
	3rd	20.0%	27.4%	27.4%	25.1%	15.5%	23.9%	28.2%	32.4%
	4th (slow)	15.9%	21.0%	30.7%	32.4%	14.1%	18.3%	36.6%	31.0%
		Real estate (n = 334)				Funds of funds (n = 295)			
	1st (fast)	37.3%	31.3%	17.9%	13.4%	48.1%	30.8%	15.4%	5.8%
	2nd	30.3%	24.2%	28.8%	16.7%	23.1%	26.9%	23.1%	26.9%
	3rd	16.7%	24.2%	24.2%	34.8%	19.2%	30.8%	30.8%	19.2%
	4th (slow)	16.4%	19.4%	28.4%	35.8%	9.4%	11.3%	30.2%	49.1%
		Real assets (n = 200)				Debt (n = 313)			
	1st (fast)	39.5%	25.6%	16.3%	18.6%	49.2%	21.5%	20.0%	9.2%
	2nd	23.8%	26.2%	35.7%	14.3%	26.6%	28.1%	20.3%	25.0%
	3rd	23.3%	25.6%	23.3%	27.9%	16.9%	27.7%	32.3%	23.1%
	4th (slow)	14.0%	20.9%	25.6%	39.5%	7.7%	21.5%	27.7%	43.1%
		Secondaries (n = 111)							
	1st (fast)	40.0%	30.0%	15.0%	15.0%				
	2nd	31.6%	31.6%	26.3%	10.5%				
	3rd	10.0%	30.0%	25.0%	35.0%				
	4th (slow)	20.0%	5.0%	35.0%	40.0%				

Source: PitchBook • Geography: Global
*As of December 31, 2022

Note: In a perfectly random setting, the diagonals of the transition matrix would show 25%, as the quartile of the prior fund's score would have no impact on the subsequent fund's quartile.

Predecessor fund versus subsequent fund Distributed Z-score by asset class*



Source: PitchBook • Geography: Global
*As of December 31, 2022

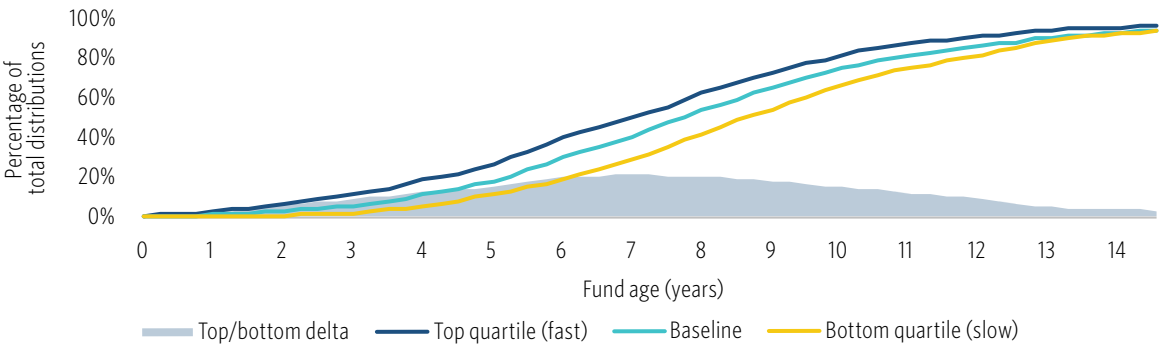
Implications for allocators

As established above, there is a degree to which the speed of capital calls and distributions of one fund predicts the cash flow speed of the subsequent fund, with the effect being particularly strong at the extreme ends of the spectrum. That is, the fastest and slowest calling/distributing funds have significantly higher odds of being followed by a fund that is also one of the 25% fastest or slowest calling/distributing funds. While the predictive power of the metrics is far from a sure thing, it does allow LPs to adjust their prior expectations when making allocations to a GP’s fund family.

This point is further reinforced as we examine the difference in cash flow profiles between funds in the fastest and slowest cohorts.² Using private equity funds as an example, we see that the delta between bottom- and top-quartile cumulative capital call percentages reaches above 40% in the first three years of fund life, and the difference in cumulative distributions tops 30% in year eight.

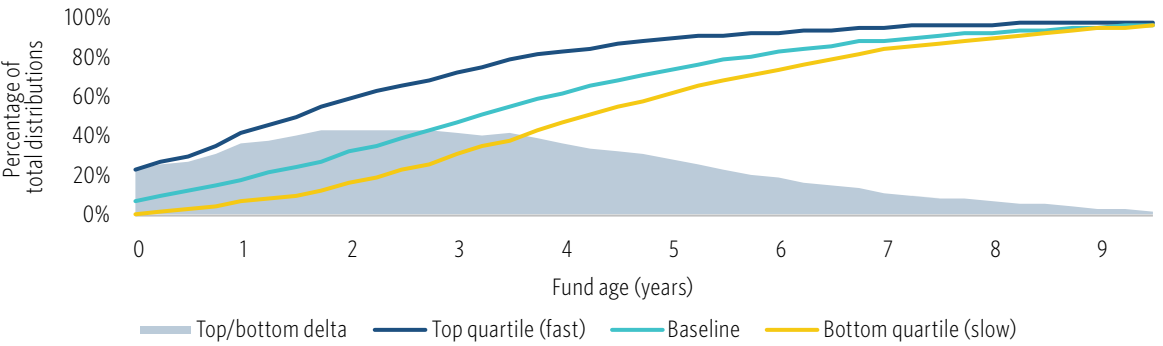
Given that we have found Capital Call Scores to be a better predictor of persistence in cash flow timing, and the Capital Call Score is finalized earlier in a fund’s lifecycle, we can also use it as the basis to set expectations for distribution profiles of funds that are currently in a portfolio. The chart below demonstrates the differentiated distribution profiles produced by funds grouped by their Capital Call Score quartile, as our results show that funds that call capital quickly tend to distribute capital more quickly than their peers.

PE cumulative distribution profile by Capital Call Z-score quartile*

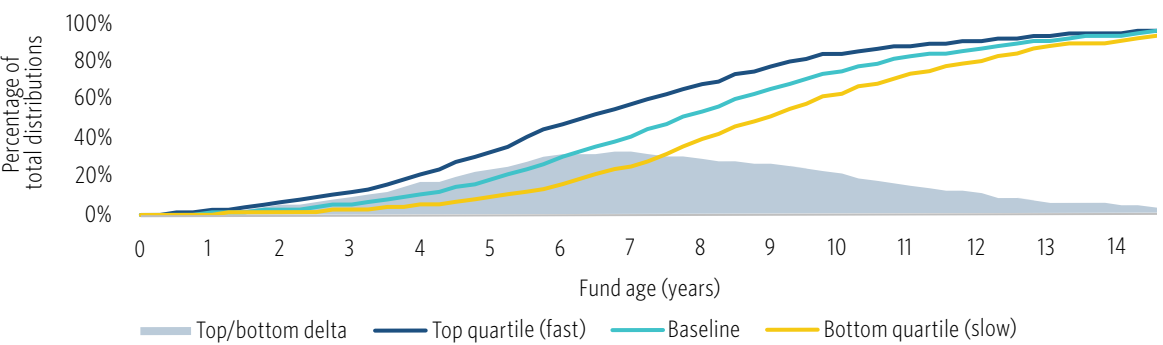


2: Cash flow profiles are normalized and represent a percentage of total contributions or distributions for a fund.

PE cumulative capital call profile by Capital Call Z-score quartile*



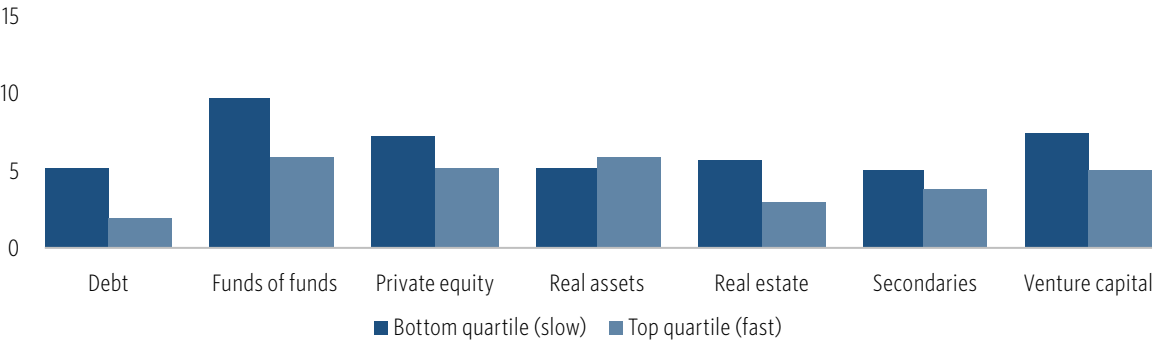
PE cumulative distribution profile by Distribution Z-score quartile*



In addition to setting expectations regarding the pace of calls and distributions, the Capital Call Scores specifically provide insight into net exposure provided by a given fund. On the right, we see that on average, PE funds in the fastest cohort reach peak NAV approximately two years earlier than funds in the bottom cohort. Peak NAV is important because, as discussed in the introduction, closed-end funds do not provide instantaneous allocation to the asset class. The allocation is built over time as investments are made by the fund, and then falls as the investments are harvested. Thus, having insight into the speed that you will gain exposure to the asset class via an individual fund commitment aids in managing asset allocation across the portfolio. We see that debt and real estate tend to gain exposure the quickest, while funds of funds tend to take the longest. This stands to reason, as funds of funds are subjected to sourcing investments twice, as the funds to which they commit must do the same. We also see that higher Capital Call Z-scores (faster calls) tend to lead to peak NAV more quickly. This pattern can be confounded, however, because peak NAV is not only a function of capital being called from LPs but also the growth in underlying asset values.

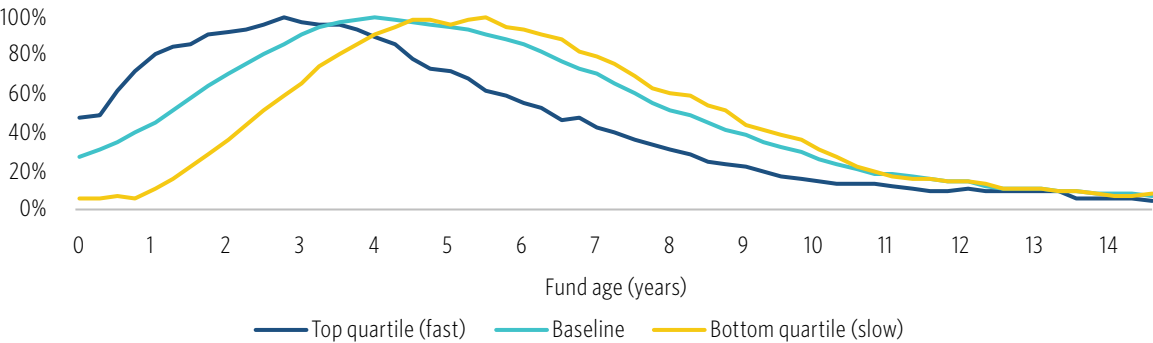
This data demonstrates that we can gain meaningful information from applying timing scores to our portfolios. Given that we find persistence in cash flow timing, particularly at the extremes, LPs can establish their priors with more confidence while allocating to different fund managers. This information can also be leveraged in conjunction with other asset allocation and forecasting tools to provide data-driven insights into potential portfolio outcomes.

Time (years) to peak NAV by Capital Call Z-score quartile*



Source: PitchBook • Geography: Global
*As of December 31, 2022

PE NAV profile by Capital Call Z-score quartile*



Source: PitchBook • Geography: Global
*As of December 31, 2022

Note: NAV profiles are normalized and represent a percentage of peak NAV for a fund.

Appendix

Detailed logistic regression results for Capital Call Scores*

	Private equity	Venture capital	Real estate	Funds of funds	Real assets	Debt	Secondaries
Prior fund is top-quartile (fast)	1.115*** (6.1)	1.189*** (4.11)	1.014** (3.24)	2.168*** (5.92)	1.989*** (5.04)	1.614*** (5.36)	0.789 (1.35)
Prior fund size (log)	-0.016 (-0.22)	0.132 (0.93)	-0.628*** (-3.82)	-0.56** (-2.99)	-0.092 (-0.57)	-0.005 (-0.03)	-0.526* (-2.2)
Number of observations	776	306	288	223	185	289	87

	Private equity	Venture capital	Real estate	Funds of funds	Real assets	Debt	Secondaries
Prior fund is bottom-quartile (slow)	0.610*** (3.33)	0.898** (3.12)	0.867** (2.84)	1.316*** (3.8)	0.94* (2.55)	1.032*** (3.52)	0.866 (1.58)
Prior fund size (log)	0.175* (2.44)	0.026 (0.18)	0.457** (3.18)	0.338* (1.96)	0.108 (0.69)	0.000 (0.00)	0.39 (1.8)
Number of observations	776	306	288	223	185	289	87

Source: PitchBook • Geography: Global
*As of December 31, 2022

Detailed logistic regression results for Distribution Scores*

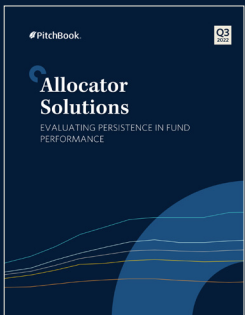
	Private equity	Venture capital	Real estate	Funds of funds	Real assets	Debt	Secondaries
Prior fund is top-quartile (fast)	0.92*** (4.85)	0.862** (2.85)	0.779* (2.52)	1.404*** (3.97)	0.942* (2.46)	1.553*** (4.87)	0.757 (1.27)
Prior fund size (log)	-0.025 (-0.34)	0.475** (2.85)	-0.067 (-0.49)	-0.359* (-2.11)	-0.002 (-0.01)	-0.004 (-0.03)	-0.59* (-2.44)
Number of observations	702	283	266	210	171	259	79

	Private equity	Venture capital	Real estate	Funds of funds	Real assets	Debt	Secondaries
Prior fund is bottom-quartile (slow)	0.439* (2.27)	0.26 (0.83)	0.691* (2.24)	1.416*** (3.99)	0.858* (2.2)	1.108*** (3.54)	0.868 (1.48)
Prior fund size (log)	-0.201** (-2.69)	-0.377* (-2.52)	0.09 (0.66)	0.253 (1.48)	-0.161 (-1.03)	0.251 (1.65)	0.097 (0.49)
Number of observations	702	283	266	210	171	259	79

Source: PitchBook • Geography: Global
*As of December 31, 2022

Additional research

Private market allocations



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