

Private Capital Indexes

Q4 2022



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Select PitchBook Private Capital Indexes quarterly returns

Index	Q1 2022	Q2 2022	Q3 2022	Q4 2022*
Private equity	1.2%	-3.7%	0.1%	-0.2%
Buyout	1.1%	-3.1%	0.0%	0.0%
Growth/expansion	1.5%	-7.8%	0.4%	-1.3%
Venture capital	-4.7%	-8.7%	-2.6%	-0.8%
Sub-\$250M	-1.0%	-6.8%	-3.8%	-1.8%
\$250M+	-5.2%	-9.0%	-2.4%	-0.8%
Real estate	7.4%	2.0%	-0.7%	0.4%
Opportunistic	7.5%	1.9%	-1.0%	0.6%
Value-add	9.0%	2.3%	0.0%	1.9%
Real assets	6.6%	3.0%	2.5%	4.5%
Infrastructure	4.8%	1.0%	3.1%	4.9%
Natural resources	10.6%	7.0%	1.4%	3.2%
Private debt	2.1%	-1.5%	2.7%	0.4%
Direct lending	1.0%	-2.6%	6.4%	3.4%
Distressed	2.9%	-1.6%	-0.8%	0.5%
Mezzanine	3.5%	0.0%	-1.7%	-0.7%
Funds of funds	-0.1%	-2.3%	-2.1%	0.8%
PE FoFs	-0.9%	-2.3%	-1.4%	2.1%
VC FoFs	-0.5%	-3.6%	-4.3%	-0.5%
Secondaries	2.6%	0.4%	-0.6%	-0.3%
Private capital	2.0%	-2.3%	0.3%	0.5%

Source: PitchBook • Geography: Global

*As of December 31, 2022

Note: Q4 2022 data in this report is preliminary.

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For further data and metrics available with PitchBook's private capital fund performance and benchmarking, please refer to our [PitchBook Benchmarks report](#).

Overview

What are the PitchBook Private Capital Indexes?

The PitchBook Private Capital Indexes are quarterly return benchmarks for the private market industry. These indexes are built with PitchBook’s fund cash flow and NAV data and serve as a supplement to our quarterly [PitchBook Benchmarks report](#).

This report is organized into sections for each of the seven strategies, with subcategories within private equity, venture capital, real estate, real assets, private debt, and funds of funds. We also track returns by fund quartile ranking, bucketed according to a fund’s class and vintage year benchmark. For the overall Private Capital Index, we include versions by global region. These various combinations provide an overall view of private market performance by money-weighting the cash flows and NAV changes of active funds in a respective fund category.

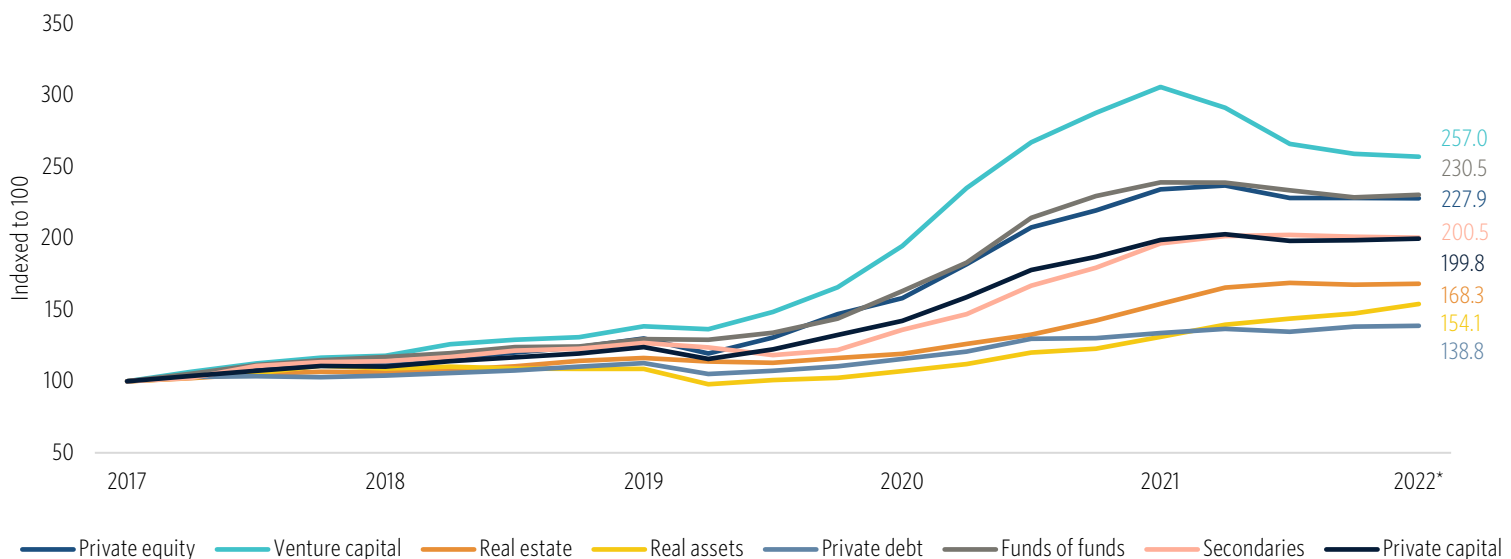
Our Benchmarks report has been providing quarterly returns since 2018, with our data series extending back to the late 90s. By calculating the change in NAV from one quarter to the next, adjusting for cash flows coming into and out of funds via capital calls and distributions, users can get a sense of each asset class’s performance in a pseudo-time-weighted manner. Linking together the quarterly return figures allows us to construct an index, providing a useful alternative comparison with other holdings such as public markets.

Additionally, the indexes unlock useful analysis on private market volatility and drawdowns during difficult environments. One known limitation of private market performance and risk measurement is the tendency for fund returns to appear overly “smooth,” with asset pricing slow to change from one period to the next. This smoothing results in lower perceived volatility than what is likely realistic, which can impact diversification decisions and risk/reward estimations based on reported returns. To address this limitation, this report includes adjusted return figures to provide alternatives for private market risk measurement.

PitchBook clients have access to all the aggregate data in the accompanying XLS, as well as the underlying constituent funds in the PitchBook platform. Please reach out with any questions or feedback.

It is important to note that the indexes provided are meant to be estimates of asset class performance, hypothetically creating a return if one had access to all active funds on a capital-weighted basis.¹ They are not practically investable and are subject to change as we continually update our datasets.

PitchBook Private Capital Indexes 5-year return



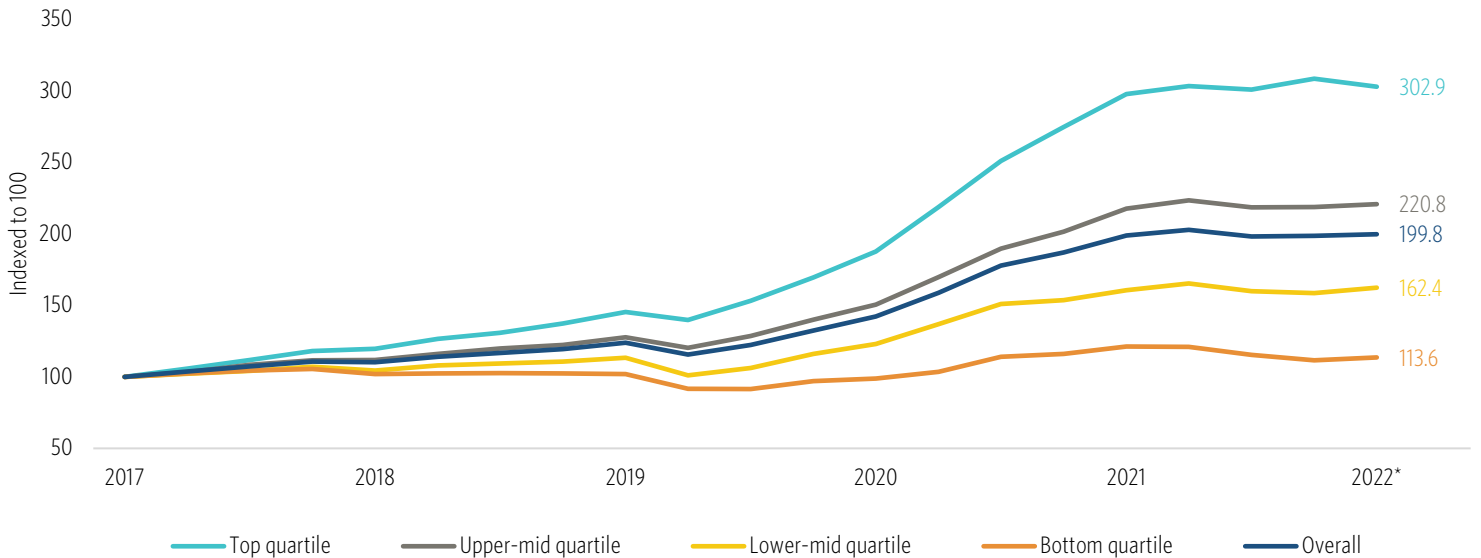
Source: PitchBook • Geography: Global

*As of December 31, 2022

¹: Specifically, we include active funds for which PitchBook has adequate returns history. As of Q3 2022, the total NAV of included funds was \$3.5 trillion.

Overview

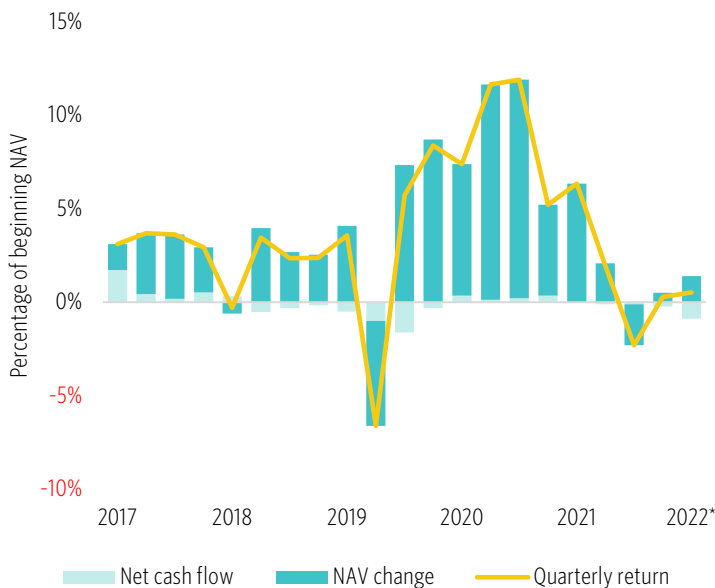
Private Capital Index by fund quartile 5-year return



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

Note: Constituent funds are bucketed into quartile rankings based on their fund categorization and vintage year. Quartiles are determined by TVPI as of the most recent available data.

Private Capital Index quarterly return by source



Private Capital Indexes annualized returns*

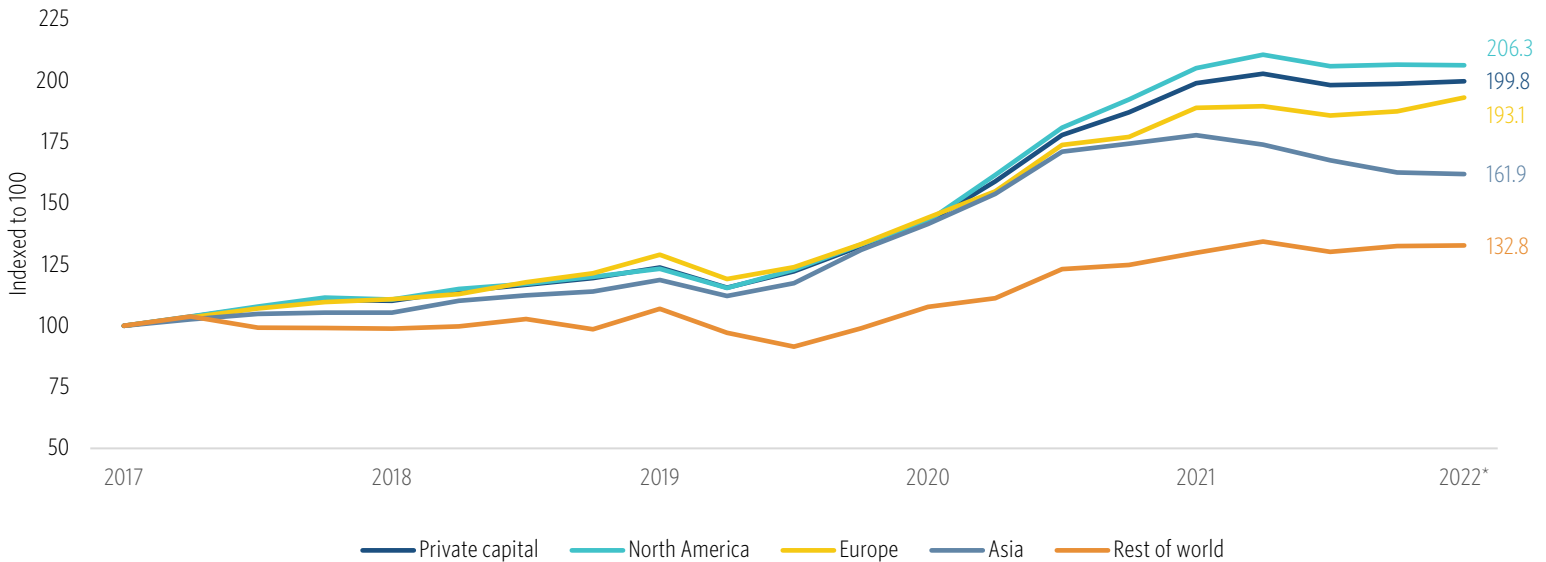
Index	1-year	5-year	10-year	15-year
Private equity	-2.6%	17.9%	16.5%	12.5%
Venture capital	-16.0%	20.8%	17.0%	12.2%
Real estate	9.2%	11.0%	12.2%	3.8%
Real assets	17.6%	9.0%	7.9%	7.5%
Private debt	3.7%	6.8%	8.1%	7.6%
Funds of funds	-3.6%	18.2%	14.8%	10.8%
Secondaries	2.0%	14.9%	13.5%	11.1%
Private capital	0.4%	14.8%	13.9%	10.4%

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

Note: Net cash flows include distributions received by LPs and contributions sent to GPs for investment. NAV change captures the unrealized markups (or markdowns) after those cash flows have been factored in.

Overview

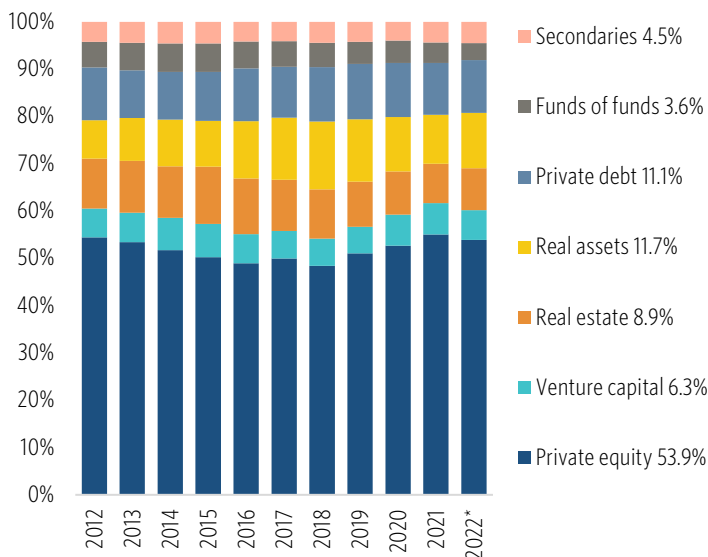
Private Capital Index regional breakout 5-year return



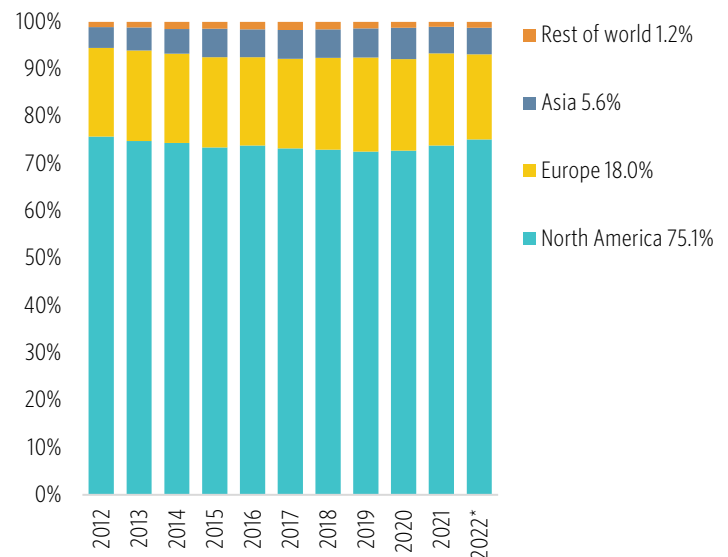
Source: PitchBook • Geography: Global
*As of December 31, 2022

Note: The regional breakouts are based on known fund locations.

Private Capital Index weighting by category



Private Capital Index weighting by region



Source: PitchBook • Geography: Global
*As of September 30, 2022

Note: Fund weightings in each period are determined by the NAV captured from active funds. As of Q3 2022, the total NAV of active funds was \$3.5 trillion.

Risk measurement

Adjusting for return smoothing

Interpreting interim returns for private markets can be challenging due to the inherent smoothing that takes place as a result of infrequent and disparate valuation adjustments to a fund's assets. This smoothing produces a potential bias in estimating volatility and correlations, which are necessary inputs for many allocators' risk modeling in portfolio construction and monitoring. If left unadjusted, our indexes are subject to this bias.

To address the issue, we have used a common approach to desmooth private market returns. This section provides adjusted return series using a first-order autoregression model. In simple terms, we have found evidence that private market returns are correlated from one quarter to the next, by about 50%, although this varies across asset classes and time.

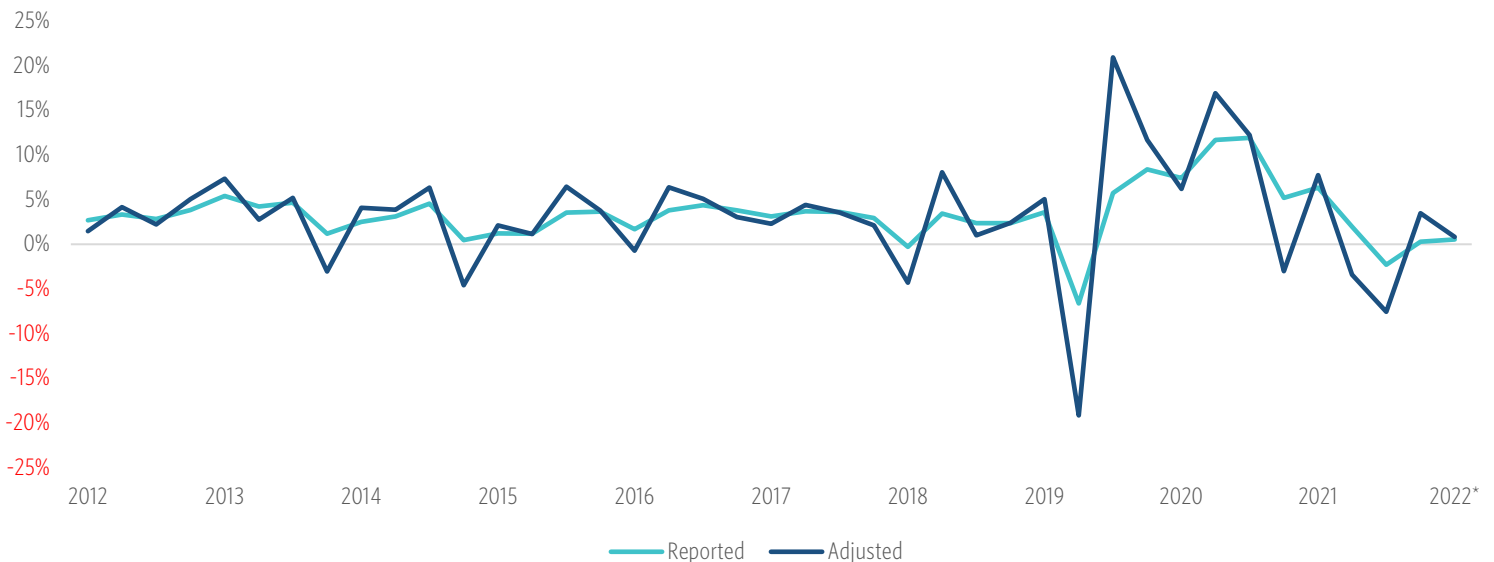
By using a single-lag autocorrelation function (ACF), the adjusted return series yields higher volatility estimates than would be calculated using the traditional reported figures. The adjusted series should be taken into consideration when evaluating the risk/return characteristics of each asset class. It should be noted that these are still just estimates of what is happening to the "true" returns of the asset class, but they nonetheless provide a useful barometer for comparison.

We also display the reported and adjusted volatility estimates for each private fund asset class and correlations between the desmoothed quarterly returns and the quarterly returns of select public market indexes. If the ACF adjustments are not made, the private market asset classes will appear more attractive on a risk-adjusted basis because of the understated volatility measures. The correlations between the Private Capital Indexes and public markets may also be lower, potentially overstating the diversification benefits. We provide historical context on how the relationship with public equities has changed, as well as the overall correlation coefficients since 2000.

The following page also includes peak-to-trough drawdowns in the unadjusted reported returns during select time frames. We leave these unadjusted to recognize the magnitude of the reported NAV change experienced by LPs through the market downturn. While not necessarily indicative of volatility, the drawdowns provide historical context to answer the question, "How much do reported NAVs fall during a correction?" This provides a starting point for considering the impact of various environments on a private market portfolio.

For further reading on fund return smoothing, please review our [Analyst Note: Return Smoothing in Private Markets](#).

Reported versus adjusted Private Capital Index quarterly returns

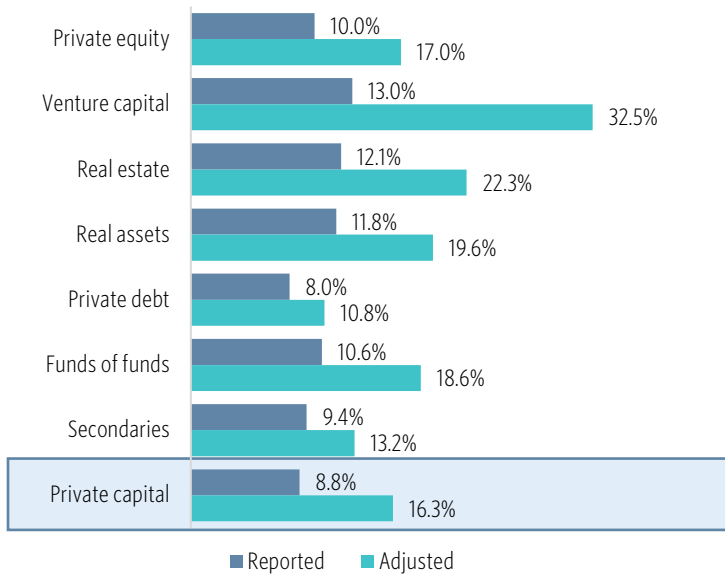


Source: PitchBook • Geography: Global
*As of December 31, 2022

Note: Adjusted indexes use the desmoothed quarterly returns.

Risk measurement

Annualized volatility estimates since 2000*



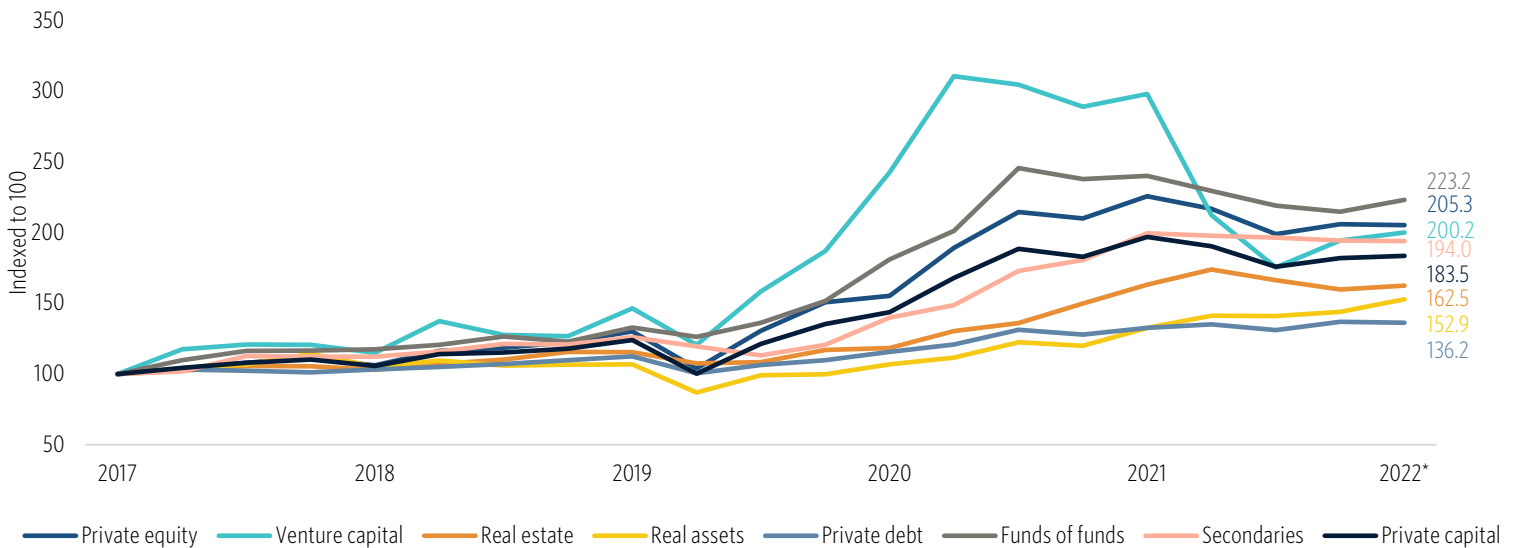
Reported peak-to-trough drawdowns in select periods

Index	Dot-com bubble	GFC	COVID-19	Current*
Private equity	-25.8%	-26.6%	-8.1%	-3.8%
Venture capital	-65.2%	-17.7%	-10.7%	-16.0%
Real estate	-4.2%	-63.5%	-2.9%	-0.3%
Real assets	-7.2%	-10.1%	-11.7%	0.0%
Private debt	-3.3%	-26.4%	-6.8%	0.0%
Funds of funds	-55.4%	-24.3%	-0.4%	-3.6%
Secondaries	-15.8%	-17.0%	-6.7%	-1.0%
Private capital	-26.9%	-26.0%	-6.6%	-1.5%

Source: PitchBook • Geography: Global

*As of December 31, 2022

Adjusted Private Capital Indexes 5-year return



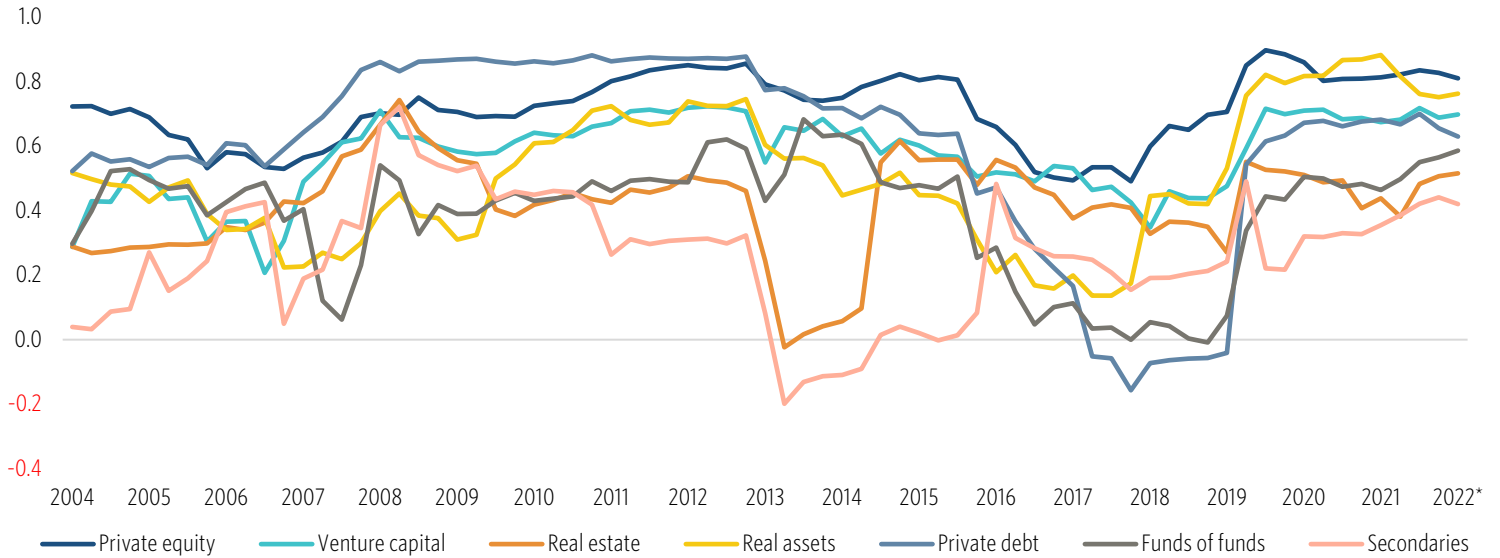
Sources: Morningstar, PitchBook • Geography: Global

*As of December 31, 2022

Note: Adjusted indexes use the desmoothed quarterly returns.

Risk measurement

Rolling 5-year correlation with S&P 500 quarterly returns



Sources: Morningstar, PitchBook • Geography: Global

*As of December 31, 2022

Note: Correlations are run using the ACF-adjusted quarterly return series for the PitchBook Private Capital Indexes.

Return correlation matrix using adjusted returns*

	PitchBook Private Capital Indexes								Public market indexes				
	Private capital	Private equity	Venture capital	Real estate	Real assets	Private debt	Funds of funds	Secondaries	S&P 500	Global Markets	Global Real Estate	Global Energy	Global High Yield
Private capital	1.00	0.98	0.63	0.61	0.49	0.74	0.59	0.23	0.75	0.77	0.68	0.57	0.64
Private equity		1.00	0.56	0.54	0.43	0.66	0.54	0.23	0.74	0.76	0.67	0.55	0.61
Venture capital			1.00	0.26	0.27	0.44	0.57	-0.02	0.48	0.46	0.34	0.28	0.41
Real estate				1.00	0.27	0.49	0.24	0.25	0.35	0.34	0.35	0.23	0.22
Real assets					1.00	0.38	0.39	0.10	0.42	0.45	0.39	0.53	0.40
Private debt						1.00	0.41	0.19	0.64	0.69	0.67	0.58	0.69
Funds of funds							1.00	0.37	0.42	0.44	0.34	0.29	0.37
Secondaries								1.00	0.22	0.24	0.25	0.25	0.06
S&P 500									1.00	0.96	0.79	0.69	0.76
Global Markets										1.00	0.85	0.75	0.82
Global Real Estate											1.00	0.62	0.79
Global Energy												1.00	0.64
Global High Yield													1.00

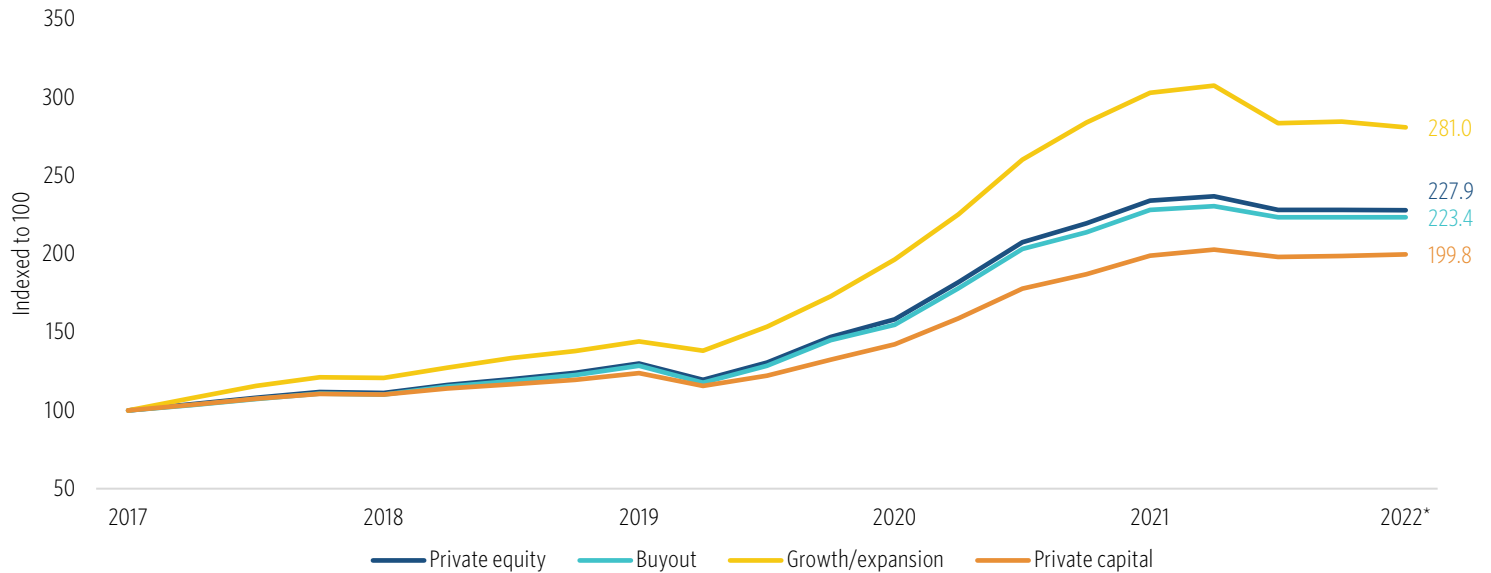
Sources: Morningstar, PitchBook • Geography: Global

*As of December 31, 2022

Note: This matrix shows the correlation of quarterly returns since the beginning of 2000. Public indexes aside from the S&P 500 are provided by Morningstar Indexes.

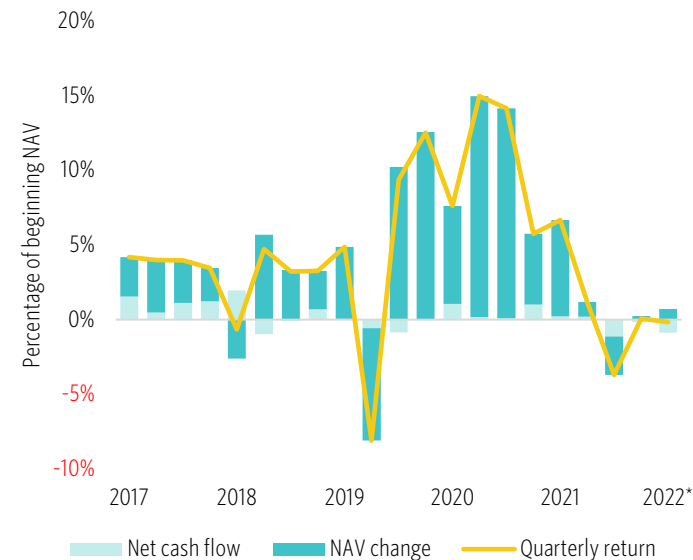
Private equity

Private Equity Indexes 5-year return



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

Private Equity Index quarterly return by source



Private Equity Indexes annualized returns*

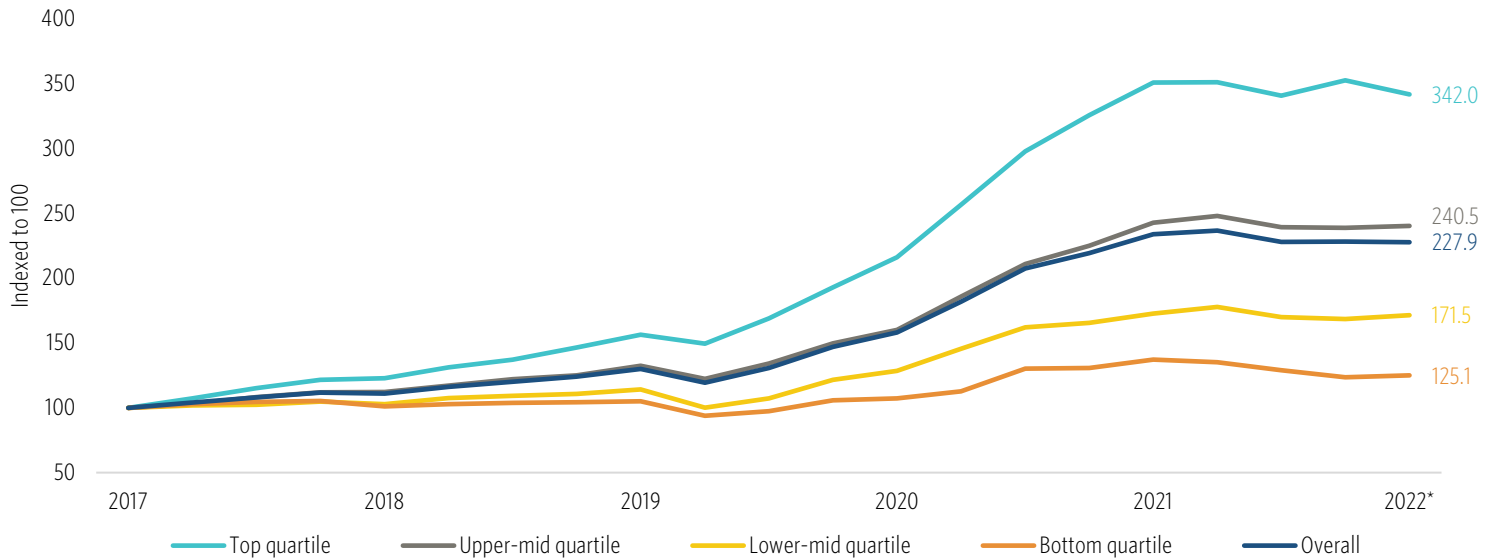
Index	1-year	5-year	10-year	15-year
Private equity	-2.6%	17.9%	16.5%	12.5%
Buyout	-2.1%	17.4%	16.4%	12.3%
Growth/expansion	-7.3%	23.0%	18.0%	14.1%
Private capital	0.4%	14.8%	13.9%	10.4%

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

Note: Net cash flows include distributions received by LPs and contributions sent to GPs for investment. NAV change captures the unrealized markups (or markdowns) after those cash flows have been factored in.

Private equity

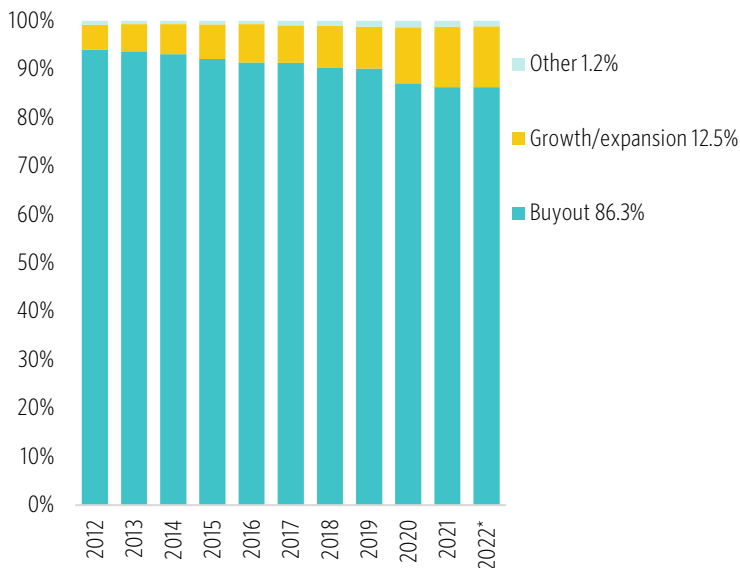
Private Equity Index by fund quartile 5-year return



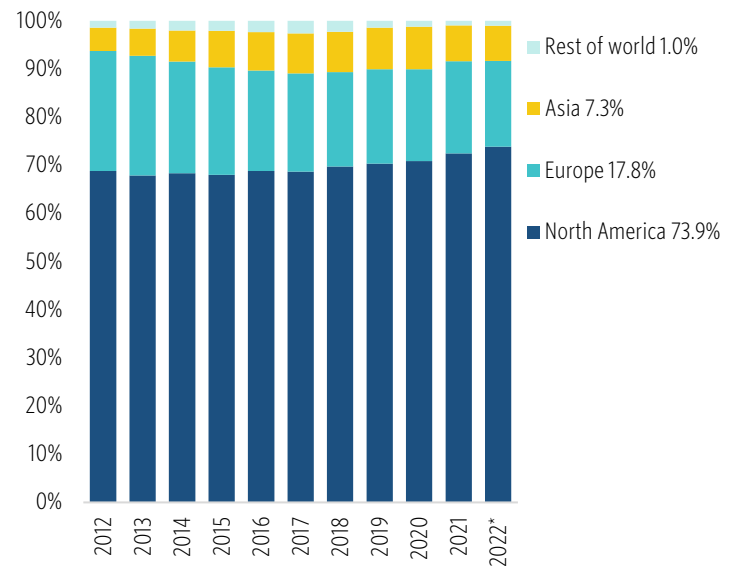
Source: PitchBook • Geography: Global
*As of December 31, 2022

Note: Constituent funds are bucketed into quartile rankings based on their fund categorization and vintage year. Quartiles are determined by TVPI as of the most recent available data.

Private Equity Index weighting by category



Private Equity Index weighting by region

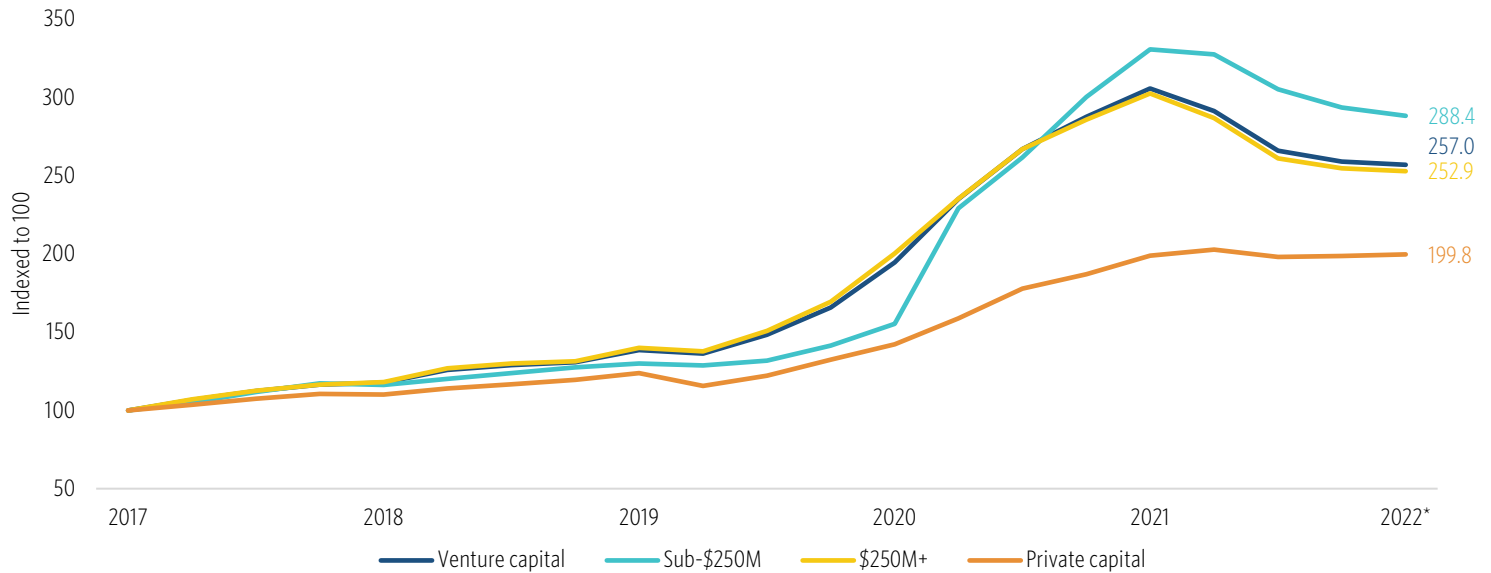


Source: PitchBook • Geography: Global
*As of September 30, 2022

Note: Fund weightings in each period are determined by the NAV captured from active funds. As of Q3 2022, the total NAV of active funds was \$1.9 trillion.

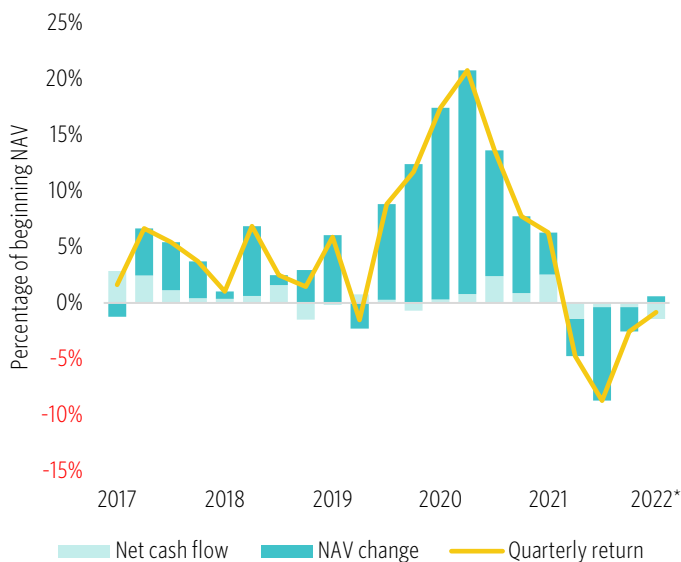
Venture capital

Venture Capital Indexes 5-year return



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

Venture Capital Index quarterly return by source



Venture Capital Indexes annualized returns*

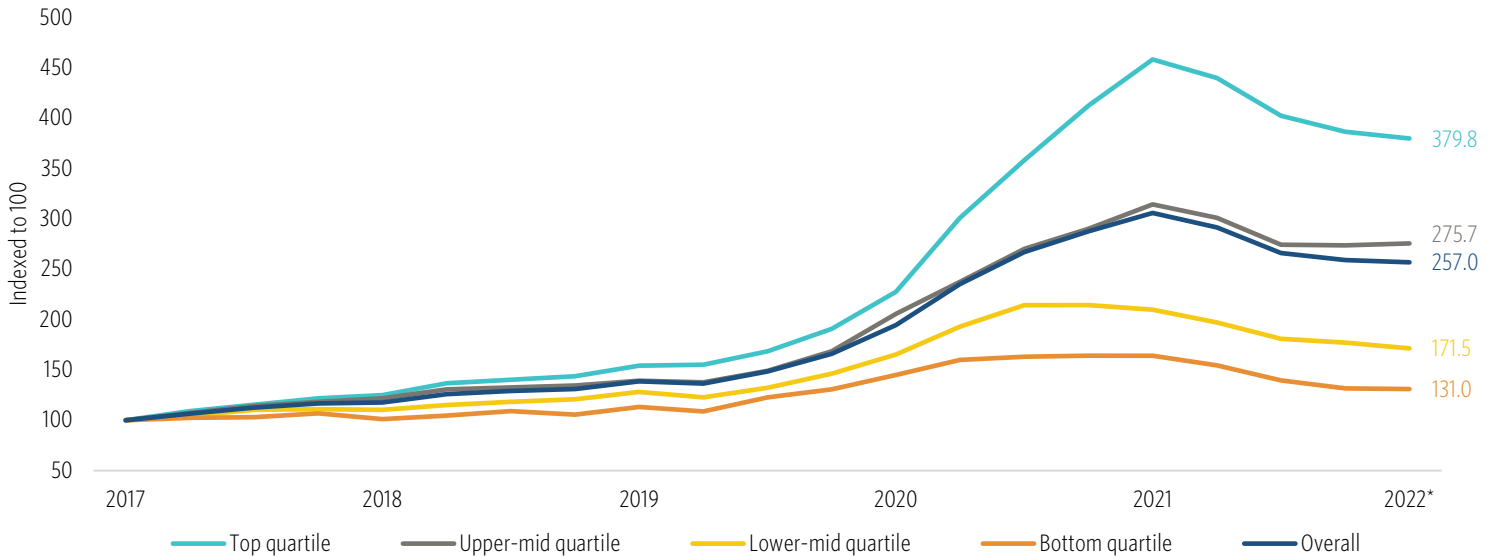
Index	1-year	5-year	10-year	15-year
Venture capital	-16.0%	20.8%	17.0%	12.2%
Sub-\$250M	-12.8%	23.6%	17.5%	12.7%
\$250M+	-16.4%	20.4%	16.9%	12.2%
Private capital	0.4%	14.8%	13.9%	10.4%

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

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Venture capital

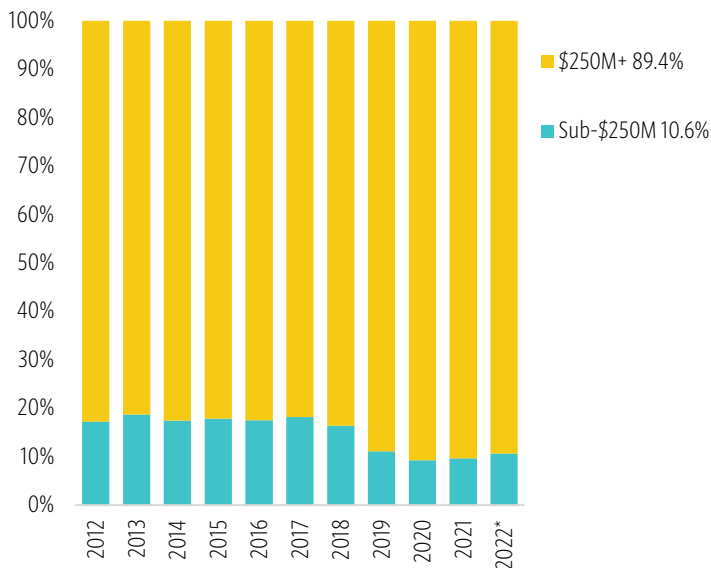
Venture Capital Index by fund quartile 5-year return



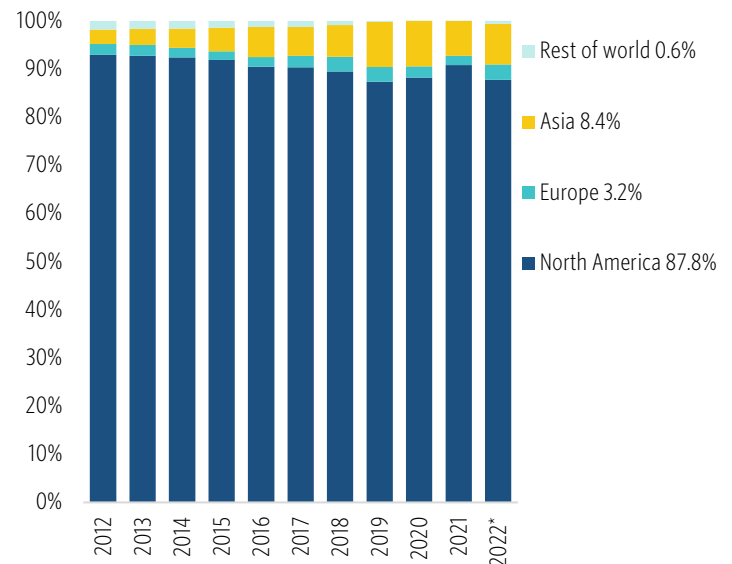
Source: PitchBook • Geography: Global
*As of December 31, 2022

Note: Constituent funds are bucketed into quartile rankings based on their fund categorization and vintage year. Quartiles are determined by TVPI as of the most recent available data.

Venture Capital Index weighting by category



Venture Capital Index weighting by region

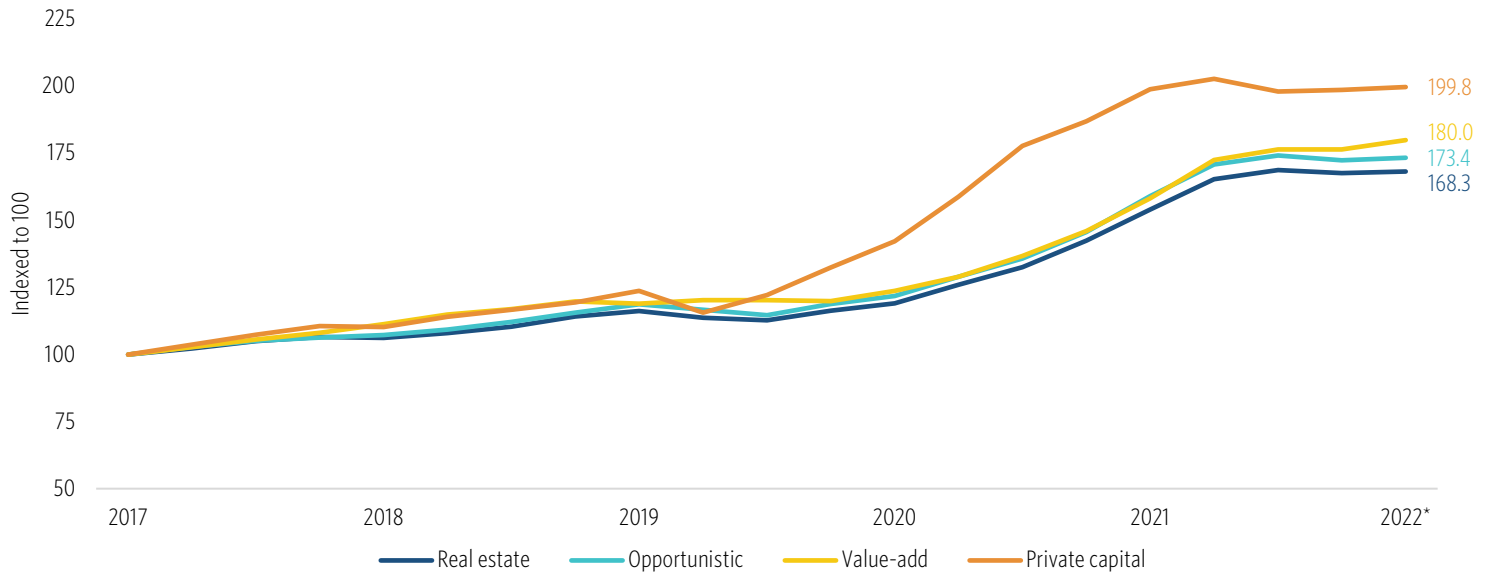


Source: PitchBook • Geography: Global
*As of September 30, 2022

Note: Fund weightings in each period are determined by the NAV captured from active funds. As of Q3 2022, the total NAV of active funds was \$216.7 billion.

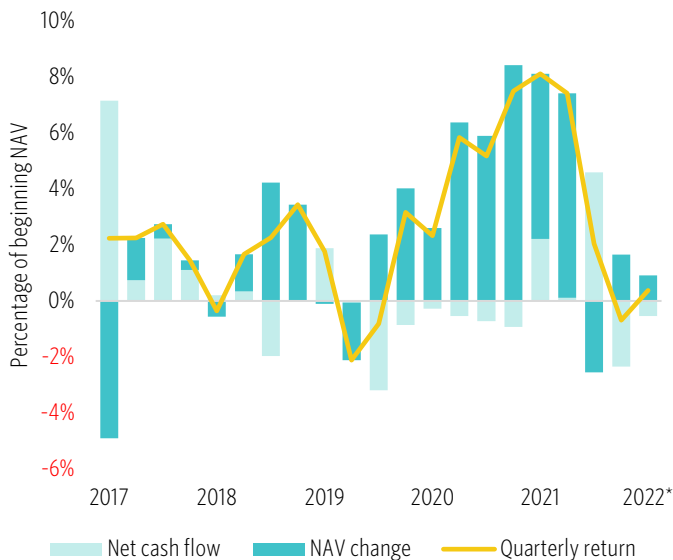
Real estate

Real Estate Indexes 5-year return



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

Real Estate Index quarterly return by source



Real Estate Indexes annualized returns*

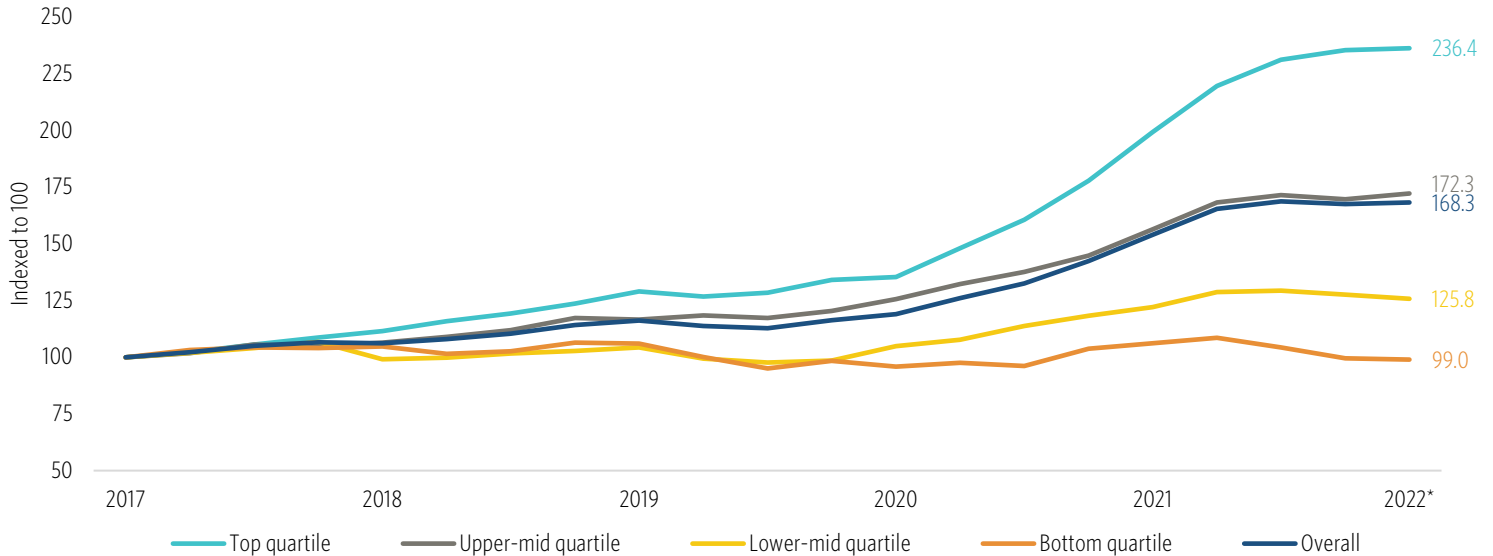
Index	1-year	5-year	10-year	15-year
Real estate	9.2%	11.0%	12.2%	3.8%
Opportunistic	9.0%	11.6%	12.5%	4.9%
Value-add	13.8%	12.5%	12.6%	3.7%
Private capital	0.4%	14.8%	13.9%	10.4%

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

Note: Net cash flows include distributions received by LPs and contributions sent to GPs for investment. NAV change captures the unrealized markups (or markdowns) after those cash flows have been factored in.

Real estate

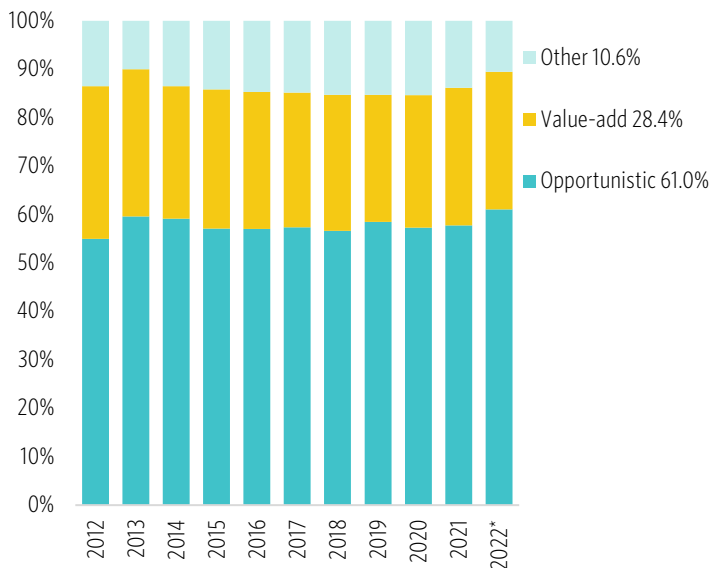
Real Estate Index by fund quartile 5-year return



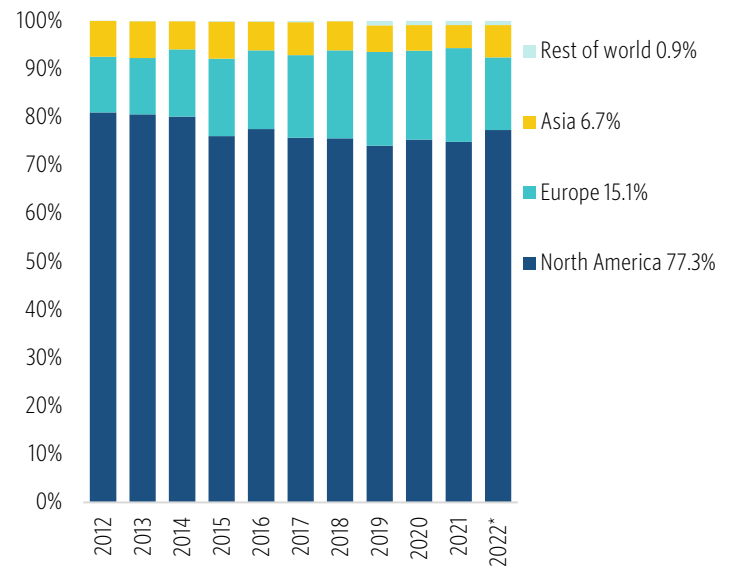
Source: PitchBook • Geography: Global
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Real Estate Index weighting by category



Real Estate Index weighting by region

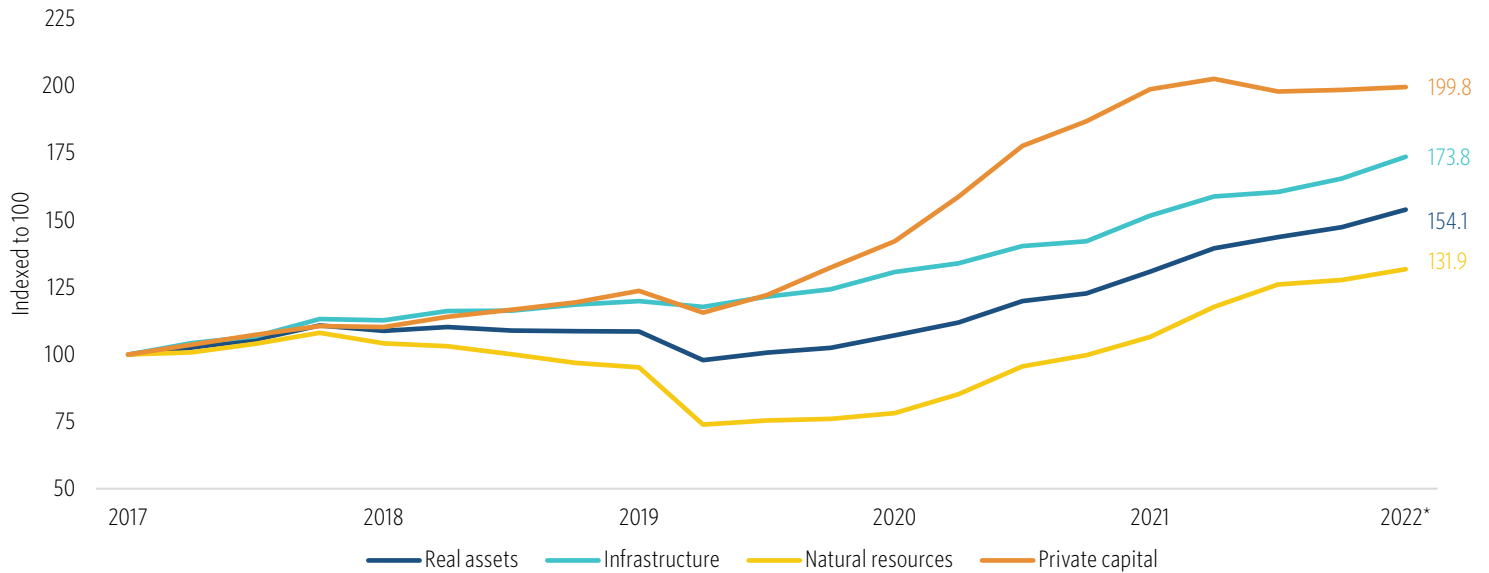


Source: PitchBook • Geography: Global
*As of September 30, 2022

Note: Fund weightings in each period are determined by the NAV captured from active funds. As of Q3 2022, the total NAV of active funds was \$306.9 billion.

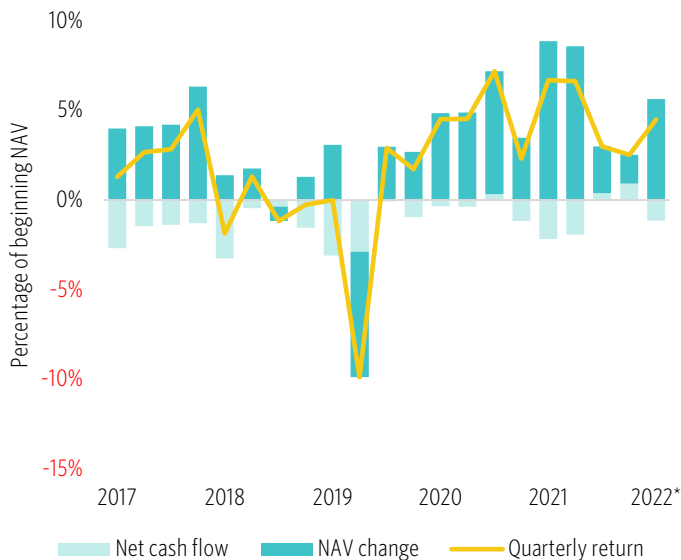
Real assets

Real Assets Indexes 5-year return



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

Real Assets Index quarterly return by source



Real Assets Indexes annualized returns*

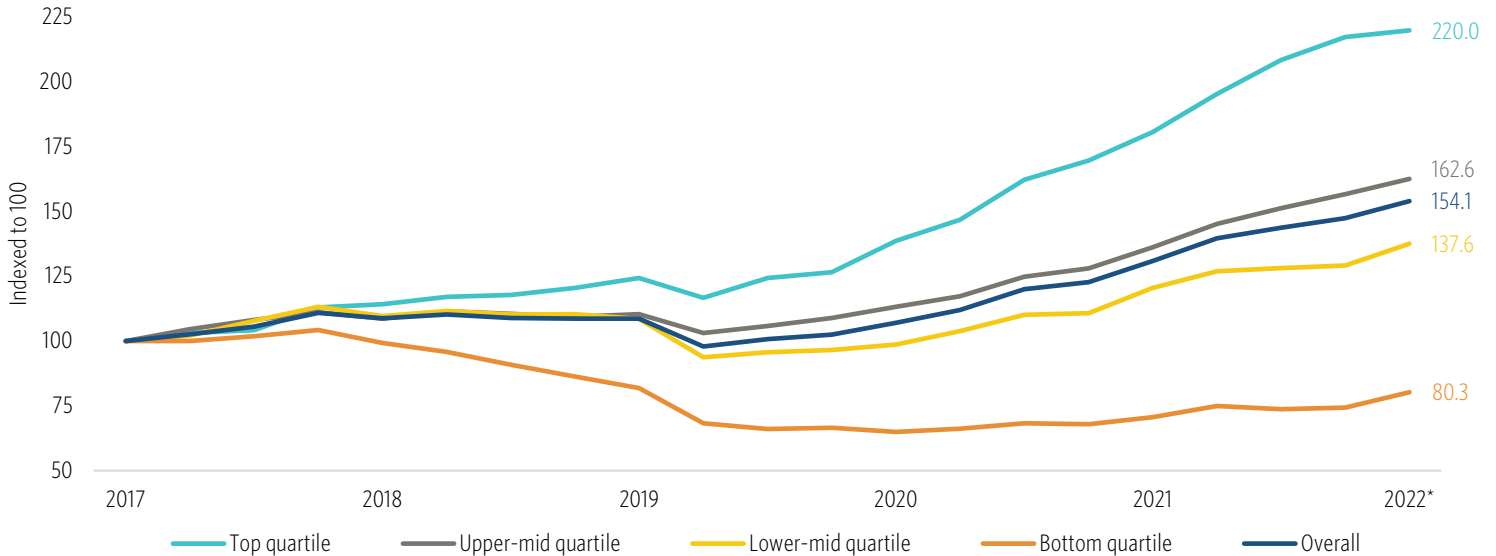
Index	1-year	5-year	10-year	15-year
Real assets	17.6%	9.0%	7.9%	7.5%
Infrastructure	14.5%	11.7%	11.3%	8.4%
Natural resources	23.8%	5.7%	4.0%	5.8%
Private capital	0.4%	14.8%	13.9%	10.4%

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

Note: Net cash flows include distributions received by LPs and contributions sent to GPs for investment. NAV change captures the unrealized markups (or markdowns) after those cash flows have been factored in.

Real assets

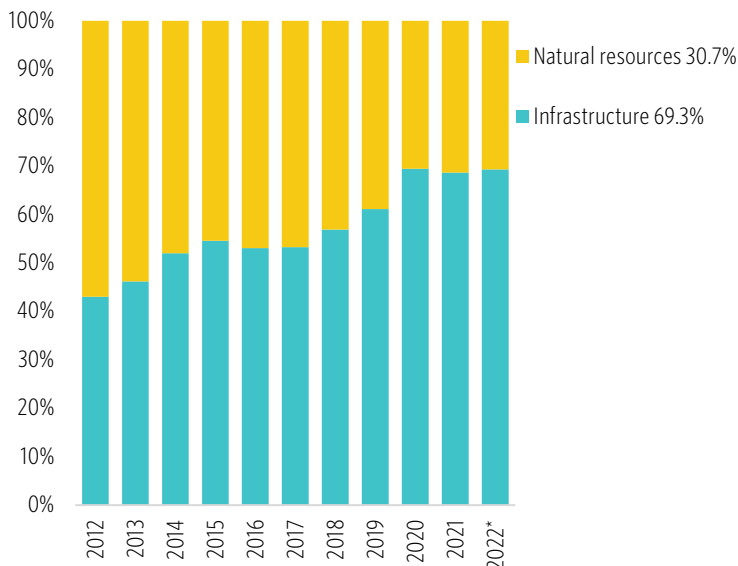
Real Assets Index by fund quartile 5-year return



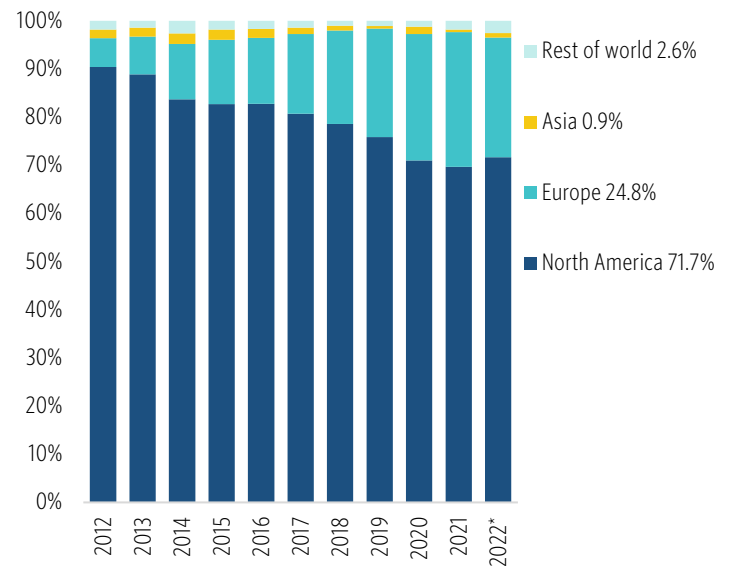
Source: PitchBook • Geography: Global
*As of December 31, 2022

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Real Assets Index weighting by category



Real Assets Index weighting by region

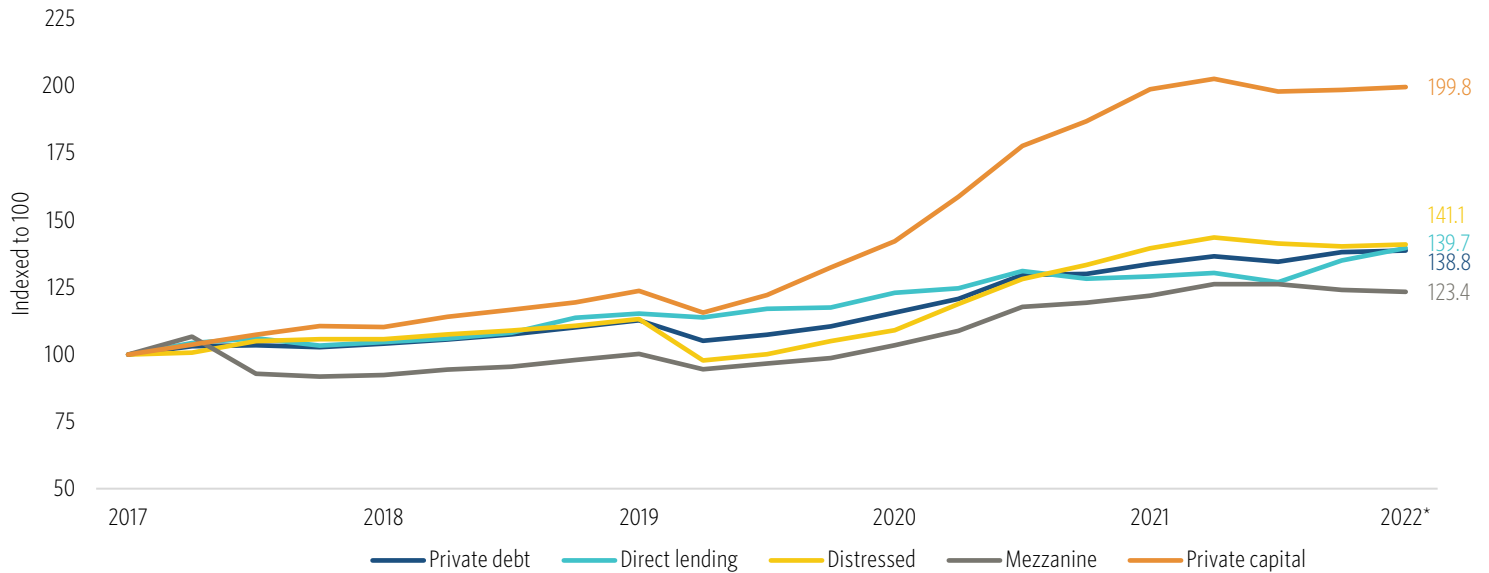


Source: PitchBook • Geography: Global
*As of September 30, 2022

Note: Fund weightings in each period are determined by the NAV captured from active funds. As of Q3 2022, the total NAV of active funds was \$404.5 billion.

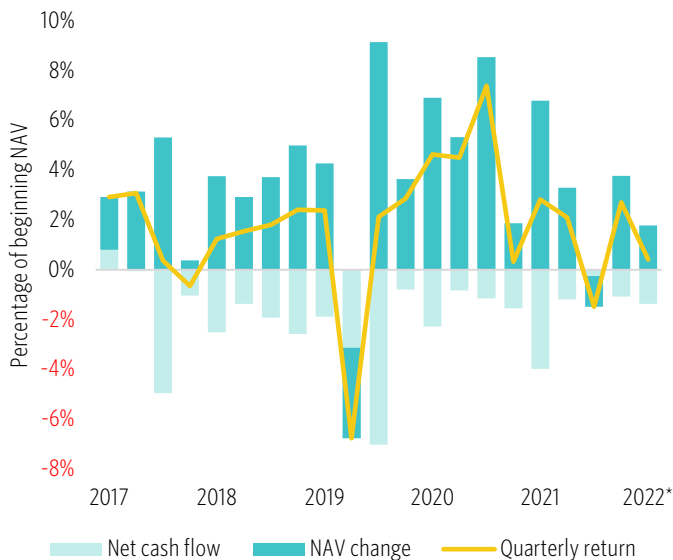
Private debt

Private Debt Indexes 5-year return



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

Private Debt Index quarterly return by source



Private Debt Indexes annualized returns*

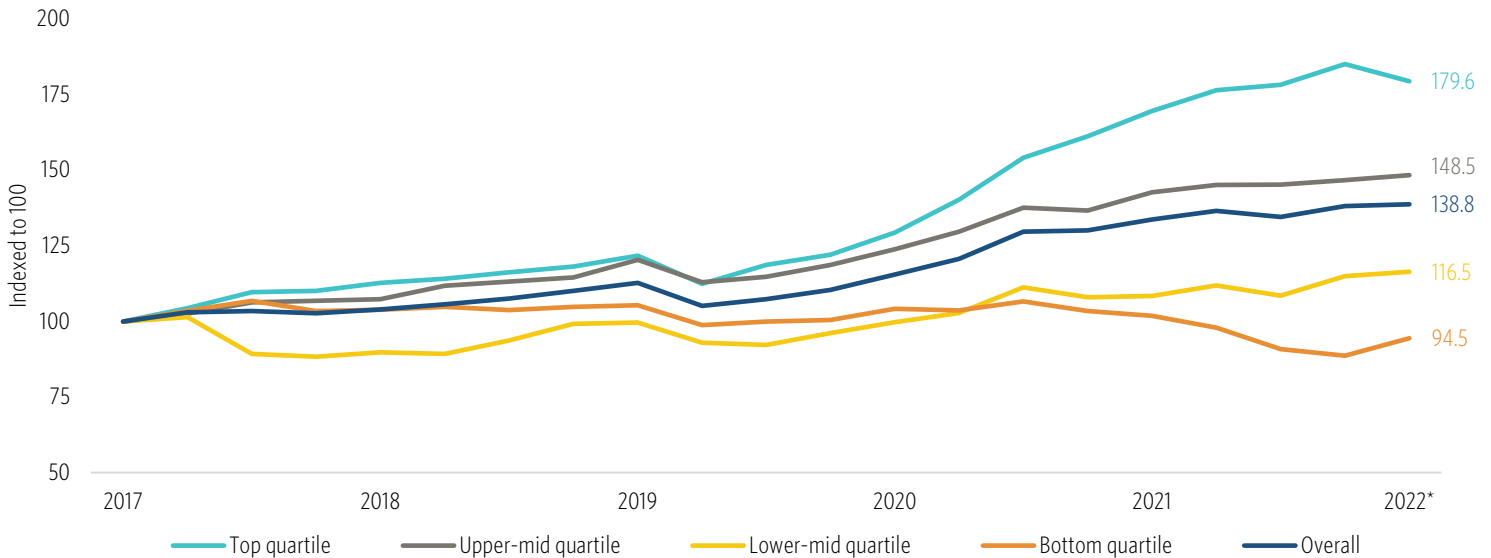
Index	1-year	5-year	10-year	15-year
Private debt	3.7%	6.8%	8.1%	7.6%
Direct lending	8.2%	6.9%	7.1%	N/A
Distressed	1.1%	7.1%	7.9%	6.9%
Mezzanine	1.1%	4.3%	8.0%	9.7%
Private capital	0.4%	14.8%	13.9%	10.4%

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

Note: Net cash flows include distributions received by LPs and contributions sent to GPs for investment. NAV change captures the unrealized markups (or markdowns) after those cash flows have been factored in.

Private debt

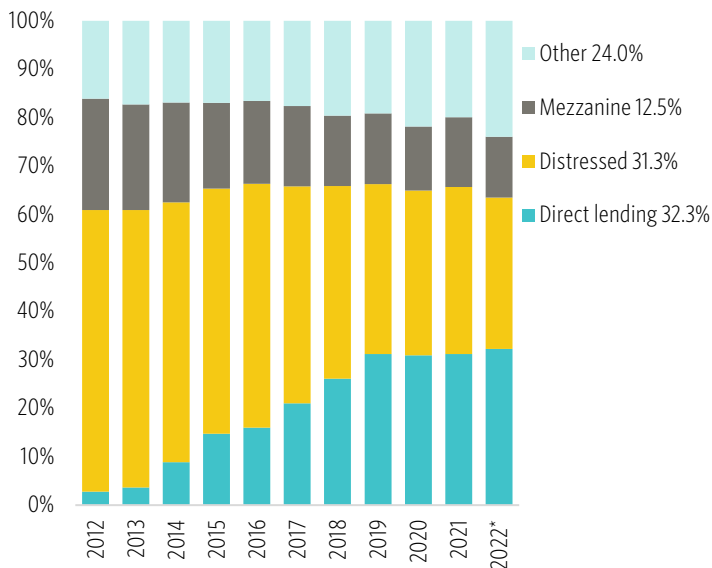
Private Debt Index by fund quartile 5-year return



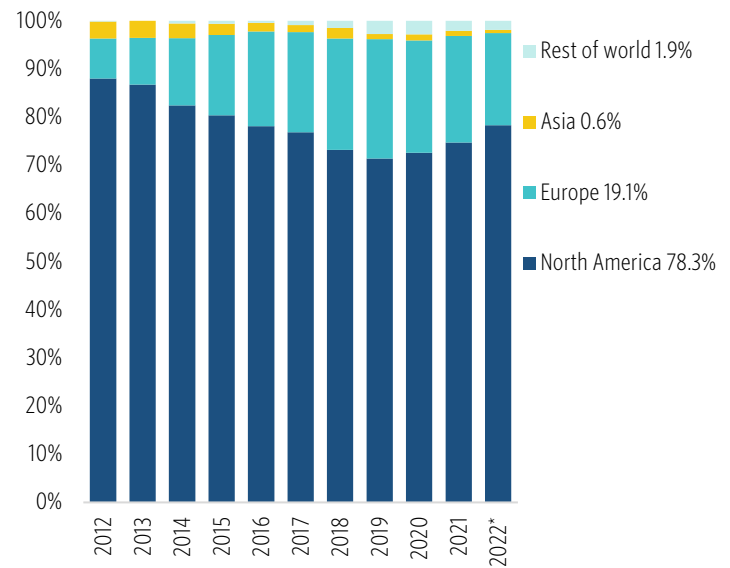
Source: PitchBook • Geography: Global
*As of December 31, 2022

Note: Constituent funds are bucketed into quartile rankings based on their fund categorization and vintage year. Quartiles are determined by TVPI as of the most recent available data.

Private Debt Index weighting by category



Private Debt Index weighting by region

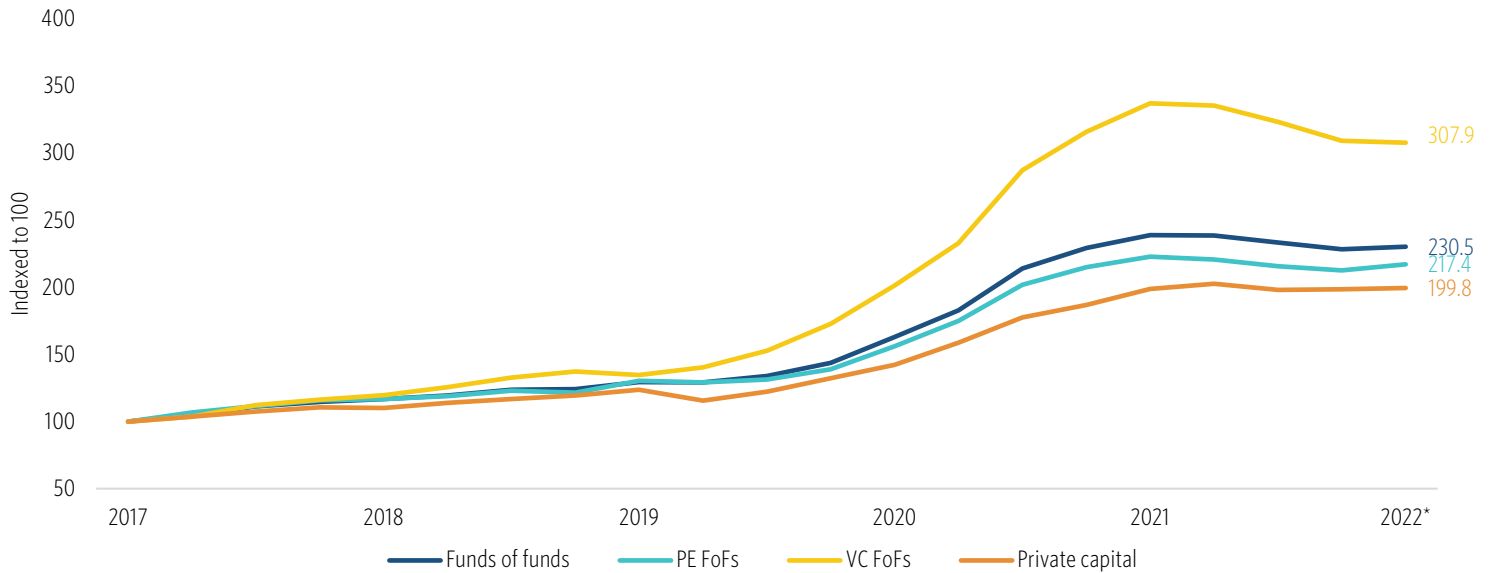


Source: PitchBook • Geography: Global
*As of September 30, 2022

Note: Fund weightings in each period are determined by the NAV captured from active funds. As of Q3 2022, the total NAV of active funds was \$384.2 billion.

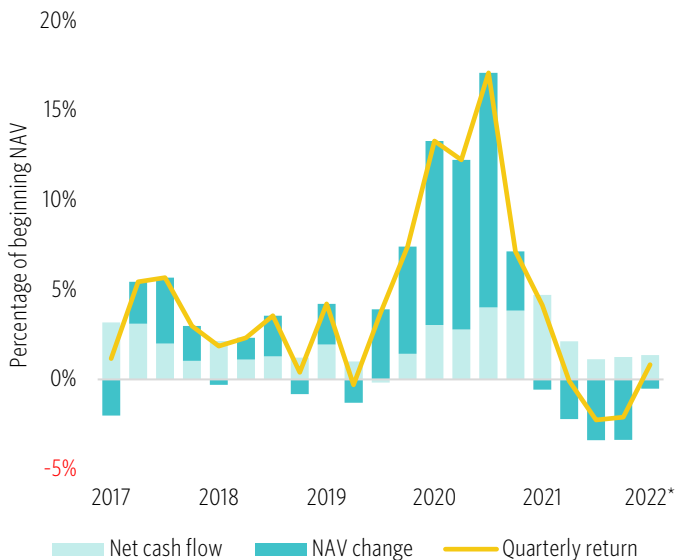
Funds of funds

Funds of Funds Indexes 5-year return



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

Funds of Funds Index quarterly return by source



Funds of Funds Indexes annualized returns*

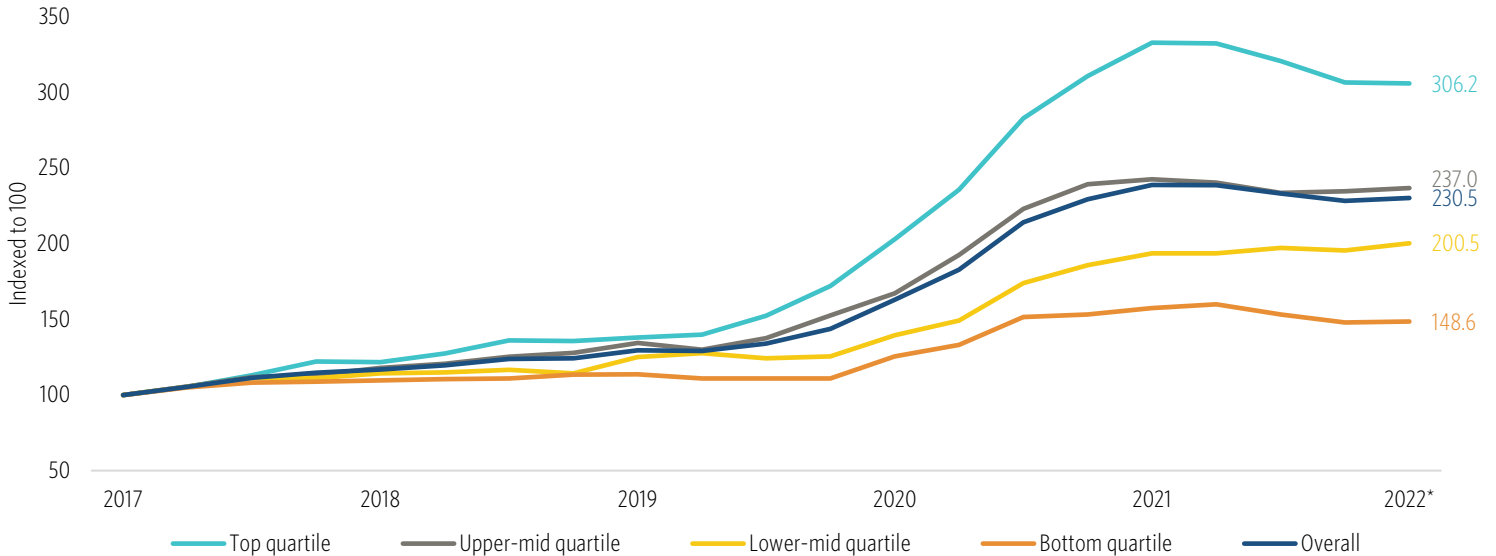
Index	1-year	5-year	10-year	15-year
Funds of funds	-3.6%	18.2%	14.8%	10.8%
PE FoFs	-2.5%	16.8%	14.2%	10.2%
VC FoFs	-8.7%	25.2%	19.2%	N/A
Private capital	0.4%	14.8%	13.9%	10.4%

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

Note: Net cash flows include distributions received by LPs and contributions sent to GPs for investment. NAV change captures the unrealized markups (or markdowns) after those cash flows have been factored in.

Funds of funds

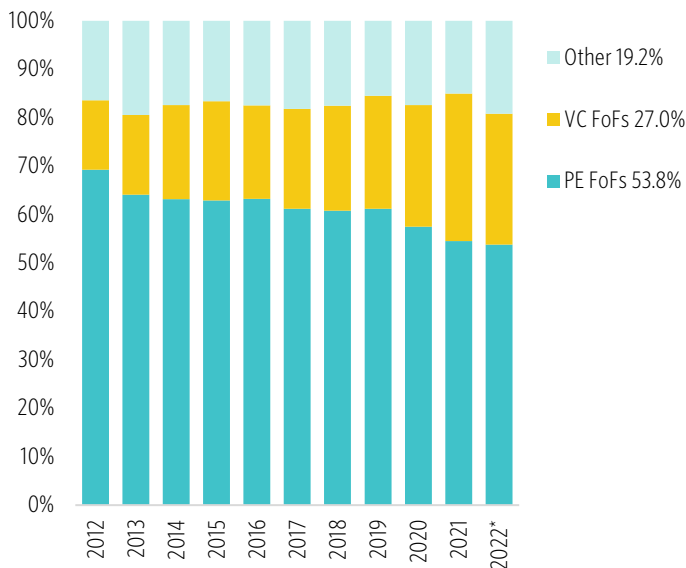
Funds of Funds Index by fund quartile 5-year return



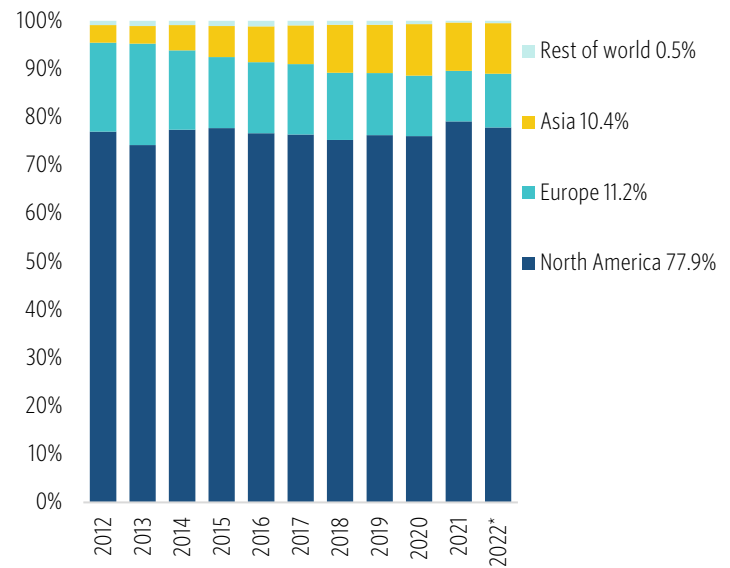
Source: PitchBook • Geography: Global
*As of December 31, 2022

Note: Constituent funds are bucketed into quartile rankings based on their fund categorization and vintage year. Quartiles are determined by TVPI as of the most recent available data.

Funds of Funds Index weighting by category



Funds of Funds Index weighting by region

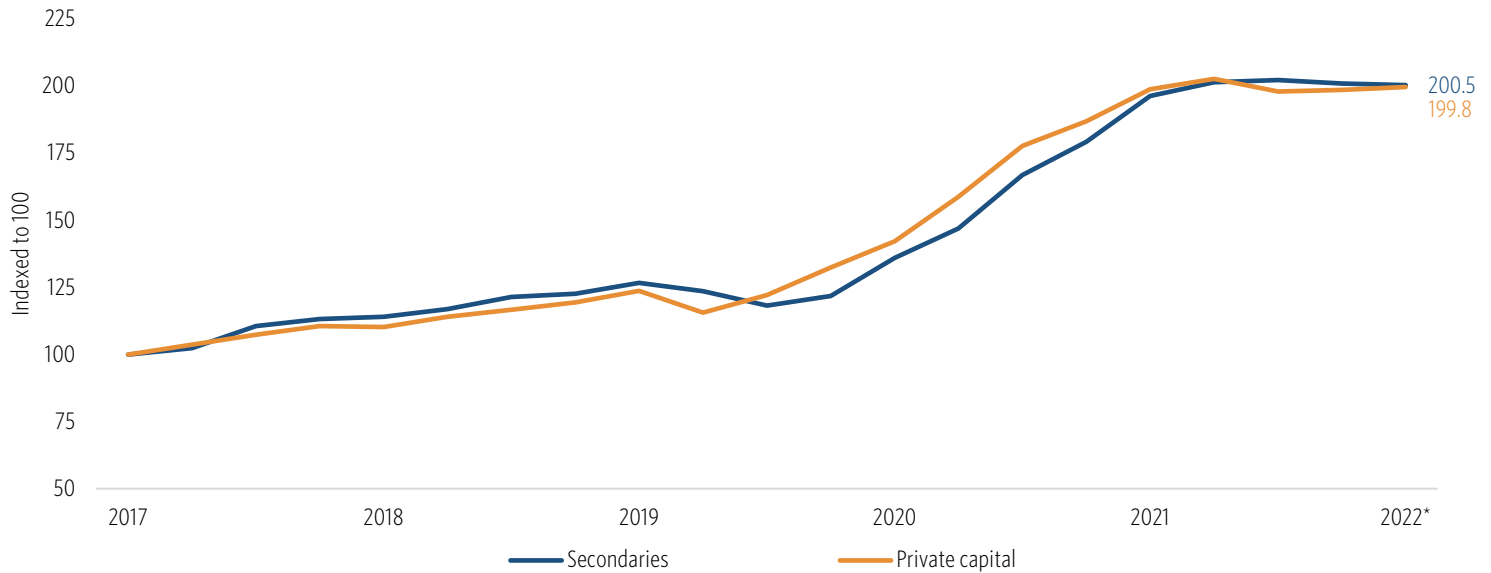


Source: PitchBook • Geography: Global
*As of September 30, 2022

Note: Fund weightings in each period are determined by the NAV captured from active funds. As of Q3 2022, the total NAV of active funds was \$124.7 billion.

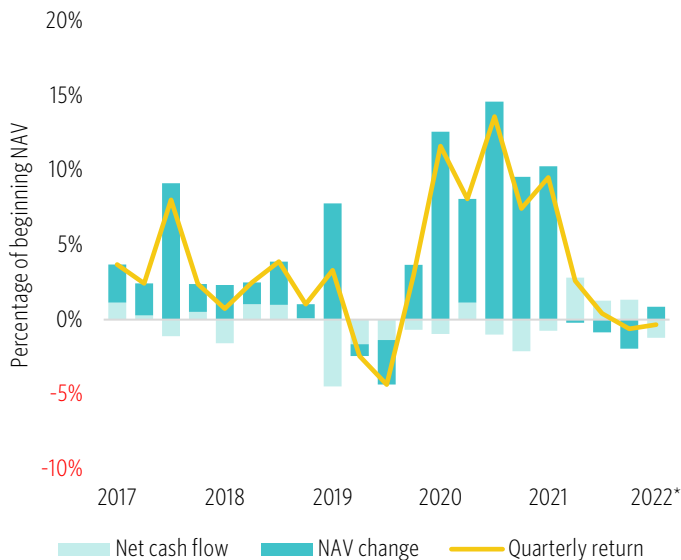
Secondaries

Secondaries Index 5-year return



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

Secondaries Index quarterly return by source



Secondaries Index annualized returns*

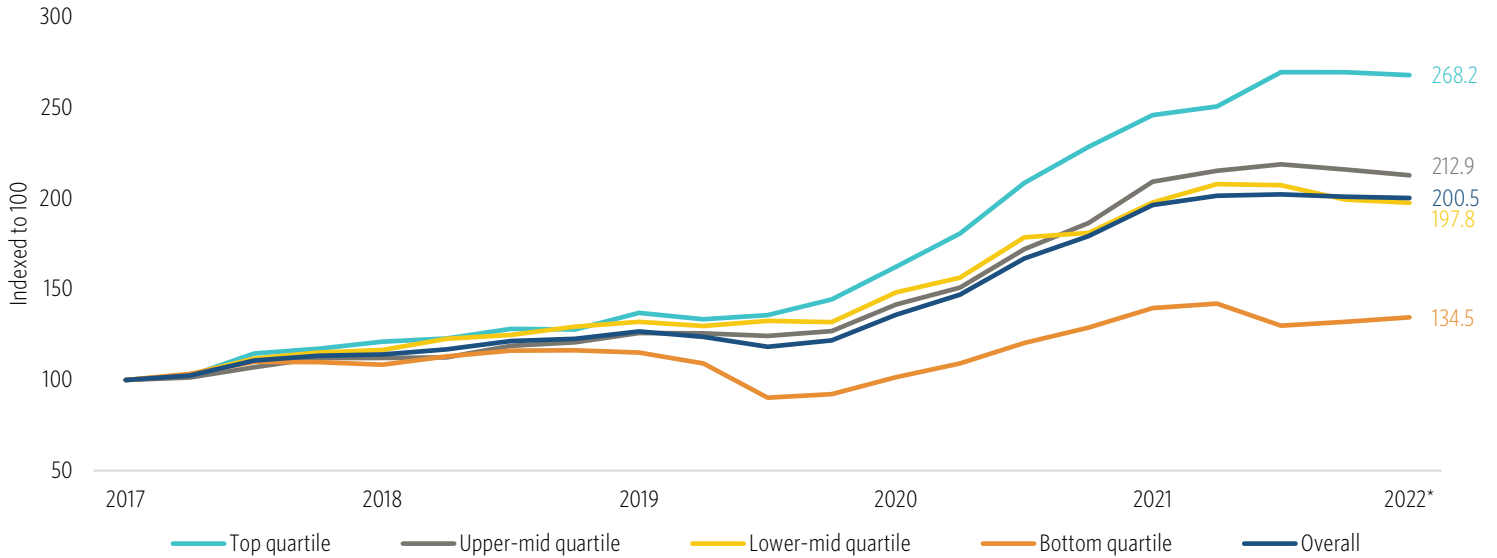
Index	1-year	5-year	10-year	15-year
Secondaries	2.0%	14.9%	13.5%	11.1%
Private capital	0.4%	14.8%	13.9%	10.4%

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

Note: Net cash flows include distributions received by LPs and contributions sent to GPs for investment. NAV change captures the unrealized markups (or markdowns) after those cash flows have been factored in.

Secondaries

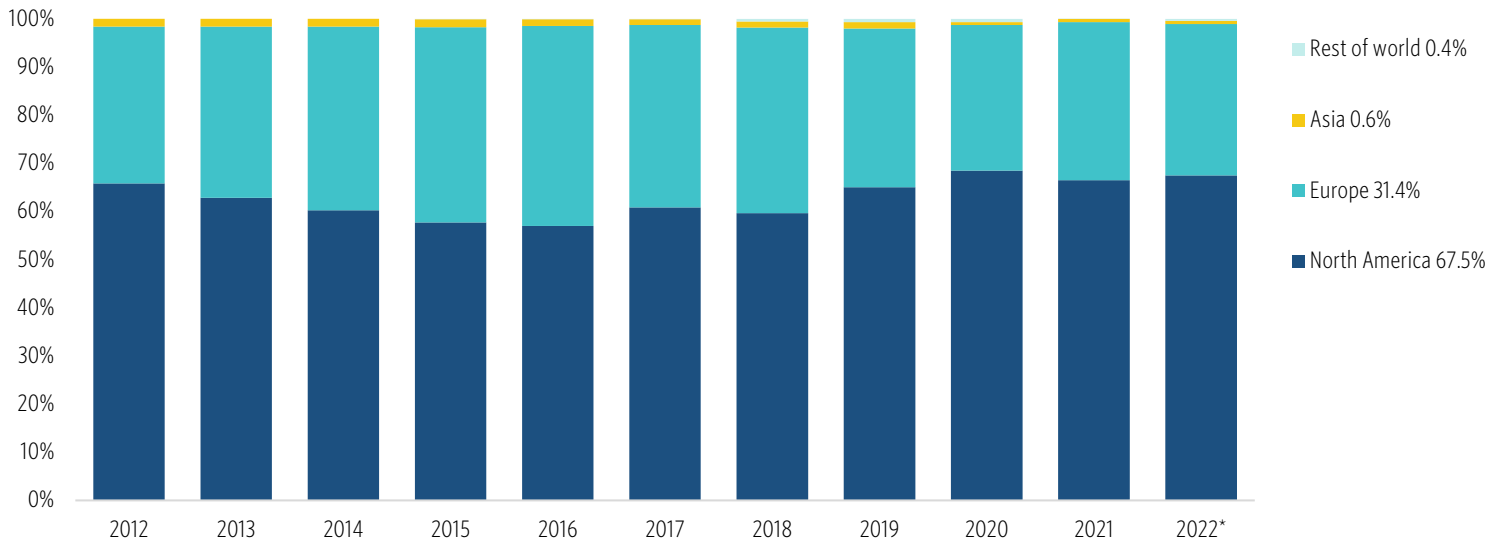
Secondaries Index by fund quartile 5-year return



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

Note: Constituent funds are bucketed into quartile rankings based on their fund categorization and vintage year. Quartiles are determined by TVPI as of the most recent available data.

Secondaries Index weighting by region



Source: PitchBook • Geography: Global
*As of September 30, 2022

Note: Fund weightings in each period are determined by the NAV captured from active funds. As of Q3 2022, the total NAV of active funds was \$154.7 billion.

Appendix

Glossary

Autocorrelation function (ACF)

The measurement of correlation between a lagged version of a variable as compared with its original version between two successive time intervals. The ACF quantifies the extent to which the values of a time series are linearly related to their own past values.

Contributions

The capital provided by the LP to the GP once the GP has identified an asset or assets it intends to acquire. Contributions differ from committed capital in that committed capital is the full amount that an LP has legally agreed to contribute to the fund over the course of the fund life. LPs only provide contributions when a GP calls down capital, which it typically does several times over the life of the fund.

Desmoothed returns

Because the true value of private portfolio companies is often unknown, private market returns are often estimated using fair value accounting, resulting in conservative valuation estimates. These conservative valuation estimates result in artificially smoothed reported returns that underestimate the volatility that private funds experience. This also results in a tendency for returns to be autocorrelated. To desmooth the return series, an adjustment is made to the reported returns using a one-period ACF to more accurately reflect volatility.

Distributions

The capital returned to a limited partner (LP) from the general partner (GP) after the fund exits an investment or as the fund's assets produce income.

Net asset value (NAV)

NAV is the remaining value of a fund at a given point in time. It is the value of the assets in a fund that have not yet been realized. NAV will typically rise early in a fund's life as capital is called down by the GP and invested. As the fund exits investments and distributes capital to its LPs, or if the fund's investments are marked down, the NAV will decrease.

Quarterly return

Calculated as the percentage change in aggregate NAV for a group of funds, considering contributions and distributions during the quarter. This makes the calculation tantamount to a quarterly compounded growth rate.

$$\text{Quarterly return} = \left[\frac{\text{NAV at end of quarter} + \text{distributions during the quarter} - \text{contributions during the quarter}}{\text{NAV at the beginning of the quarter}} \right] - 1$$

Total value to paid-in (TVPI) multiple

A measurement of both the realized and unrealized value of a fund as a proportion of the total paid-in (contributed) capital.

Vintage year

The vintage year is based on the year that a fund makes its first capital call. If the year of the initial call is unknown, the year of the final close is used as the vintage year. However, if a firm publicly declares via press release or marketing materials a fund to be of a particular vintage that is different than either of the first conditions, the firm's classification takes precedence.

Fund classifications²

Private equity

Buyout
Growth/expansion
Other
Restructuring/turnaround
Diversified PE

Venture capital

Real estate

Value-add
Opportunistic
Other
Core
Core-plus
Distressed

Real assets

Infrastructure
Core
Core-plus
Value-add
Opportunistic
Greenfield
Natural resources
Oil & gas
Timber
Agriculture
Metals/mining

Private debt

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

Funds of funds

Private equity
Venture capital
Other
Real estate
Real assets
Private debt
General

Secondaries

Private equity
Venture capital
Real estate
Real assets
Private debt
General

²: Italicized fund types are not broken out in this report.

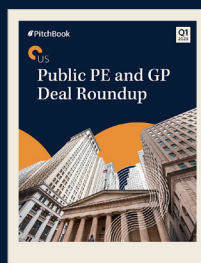
Additional research

Market updates



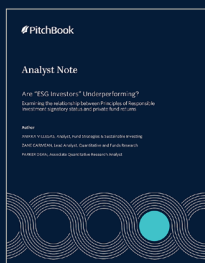
Q1 2023 Global Real Assets Report

Download the report [here](#)



Q1 2023 US Public PE and GP Deal Roundup

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PitchBook Analyst Note: Are "ESG Investors" Underperforming?

Download the report [here](#)



Q1 2023 Private Market Fundraising Report

Download the report [here](#)



2022 PitchBook Benchmarks (as of Q3 2022)

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2022 Global Fund Performance Report

Download the report [here](#)

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