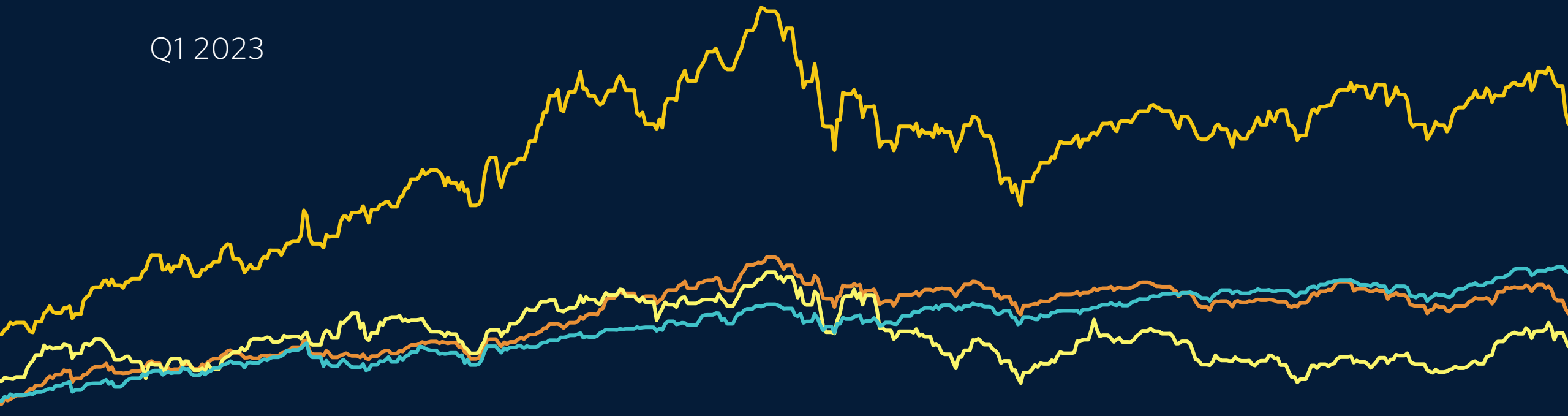
PitchBook

QUANTITATIVE PERSPECTIVES

Putting the Pieces Back Together

Q1 2023



Putting the Pieces Back Together

Introduction

2020's chaotic financial market caused by the pandemic and then the Federal Reserve's (Fed's) response to it created an atmosphere of irrational exuberance. Easy money led to sky-high asset valuations for VC-backed public listings, which encouraged comparable mature startups to expand their operations with easy money justified by a probable exit right around the corner.

In 2021, the easy monetary policy that kept the economy together turned into a double-edged sword as inflation reared its ugly head. Market participants sensed the party's end as the Fed reversed course by increasing discount rates in 2022. The resulting hangover dominated the rest of that year and was coupled with commodity shocks caused by a devastating war in Eastern Europe increasing geopolitical tensions. Startups that were once gluttonous had to pivot to conserve capital through layoffs and reduced operations. At the same time, nontraditional investors, which had strongly supported the ecosystem in 2021, shied away as the exit market closed, leaving startups in the lurch.

Now, in 2023, stability appears to be on the horizon as interest rate policy becomes clearer and inflation calms, albeit more slowly than expected. Startups and investors must now come together to restart the flow of capital and clear the backlog of expectant public listings that missed their chance in 2021.

Published on March 16, 2023

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Key takeaways

- Valuation multiples play a strong role in dictating how many companies will publicly list. Currently, multiples for VC-backed public companies are the lowest they have been seen since 2016. Rising valuations could hint at an opening IPO market.
- Once open, the population of VC-backed startups can support over 200 companies that are ready to go public but haven't been able to due to depressed financial conditions. These exits could lead to higher distributions to LPs as GPs obtain liquidity.
- There is an imbalance in the supply and demand of capital, most notably at the late stage. Growth in startups' need for capital has decelerated, but the supply of capital has dropped more quickly, leaving late-stage software and healthcare services & systems the most starved industries at this stage.
- Nontraditional investors, a primary capital source for late-stage startups during the pandemic, have nudged their investments toward the early stage or away from venture capital completely, leaving some mature startups out to dry.
- The market has become more investor friendly as startups seeking capital at a flat or up valuation accept more investor-friendly deal terms. The economic consequences of this must be clearly understood, and founders should carefully consider the impact of increasing deal structure.
- Smaller, less mature companies seem to provide the best return to investors. LPs and GPs should consider this as discounts in the market are likely to appear in 2023, spelling better-than-average performance for that vintage year.

It's been a wild ride since the start of 2020. Public markets are clawing their way back from lows in 2022, but there is still a long way to go for the market to recover fully.

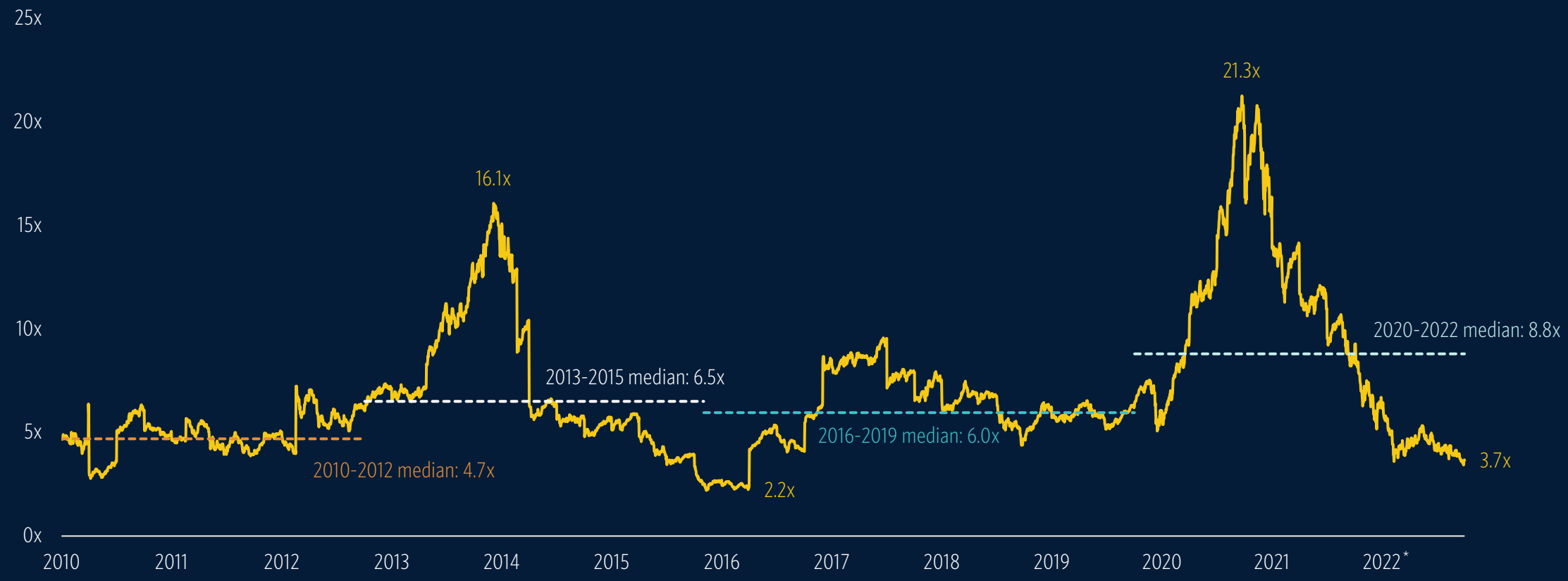
Performance of PitchBook IPO and DeSPAC Indexes versus Nasdaq

Source: PitchBook, Morningstar | Geography: US

*As of February 17, 2023

Valuations have come down significantly from their peak, reaching levels not seen since 2016. However, over the last few months, the tech wreck appears to have stabilized.

TTM price-to-sales multiple of VC-backed IPO Index



Source: PitchBook, Morningstar | Geography: US

*As of December 31, 2022

To give some additional perspective, there have been several runups in valuations since 2010. However, we are currently down significantly from the last high.

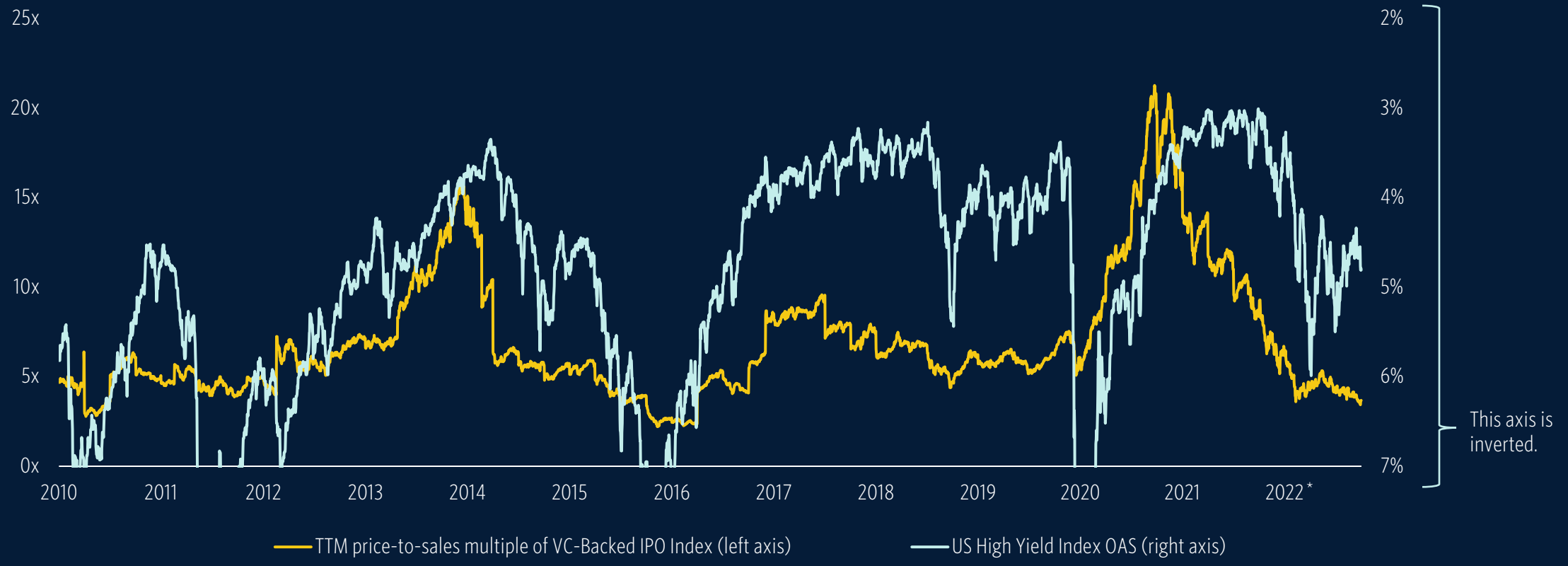
VC-Backed IPO Index with new high markers

Source: PitchBook | Geography: US

*As of February 28, 2023

Valuation declines are related to periods of instability as evidenced by the option-adjusted spread (OAS) on high-yield securities.

TTM price-to-sales multiple of VC-backed IPO Index constituents versus High Yield OAS

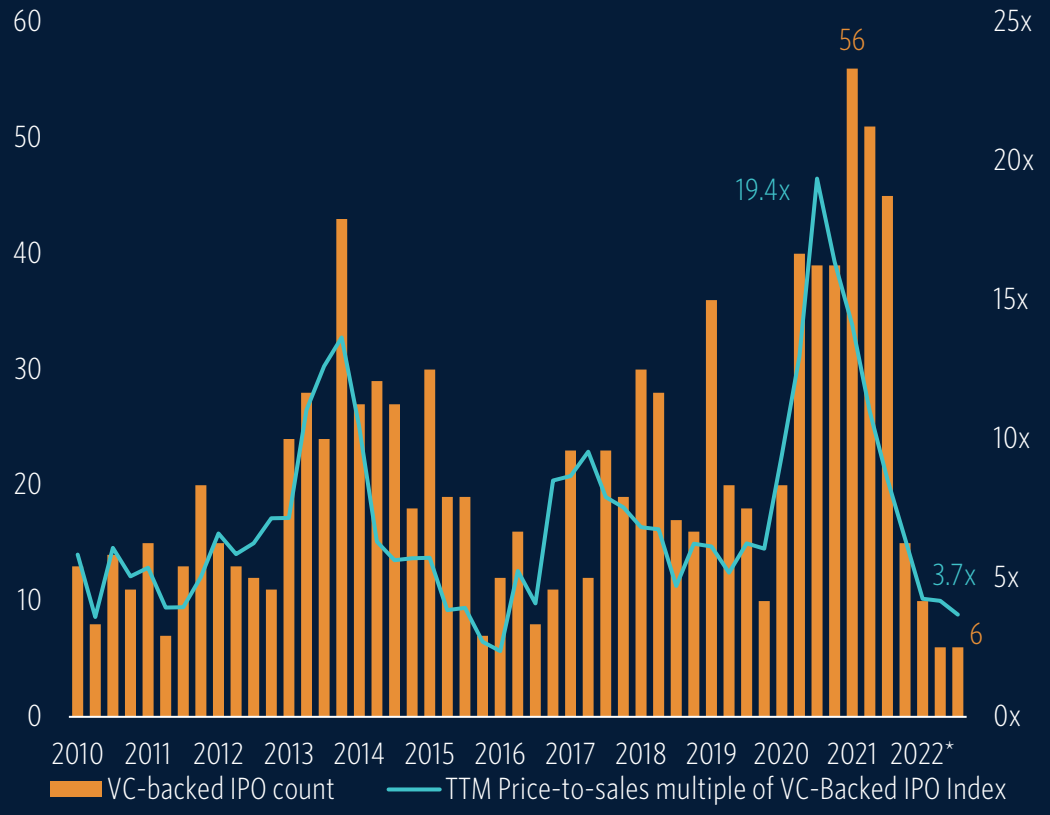


Sources: PitchBook, Morningstar, FRED | Geography: US

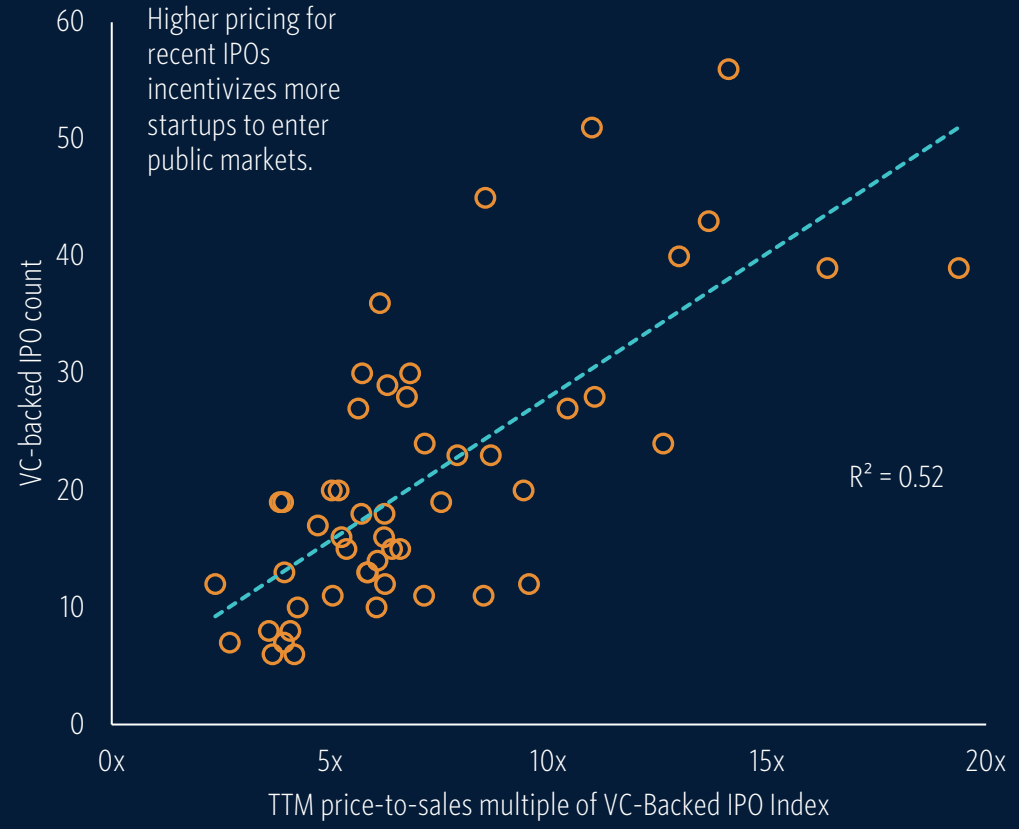
*As of December 31, 2022

Valuation multiples influence how open or closed the IPO window is for companies looking to enter the public markets...

TTM price-to-sales multiple of VC-backed IPO Index versus quarterly IPO count



Relationship between TTM price-to-sales multiple of VC-backed IPO Index versus quarterly IPO count*

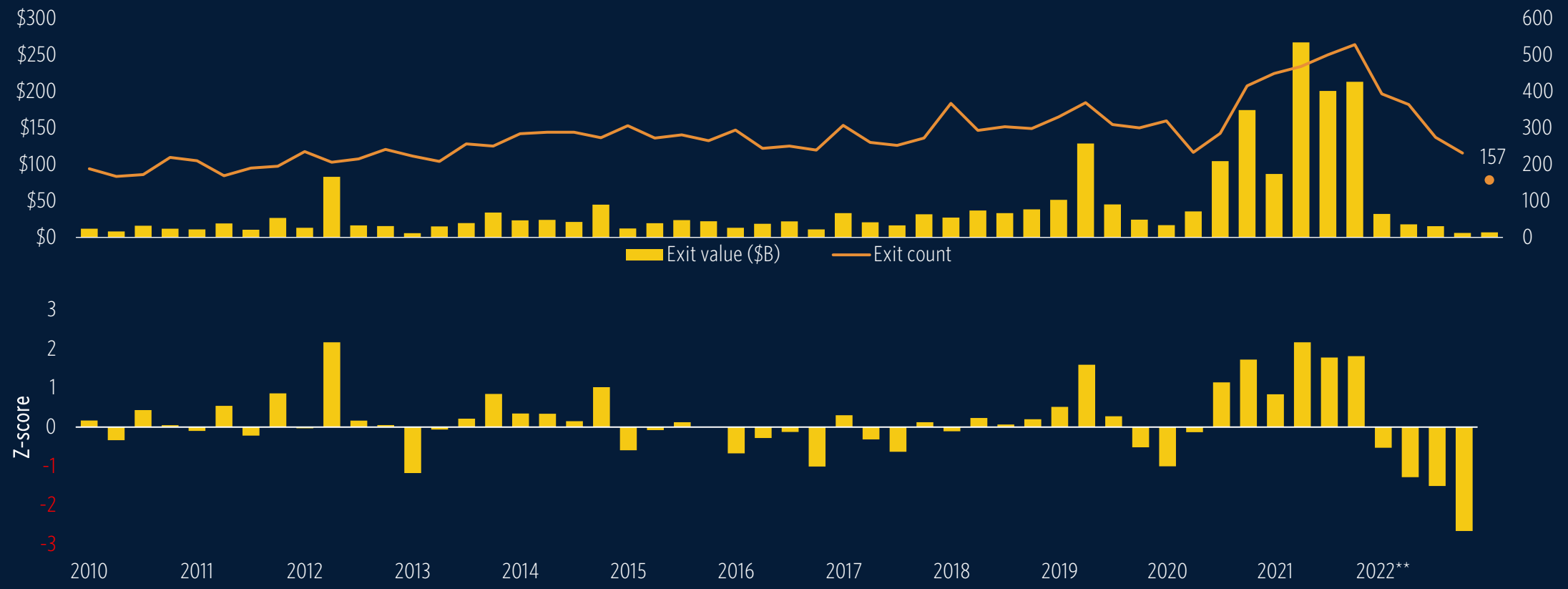


Source: PitchBook | Geography: US

*As of December 31, 2022

...and right now, the low valuation multiples may be keeping the IPO window closed. Painfully, all exits are significantly below historical levels, too...

Quarterly VC exit activity* and trend-adjusted Z-score



Source: PitchBook | Geography: US

*As of February 27, 2023; **As of December 31, 2022

...and most segments are below their short-term trend. Energy and transportation are bright spots in the VC ecosystem, and software is experiencing the worst short-term slowdown in activity.

VC exit scorecard*

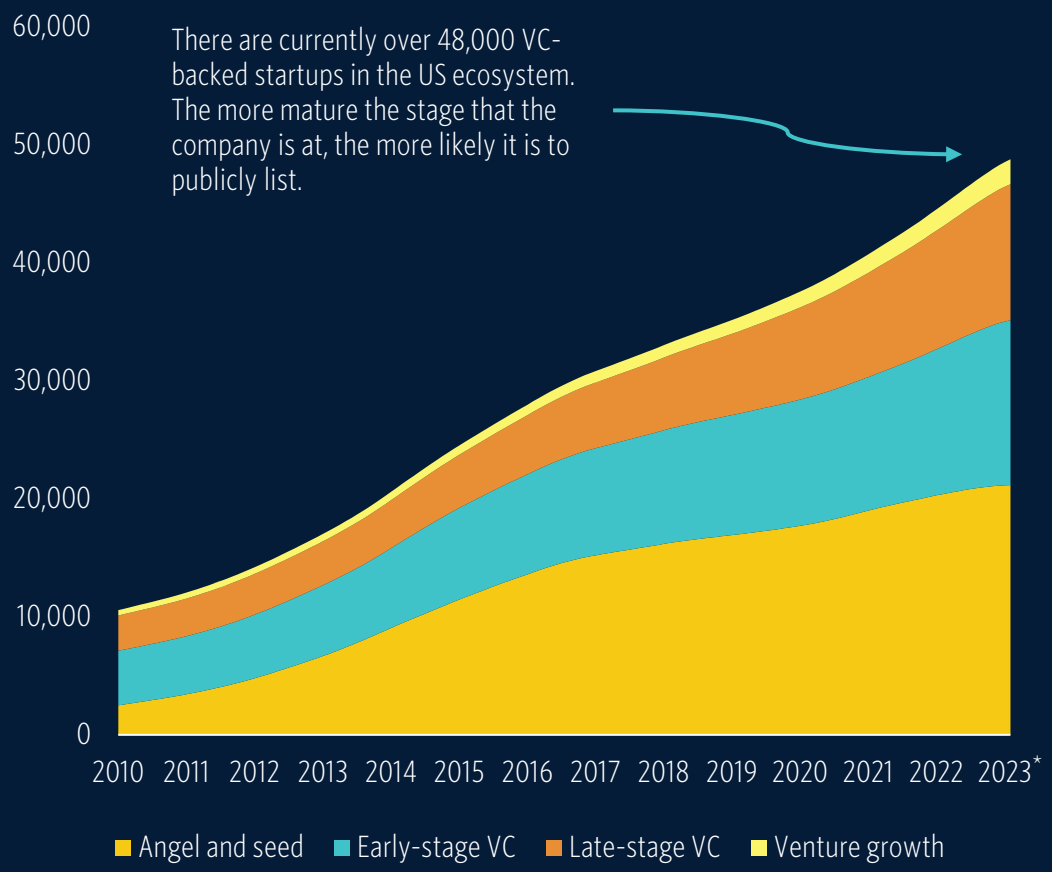
		Exit count				Exit value ($B)			
	Segment	Current	% of total	Long-term score	Short-term score	Current	% of total	Long-term score	Short-term score
	Total	659	100.0%	-1.27	-2.06	$12.78	100.0%	-2.41	-2.62
Sector	B2B	88	13.9%	-2.06	-1.84	$2.27	18.1%	-1.45	-1.31
Sector	B2C	66	10.4%	-0.76	-0.95	$0.66	5.2%	-2.42	-1.54
Sector	Energy	11	1.7%	1.13	0.47	$0.35	2.8%	0.03	-0.20
Sector	Healthcare devices & supplies	25	3.9%	-1.57	-1.10	$1.25	9.9%	-1.58	-1.10
Sector	Healthcare services & systems	44	6.9%	-1.18	-1.39	$0.43	3.4%	-1.53	-1.43
Sector	Information technology hardware	23	3.6%	0.24	-1.22	$0.77	6.2%	-0.70	-1.53
Sector	Media	19	3.0%	-0.92	-0.43	$0.86	6.9%	0.07	-0.38
Sector	Pharma & biotech	51	8.0%	-1.25	-0.92	$3.24	25.7%	-2.25	-1.79
Sector	Software	298	46.9%	-0.72	-1.81	$2.26	18.0%	-3.01	-3.24
Sector	Transportation	10	1.6%	0.58	0.13	$0.48	3.8%	-0.71	-0.20
Type	Acquisition	453	68.7%	-1.81	-2.39	$7.13	55.8%	-3.03	-2.80
Type	Buyout	166	25.2%	1.03	-0.55	$2.02	15.8%	-1.26	-0.17
Type	Public listing	40	6.1%	-1.30	-1.32	$3.63	28.4%	-1.82	-1.85

Source: PitchBook | Geography: US

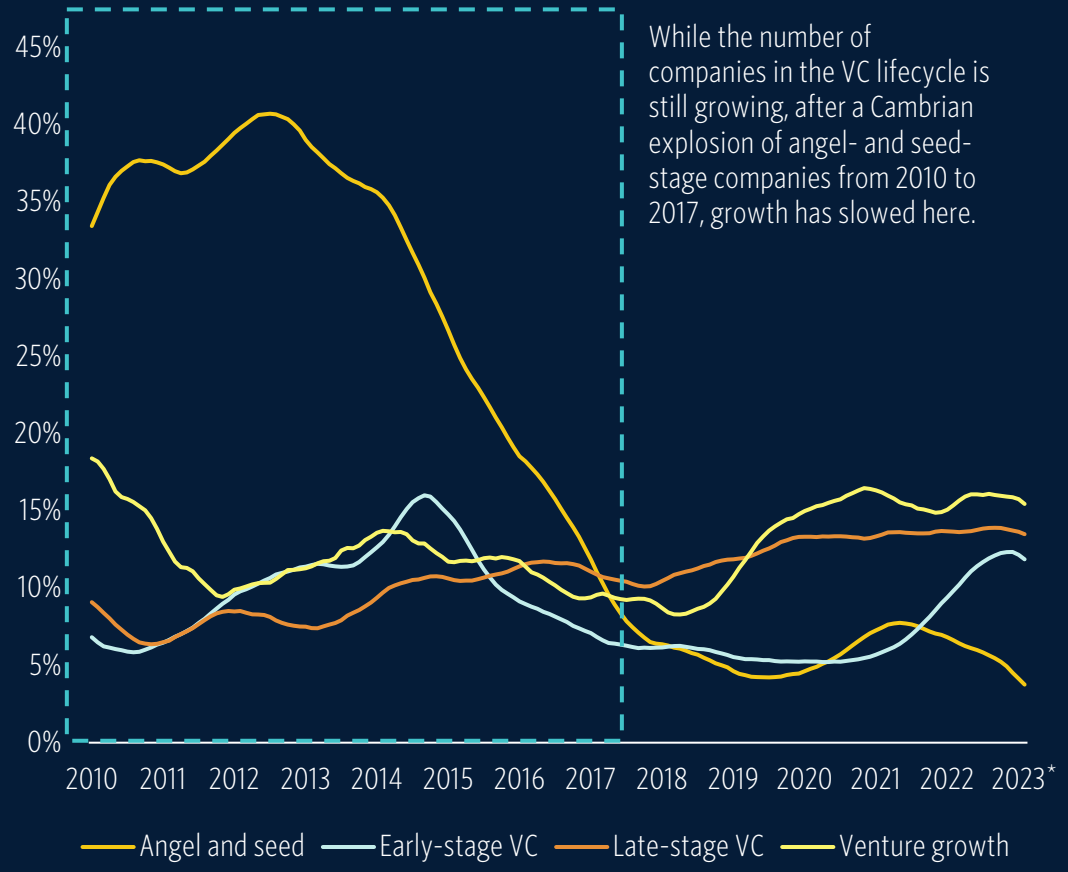
*As of December 31, 2022

Pushed-off IPOs are clearly building. We attempt to quantify the backlog by first considering the number of companies that are moving through the VC lifecycle at each stage...

VC company inventory by stage



VC company inventory YoY growth

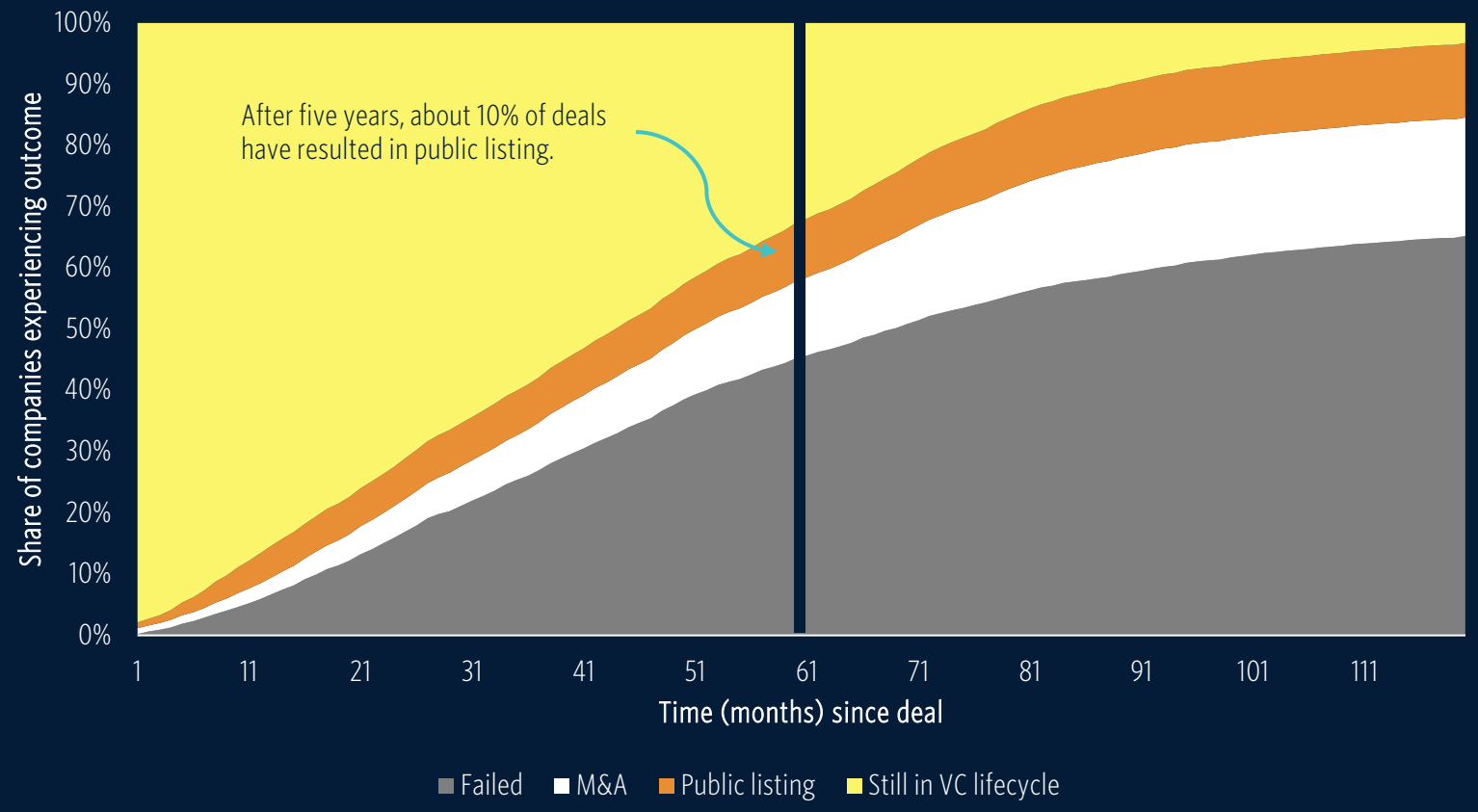


Source: PitchBook | Geography: US

*As of January 31, 2023

...and then we consider when these companies tend to exit, go out of business, or continue through the VC lifecycle...

VC cohort outcomes by time (months) since deal

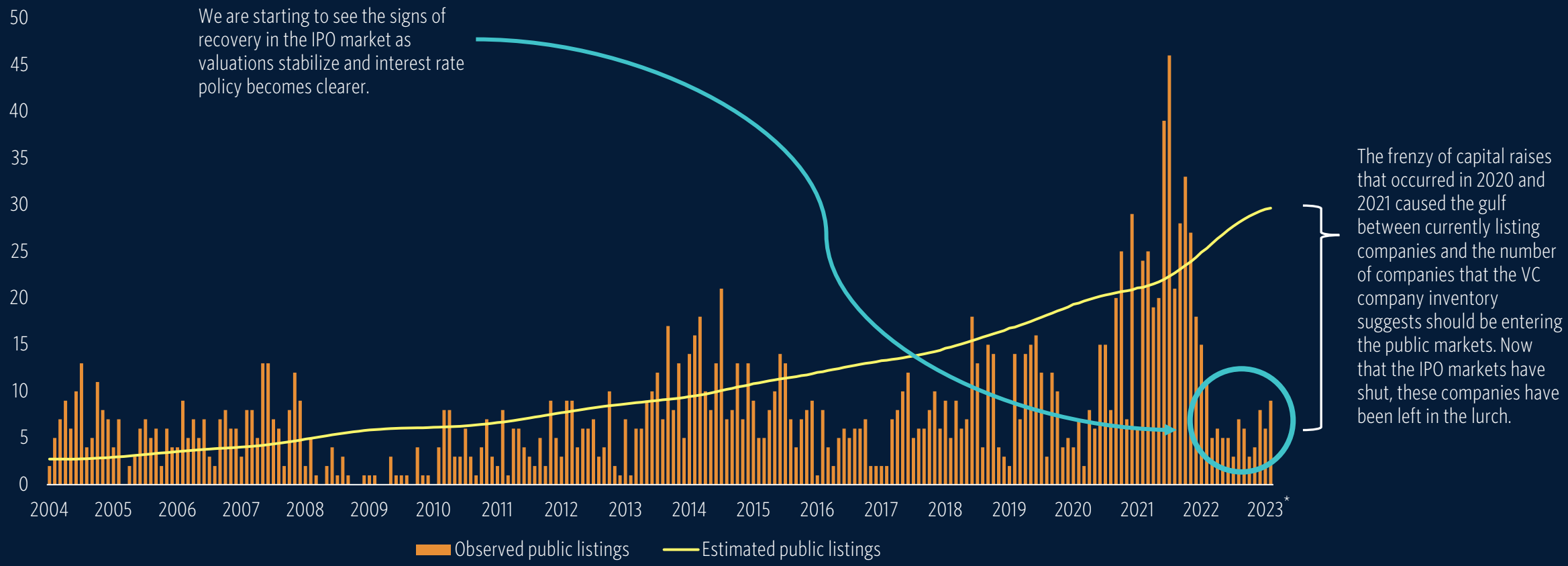


Note: For illustrative purposes only

We start by following a cohort of deals. Each cohort is then tracked across time to determine the outcome. What is displayed is the proportion of companies that experienced that outcome. We generate a new cohort every month and apply these distributions to our company inventory, which gives us the propensity to exit at each future period.

...which tells us how many public listings should theoretically be occurring. The difference between this estimate and the number of actual IPOs tells us how many are potentially in the backlog...

Monthly VC-backed public listing count versus estimated IPO backlog



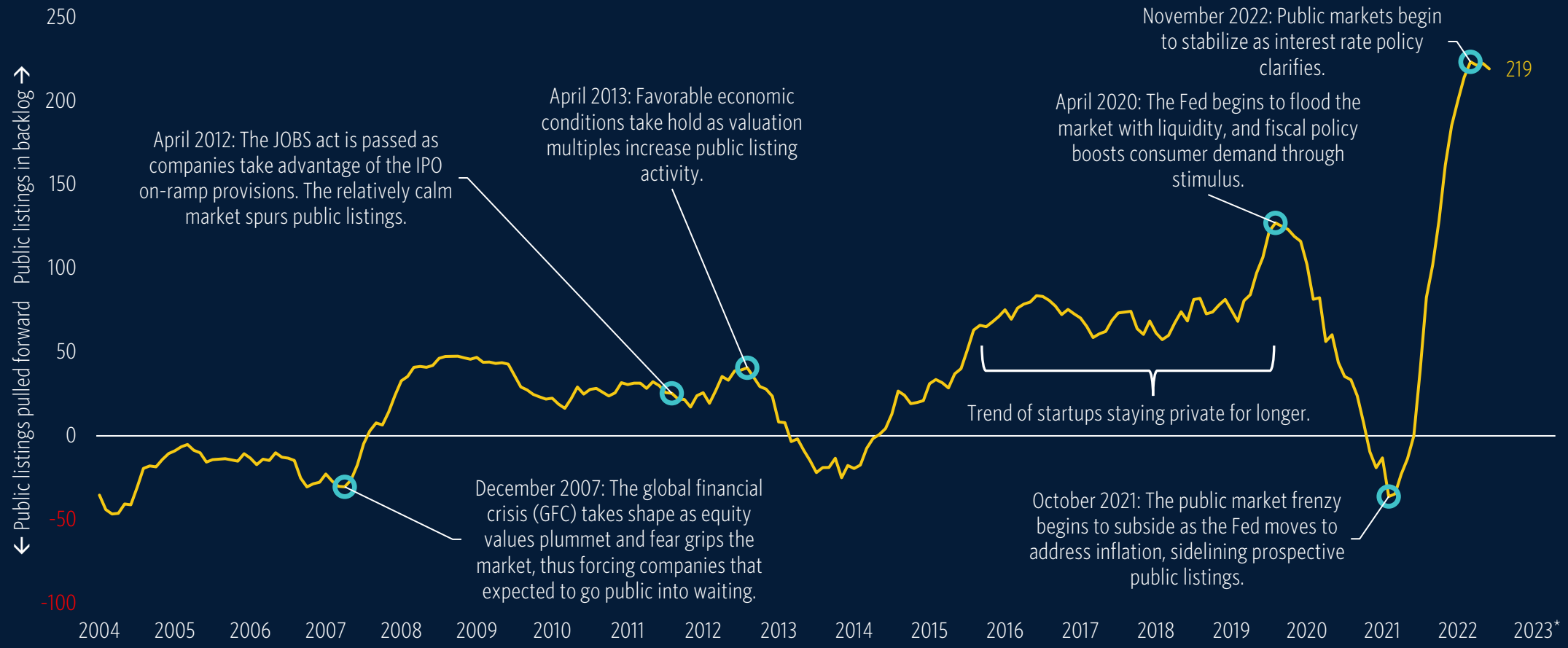
Source: PitchBook | Geography: US

*As of February 23, 2023

Note: Public listing includes reverse mergers, traditional IPOs, and direct listings.

...and right now, the number of pent-up public listings has likely peaked. When public listings start to pick up again, it may take many months or years to clear this backlog.

Estimated IPO backlog*

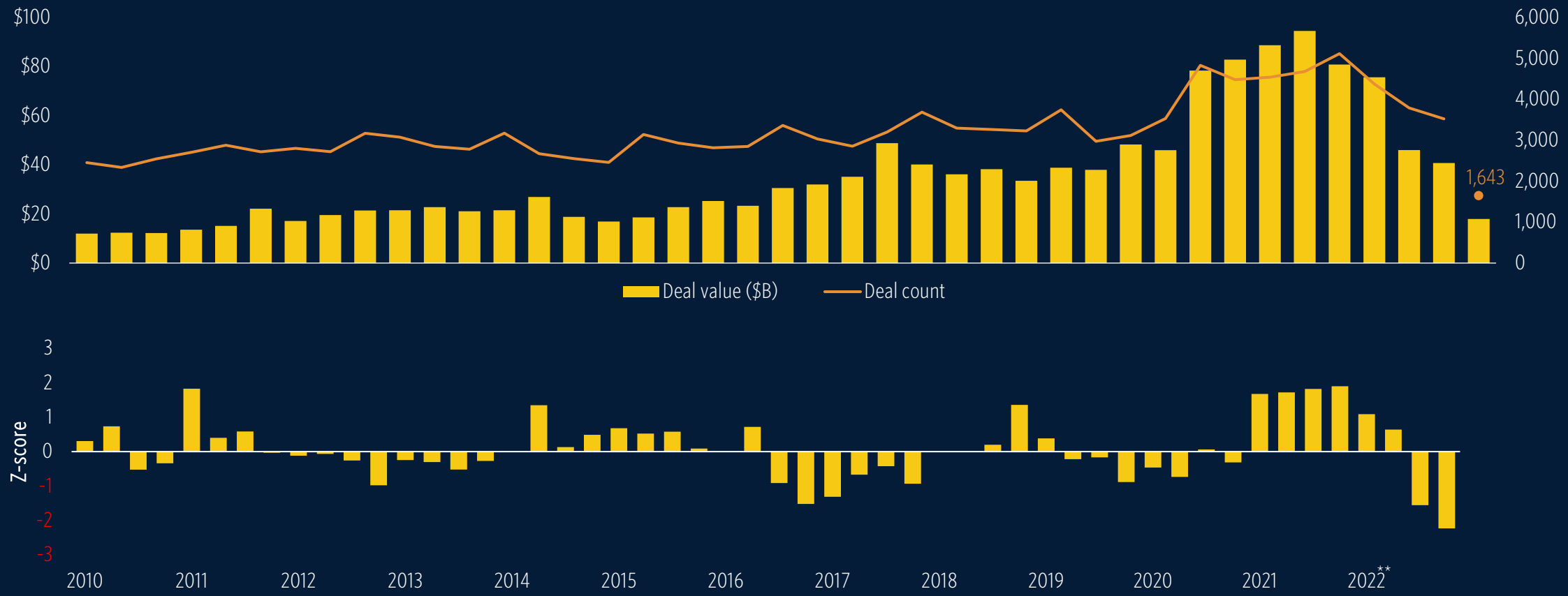


Source: PitchBook | Geography: US

*As of February 28, 2023

This cascades into deal activity as investors question how quickly they will be able to return their capital to LPs. A higher cost of capital is also discouraging investment...

Quarterly VC deal activity and trend-adjusted Z-score*



Source: PitchBook | Geography: US

*As of February 24, 2023; **As of December 31, 2022

...and from a count perspective, all deal types are still above their long-term trend, but aggregate deal value is below trend, indicating that smaller deals are getting done...

VC deal scorecard*

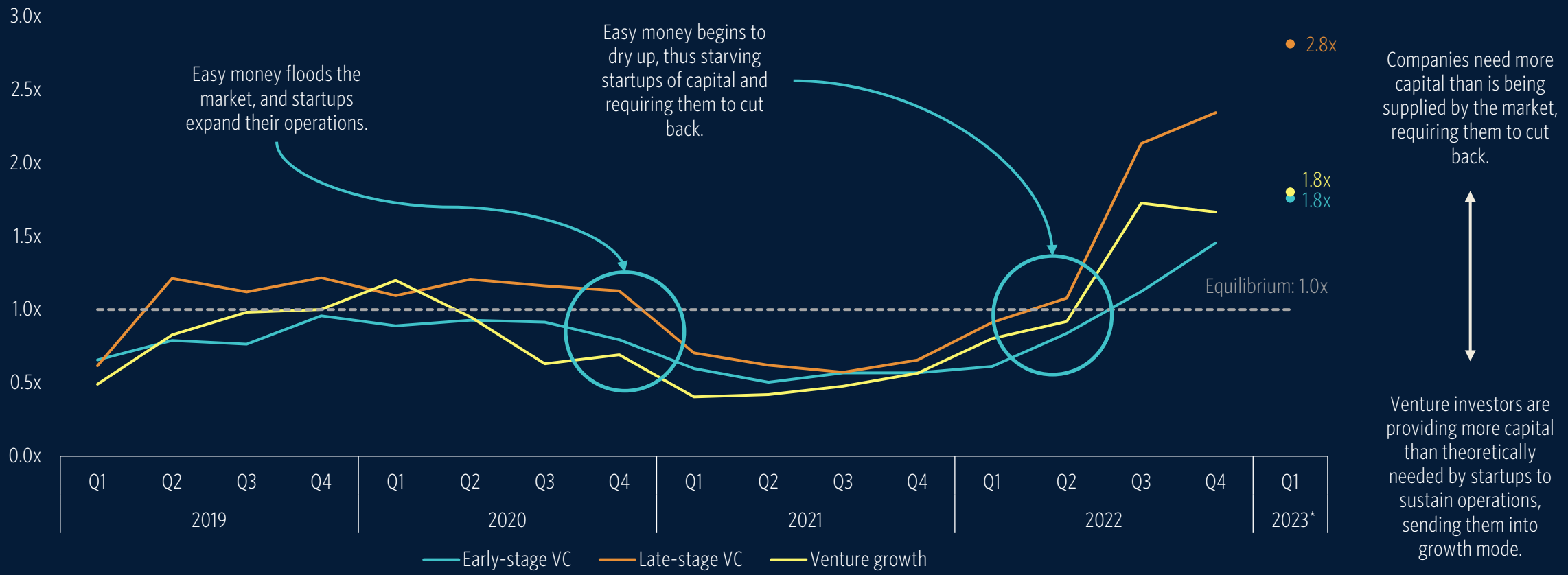
		Deal count				Deal value ($B)			
	Segment	Current	% of total	Long-term score	Short-term score	Current	% of total	Long-term score	Short-term score
	Total	9,325	100.0%	1.40	-0.82	$55.76	100.0%	0.04	-2.59
Sector	B2B	1,448	16.3%	2.11	0.08	$7.47	14.1%	0.74	-1.63
Sector	B2C	1,256	14.1%	-0.17	-0.90	$4.82	9.1%	-1.13	-2.08
Sector	Energy	116	1.3%	0.95	0.65	$1.24	2.3%	1.83	0.40
Sector	Healthcare devices & supplies	465	5.2%	1.35	1.01	$2.73	5.1%	-0.31	-0.87
Sector	Healthcare services & systems	763	8.6%	1.19	-0.91	$4.67	8.8%	0.03	-2.18
Sector	Information technology hardware	309	3.5%	1.72	0.89	$2.22	4.2%	0.86	-1.14
Sector	Media	228	2.6%	-0.32	-0.78	$0.59	1.1%	-1.94	-1.99
Sector	Pharma & biotech	679	7.6%	1.77	0.57	$7.33	13.8%	0.11	-1.16
Sector	Software	3,531	39.6%	1.18	-1.19	$20.84	39.3%	-0.03	-2.66
Sector	Transportation	114	1.3%	0.14	-0.53	$1.16	2.2%	0.60	-0.13
Type	Angel and seed	3,705	39.7%	-0.32	-0.91	$9.07	16.3%	1.48	-1.33
Type	Early-stage VC	2,765	29.7%	1.96	-0.30	$18.67	33.5%	-0.07	-2.41
Type	Late-stage VC	2,297	24.6%	2.05	-0.78	$20.37	36.5%	-0.27	-2.81
Type	Venture growth	557	38.5%	3.22	1.07	$7.68	102.8%	-0.08	-1.16

Source: PitchBook | Geography: US

*As of December 31, 2022

...which has thrown off the supply and demand of capital balance in VC. The late stage is the most overextended, with startups needing 2.8x more capital than is being supplied by investors.

Quarterly VC capital demand to supply ratio by stage

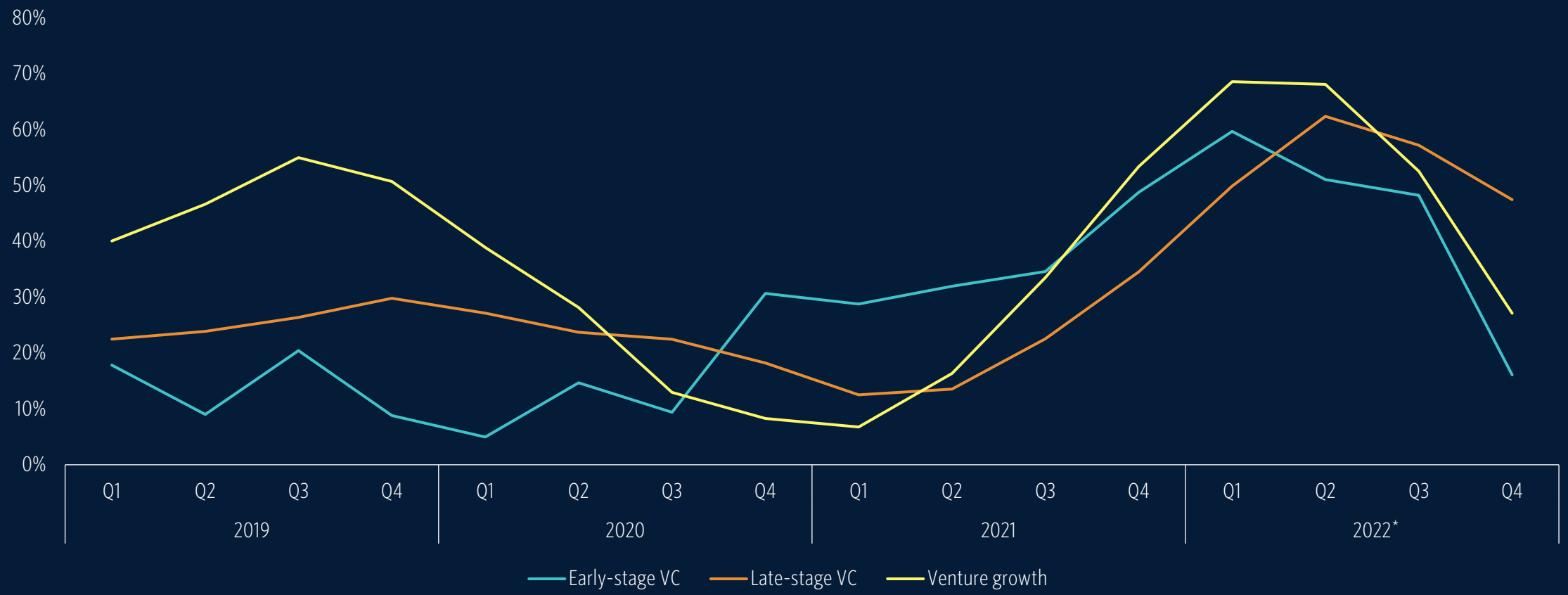


Source: PitchBook | Geography: US

*As of February 28, 2023

Startups are responding by lengthening runways to reduce their need for new capital. Growth in capital demand is slowing and may begin to shrink in the coming quarters.

Quarterly YoY change in capital demanded from startups by stage

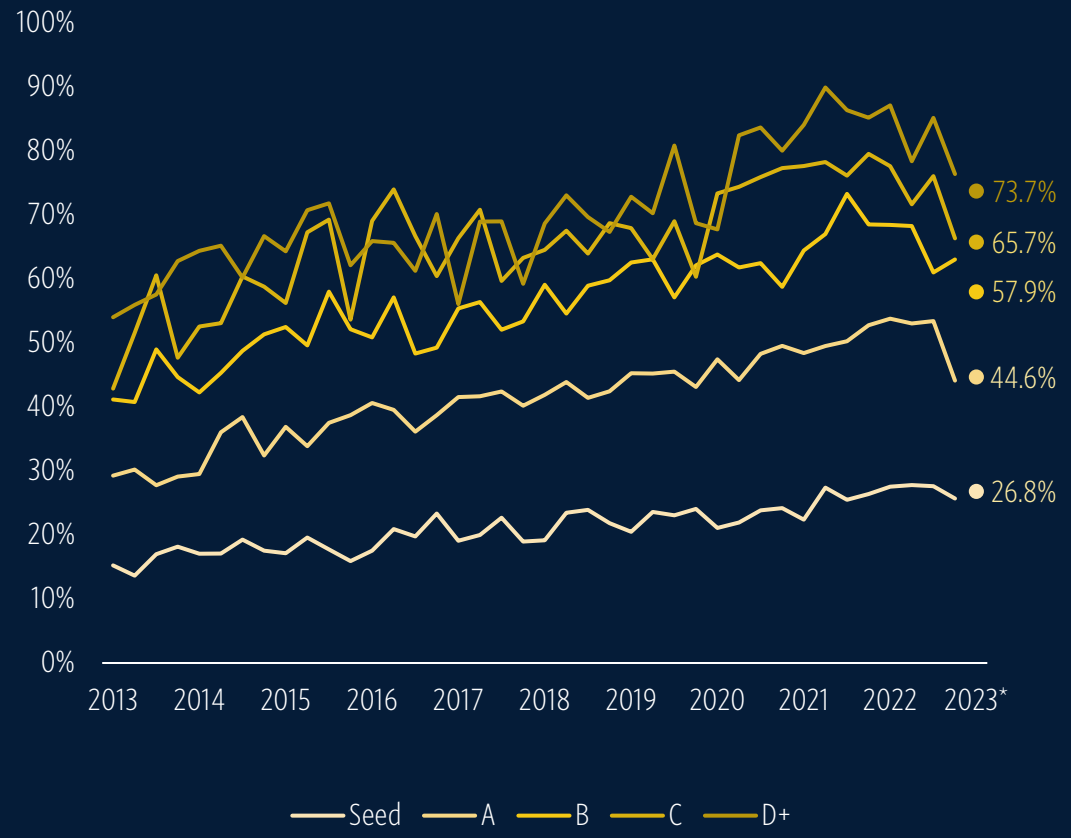


Source: PitchBook | Geography: US

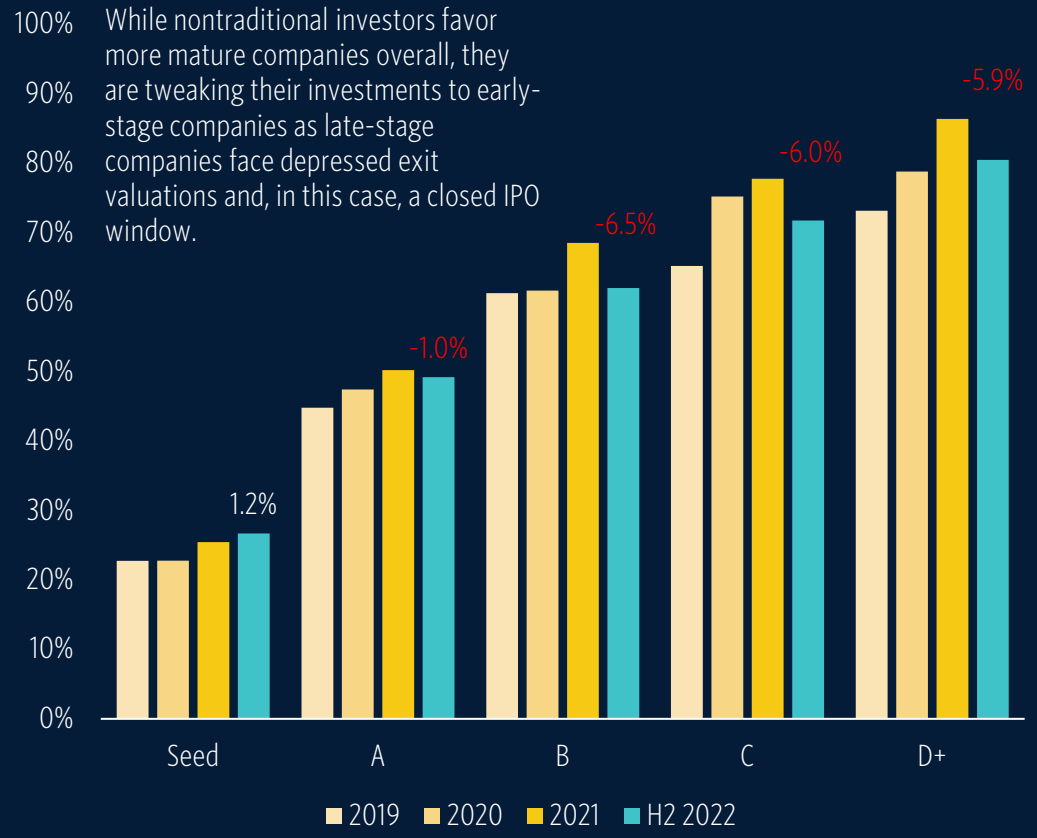
*As of December 31, 2022

Late-stage and venture-growth startups are experiencing a pullback by nontraditional investors, which have supported the market in recent years.

VC deal count with nontraditional investor participation by stock series as a share of all VC deals



VC deal count with nontraditional investor participation by stock series and year as a share of all VC deals**

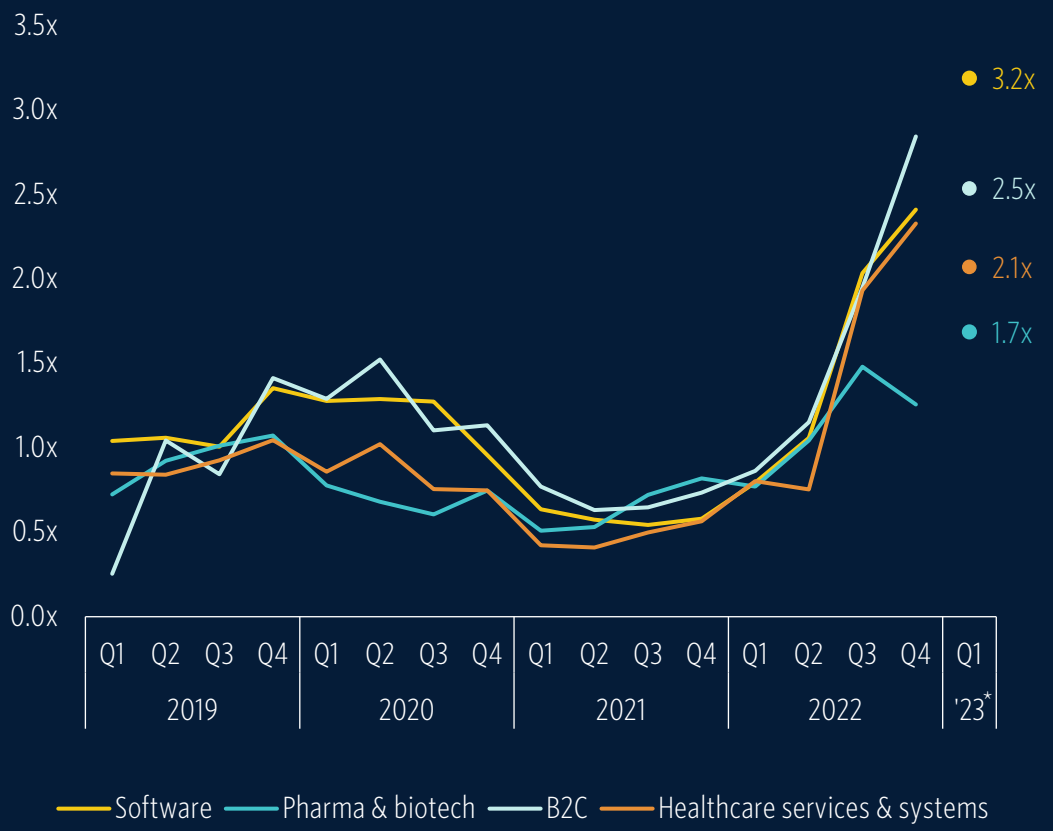


Source: PitchBook | Geography: US

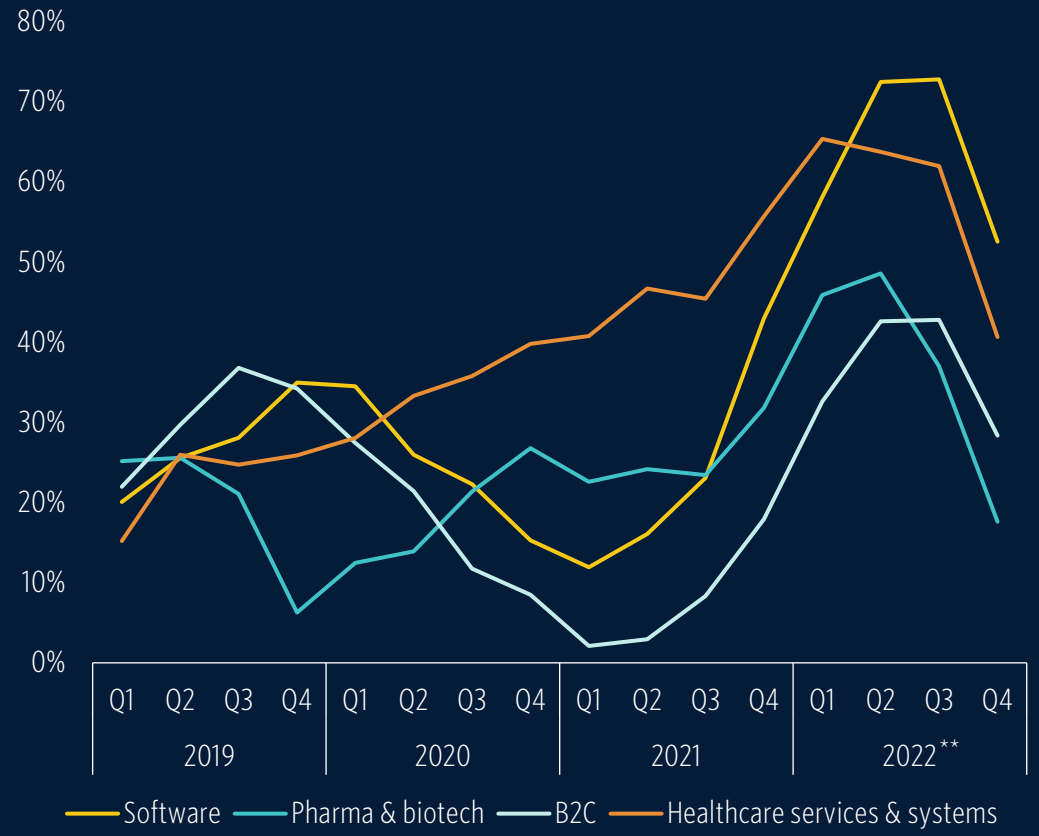
*As of March 1, 2023; **As of December 31, 2022

While founders in all industries have reduced their capital needs, pharma & biotech is faring well. Software companies are most capital starved and may need to curtail operations further.

Quarterly VC capital demand to supply ratio by select industries



Quarterly VC capital demand YoY change by select industries

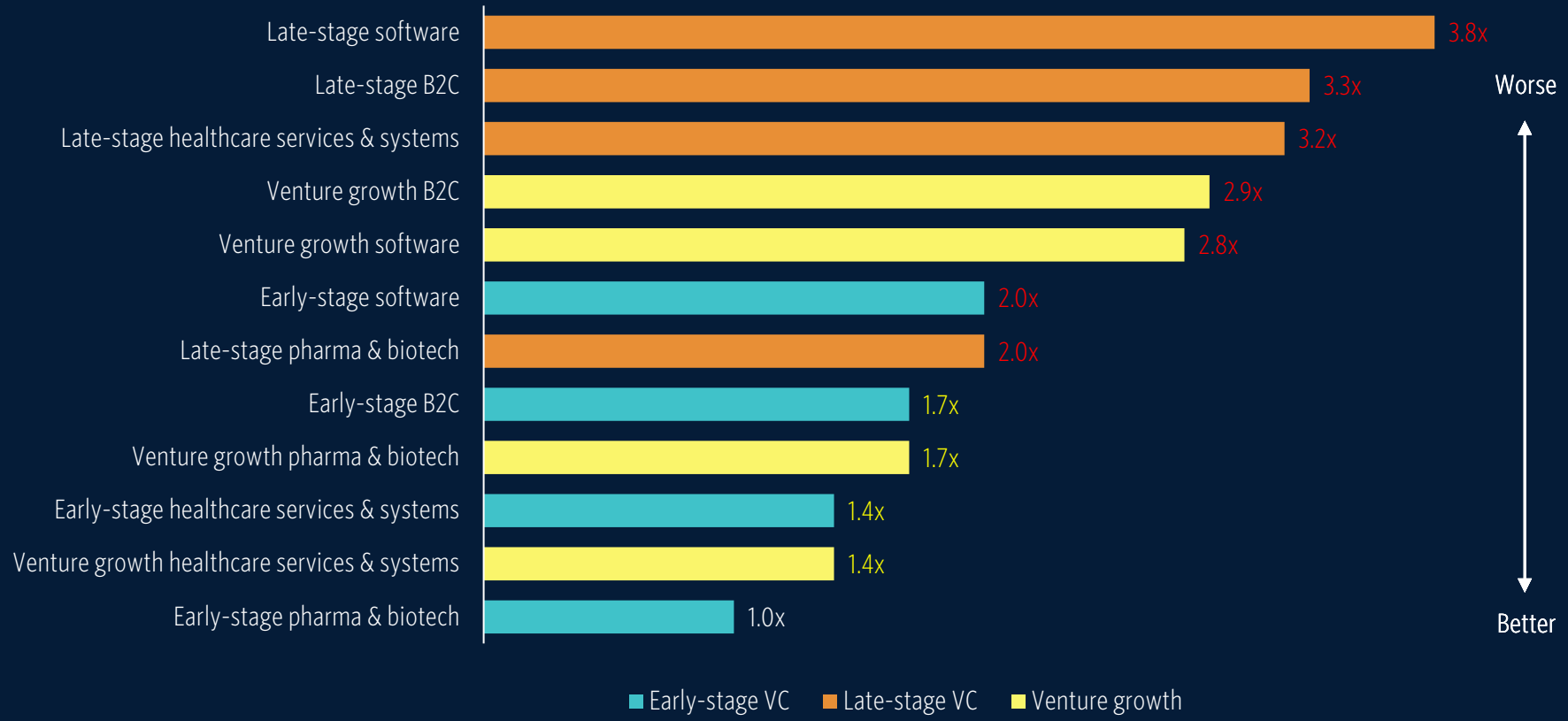


Source: PitchBook | Geography: US

*As of February 28, 2023; **As of December 31, 2022

Certain stages and industries show more distress than others. Late-stage software is struggling the most, while early-stage healthcare and pharma are relatively better capitalized.

Capital demand to supply ratio by select industry*

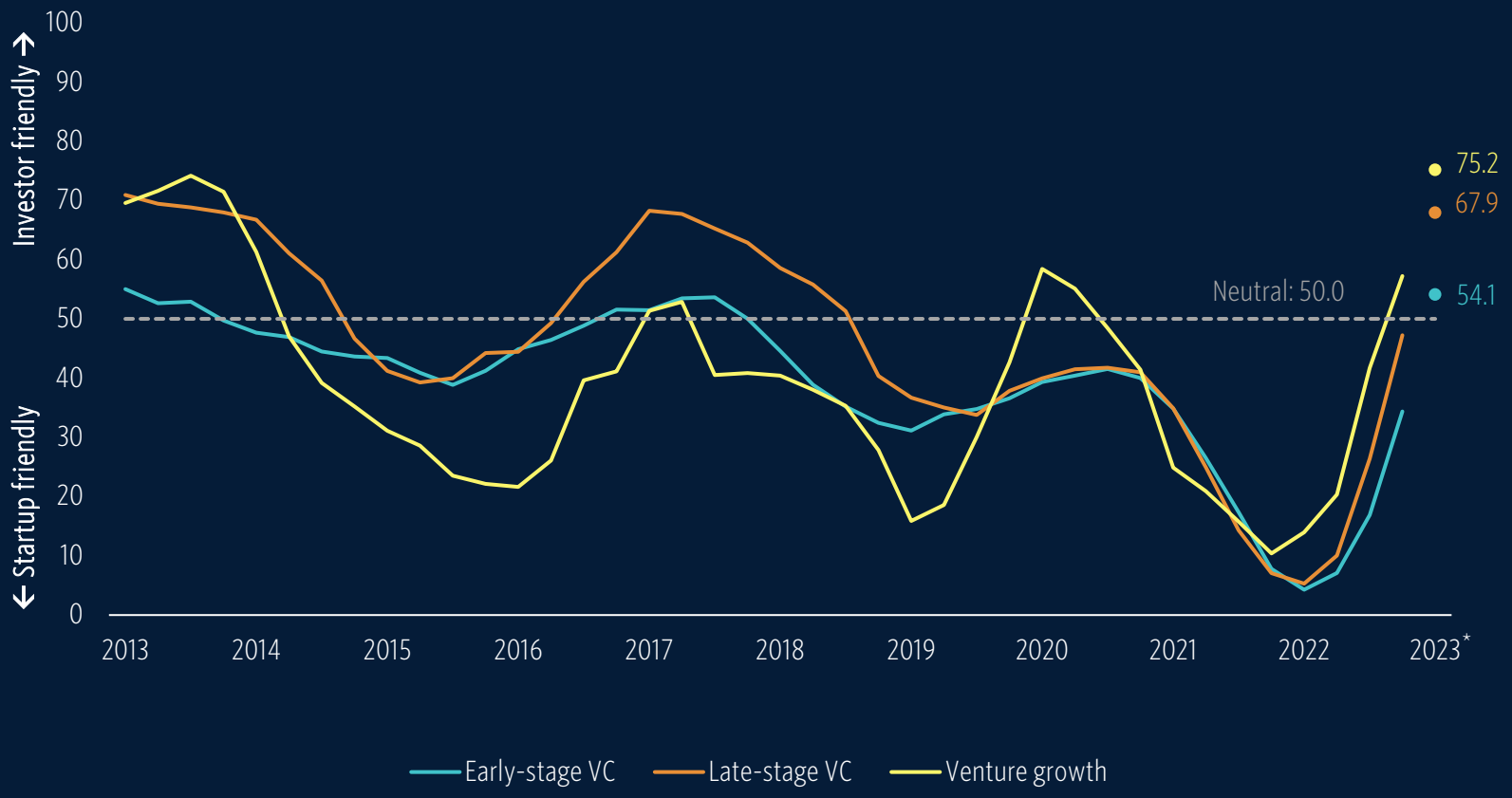


Source: PitchBook | Geography: US

*As of February 28, 2023

This all contributes to a better environment for investors with dry powder. All stages have moved further into investor-friendly territory.

VC Dealmaking Indicator



Source: PitchBook | Geography: US

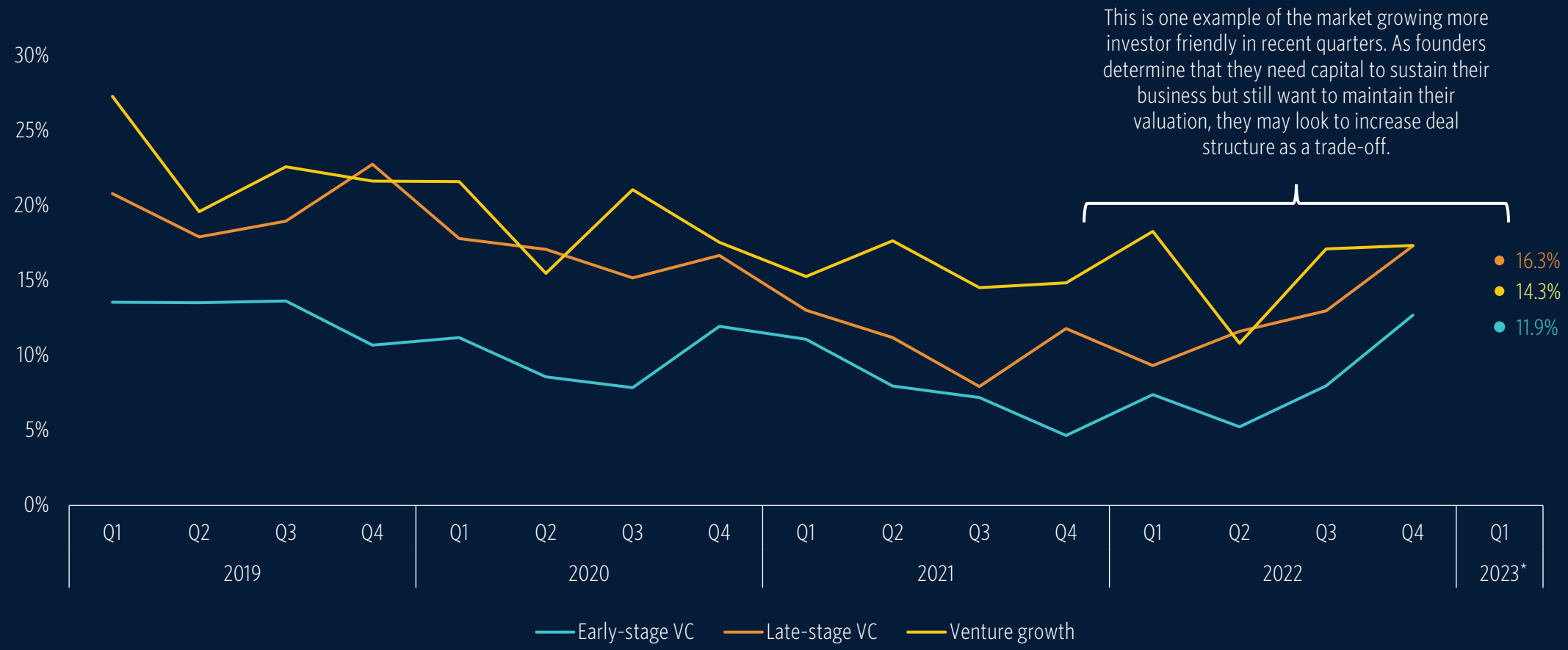
*As of February 28, 2023

The VC Dealmaking Indicator quantifies how friendly the dealmaking environment is between startups and investors. A high score indicates investor friendliness, and a low score indicates startup friendliness.

The indicator takes the prevalence of deal terms into account, as well as deal attributes such as percentage ownership obtained by investors and valuation step-ups. Finally, the indicator integrates the demand and supply of capital imbalance to quantify the negotiating power of these market participants.

Not only are participating preferred shares becoming more popular, but so are cumulative dividends. While founders may be tempted to accept tougher deal terms to keep capital flowing...

Quarterly VC deals with participation preference as a share of all VC deals

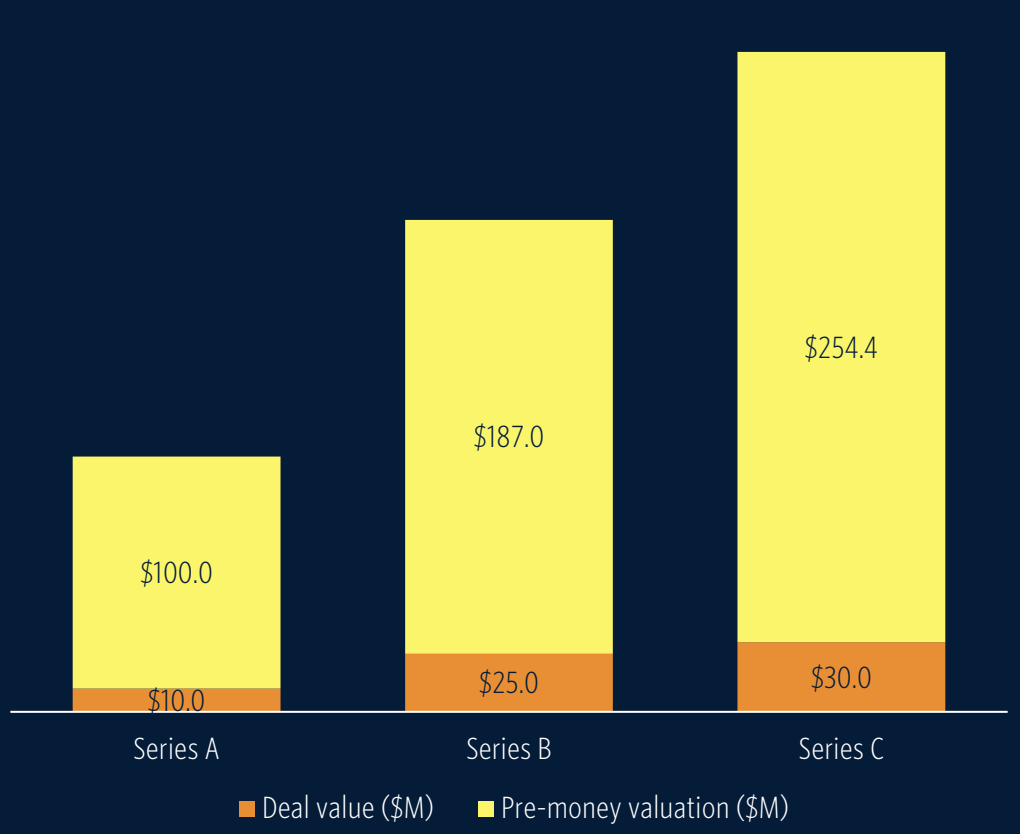


Source: PitchBook | Geography: US

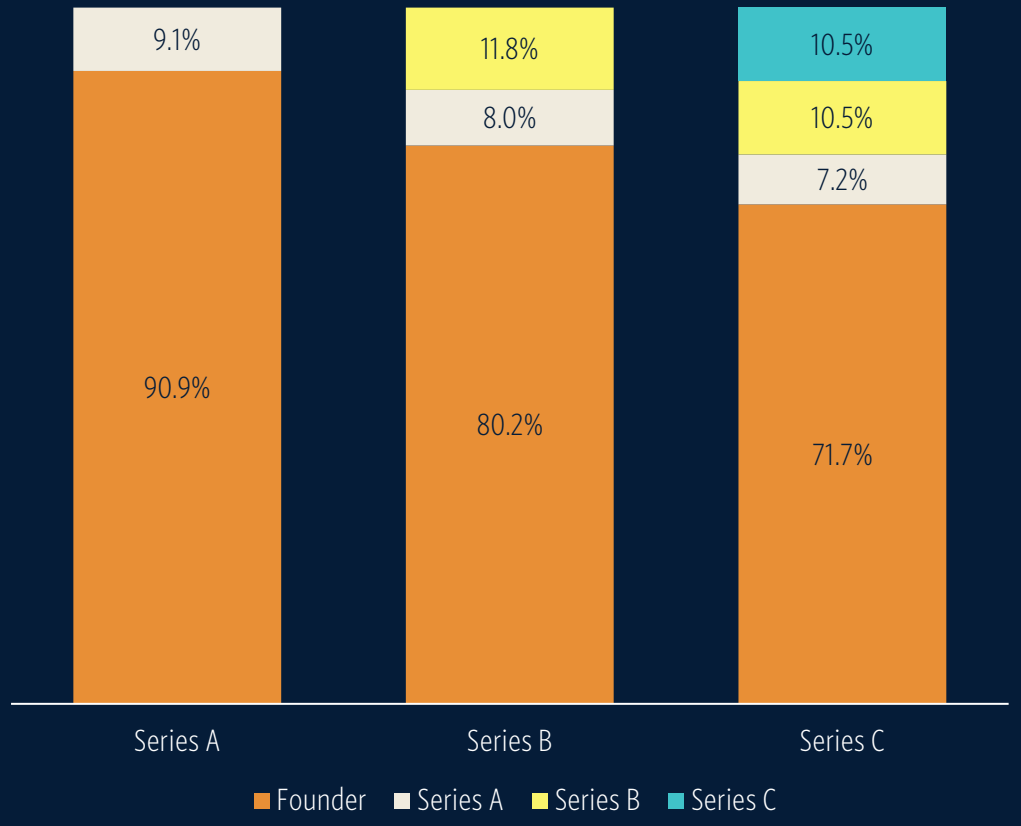
*As of February 25, 2023

...they should be wary of the impact this has on their returns and the returns of their previous investors. Consider a hypothetical company raising its Series C after a strong Series B in 2021.

Hypothetical lifecycle of VC company



Hypothetical common equity ownership for VC company

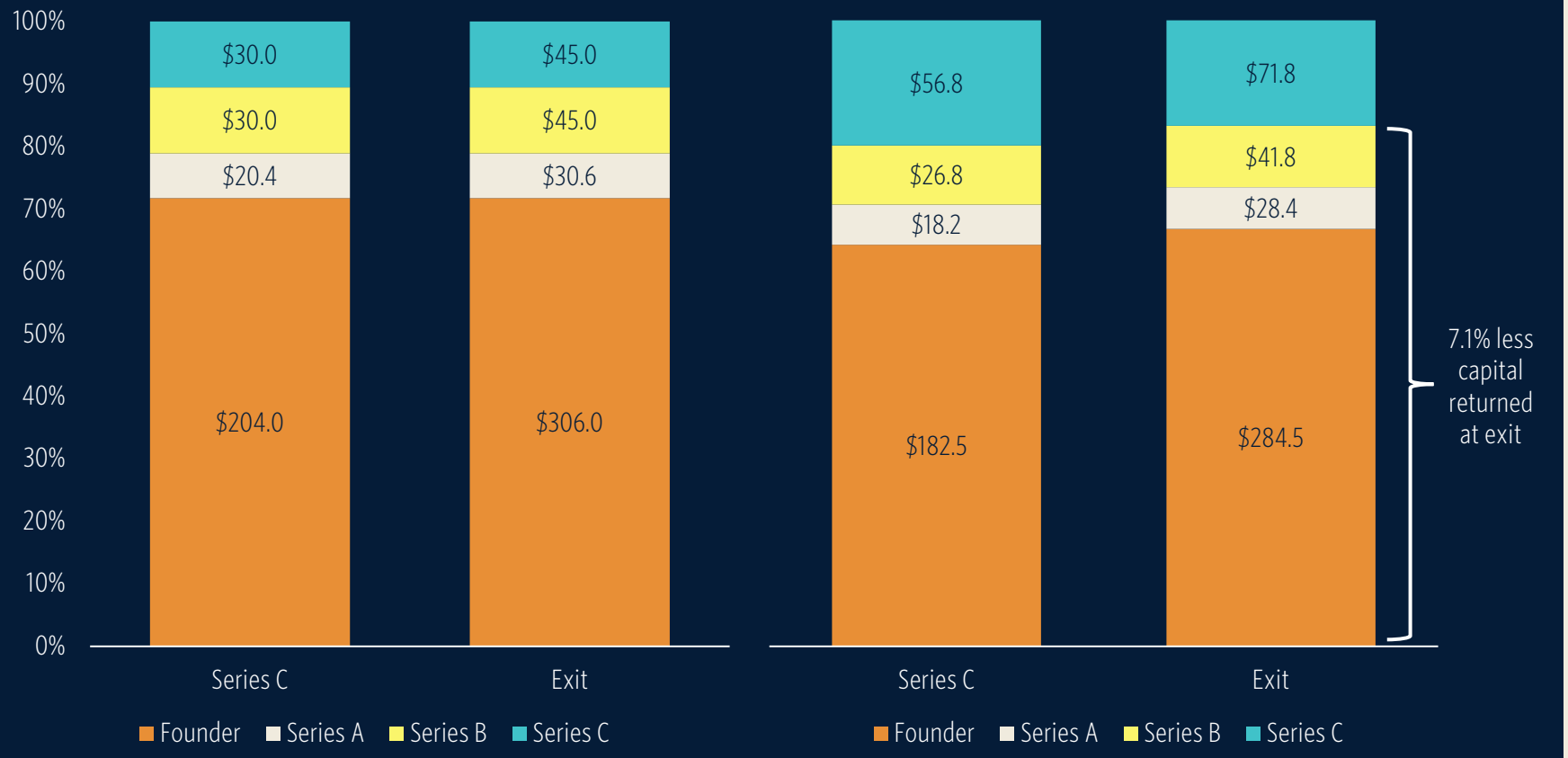


Note: For illustrative purposes only

A participating preferred stock can dampen future returns for founders and previous investors.

Share of economic ownership (with $M) across rounds *without* a Series C participating preferred stock

Share of economic ownership (with $M) across rounds *with* a Series C participating preferred stock at 1.0x



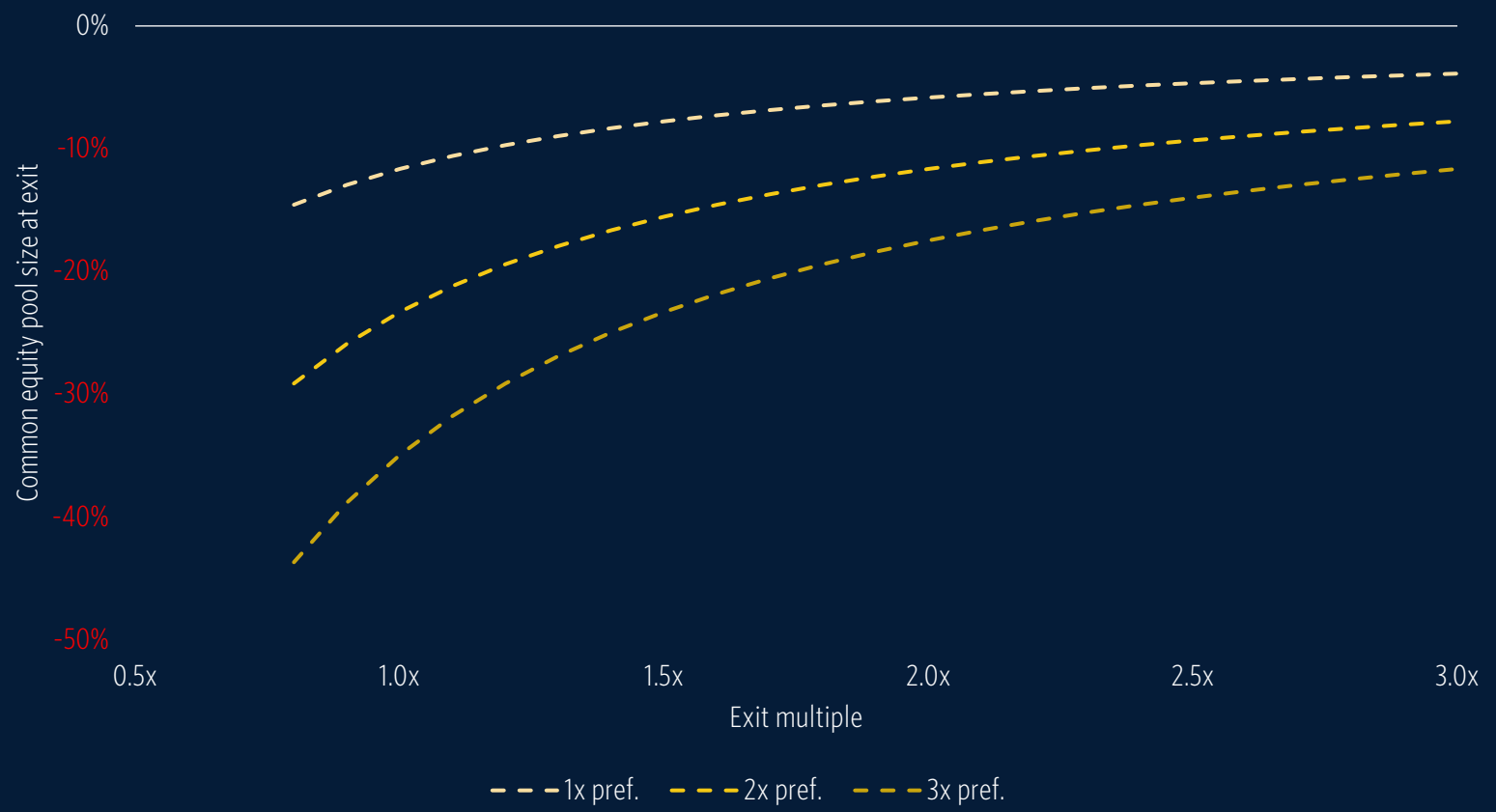
Note: For illustrative purposes only

For this example, assume that no previous investors hold participating preferred shares. When a founder accepts a participating preferred term in this Series C round, it changes the economic ownership for everyone.

At exit, this reduces the value returned to investors because the Series C investor gets to keep their initial investment or more depending on the preference multiple (1.0x used in this example). The Series C investor also gets to keep their share of the common equity at exit. This double-dip effect diminishes the capital return to other investors.

But the effect of participating preferred shares is strongest at smaller exit multiples.

Hypothetical change in common equity pool by exit multiple and liquidation preference multiple

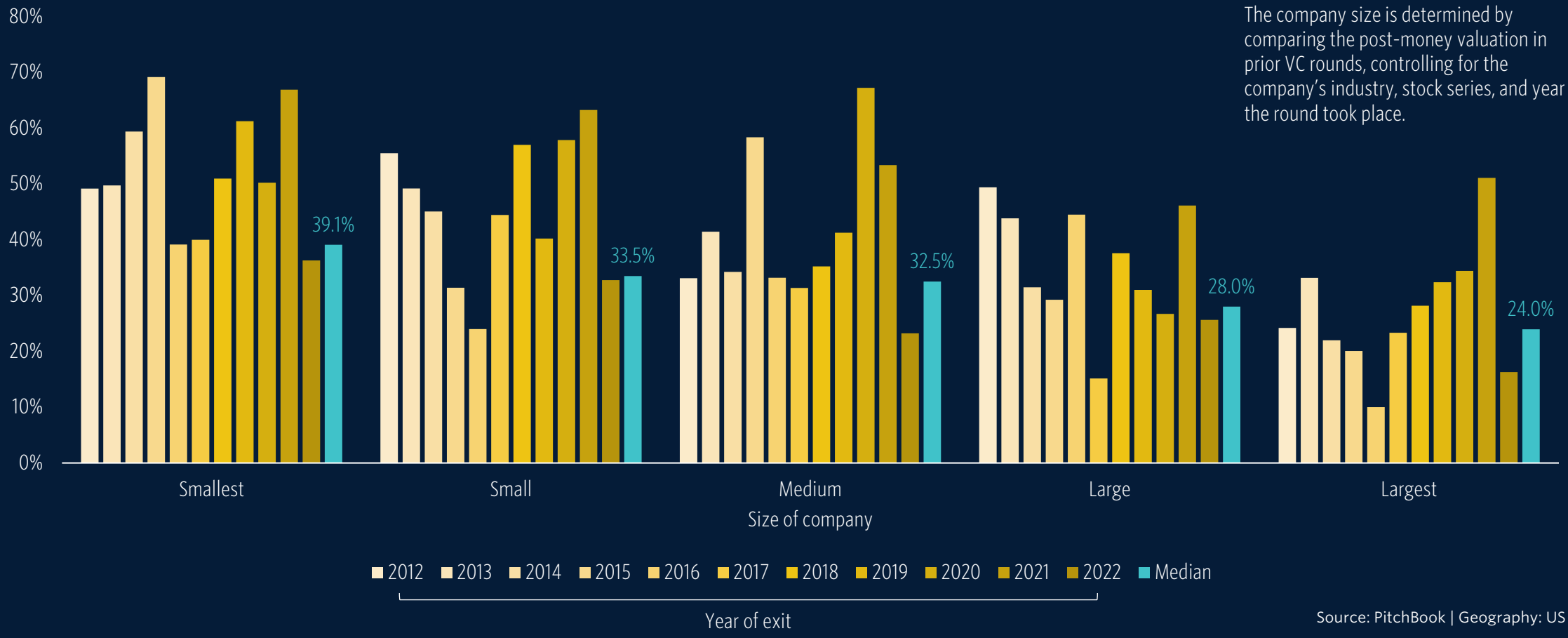


Note: For illustrative purposes only

The equity available to common shareholders can be greatly reduced by accepting participating preferred shares. The effect is greatest at smaller exit multiples because the liquidation preference does not scale with the size of the company. This form of deal structure is often most useful as a form of downside protection for investors.

While there is variation year to year in returns, the broad trend is that investors have done well to invest at lower headline valuations...

Annualized change in company value by exit year and quintile of company size*



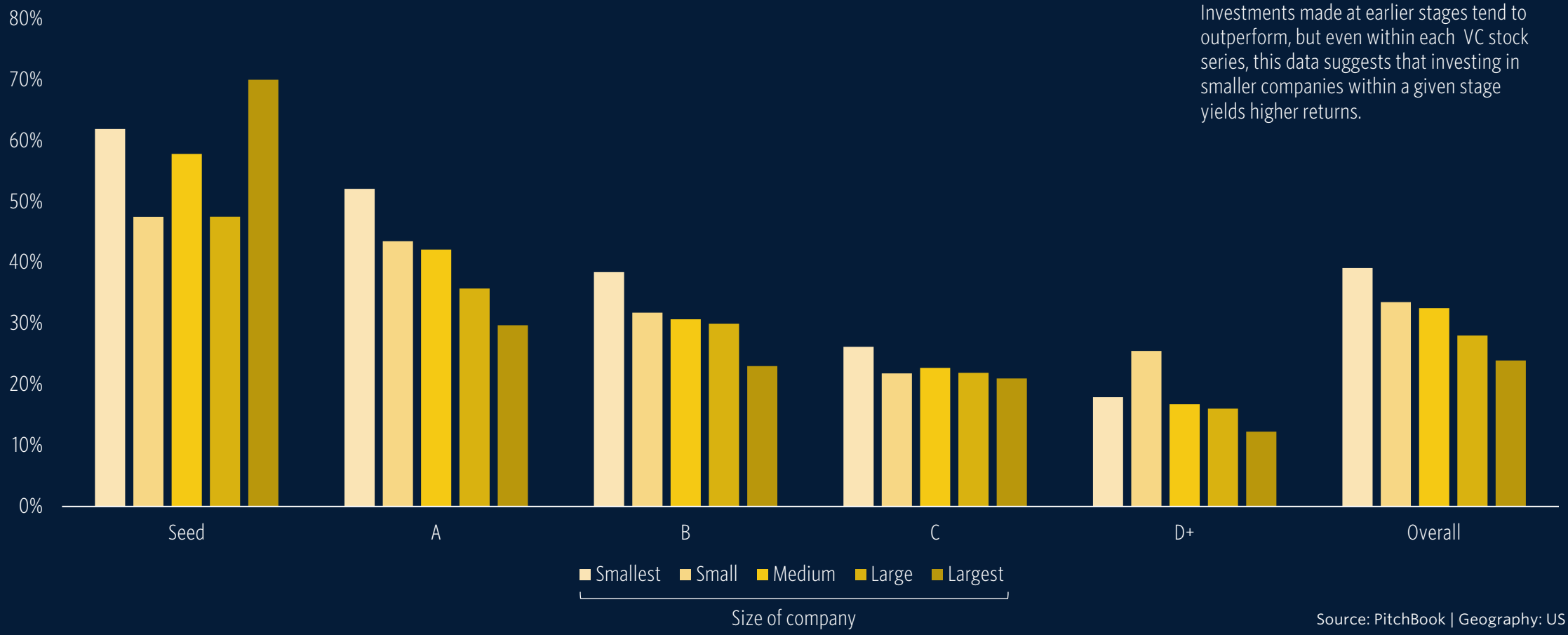
The company size is determined by comparing the post-money valuation in prior VC rounds, controlling for the company's industry, stock series, and year the round took place.

Source: PitchBook | Geography: US

*As of December 31, 2022

...and investing in smaller companies within stages has seen better returns as well, except for seed, wherein results appear mixed.

Annualized change in company value by stock type and quintile of company size*



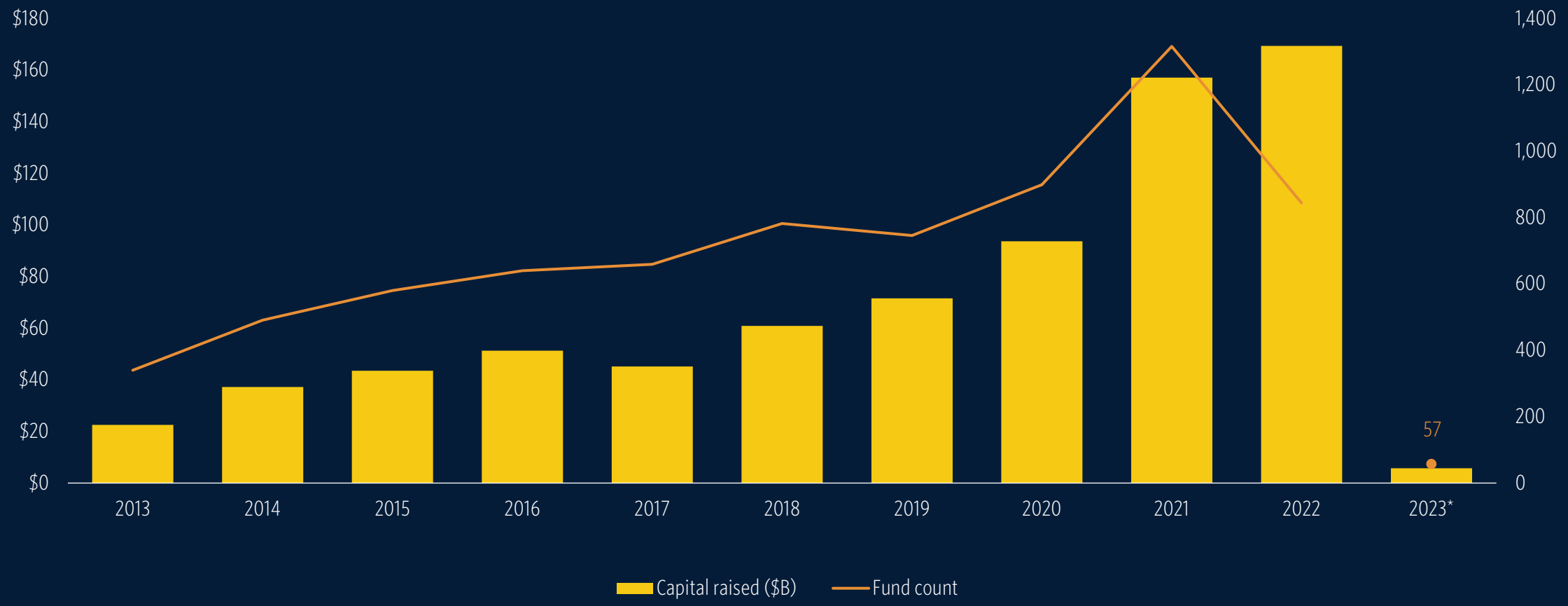
Investments made at earlier stages tend to outperform, but even within each VC stock series, this data suggests that investing in smaller companies within a given stage yields higher returns.

Source: PitchBook | Geography: US

*As of December 31, 2022

2022 saw a record amount of new LP commitments closed by VC funds. However, we have seen a lackluster fundraising environment to start 2023.

VC fundraising activity

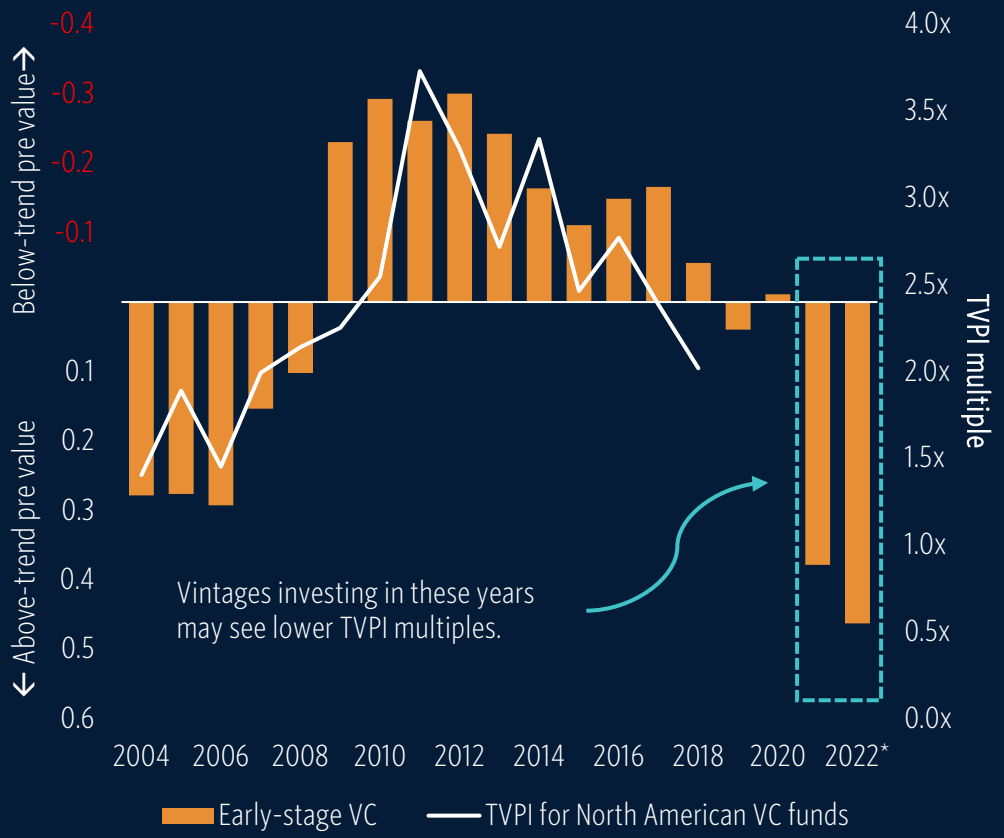


Source: PitchBook | Geography: US

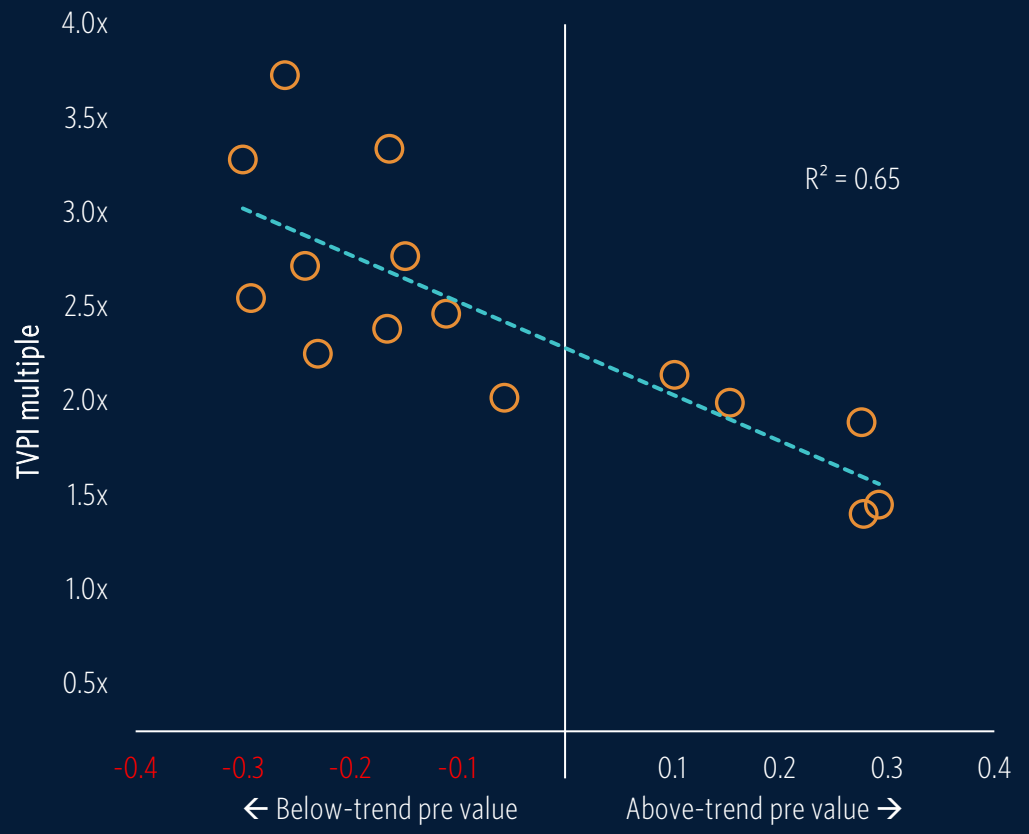
*As of February 28, 2023

This could end up being one of the best-performing vintage years on record. When prevailing pre-money valuations are below trend, we see larger TVPIs from funds that likely invested at that time.

Z-score of pre-money valuations compared with pooled TVPI multiples



Z-score of early-stage VC pre-money valuations compared with pooled TVPI multiples*



Source: PitchBook | Geography: North America

*As of December 31, 2022

Note: We use only pooled TVPI for vintage years wherein we have at least five years of reported data.

Glossary

TTM (page 5) – The "trailing 12 months" is the calculation of a statistic across the previous twelve months starting from a given date.

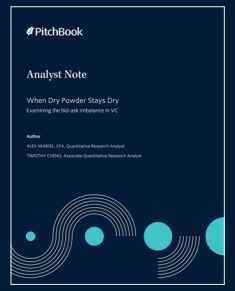
OAS (page 7) – The "option-adjusted spread" is the spread between a bond and the risk-free rate (Treasury bill), adjusted for embedded options.

Z-score (page 9) – A normalized measure that scales a value using its sample mean and standard deviation, which is useful for characterizing the extremeness of a value relative to what has happened historically.

TVPI (page 30) – The "total value to paid-in" capital is a ratio between the contributed capital (paid in) and the total value of a fund, including realized and unrealized profits.

Additional research

Market updates



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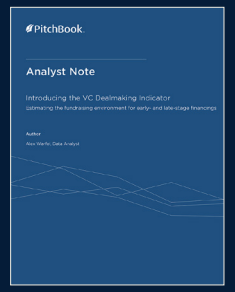

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