PitchBook

QUANTITATIVE PERSPECTIVES

Cleared for Takeoff?

Q1 2024

Cleared for Takeoff?

Introduction

Venture capital investment is a critical driver of innovation and economic growth, providing funding to startups with high growth potential. The VC landscape has undergone significant shifts in recent years, influenced by ever-evolving market conditions and emerging technologies. While startups' need for VC investment continues to outpace the supply of dollars available, the spread of investment activity across verticals underscores shifting investor interests.

In this report, we dissect the dynamics of the verticals software as a service (SaaS) and artificial intelligence & machine learning (AI & ML) within the venture capital landscape. We compare the challenges, opportunities, and investment prospects of these verticals over the past five years and evaluate the outlooks for each within the current market environment. The decline of VC deal activity has left many SaaS startups capital starved, while AI & ML remains a focal point of venture dollars. The release of transformative technologies like OpenAI's ChatGPT further fueled investor interest in AI & ML startups. However, our analysis suggests that early-stage SaaS companies are still likely to outperform AI & ML companies, yet we see upside not factored in due to AI & ML's impact being still in its nascency.

Despite a challenging IPO drought and concerns over unsustainable consumer spending, there are signs of optimism, with job gains, improvements in consumer sentiment, and a potential resurgence in public listings pointing toward a resurgence in exit activity.

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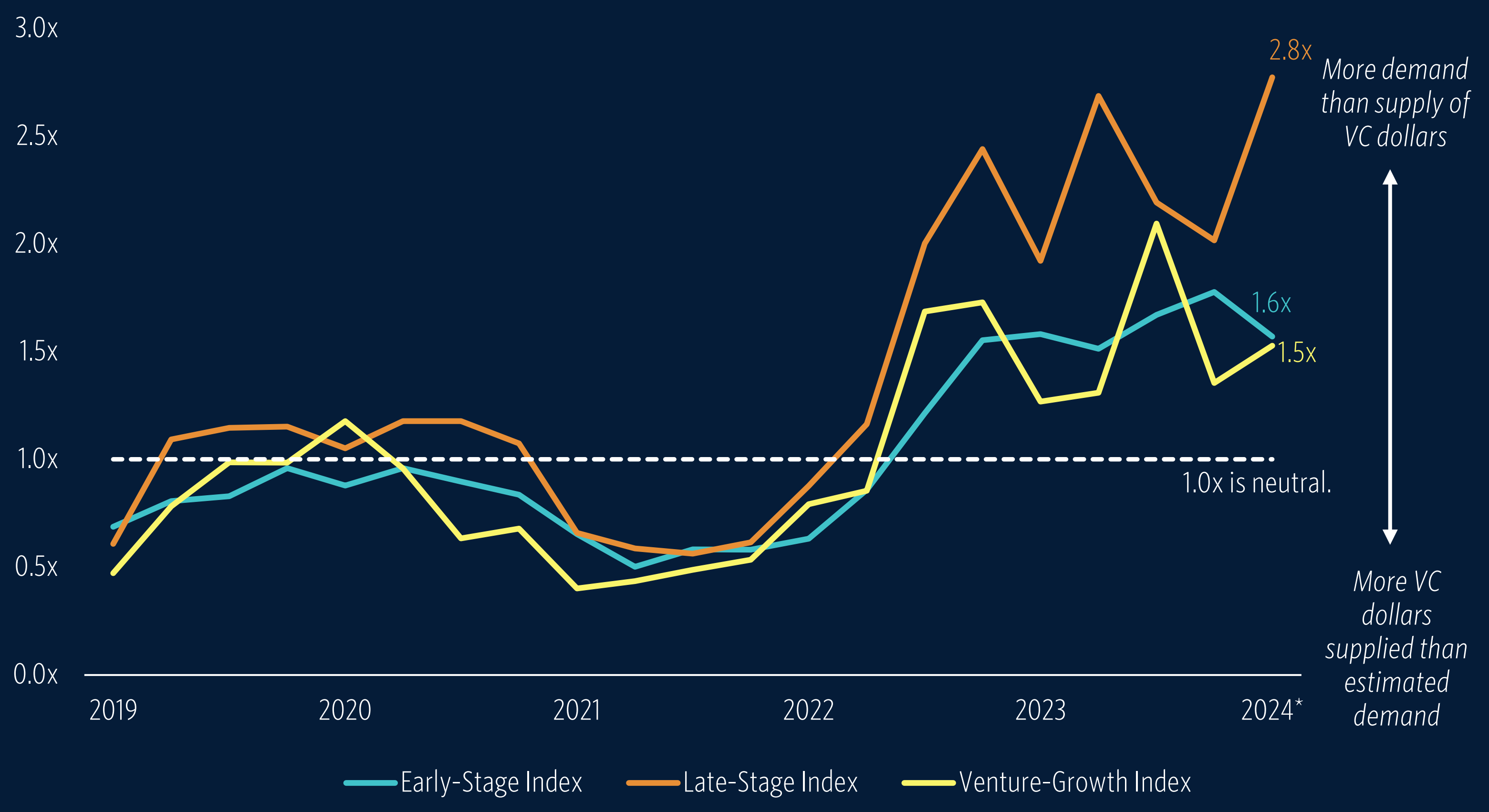
Key takeaways

- Overall, 2023 was a slow year for VC activity. The lack of capital availability continues to be highlighted by the demand/supply ratio across all stages and sectors of VC. AI & ML has dominated total dealmaking activity, making up 35.4% of the total capital invested in VC.
- Historically, SaaS has been the most lucrative area of investment for VC investors. However, following the release of ChatGPT, AI & ML has taken center stage, with valuations of private companies in the space growing faster than SaaS company valuations.
- The poor exit environment in the last two years led to a buildup of paper valuations within each sector that is roughly three times that of the public market capitalization of VC-backed companies that publicly listed in the last five years, signaling a significant backlog of capital waiting to exit and the overweight balance of value held within private markets.
- Encouraging macroeconomic conditions alleviate some uncertainty in the private markets and set an optimistic tone for 2024. Public companies that have recently completed an IPO have started to see a pickup in revenue growth and valuations.

Boarding has started

VC demand is outpacing supply, with investment activity not keeping pace with high proportion of startups seeking capital.

Estimated startup demand for VC investment relative to supply



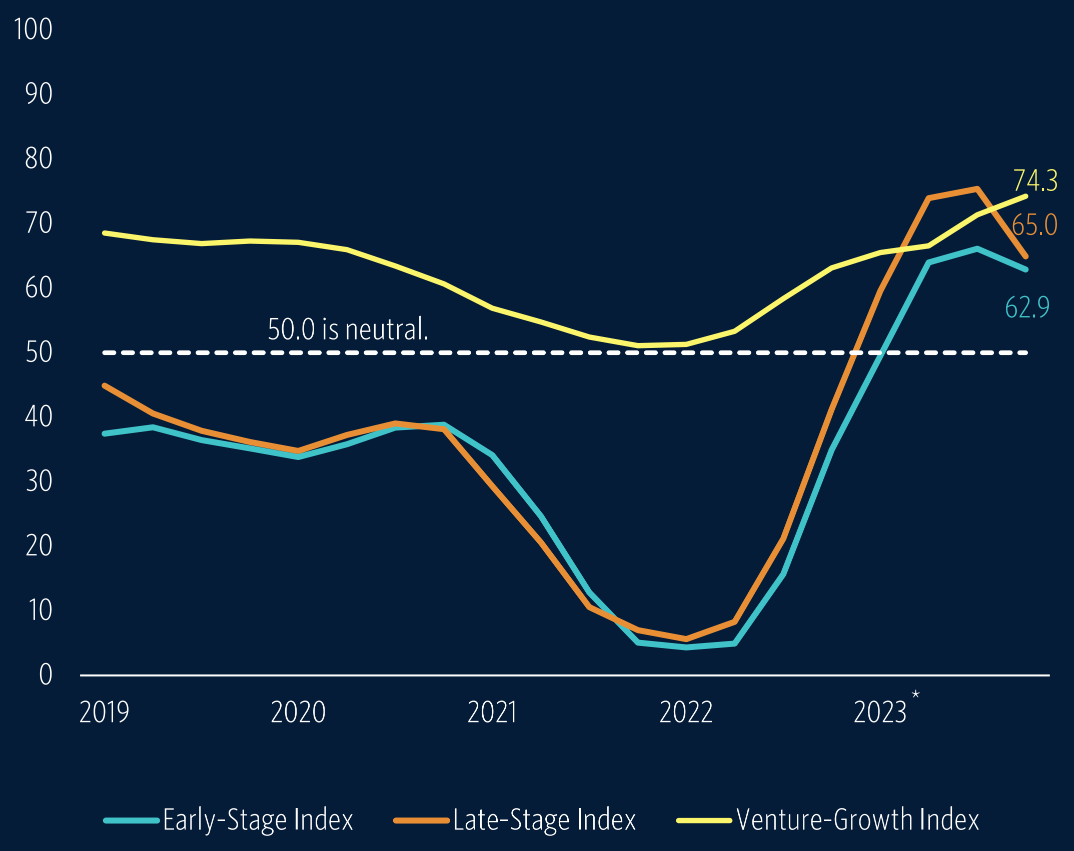
Source: PitchBook • Geography: US • *As of February 29, 2024

The capital demand/supply ratio estimates the amount of capital demanded by US startups as a ratio of supply broken out by stage.

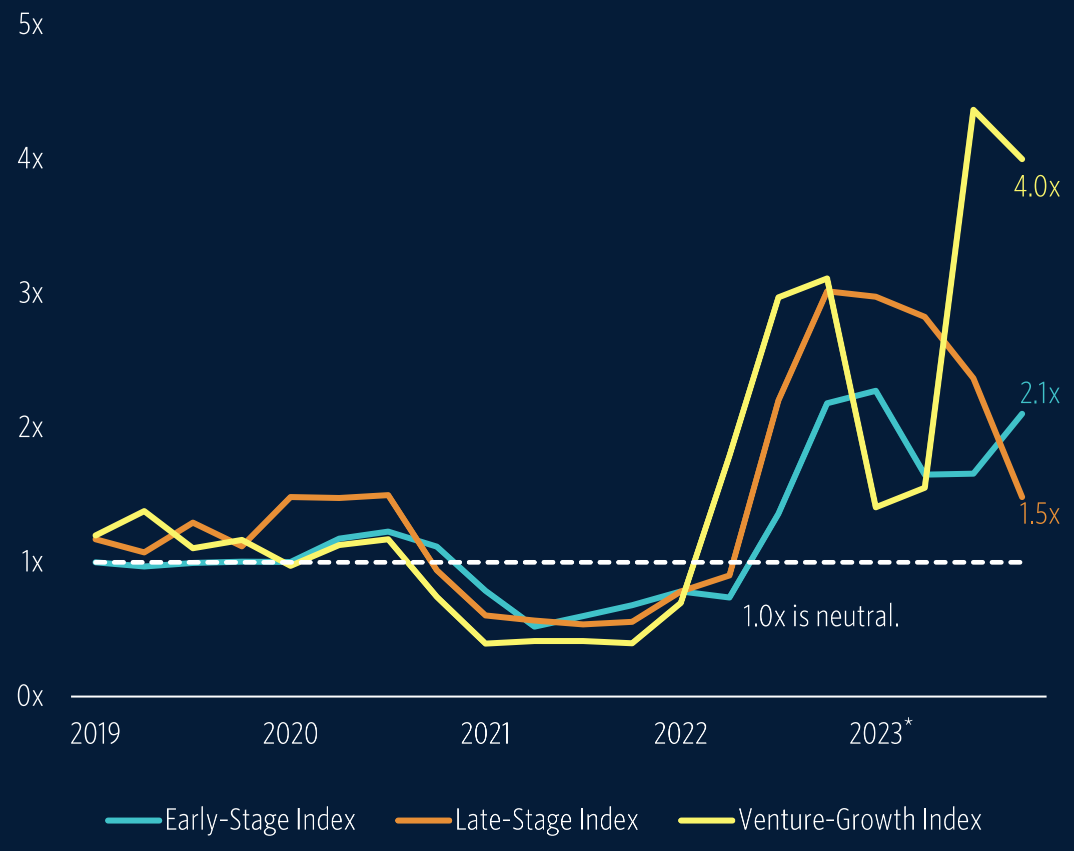
Demand is calculated by estimating how much capital companies will raise in their next round and spreading that amount over the historical probability of raising in the future. Capital supply uses observed VC deal value.

SaaS has been a staple of many VC investment portfolios in the last decade, but with the decline in VC deal activity, SaaS startups' need for capital has been largely unmet.

SaaS VC Dealmaking Indicator by quarter



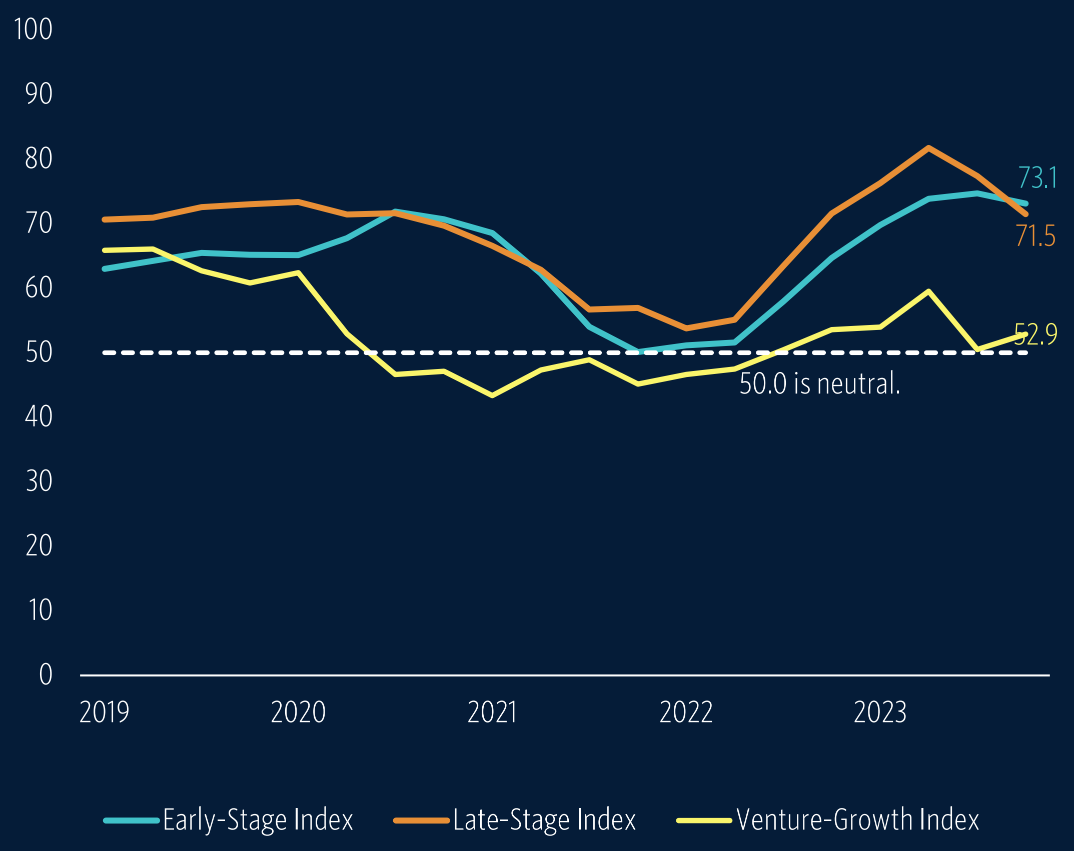
SaaS capital demand/supply ratio by quarter



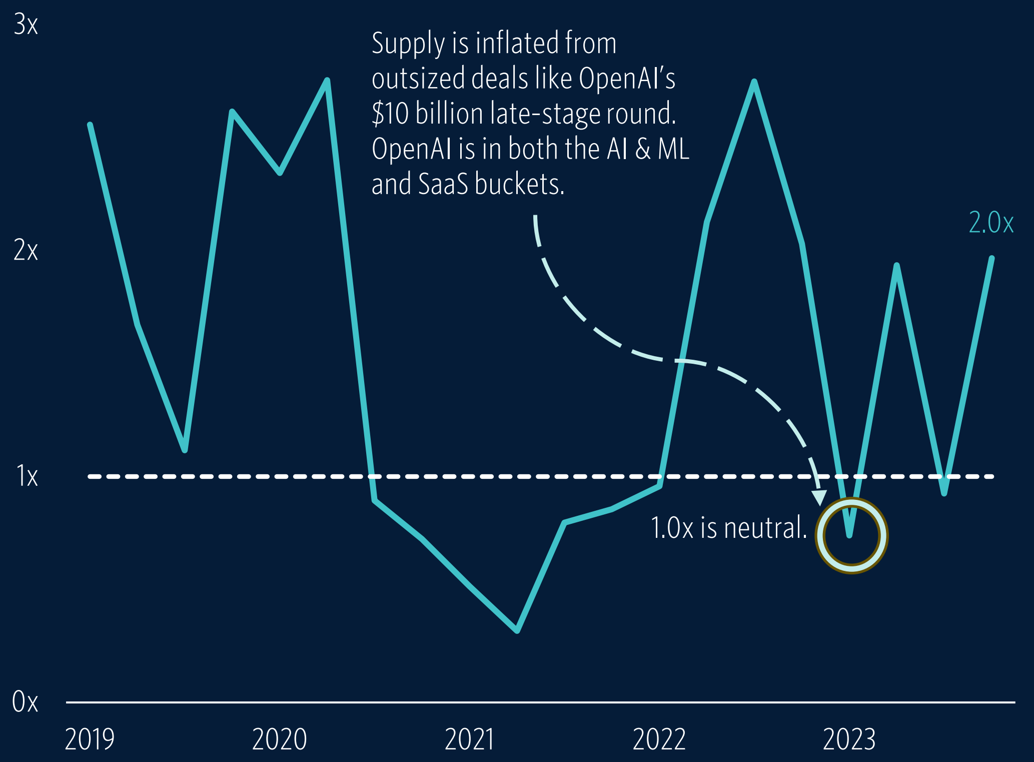
Source: PitchBook • Geography: US • *As of December 31, 2023

While AI & ML has remained less susceptible to changes in historical trends, outsized deals like OpenAI's $10 billion late-stage round greatly impact the "supply" of capital.

AI & ML VC Dealmaking Indicator by quarter*



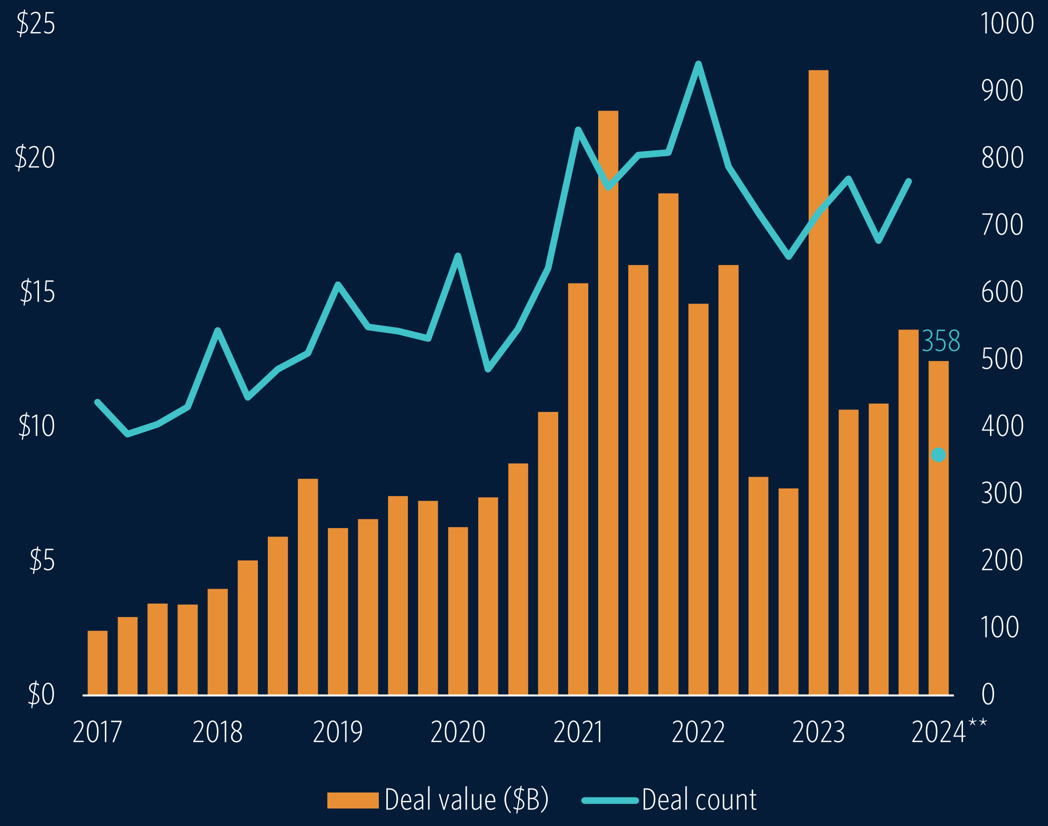
Aggregate AI & ML capital demand/supply ratio*



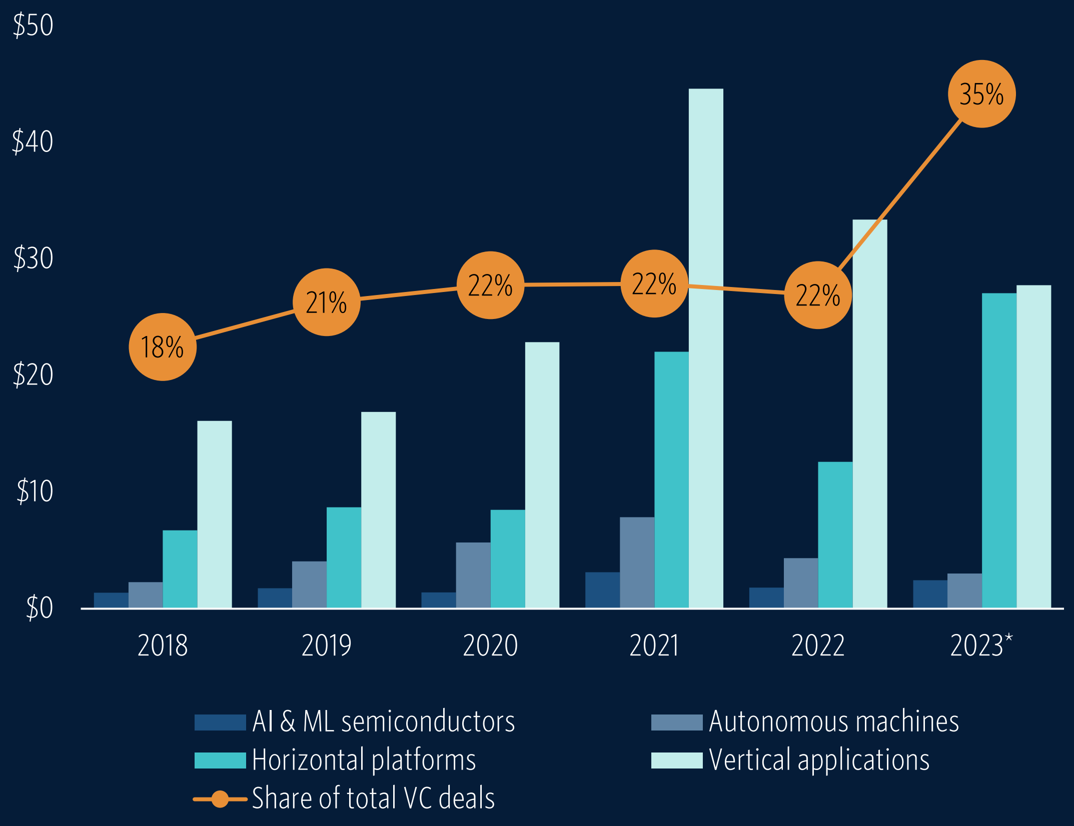
Source: PitchBook • Geography: US • *As of December 31, 2023

VC investors appear to be pivoting. Despite being a slow year for dealmaking, the share of VC dollars invested in AI & ML accelerated to 35.4% in 2023...

AI & ML VC deal activity by quarter



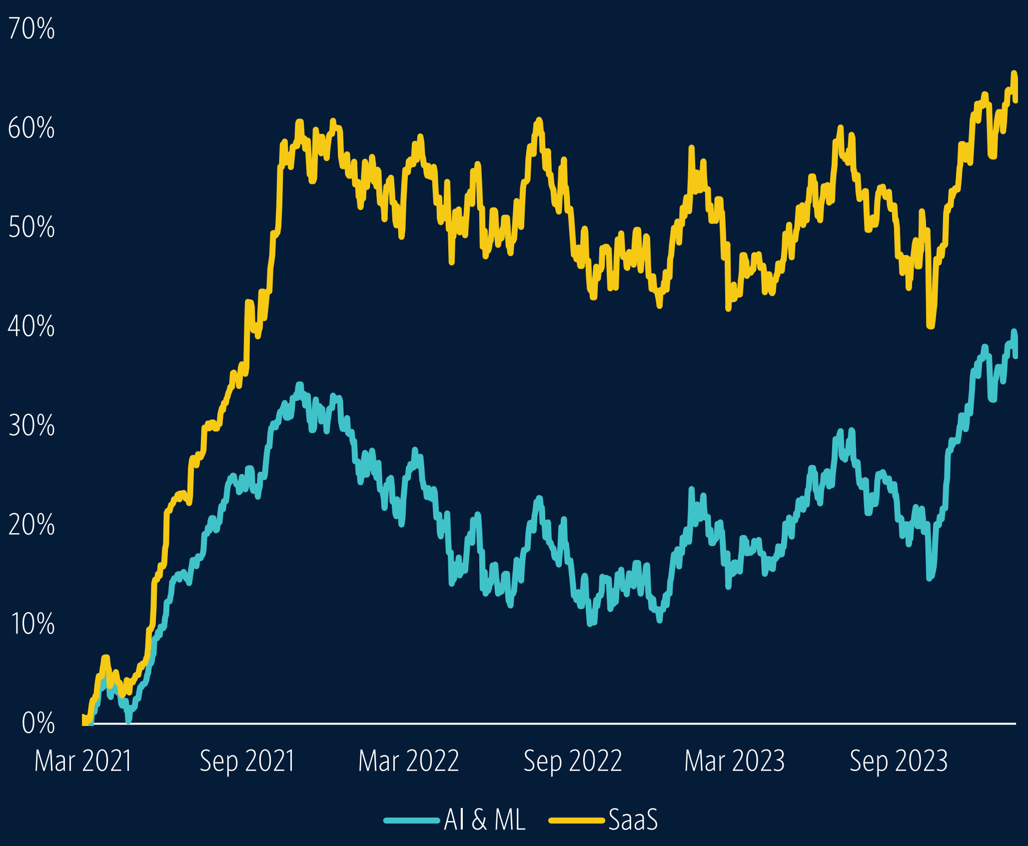
AI & ML VC deal value ($B) by segment and share of all VC deal value



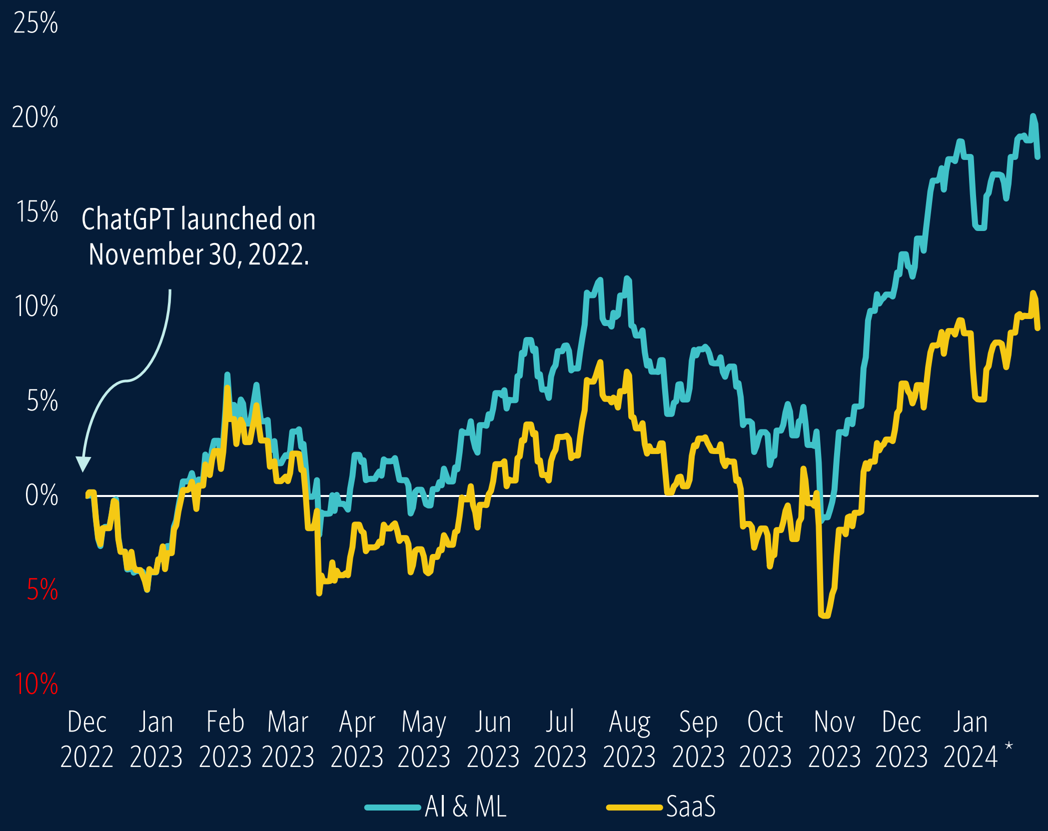
Source: PitchBook • Geography: US • *As of January 31, 2024 • **As of February 28, 2024

...with late-stage unicorn valuations rebounding faster than VC's previous darling, SaaS. Since the launch of ChatGPT in late 2022, AI & ML unicorns have outperformed on paper.

Morningstar PitchBook Unicorn Index returns by select sector*



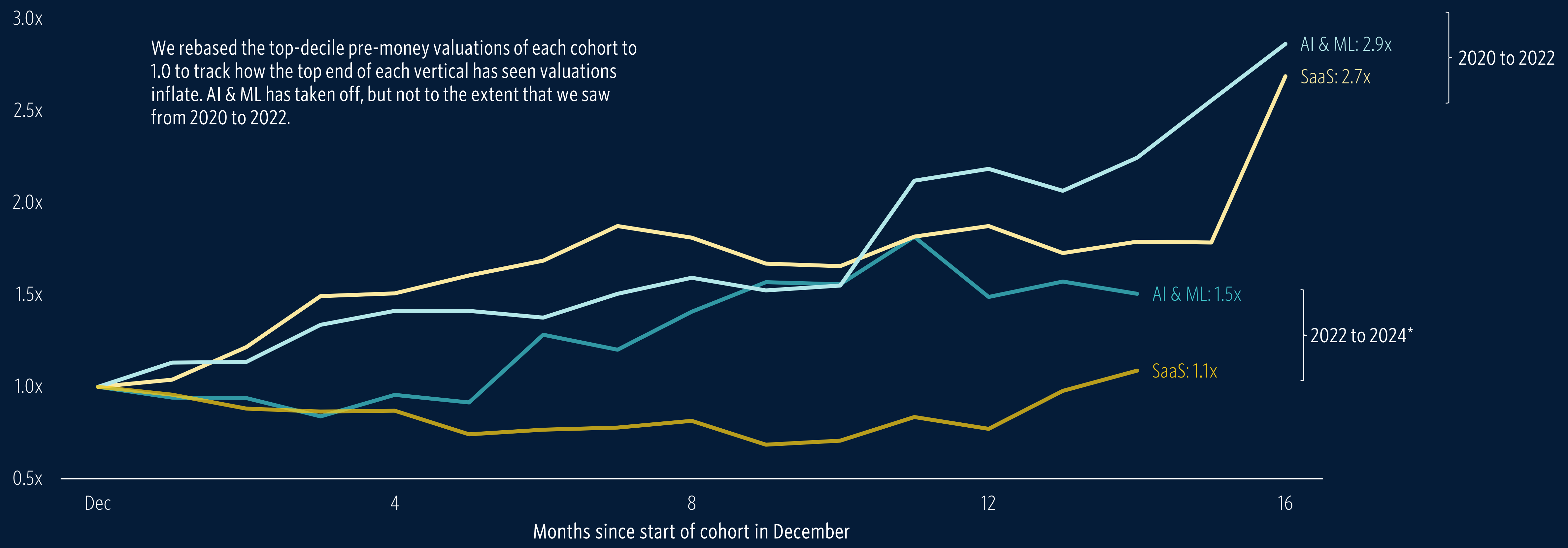
Morningstar PitchBook Unicorn Index returns by select sector



Sources: Morningstar, PitchBook • Geography: Global • *As of January 31, 2024

Top valuations of early-stage AI & ML startups have seen an uptick since ChatGPT's release, though not to the extent seen in 2021. Growth of top-decile SaaS valuations has been subdued.

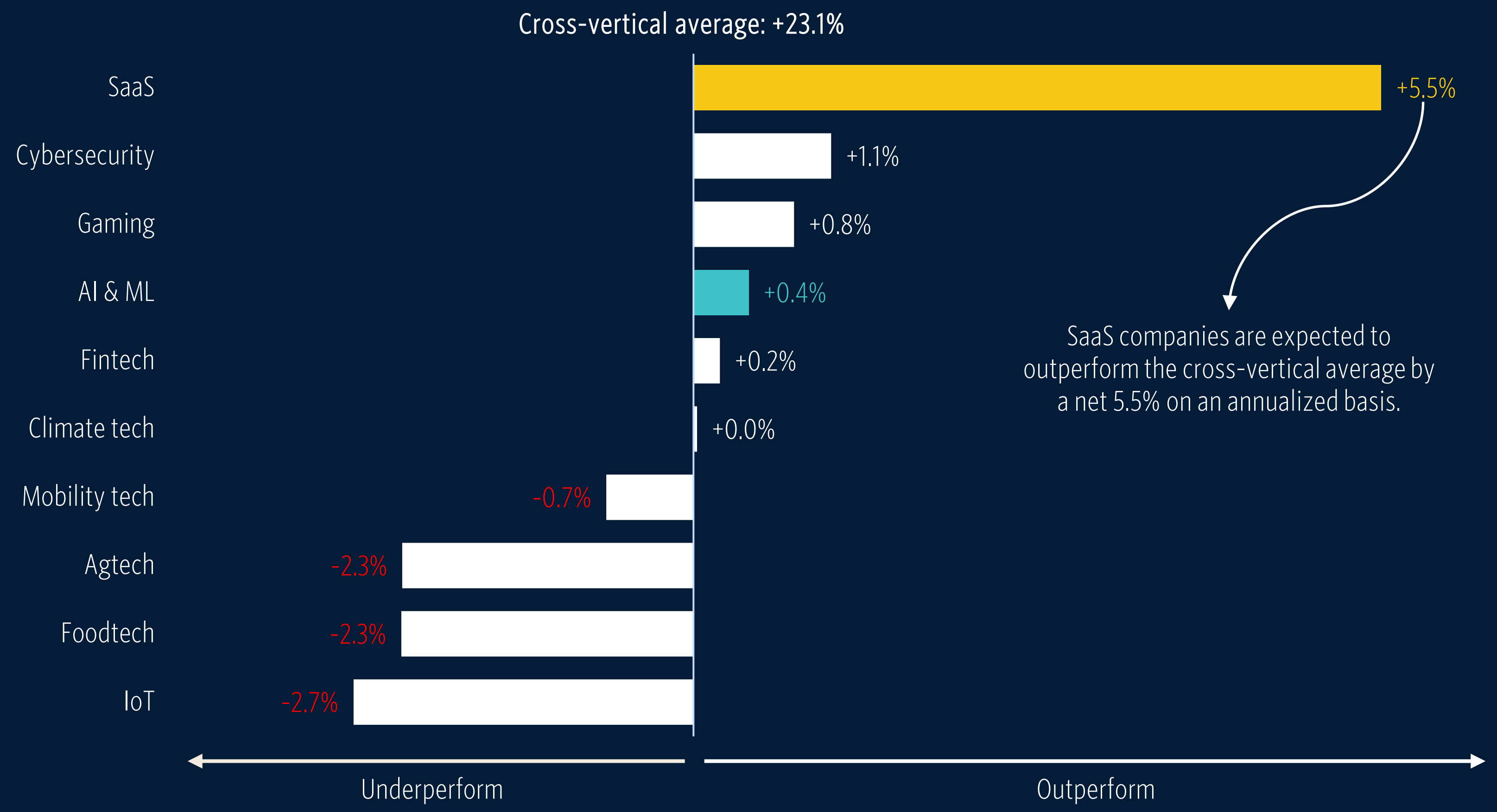
Rolling six-month average top-decile pre-money valuation multiples for new deals by select vertical, rebased to December of starting year



Source: PitchBook • Geography: US • *As of February 28, 2024

Despite the focus on AI & ML, our analysis still suggests that early-stage SaaS companies are likely to outperform the average vertical...

Annualized expected returns relative to the cross-vertical average*



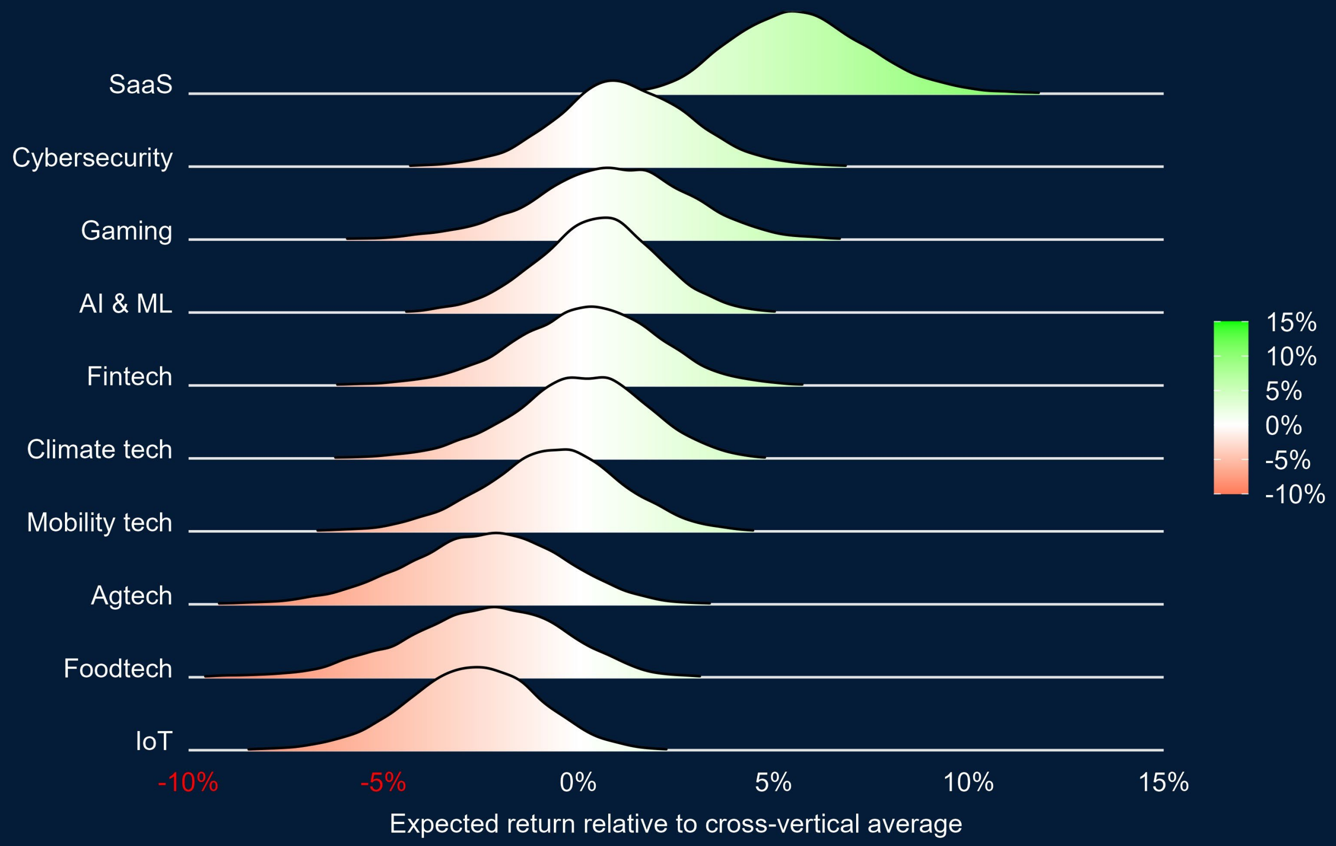
Source: PitchBook • Geography: Global • *As of December 31, 2023

Expected returns for each vertical are based on an aggregation of the expected returns for the underlying companies. Company-level returns are determined from the exit-type predictions and historical returns by series. For more information, please see our VC Emerging Opportunities report and the VC Exit Predictor methodology located in the PitchBook Help Center.

The cross-vertical average return of 23.1% is provided as a historical baseline value and should not be relied on as a forecast. This baseline value is derived from the average of deal-level return data from 2000 to 2021 and can vary significantly based on the environment at any given time. The relative returns for each vertical, however, are a more robust forward-looking measure because they are unaffected by factors that impact the entire VC ecosystem, such as interest rates, available funding, and economic growth.

...and simulations of exit outcomes provide evidence that bets placed in early-stage SaaS may lead to better payoffs.

Distributions of relative annualized expected returns based on Monte Carlo simulations*



Source: PitchBook • Geography: Global • *As of December 31, 2023

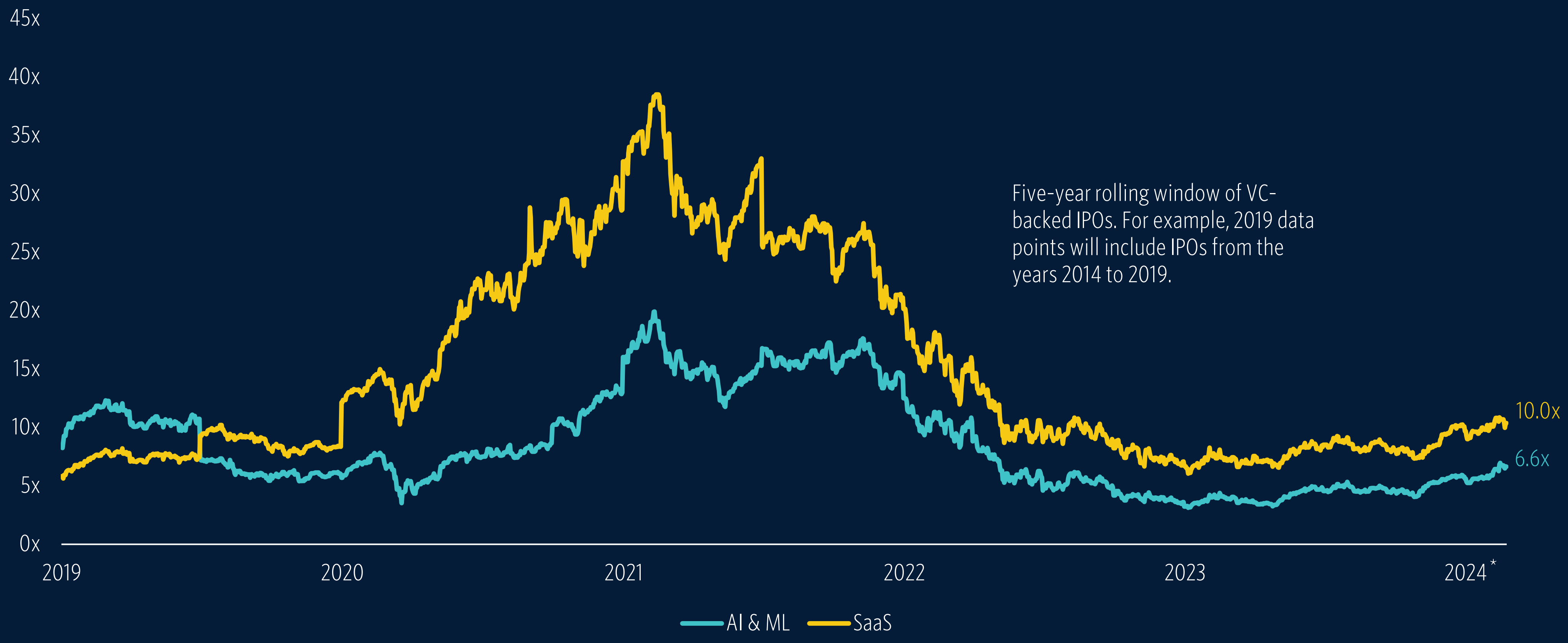
To assess the uncertainty of the relative expected returns shown on the prior page, we ran 10,000 Monte Carlo simulations that randomly generated exit outcomes for each company based on the exit probabilities from the VC Exit Predictor. At each iteration, we then used the random exit outcomes to calculate the return for each vertical. We assumed that exit outcomes between pairs of companies were positively correlated—the degree to which was based on a single common factor, as well as factors for each vertical.

This analysis suggests that there are three tiers of verticals based on expected performance. SaaS is expected to outperform with high confidence, while agricultural tech (agtech), foodtech, and Internet of Things (IoT) are expected to underperform. Meanwhile, the remaining verticals form a middle tier wherein the relative performance outcomes are much less certain.

Into the clouds

Public equity investors appear to agree with SaaS's prospects. VC-backed SaaS companies that recently completed an IPO are trading at higher multiples than AI & ML in the public markets.

Price/sales multiples of VC-backed IPOs in SaaS and AI & ML

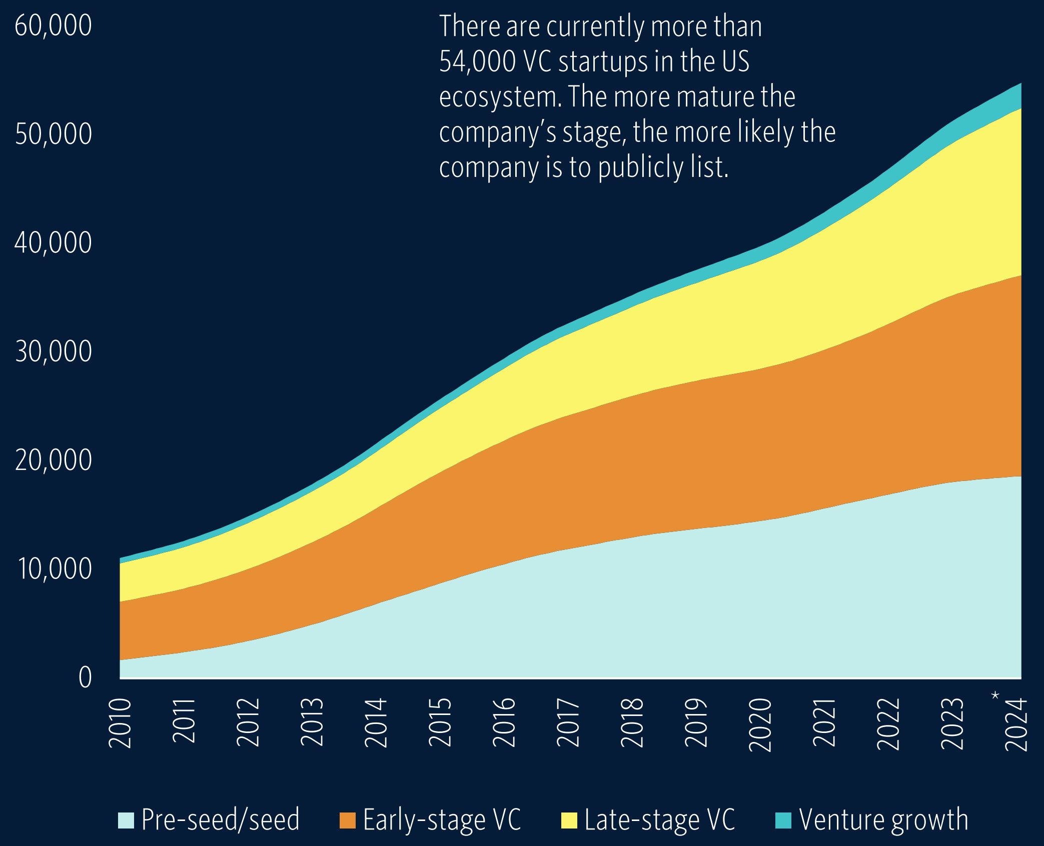


Source: PitchBook • Geography: US • *As of February 28, 2024

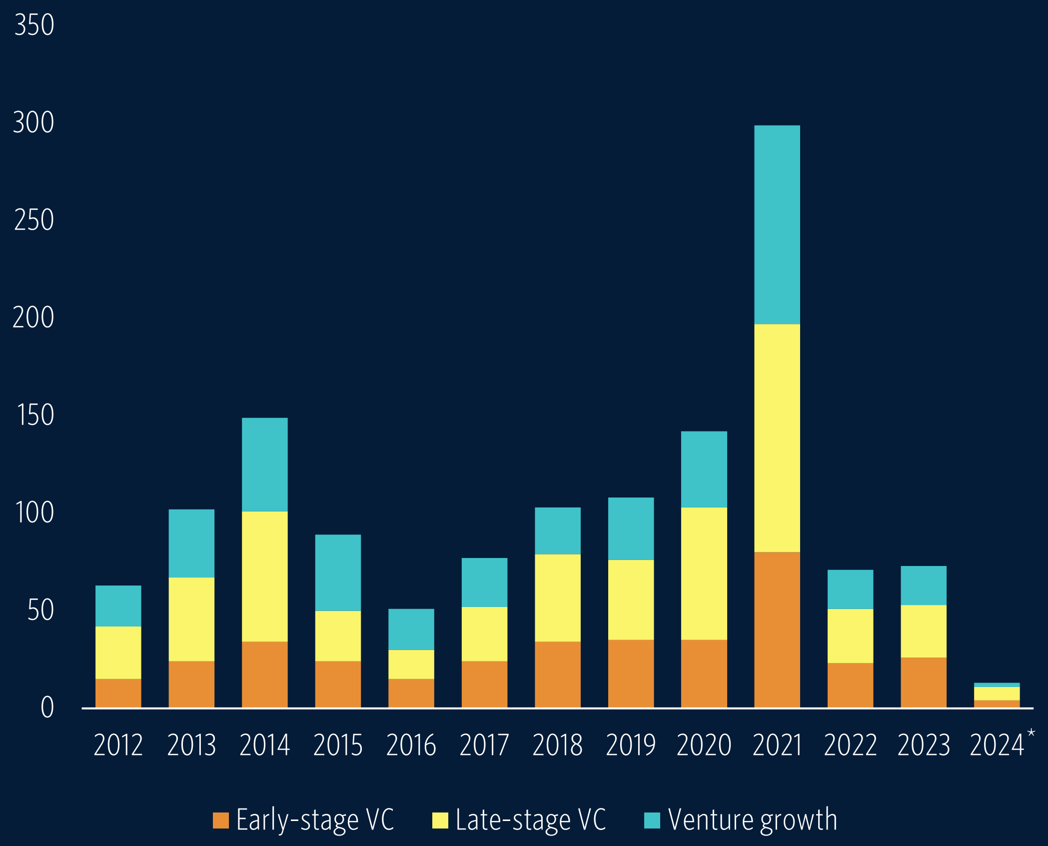
Note: Five years of inclusion in indexed constituents

However, crimped valuation multiples led to an IPO drought in 2022 and 2023. A record number of VC-backed companies are looking for exits…

VC company count by stage



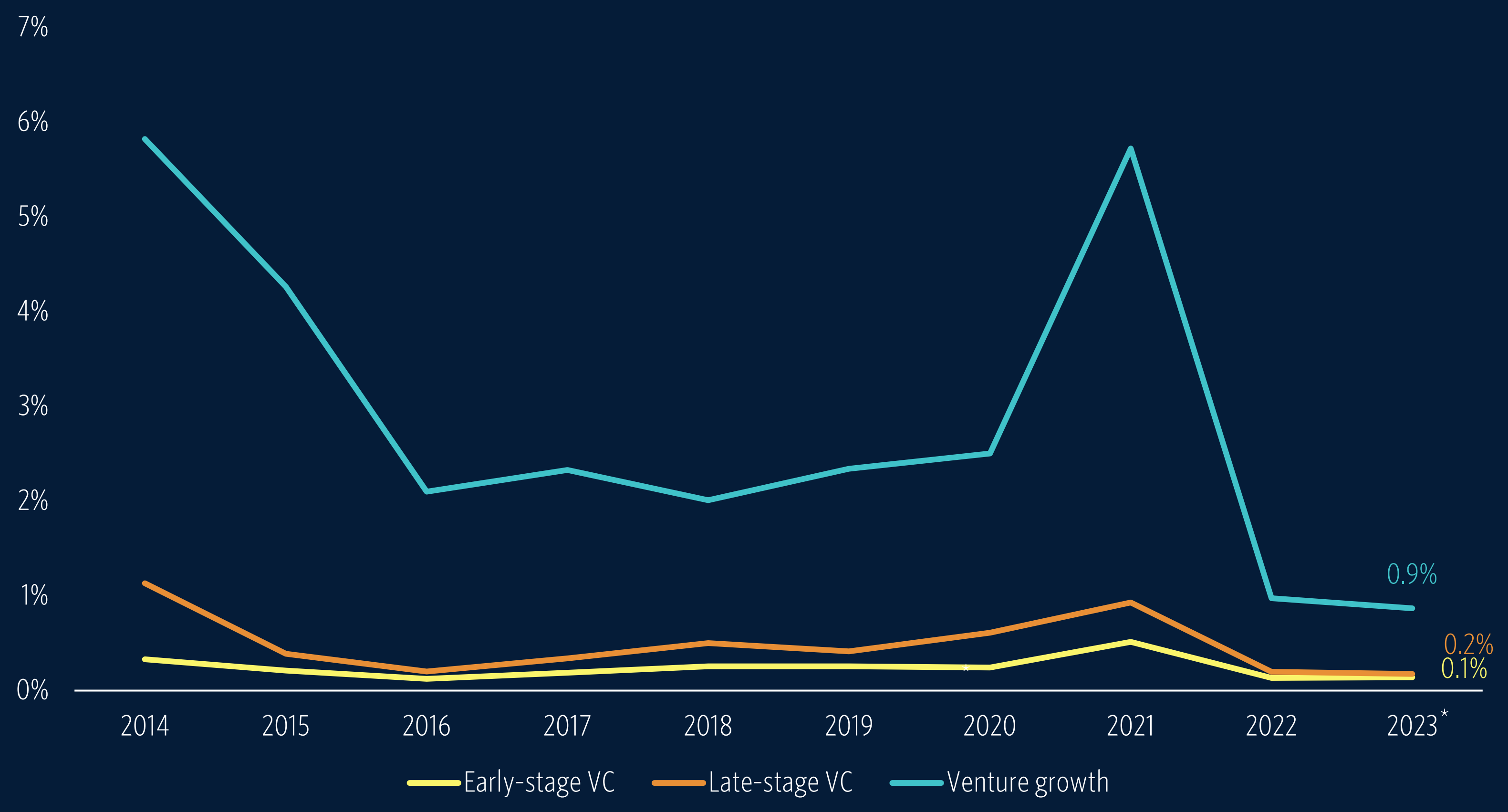
Public listing count by stage of last VC financing round



Source: PitchBook • Geography: US • *As of February 28, 2024

…but even in normal times, public listings are rare. The last two years have been the worst over the last decade…

Share of VC-backed companies that publicly listed by stage

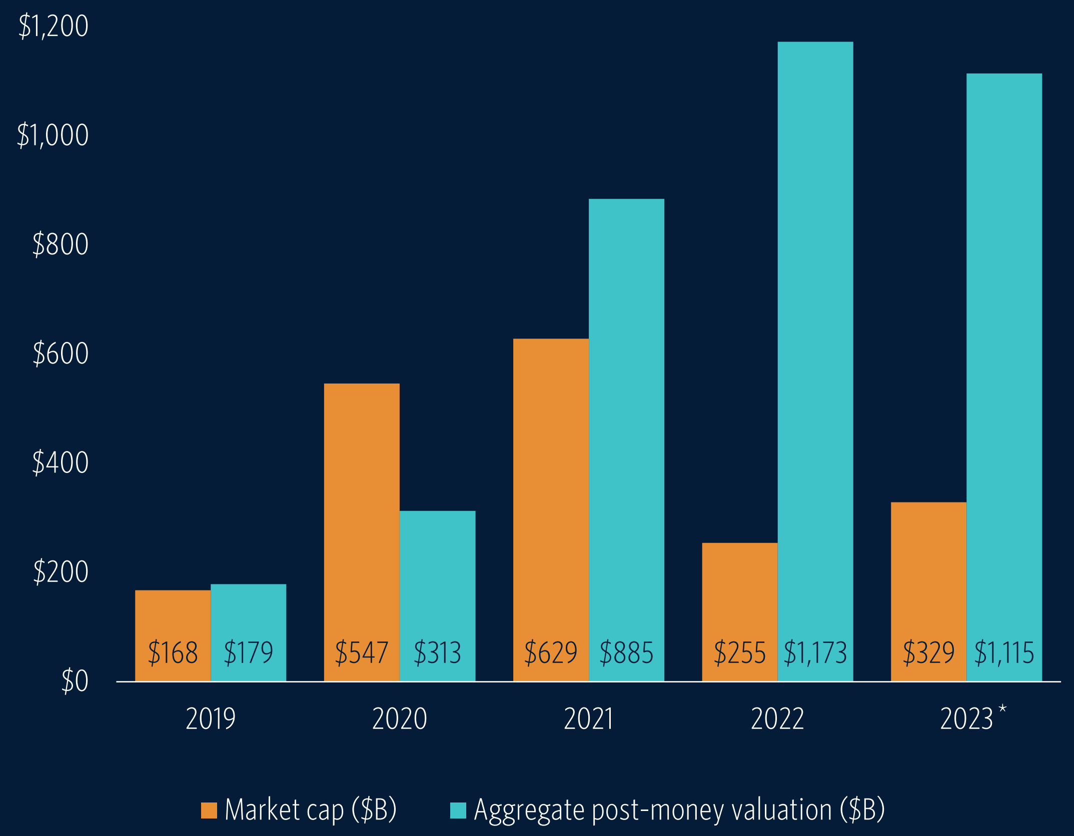


Source: PitchBook • Geography: US • *As December 31, 2023

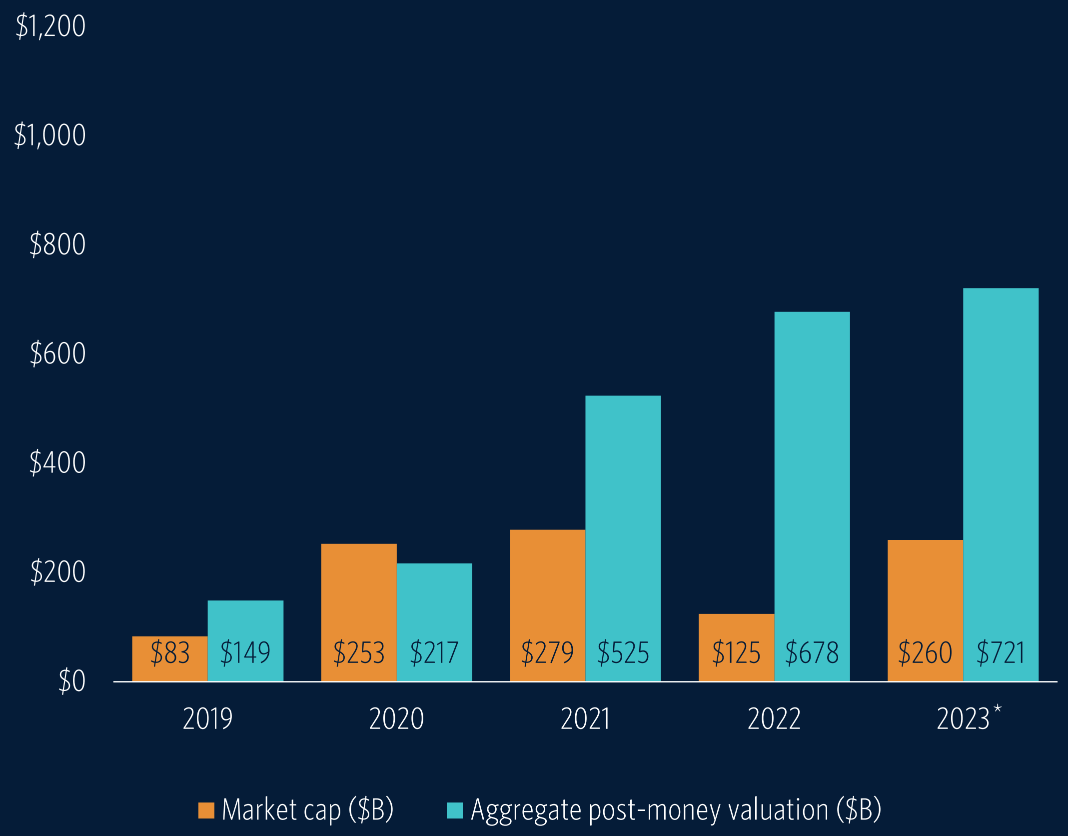
Based on our estimates for the universe of VC-backed startups, we compare the proportion of firms that publicly listed each year. By averaging the proportion from 2015 to 2019, we next estimate the number of public listings there would be under "normal" exit conditions.

...leading to a buildup of paper valuations. The market cap of companies that have completed an IPO in the last five years is roughly one-third of aggregate private market valuations.

SaaS market cap of recent IPOs versus aggregate post-money valuation of still-private, VC-backed firms



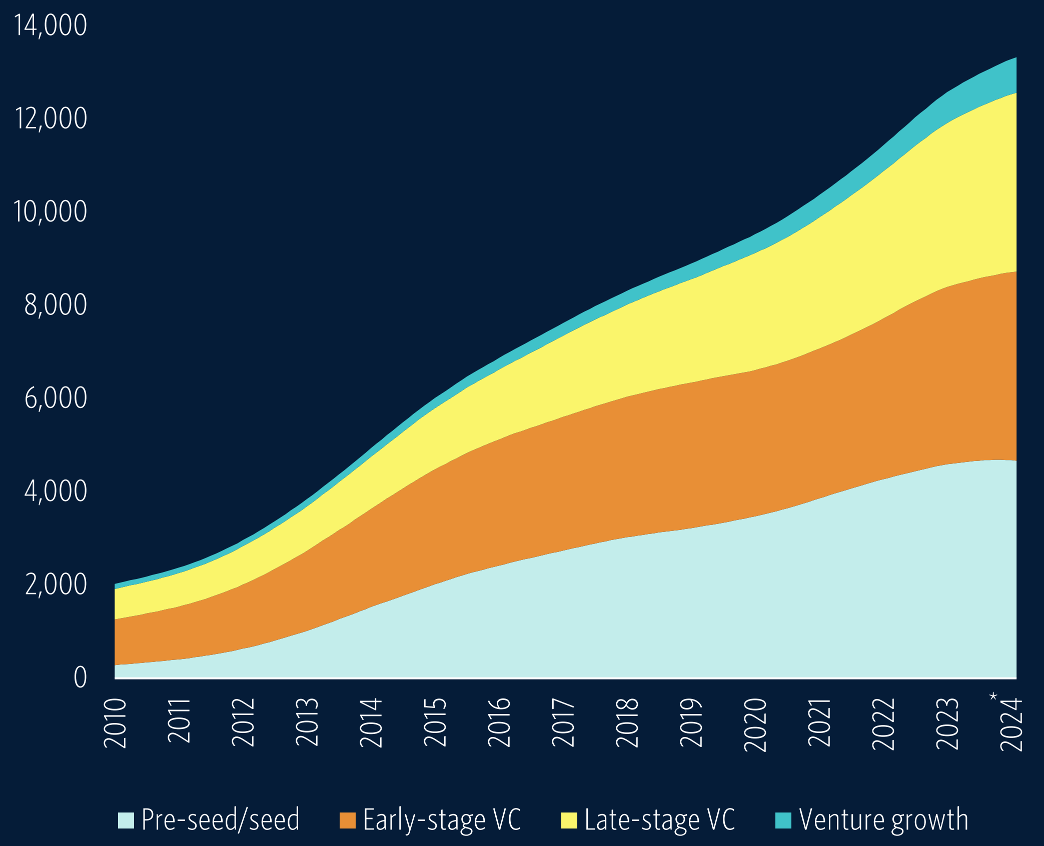
AI & ML market cap of recent IPOs versus aggregate post-money valuation of still-private, VC-backed firms



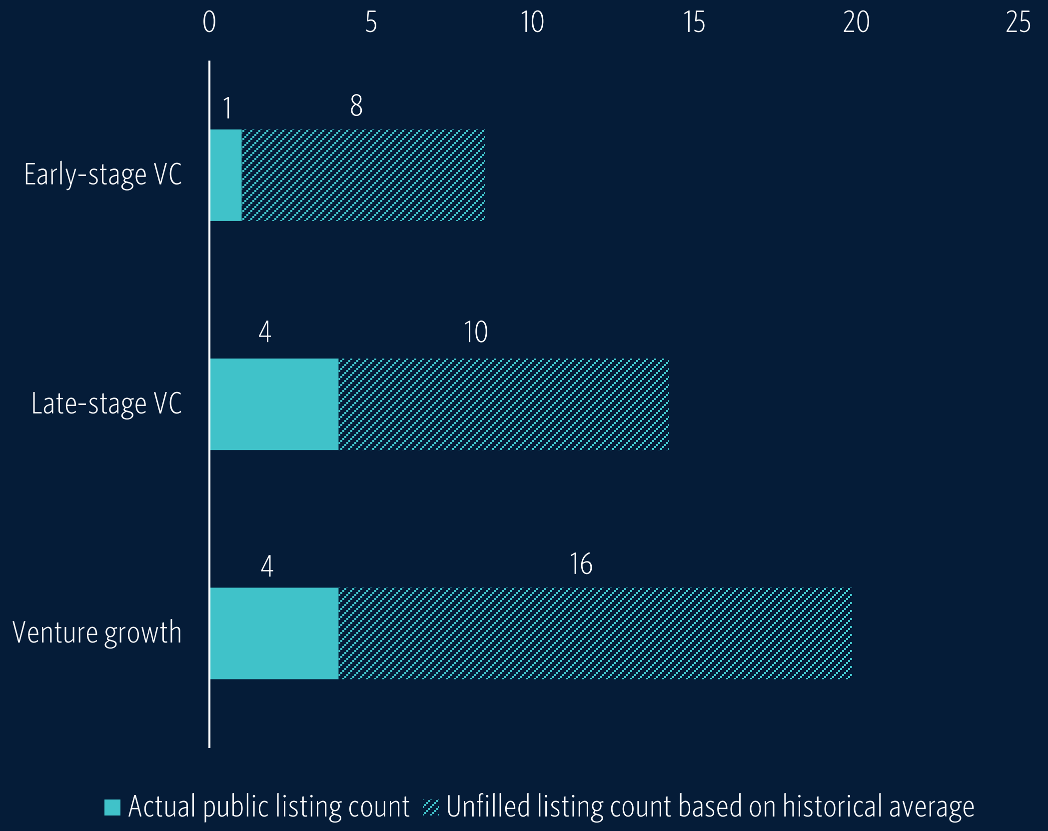
Source: PitchBook • Geography: US • *As of December 31, 2023

A record number of SaaS companies were left out of new offerings, and they are now facing challenges in navigating growth while private.

SaaS VC company count by stage



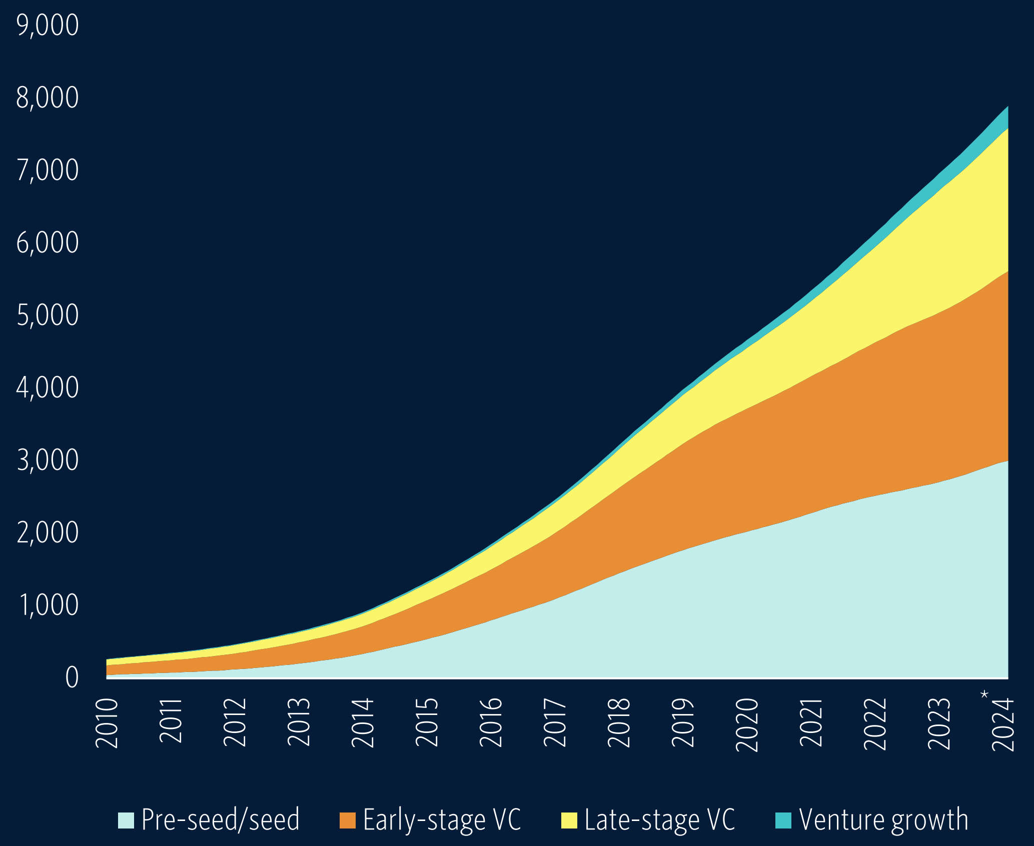
SaaS 2023 public listing count versus shortfall based on 2015-2019 average public listing rate by stage*



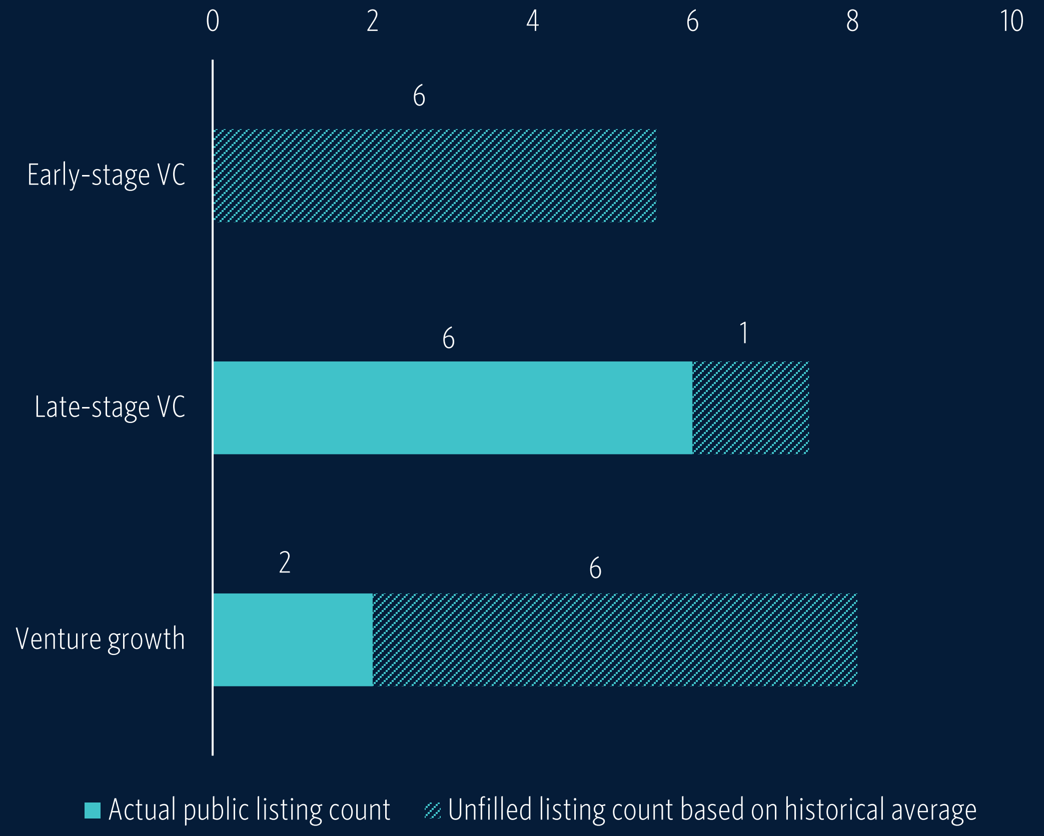
Source: PitchBook • Geography: US • *As of February 28, 2024

Despite hype in AI & ML VC deals, exit activity has fallen short of expectations.

AI & ML VC company count by stage



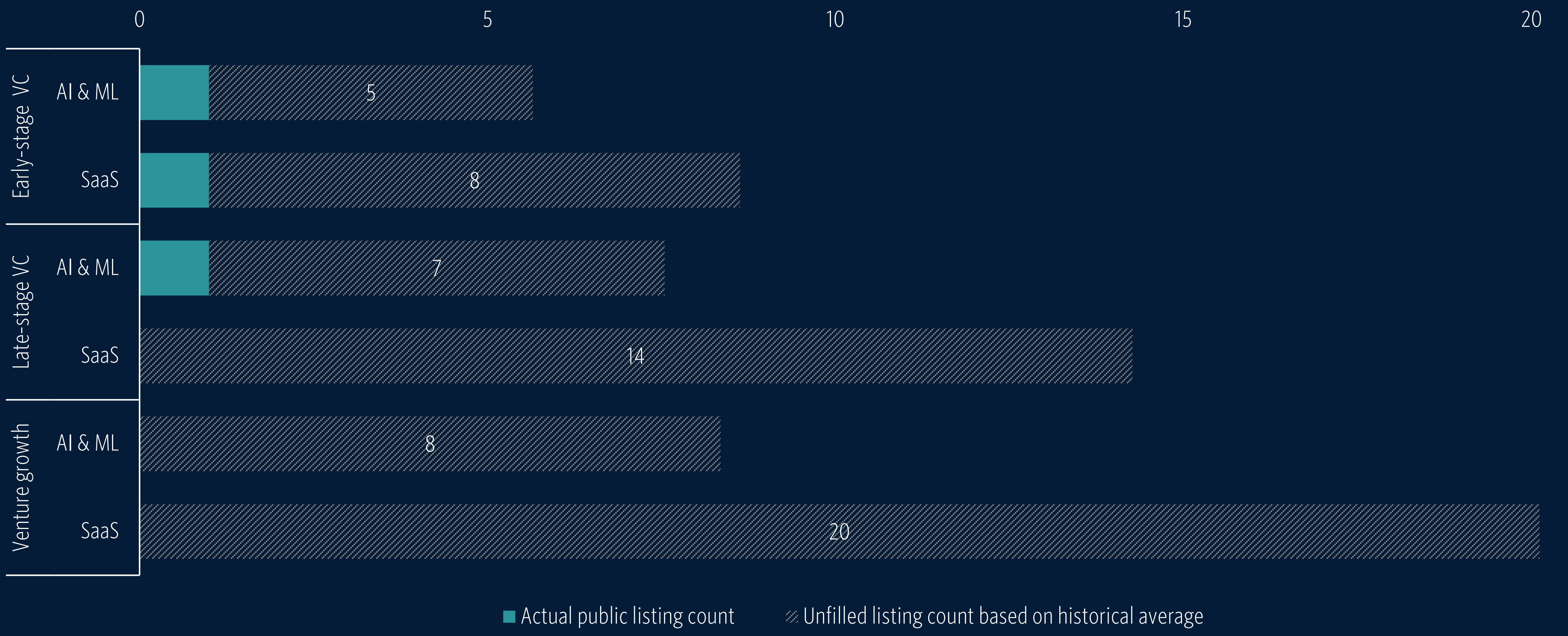
AI & ML 2023 public listing count versus shortfall based on 2015-2019 average IPO rate by stage*



Source: PitchBook • Geography: US • *As of February 28, 2024

Two months into 2024, IPOs have not taken off, but there is optimism for a resurgence. Several notable VC-backed companies are targeting an IPO this year if the macro environment allows.

2024 public listing count versus shortfall based on 2015-2019 average IPO rate by stage and select vertical*

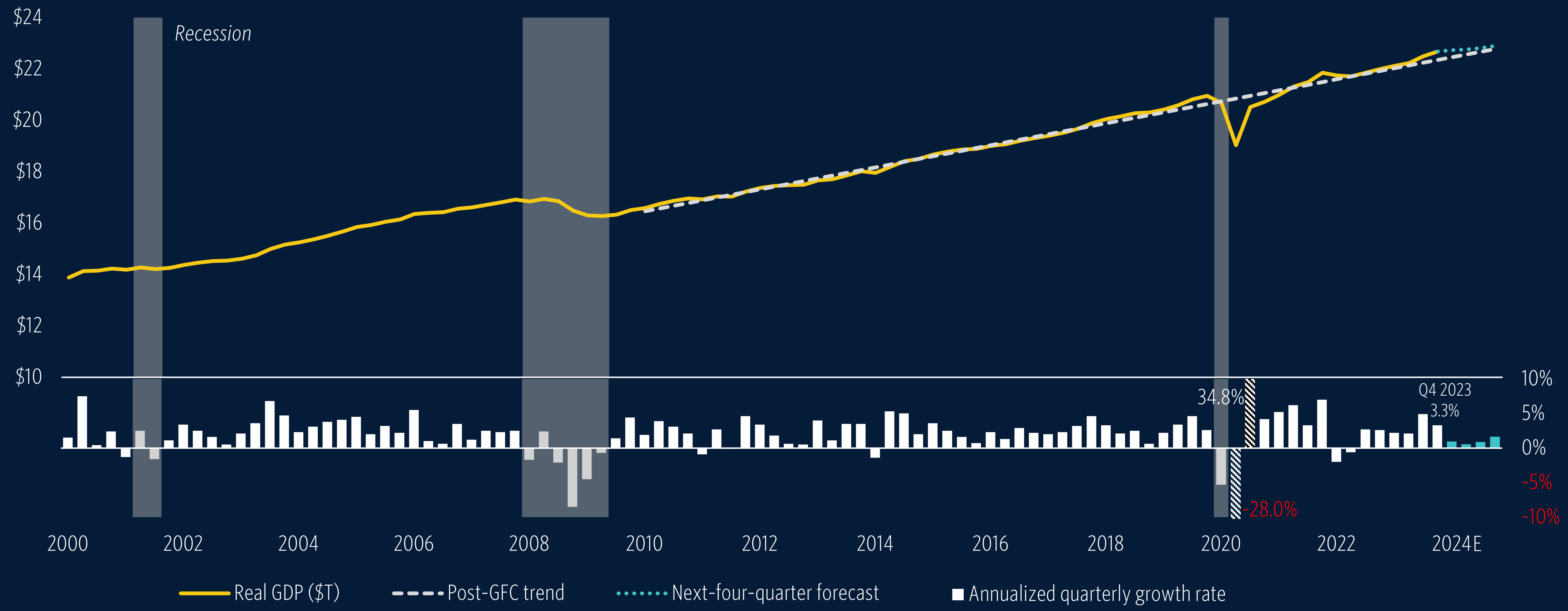


Source: PitchBook • Geography: US • *As of February 28, 2024

Clear skies ahead?

The above-trend real GDP in 2023 brings the US closer to a successful soft landing. GDP growth forecasts are muted, but recession fears have noticeably receded.

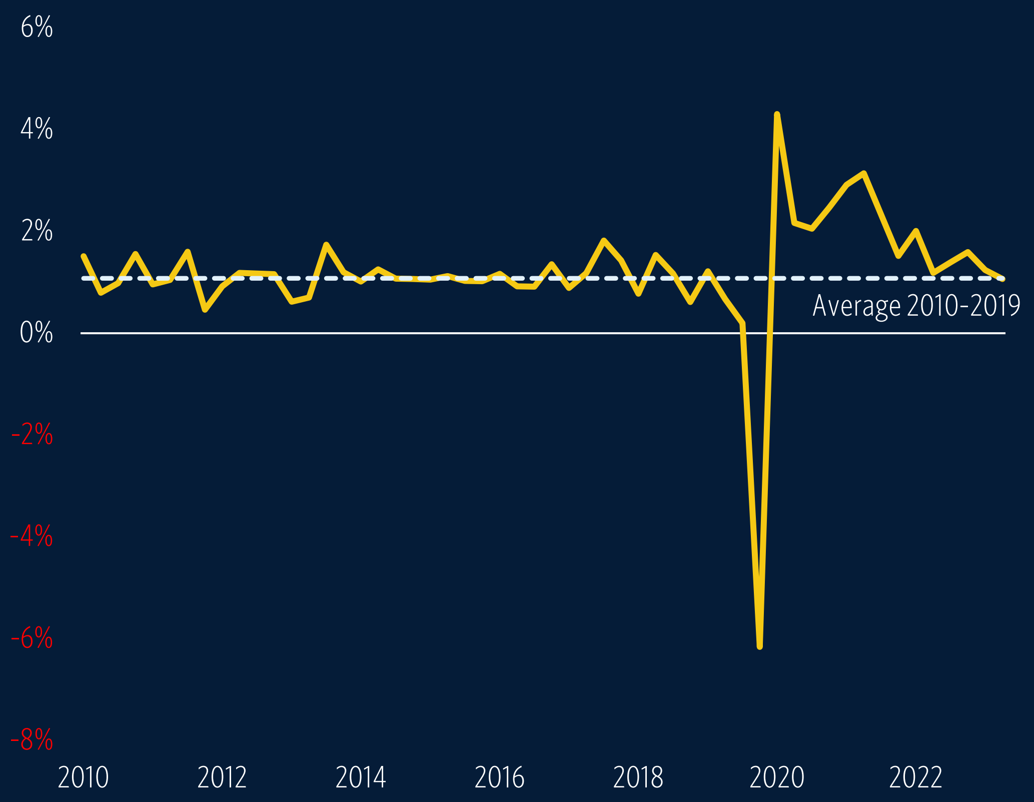
Real GDP compared with trend following the global financial crisis (GFC)*



Sources: Bureau of Economic Analysis, Wall Street Journal Economic Forecasting Survey • Geography: US • *As of December 31, 2023

Strong job gains have driven the unemployment rate back to the lows of 2019. While positive, job creation has cooled to the average growth of the pre-pandemic decade.

QoQ job creation change*

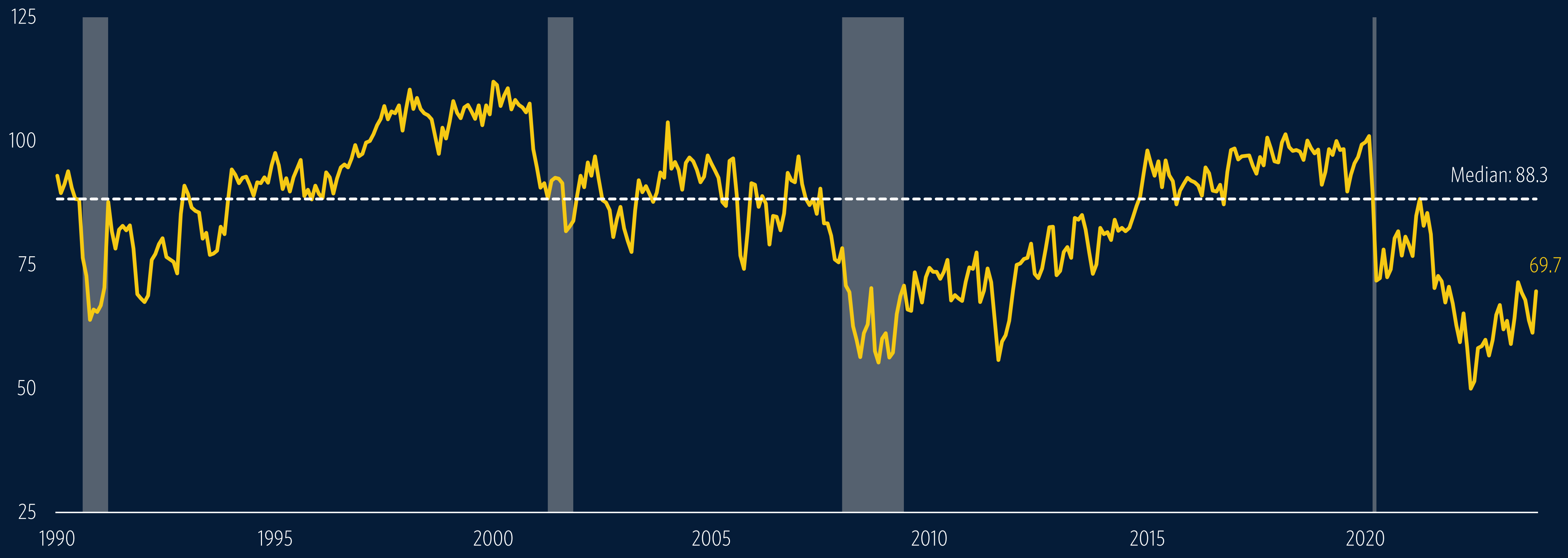


Unemployment rate*

Source: Bureau of Labor Statistics • Geography: US • *As of December 31, 2023

Consumers are still wary, but sentiment has improved over 2022 and early 2023…

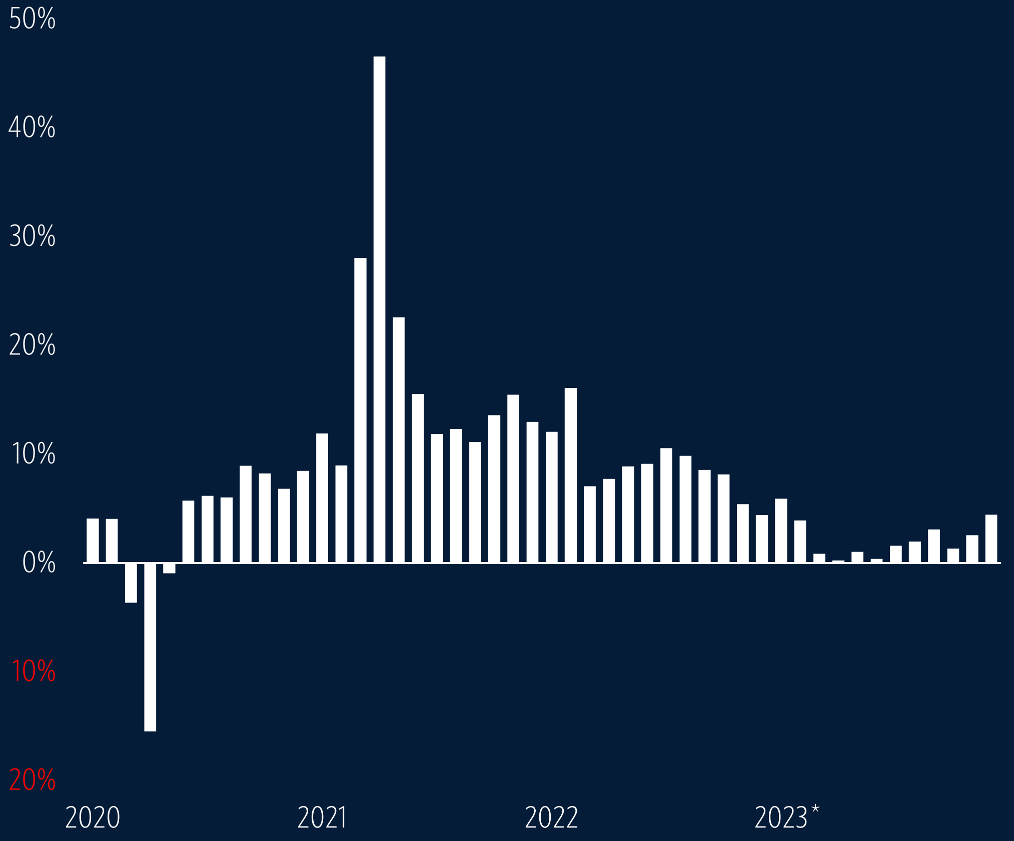
University of Michigan Consumer Sentiment Index*



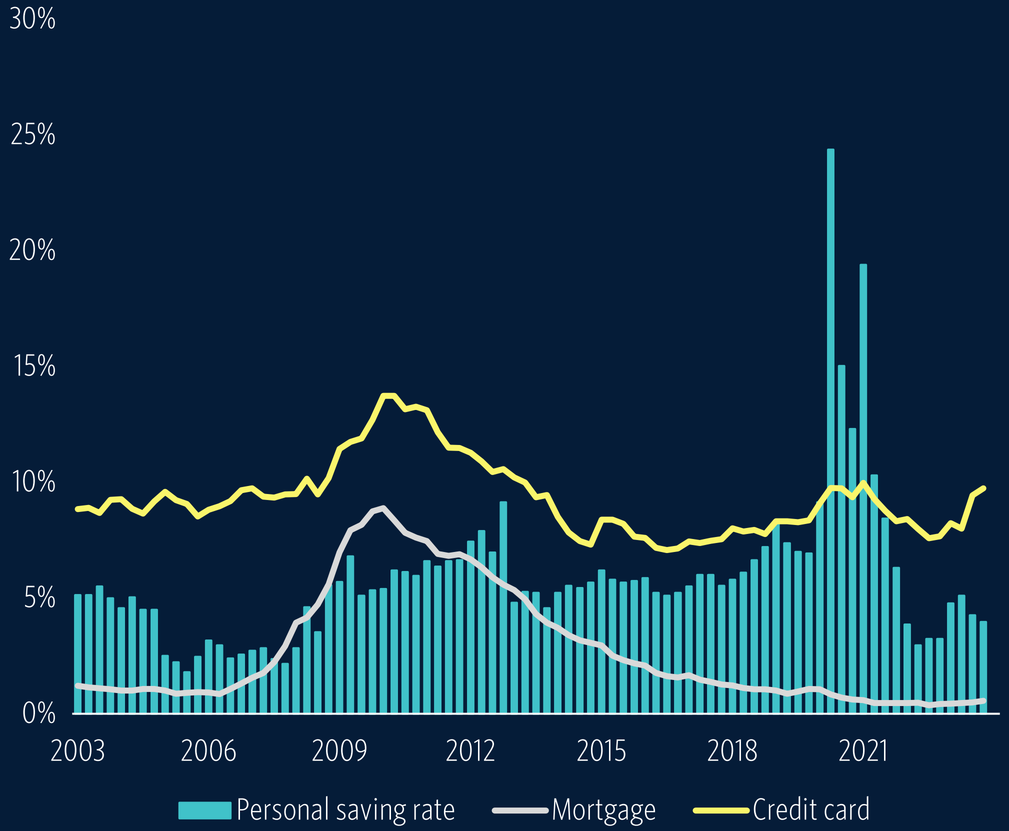
Source: University of Michigan • Geography: US • *As of December 31, 2023

...and YoY US retail sales growth continues to trend positive. However, a decline in the personal saving rate and rising delinquency rates indicate unsustainable consumer spending.

YoY retail sales by month



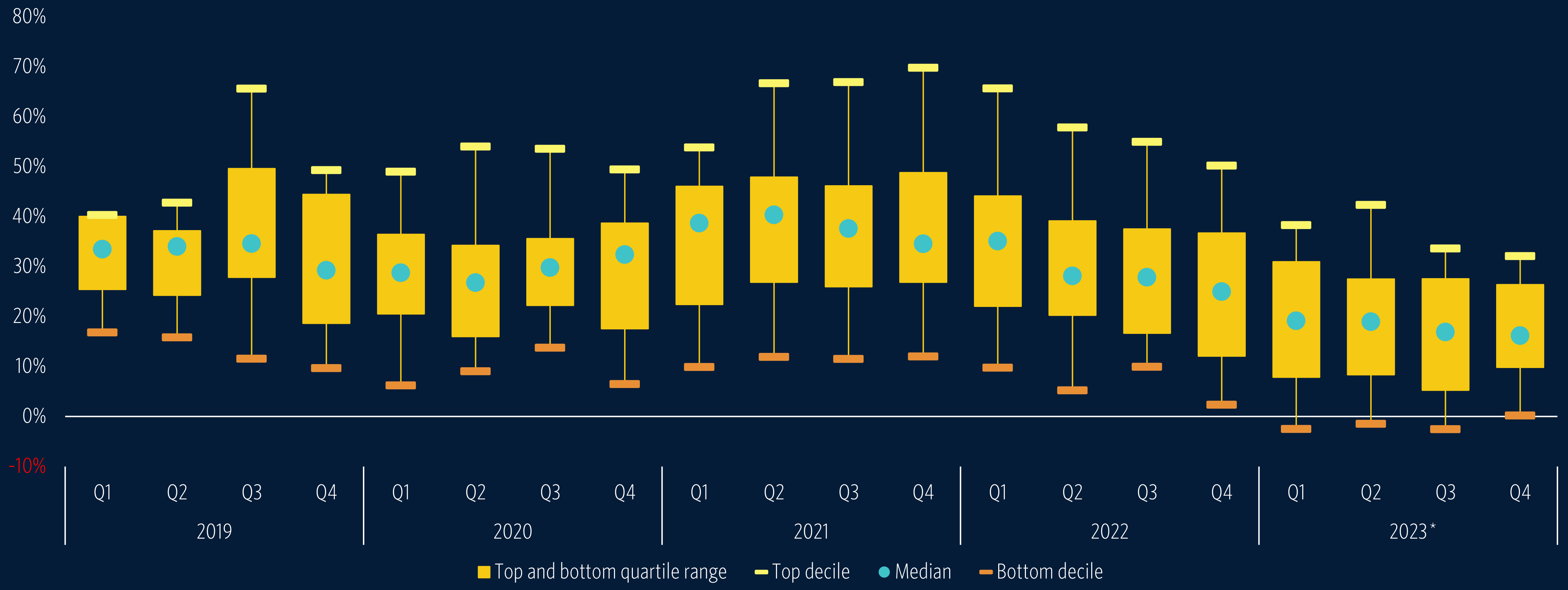
Personal saving rate and share of balance 90+ days delinquent by loan type*



Sources: Census Bureau, Federal Reserve Bank of St. Louis, Federal Reserve Bank of New York • Geography: US • *As of December 31, 2023

Recent IPOs provide a proxy for business fundamentals of late-stage VC-backed companies. SaaS revenue growth has slowed from 2021...

SaaS revenue growth dispersion of VC-backed IPO companies by quarter

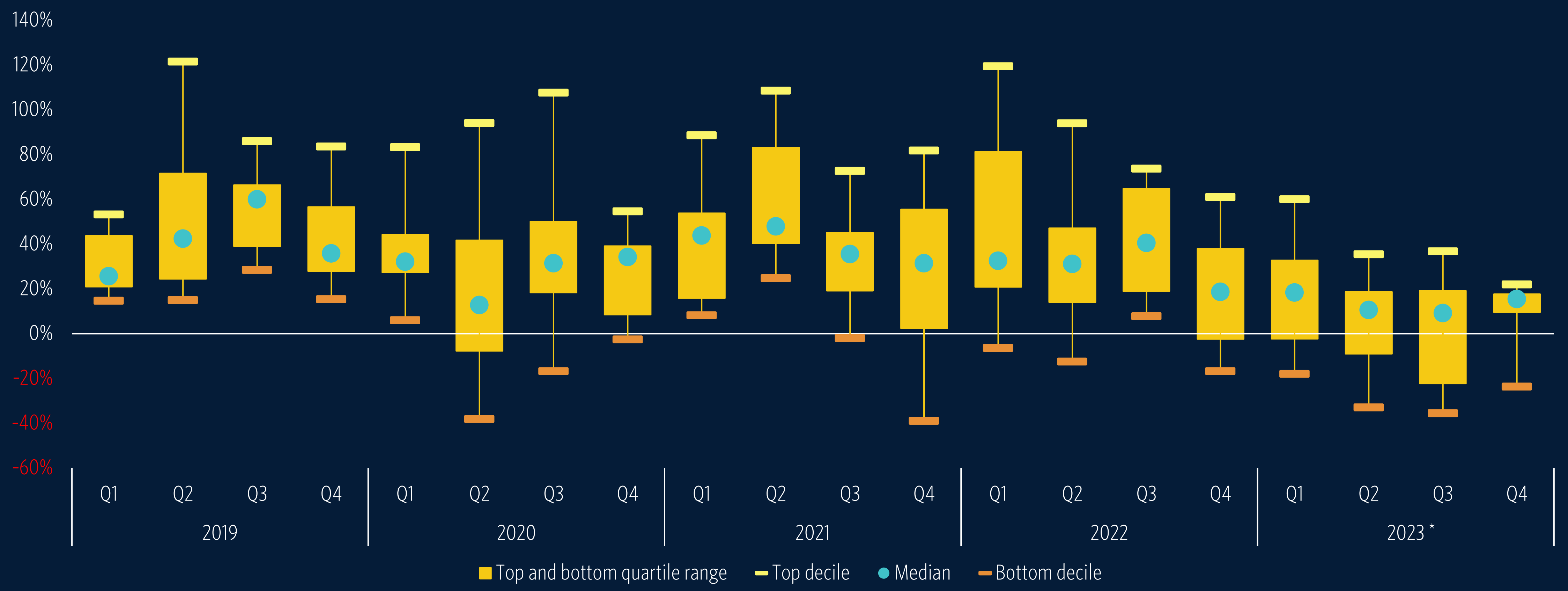


Source: PitchBook • Geography: US • *As of December 31, 2023

Note: VC-backed IPOs included for five years. Limited Q4 2023 data: 25 of 38 companies have reported.

...and AI & ML has followed a similar trend. Despite the perceived potential of this vertical, we have yet to see revenue growth figures pick up meaningfully.

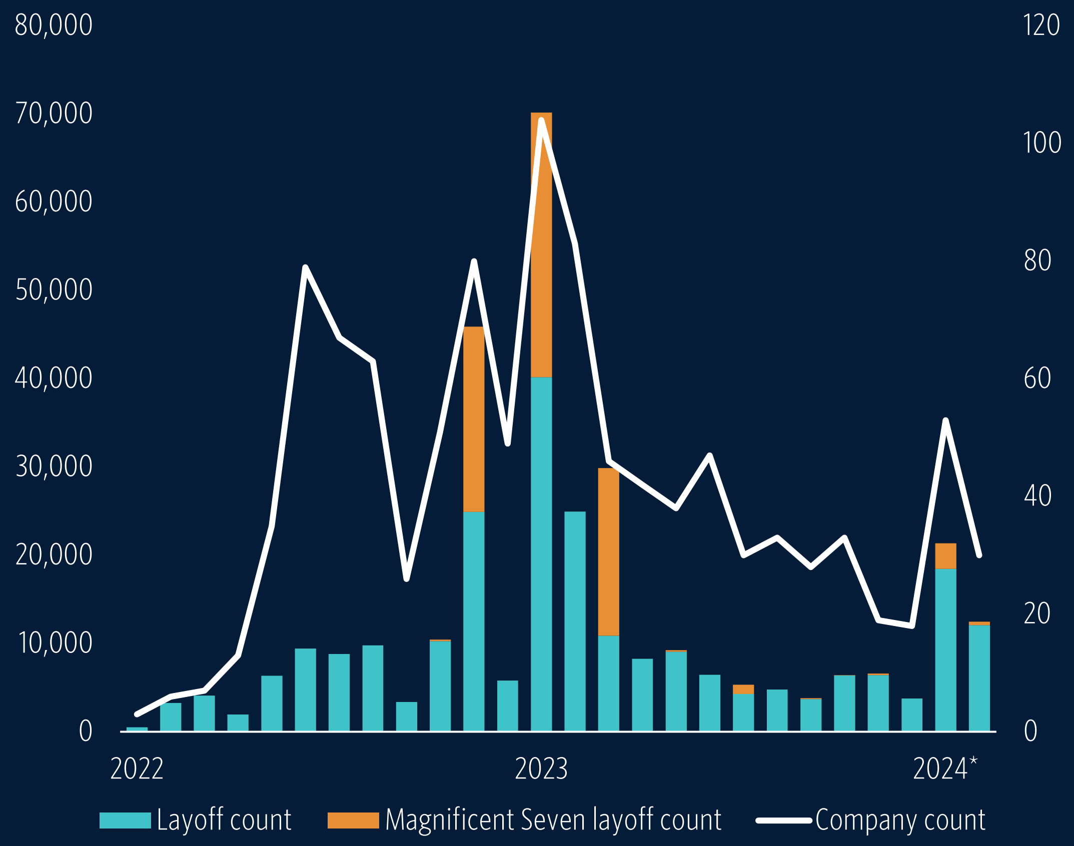
AI & ML revenue growth dispersion of VC-backed IPO companies by quarter



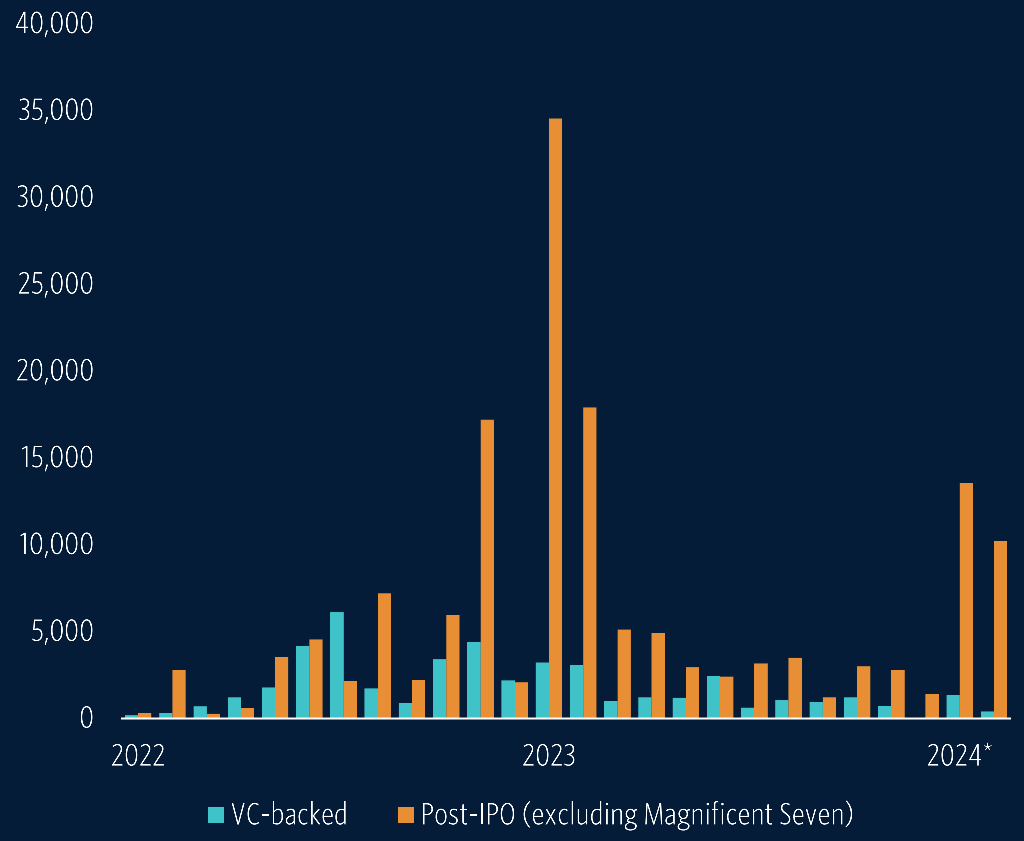
Source: PitchBook • Geography: US • *As of December 31, 2023
Note: VC-backed IPOs included for five years. Limited Q4 2023 data: 13 of 26 companies have reported.

In response to declining revenue growth, tech layoffs indicate a continuing stance to cut costs. Late-stage startups with sustainable business models are more likely to have a successful IPO.

Tech layoff count by month



Monthly tech layoff count by stage



Source: Layoffs.fyi • Geography: US • *As of March 7, 2024

Our Emerging Technology analyst team has identified several IPO candidates in the pipeline.

2024 IPO pipeline for VC-backed startups*

Company	Segment	Total raised	Last known valuation
Databricks	AI & ML	$4.2 billion	$43.2 billion
Epic Games	Gaming and AI & ML	$6.1 billion	$30.0 billion
Klarna	SaaS and Fintech	$4.7 billion	$6.7 billion
Rubrik	Cybersecurity and SaaS	$1.2 billion	$4.0 billion
FBN	Agtech and SaaS	$939.3 million	$3.8 billion
Astera Labs	AI & ML	$235.0 million	$3.2 billion
Generate Biomedicines	Biopharma and Generative AI	$673.0 million	$2.0 billion

Source: PitchBook • Geography: Global • *As of December 31, 2023

Note: This is a select list that we identified from the report.

Additional research

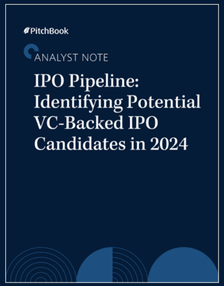
Market updates

2023 VC Emerging Opportunities

Download the report here

Q1 2024 Quantitative Perspectives: US Market Insights

Download the report here



Q1 2024 IPO Pipeline: Identifying Potential VC-Backed IPO Candidates in 2024

Download the report here

Q4 2023 Artificial Intelligence & Machine Learning Report

Download the report here

Q4 2023 Enterprise SaaS Report

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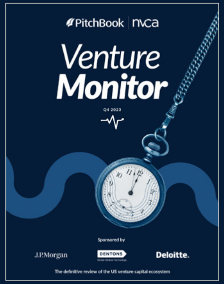

Q4 2023 PitchBook-NVCA Venture Monitor

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