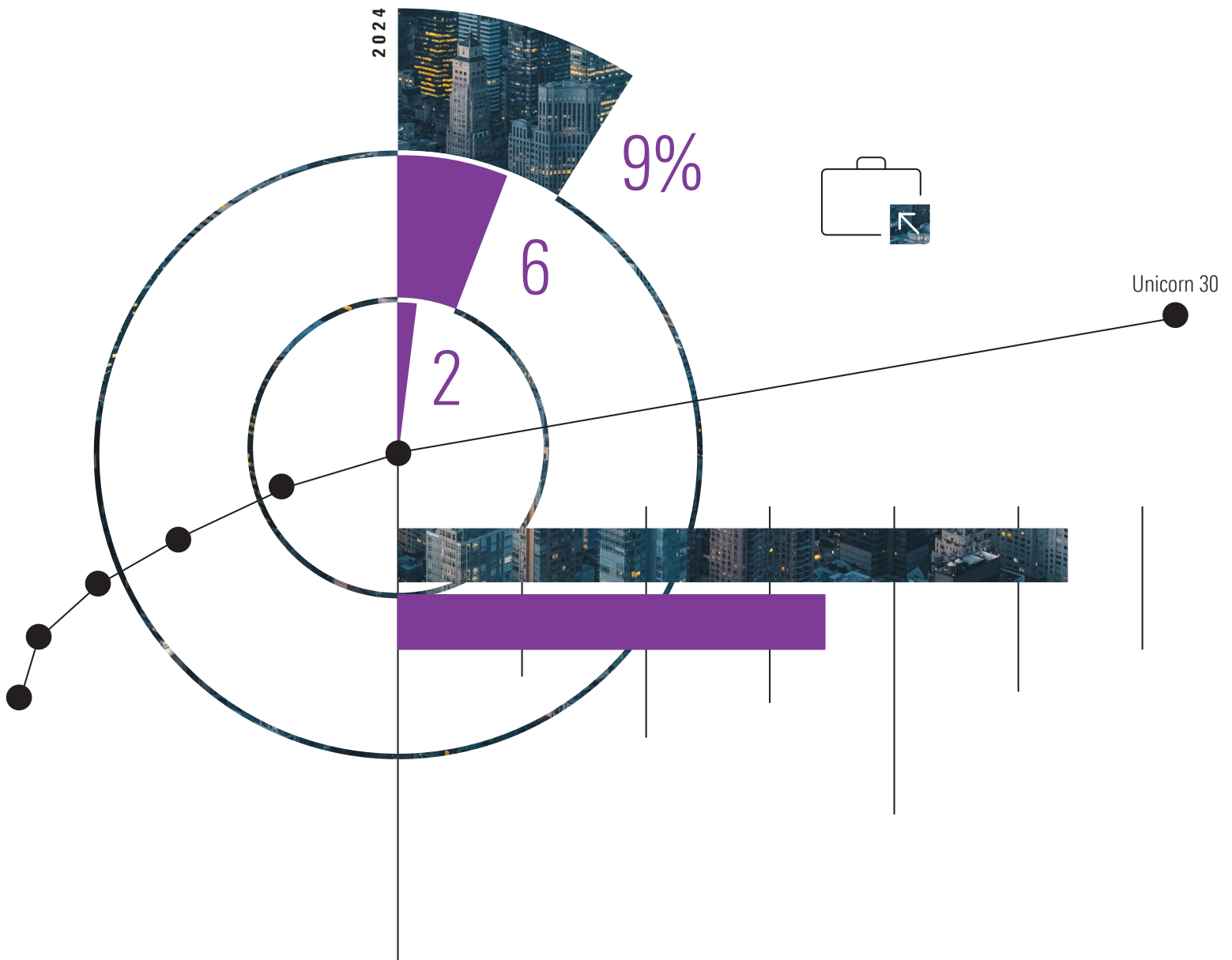


Breaking barriers: Redefining equity market portfolios with venture capital



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Introduction

Venture capital has emerged from the shadows. It accounts for a growing share of the global equity market and has become too large to be overlooked. High-growth venture capital (VC) backed businesses—the subject of this paper, as opposed to traditional private equity (PE) backed companies that are more mature—are engines of global economic growth and value creation. The venture capital market is worth \$8.26 trillion,¹ divided almost equally between the United States and the rest of the world.

Some of the most well-known companies of our time, such as ByteDance (parent company of TikTok), SpaceX, OpenAI and SHEIN, a major online retailer based in Singapore, are emblematic of this trend. Like their now-public predecessors Airbnb and Uber, these companies are often market influencers long before they go public. Their impact extends far beyond their respective industries, positioning them as key drivers of global economic growth.

The global market value of private venture-backed companies now surpasses the public markets of every country except the U.S. and China. Global investors, who would never overlook key economies like Germany, Japan, or the United Kingdom in their portfolios, understand the benefits of portfolio diversification. Why, then, would they exclude private equity from their consideration?

With venture capital out of the shadow, public equity markets no longer represent the full scope of the global economy. Investors seeking broad global diversification risk missing out on substantial growth opportunities by waiting for companies to go public.

In addition to maximizing diversification, there are three other key reasons to invest in venture capital:

- Market growth rate
- Exposure to the innovation economy
- Historical performance

¹ PitchBook Data, November 2024.

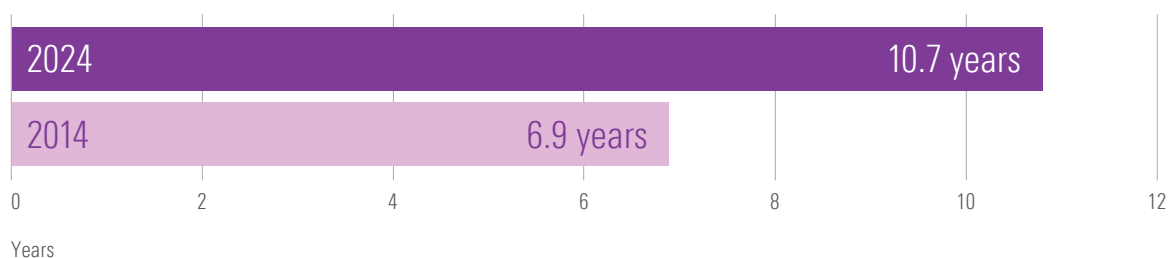
Market growth

Over the past decade, the VC market grew much faster than its public counterpart. Since 2014, global private-equity assets have grown ninefold, while the public markets have only doubled.

Were those two growth rates to persist, the aggregate market value of venture capital-backed companies would surpass public equity markets in 2042. Of course, even the most fervent VC supporters recognize that growth will moderate. Nevertheless, the projection vividly highlights the ongoing trend: venture capital is a much larger portion of the global capital markets.

A major driver of this growth is the increasing tendency of private companies to delay or avoid going public. In the past, emerging businesses would rush to list as soon as they reached a certain scale—typically when they were considered “IPO-ready.” Today, however, many companies are choosing to stay private longer, with the median age of VC-backed companies at 10.7 years, which is up from 6.9 years a decade ago.

Exhibit 1: Companies are staying private longer



Source: PitchBook Data.

Private companies are waiting because their owners can. There have always been advantages to remaining out of the spotlight. Non-listed businesses need not disclose their financial statements, face little or no pressure from outside shareholders about their short-term results, and pay fewer regulatory costs. No CEO objects to such conditions.

Until recently, however, there was a substantial cost to remaining private. For one, such businesses often struggled to receive financing. They already had enough debt on their books, and venture capitalists were looking to exit rather than follow on. Also, the company’s stakeholders needed liquidity. They invested effort (and sometimes also money) into the organization expecting to profit from their success. Finally, there was limited capital in the private markets. Sometimes, companies went public not because they wished to do so, but because they needed the money, and no other funding approach was feasible.

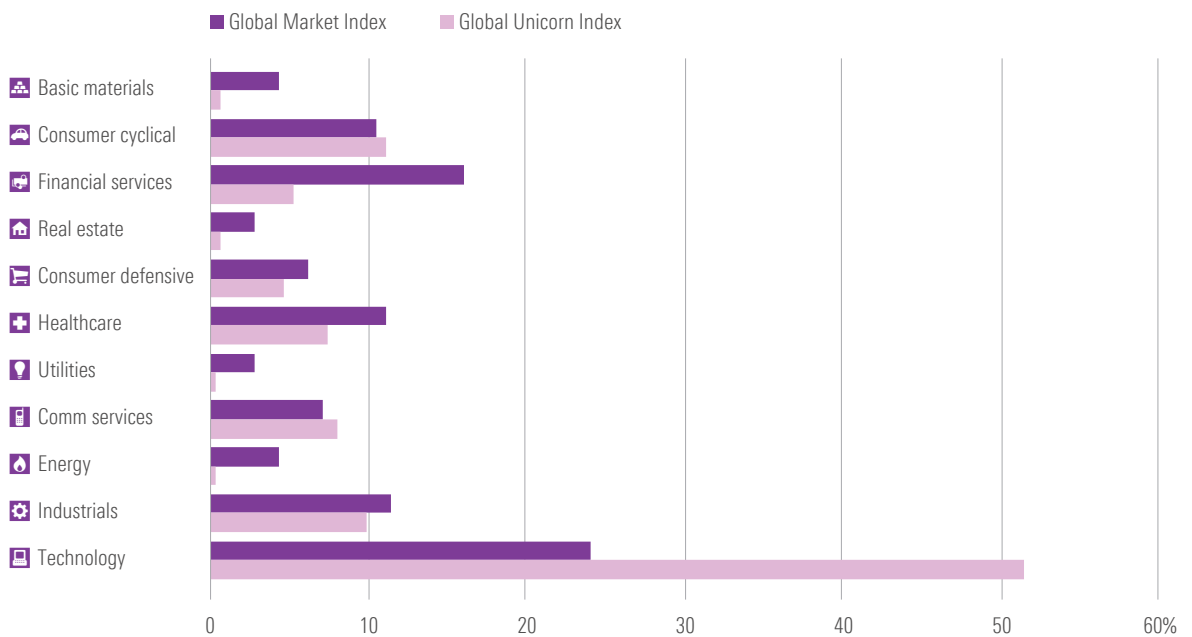
Financing and liquidity can now be accomplished within the private marketplace. New sources of capital have appeared, willing to replace IPO funding that would have typically come at the early stage of being a public company. Nontraditional investors, such as crossover mutual funds, hedge funds, and corporate venture capitalists, are now a major source of capital for late-stage venture companies (Stanford 2021). Additionally, secondary market transactions have grown significantly through alternative trading systems for private markets, which are now playing a larger role (Sherman 2022). As these trends show no sign of slowing, private equity will continue to grow its share of the overall equity marketplace.

Exposure to the innovation economy

In recent years, the term “innovation economy” has gained prominence, reflecting the increasing importance of new ideas in driving economic growth. A substantial portion of GDP growth today can be attributed to innovation, which takes many forms, including patents, copyrights, and intellectual property rights. Venture capital plays a key role in fostering this innovation, helping entrepreneurs turn promising ideas into transformative businesses, ultimately leading to wealth creation.

As illustrated in Exhibit 2, sector exposures for venture capital market differs significantly from public markets.

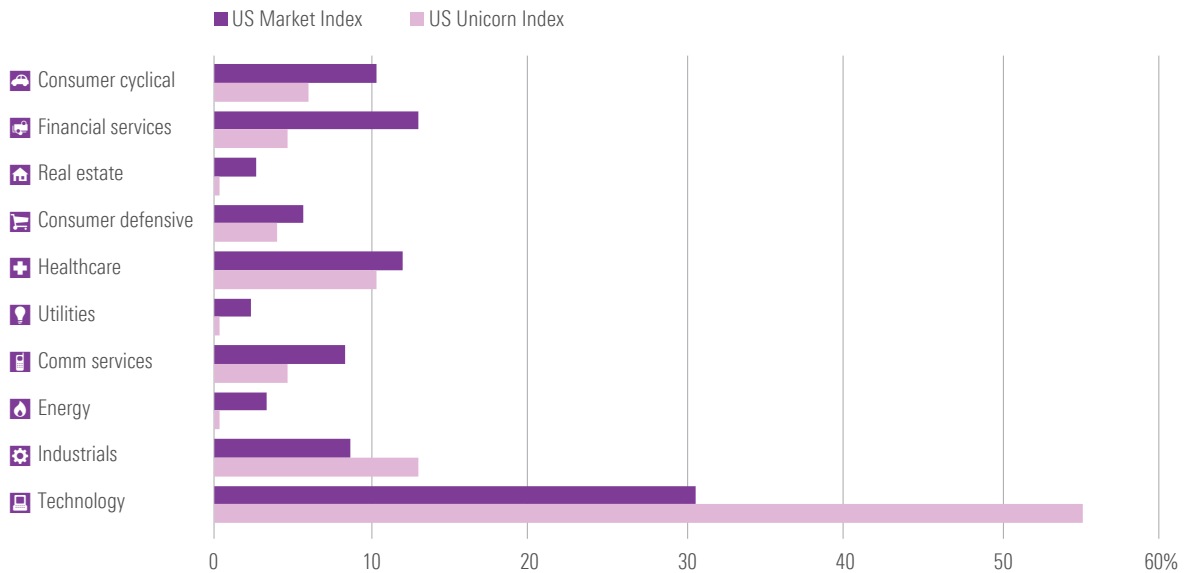
Exhibit 2: Global sector exposures – Public market versus venture capital market



Data as of August 30, 2024. Public market exposure is based on the Morningstar Global Market Index, and venture capital exposure on the Morningstar PitchBook Global Unicorn Index.

In public markets, technology is the largest sector, but it is only one of many. For example, financial services and consumer cyclicals combined are larger than technology. In the universe of private venture-backed companies, by contrast, technology-centric industries—such as AI, enterprise SaaS, and cybersecurity—dominate, accounting for over half of post-money valuations.

Exhibit 3: US Sector Exposures – Public market versus venture capital market



Data as of August 30, 2024. Public market exposure is based on the Morningstar US Market Index, and venture capital exposure on the Morningstar PitchBook US Unicorn Index.

The difference between public and private markets is even more pronounced when considering that private companies often operate on the cutting edge of innovation. While the “technology” sector in public markets includes industries like computer hardware and desktop software—once innovative but now more commoditized—venture capital firms are largely focused on newer, high-growth areas. In fact, 20% of U.S. venture capital technology investments are directed toward artificial intelligence, with significant allocations also going into fintech, e-commerce, and cryptocurrency. Together, these four sub-sectors represent half of all U.S. venture capital companies. According to PitchBook, a whopping 96% of post-money valuations of venture-backed companies reside in technology related industry verticals, highlighting the pivotal role of innovation in driving growth.

This disparity between public and private market technology exposure reinforces the case for considering venture capital as a complementary asset class. If venture capital funds were heavily invested in the same industries as public companies, their appeal would diminish. However, by focusing on cutting-edge technologies, venture capital offers distinct exposure that set it apart from the public markets.

Historical performance

Unlike publicly traded stocks, the historical performance of private equity is not always easy to assess with certainty. Until recently, private equity returns were typically measured based on the performance of funds investing in private companies, rather than the performance of the individual securities themselves. As a result, the commonly reported returns for private equities were not always directly comparable to those from public markets.

There are several key differences in how performance is measured between the two. For one, private equity funds often hold cash reserves, while public stock indexes do not. Moreover, private equity funds commonly report returns using internal-rate-of-return (IRR) calculations, which often raise skepticism (Phalippou 2024), whereas public stock indexes use time-weighted returns.

Another major distinction is transparency: publicly traded equities provide readily available data, whereas private equity funds are not required to disclose their results. As a result, databases tracking private equity performance are often incomplete, reflecting only those funds that voluntarily provide data.

Caveats aside, private equity has generally performed well. Academic studies suggest that private equity investors (buyout and venture capital), have earned higher returns after costs compared to public equity markets—more than 3 per cent per year on average (Harris, Jenkinson, Kaplan, 2012).

In recent years, researchers have started measuring the performance of private venture-backed companies directly, similar to how public stocks are tracked.

For example, Morningstar introduced the Morningstar PitchBook Unicorn 30 Index (UI30), which tracks the performance of the 30 largest venture-backed companies in the global venture capital market. The UI30 is derived from the Morningstar PitchBook Global Unicorn Index, which includes all venture-backed companies with a post-money valuation of \$1 billion or more. As shown in Exhibit 4, the UI30 has significantly outperformed public stock market indexes over the past decade.

Exhibit 4: Index Performance— Morningstar PitchBook Unicorn 30 Index vs. Morningstar US Market Index

Index name	1-Year return (%)	3-Year return (%)	5-Year return (%)	10-Year return (%)	Standard deviation (%)	Sharpe-ratio	Max drawdown (%)
Morningstar PitchBook Unicorn 30 Index	39.8	-12.4	18.2	16.6	15.9	1.0	-58.3
Morningstar US Market Index	24.1	8.1	14.0	12.7	15.8	0.7	-34.8

Date range: December 22, 2014 to December 31, 2024.

Performance data prior to December 21, 2020 is based on primary funding round data, sourced by PitchBook.

Introducing the Morningstar PitchBook Unicorn 30 Index

² For more information, refer to the Morningstar PitchBook Unicorn 30 Index [Rulebook](#).

The Morningstar PitchBook Unicorn 30 Index² (UI30) is designed to track the performance of the world's largest and most liquid late-stage venture-backed companies with valuations of \$1 billion or more. The index provides access to some of the most innovative and fastest-growing companies in developed markets. To support replicability, market-driven pricing and liquidity screens are applied.

Transparency is a core principle of the UI30. The index adopts a public equities-style metric by providing a continuously observable price for private companies, made possible through data from secondary market transactions.

Below are the key features of the index methodology, pricing sources, performance and risk metrics, and how to access the data.

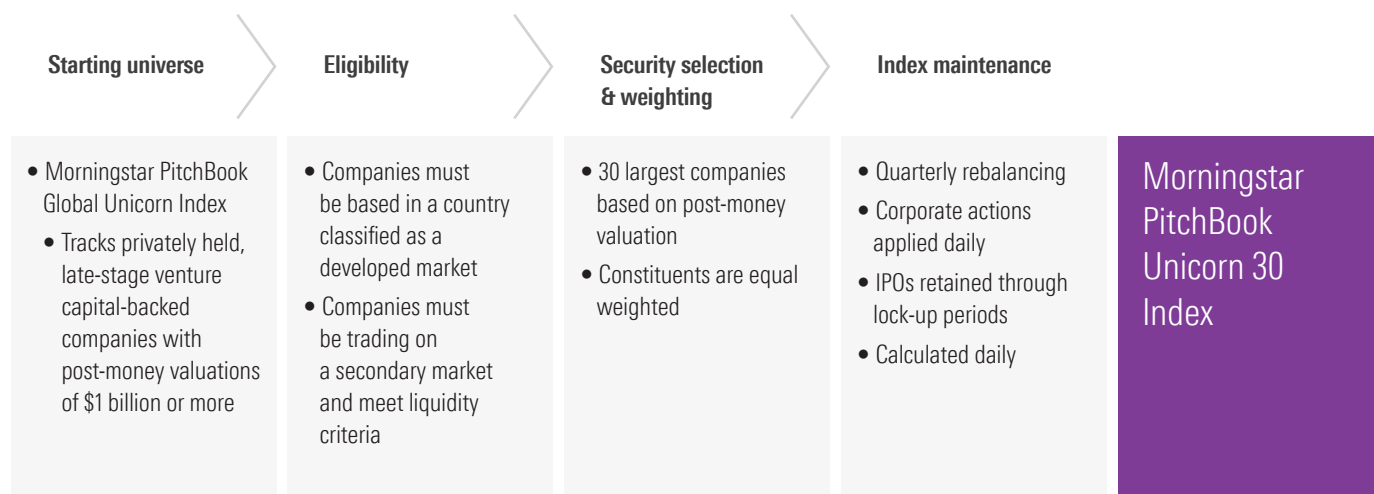
Eligibility criteria: Eligible constituents are selected from the parent index, the Morningstar PitchBook Global Unicorn Index, which utilizes PitchBook's database of VC-backed companies to determine unicorn status. From this pool of eligible companies, the 30 largest unicorns in developed markets are chosen, provided they meet liquidity criteria.

Index membership: The index is rebalanced quarterly, with companies achieving unicorn status by the month-end prior to reconstitution being eligible for inclusion.

Country risk: To mitigate country risk, the index includes constituents from developed markets in North America, Europe, and Asia.

Weighting methodology: The index employs an equal-weighting approach, ensuring that all eligible unicorns have an equal impact on the overall index performance. This method helps avoid the concentration of influence that can occur in traditional market indices, where a small number of massive companies dominate.

Exhibit 5: Morningstar PitchBook Unicorn 30 Index construction process



Index maintenance and calculation: Index values are calculated daily at end of the business day. Corporate actions, such as IPOs, bankruptcies, mergers and acquisitions, and buyouts, are reflected on a daily basis. A company exiting the portfolio due to an IPO remains part of the index until the lock-up period expires.

Back history: The index performance is backcast to 2014 using historical pricing data.

Pricing sources and rules: The constituent prices are sourced from two vendors that provide secondary market data for private companies. These prices are denominated in USD, and if the index is calculated in another currency, the WMR Closing Spot Rates are used.

Access to index data: The index is accessible via the Morningstar Indexes website, Morningstar Direct, the PitchBook platform, and licensed redistributor applications (Bloomberg Ticker: MSPUNI30).

Venture capital's role in asset allocation and portfolio diversification

When considering the inclusion of venture capital in a diversified portfolio, there are two primary approaches.

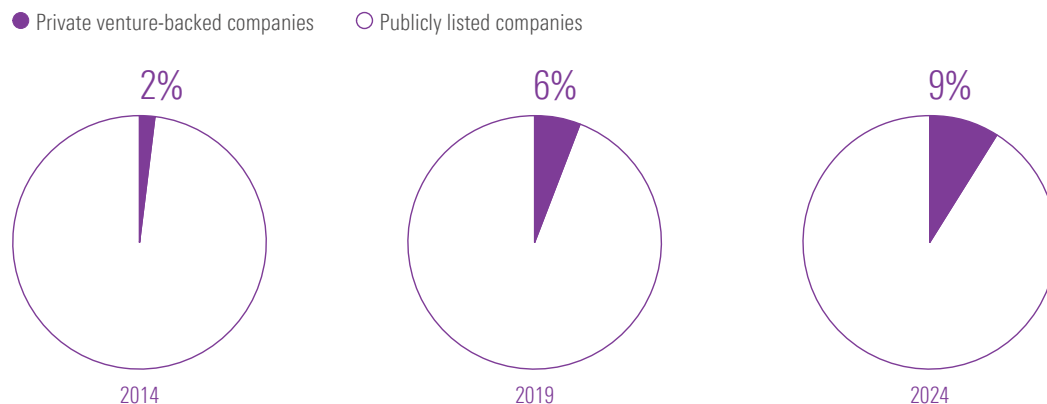
The first approach treats venture capital as a distinct asset class, separate from public equity. In this strategy, investors use a top-down process to allocate funds, with venture capital positioned alongside traditional asset classes like stocks and bonds. This approach acknowledges venture capital's unique characteristics and role in an overall portfolio.

The second approach integrates public securities and venture capital within a single equity category. Here, investors combine both types of equity to meet their overall equity target, without distinguishing between them. This method recognizes that the venture capital market offers unique opportunities that may not be readily available in public markets.

A key challenge in both strategies is determining the appropriate allocation size to venture capital. According to the Capital Asset Pricing Model (CAPM), the optimal portfolio for maximizing risk-adjusted returns should be diversified across assets, including both public and venture capital. While the ideal allocation may vary based on investor preferences, this model provides a useful framework for understanding venture capital's growing role in portfolio construction.

As Exhibit 6 illustrates, venture capital now constitutes a significant portion of the global market portfolio, underscoring the importance of incorporating it into asset allocation decisions. Given its increasing influence, integrating venture capital is becoming a more critical consideration for investors looking to optimize their portfolios.

Exhibit 6: The evolving composition of the global equity market portfolio



"Publicly listed companies" refers to the total market value of firms in the Morningstar Global Markets Index, while "Private venture-backed companies" represents the post-money valuation of companies in PitchBook's venture-backed database.

*Data as of October, 2024.

Exhibit 7 presents the historical back-casted correlation matrix based on calendar year returns, including the year-to-date return as of October 2024. Analyzing calendar year returns helps mitigate concerns over the artificially smoothed returns often associated with venture capital. Venture capital, as represented by the Unicorn 30 Index, shows relatively low correlations with public equity and fixed income asset classes.

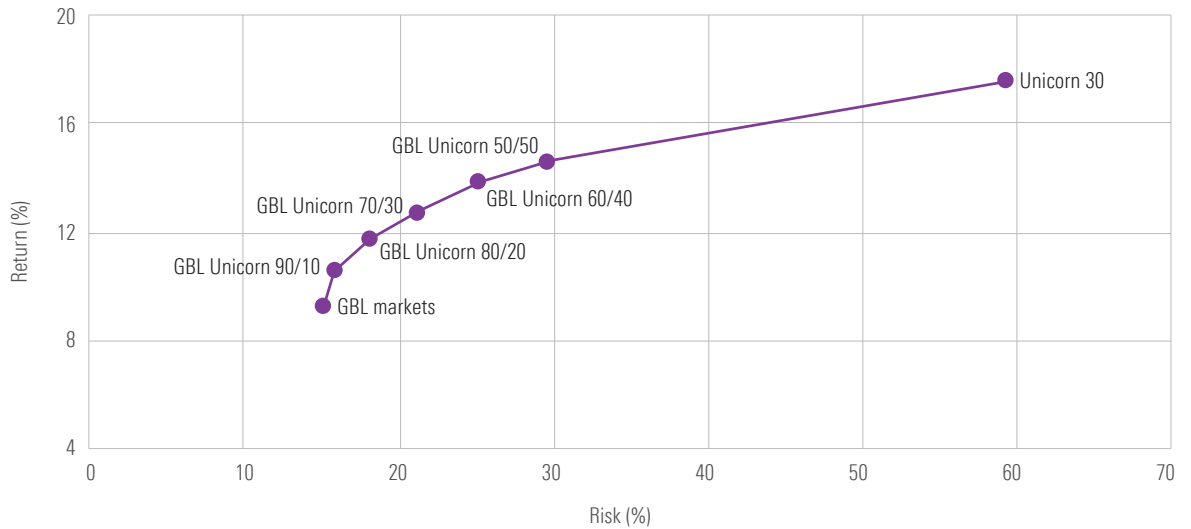
Exhibit 7: Asset-class correlation matrix

1 Morningstar Global Markets Index	1.00			
2 Morningstar US Market Index	0.98	1.00		
3 Morningstar US Core Bond Index	0.39	0.37	1.00	
4 Morningstar PitchBook Unicorn 30 Index	0.08	0.07	-0.02	1.00
	1	2	3	4

Note: Data is from December 2014 to October 2024 and based on calendar-year returns. The historical returns are back casted using primary and secondary market pricing data and are adjusted for any survivorship biases.

To explore the potential diversification benefits of combining venture capital with public equities, Exhibit 8 presents a historical efficient frontier showing the risk and return outcomes of various allocations between private VC and public equities, using the Morningstar PitchBook Unicorn 30 Index to represent private-VC exposure and the Morningstar Global Equity Market Index to represent public-market exposure.

Exhibit 8: Historical efficient frontier



Data from December 2014, to June 2024. The indexes beginning with "GBL Unicorn" represent the performance of blended indexes in which the Morningstar Global Equity Market Index is allocated the weight of the first number in the index name and the Morningstar PitchBook Unicorn 30 Index is allocated the weight of the second number of the index name, respectively. The historical returns are back casted using primary and secondary market pricing data and are adjusted for survivorship biases.

Conclusion

Over the years, the concept of a diversified equity portfolio has evolved significantly. It began with a focus on blue-chip companies within a single country, later expanding to include midsized and smaller stocks in the domestic market, as well as blue-chip companies from other developed markets. Over time, the model grew to incorporate small-cap stocks and as well as those from emerging markets, eventually forming the standard of a fully international equity portfolio.

However, this traditional model is increasingly inadequate. While it covers the world's public markets, it fails to account for a significant and rapidly growing sector—the venture capital market—that offers distinct investment characteristics and the potential for higher returns. By including unlisted equity investments in a diversified portfolio, investors can broaden their opportunities and capture a larger share of global value creation. Venture capital, as an asset class, is now more relevant than ever, providing an expanded investment landscape that allows for greater diversification and access to high-growth opportunities.

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