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Malkiel's monkeys: a better benchmark for manager skill

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A well-known experiment points to an alternative way to assess stock-picker performance, say iM Global Partner's *Luc Dumontier* and *Joan Serfaty*.

A famous experiment can help shed new light on a common question for asset owners: how good are your active managers?

Princeton professor Burton Malkiel claimed in his best-selling book, *A Random Walk Down Wall Street*, that "a blindfolded monkey throwing darts at a newspaper's financial pages could select a portfolio that would do just as well as one carefully selected by experts".

In the early 2010s, practitioners and academics set out to test the intuition, and produced what seemed like captivating results. In simulations by Research Affiliates, 96 of 100 monkey-style trials between 1964 and 2012 beat the market capitalisation-weighted universe. Average annualised excess returns were 160 basis points (see figure 1).

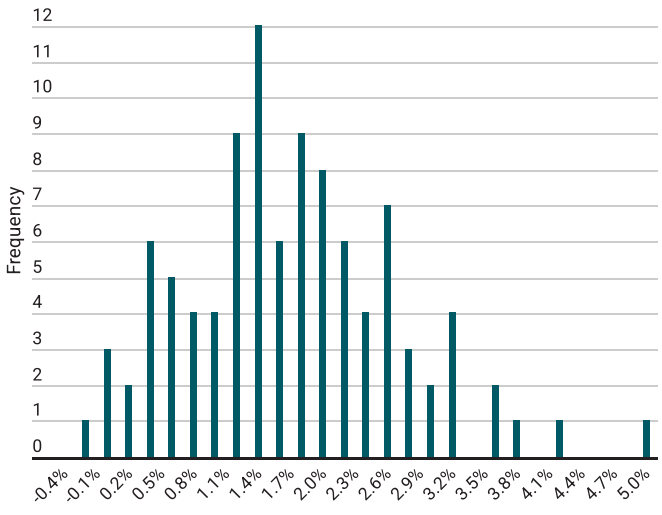
Research Affiliates founder Rob Arnott quipped that Malkiel was wrong: the monkeys had done a much better job.

An updated version of the experiment, though, tells a very different story. In our rendition, with data up to December 2025, we found that Malkiel's monkeys struggled to outperform in recent years, as the market became increasingly concentrated.

The contrast in results across different time periods illustrates how market structure complicates the task of measuring manager skill – lifting the performance of even naive, random portfolios in some market environments and detracting from their performance in others.

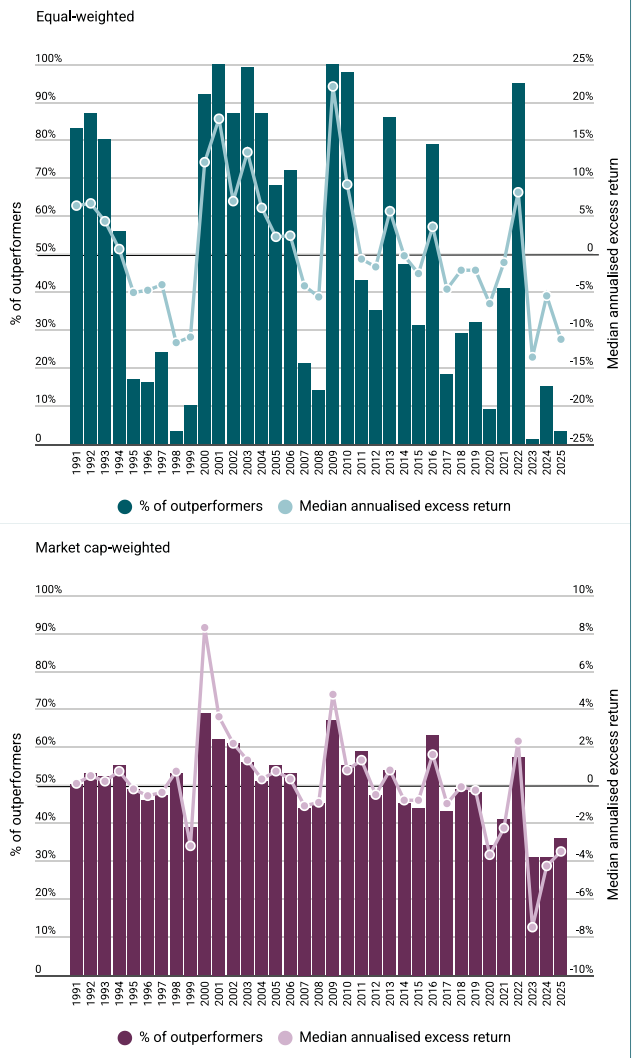
That's to say, when conditions are favourable, even Malkiel's monkeys can outperform. And during such periods, skilled active managers should do especially well. In adverse periods, by contrast, talented stock-pickers can fare badly too.

1 Random strategies, 100 simulations, US (1964–2012)



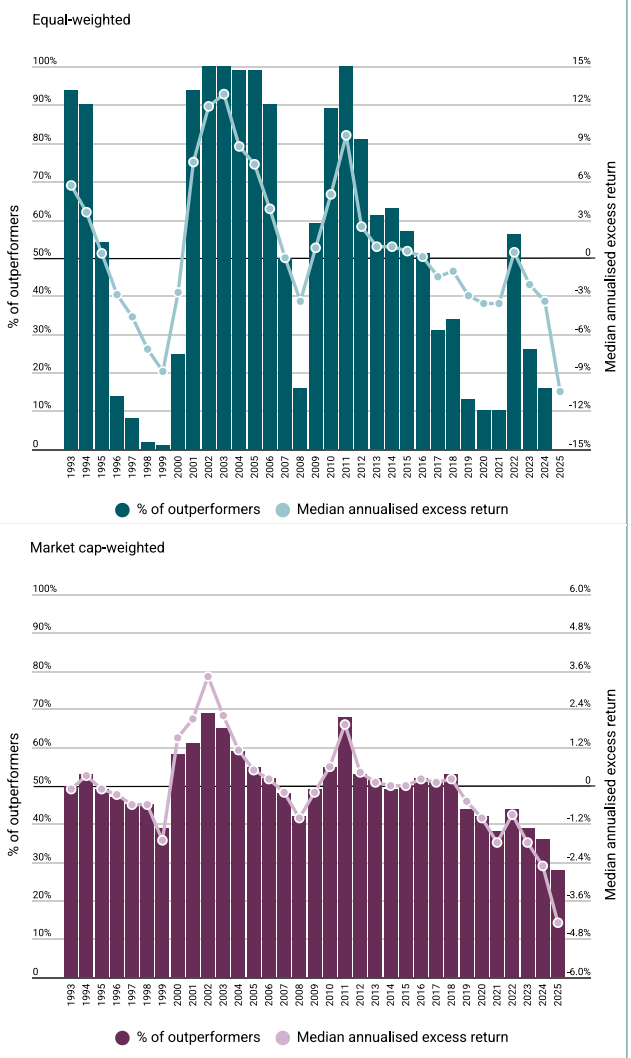
Source: Research Affiliates

2 Random portfolios with a one-year holding period



Each point is based on 10,000 random 30-stock portfolios. From December 1990–December 2025. Source: iMGP

3 Random portfolios with a three-year holding period



Each point is based on 10,000 random 30-stock portfolios. From December 1990–December 2025. Source: iMGP

The results point to the value of using the simulated performance of random portfolios – we might call this the Malkiel's Monkey Index – as an alternative benchmark against which to measure manager skill.

Based on our simulations, a high-conviction manager who selected 30 stocks and equal-weighted them should be considered a skilled manager if their performance exceeded the market return by more than 22.1% in 2009, but also if they fell short of the market by less than 11.3% in 2025.

Of course, the parameters of the simulations for such a benchmarking exercise – the selected universe, the number of securities, the weighting methodology and rebalancing frequency – must be aligned with the investment approach under evaluation.

Tough times

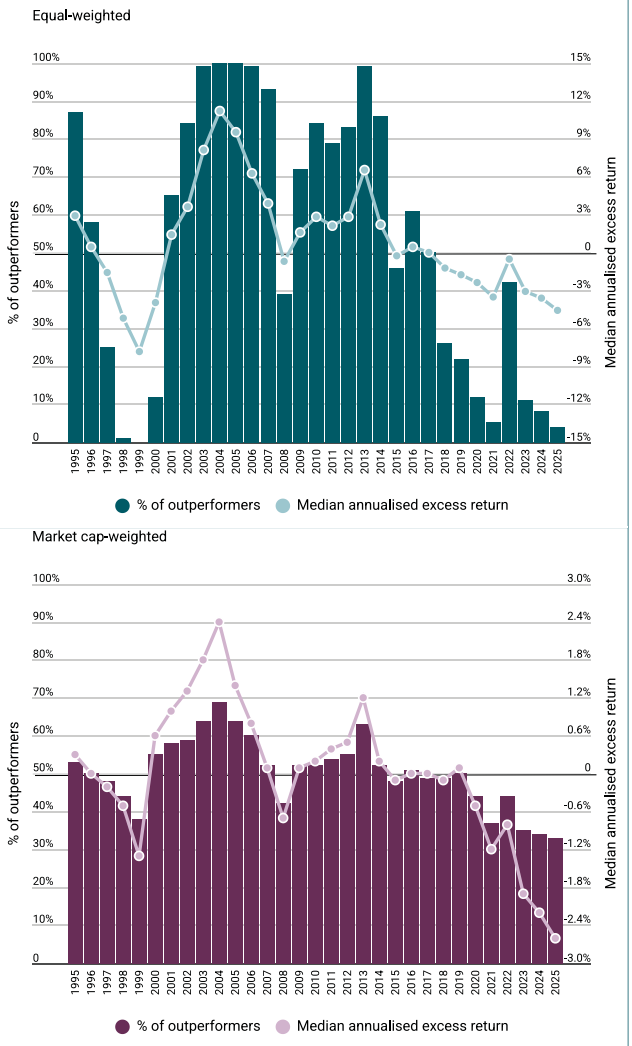
We ran 10,000 simulations for portfolios of 30 US stocks randomly selected from the top 500 companies by market cap, a similar approach to that used by Research Affiliates. We reshuffled each portfolio annually, starting in December 1990 and continuing until December 2025.

Figures 2 through 5 show the share of equal-weighted and market cap-weighted portfolios that beat the market, and the median annualised excess returns over one-, three-, five- and 10-year horizons.

The figures are striking. In periods such as the early 2000s, the imaginary monkeys with their naive, randomly constructed portfolios that embody no skill by design and inherently reflect the market structure prevailing at the time were able to beat the market.

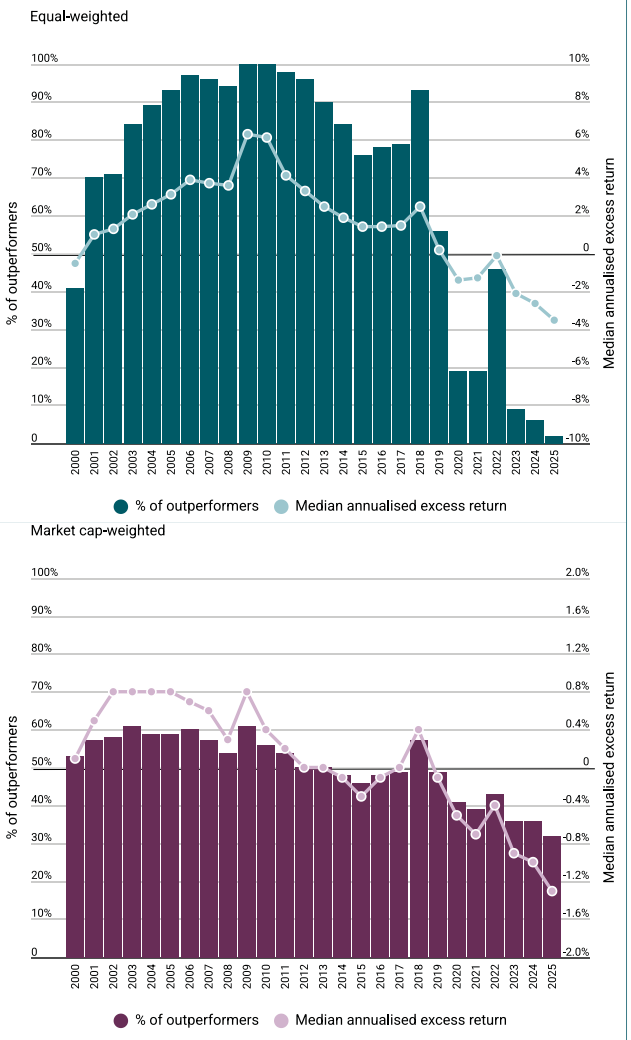
In 2009, at the time of the market rebound following the global financial crisis, nearly all equal-weighted portfolios and more than two-thirds of cap-weighted portfolios outperformed the market, with median annualised excess returns of 22.1% and 4.8%, respectively.

4 Random portfolios with a five-year holding period



Each point is based on 10,000 random 30-stock portfolios. From December 1990–December 2025. Source: iMGP

5 Random portfolios with a 10-year holding period



Each point is based on 10,000 random 30-stock portfolios. From December 1990–December 2025. Source: iMGP

In more recent years, however, the pattern changes. From around 2012, a diminishing number of equal-weighted portfolios beat the market across any of the horizons, and excess returns often turned steadily negative. The magnitude of the median annualised excess return ranges from -3.5% over the past 10 years to -10.5% over the past three.

Not one of the 10,000 random equal-weighted portfolios beat the market over the three-year horizon.

Clearly, the years 2023, 2024, and 2025 were particularly challenging. Equal-weighted random portfolios registered median annual excess returns of -13.6%, -5.5%, and -11.3%. Cap-weighted portfolios fared less badly but hardly performed well. Median excess returns, again for the one-year horizon, were -7.5%, -4.3%, and -3.5%.

The share of random equal-weighted portfolios that beat the market in 2023 was just 1%. In 2025, it was 3%.

What changed?

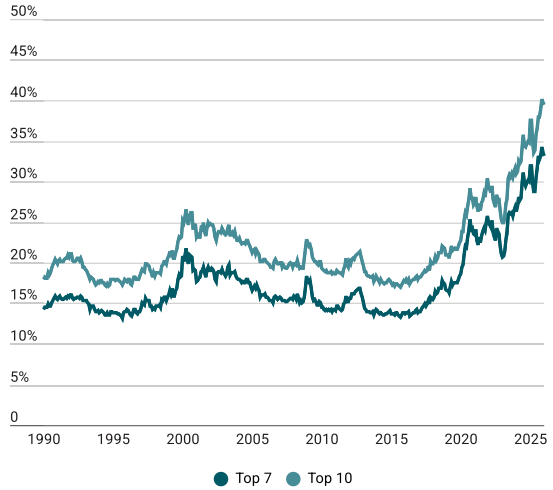
The explanation for the performance of Malkiel's monkeys in earlier years can be found in an implicit tilt in the portfolios in favour of smaller companies and undervalued stocks.

The effect arises because a portfolio that randomly selects only a few dozen stocks from a large universe is statistically unlikely to include the largest firms. This mechanically lowers the portfolios' average market cap compared with the benchmark. For a portfolio that's equally weighted – unlike the market-cap-weighted reference – the relative tilt becomes even greater.

In the years from 1964 to 2012, the size bias also translated into a cyclical value bias. Smaller names traded at lower valuations than the largest constituents.

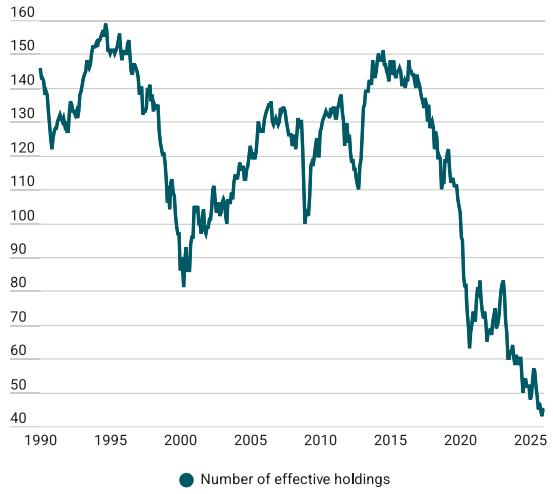
And in a regime where size and value factors delivered positive excess returns – as was the case at the time – Malkiel's monkeys enjoyed a statistically favourable chance of beating the benchmark.

6 Combined market cap weights of the top seven and top 10 US stocks



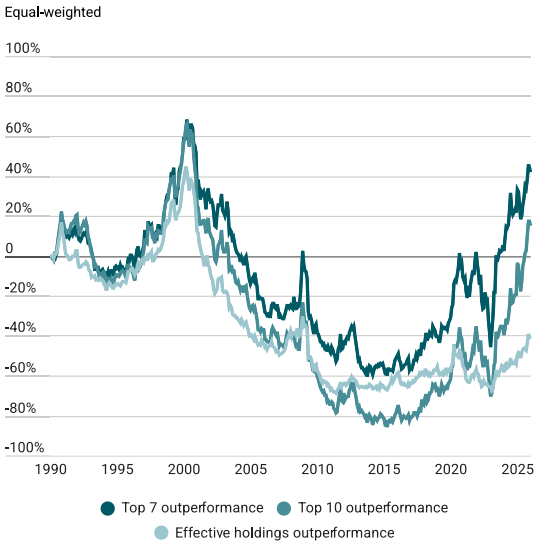
Monthly data from December 1989 to December 2025. Source: iMGP

7 Effective number of holdings in the US stock market



The effective number of holdings is calculated as the inverse of the Herfindahl-Hirschman Index (HHI), which is obtained by summing the squared weights of all constituents in the universe. Monthly data from December 1989 to December 2025. Source: iMGP

8 Cumulative excess return of top market cap stocks versus the rest



Returns are accumulated arithmetically. Monthly rebalancing and data from December 1989 to December 2025. Source: iMGP

After 2012, the market started to change profoundly. Looking at the universe of the 500 largest US stocks by capitalisation, a rise in the combined weight of the largest constituents (see figure 6) drove a sharp decline in the universe's effective number of holdings (see figure 7).

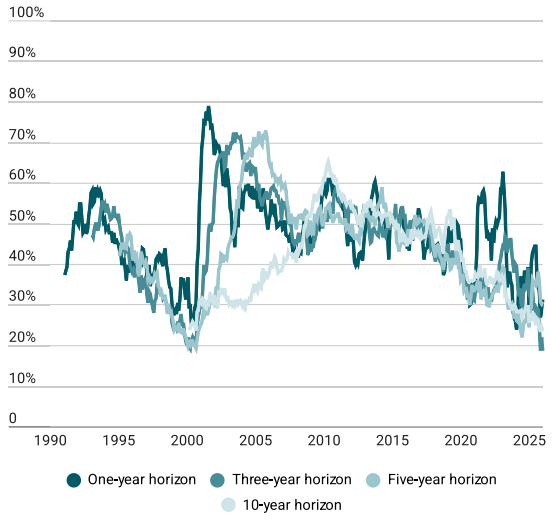
The market at the end of last year was markedly more concentrated even compared with the peak of the tech bubble in March 2000. The combined weights of the top seven and top 10 stocks were more than 50% higher than in 2000, and the effective number of holdings close to 50% lower. (Effective holdings measures the number of stocks that have the ability to move the overall market, given their weights.)

The weights of the largest stocks in the universe have risen as the companies in question persistently outperformed the rest of the market. And as their weights have grown, their returns have become an increasingly dominant driver of overall performance.

Figure 8 illustrates the cumulative excess returns of the top seven, top 10, and effective holdings groups, each measured relative to its corresponding set of remaining constituents, using both equal-weighted and market cap-weighted constructions.

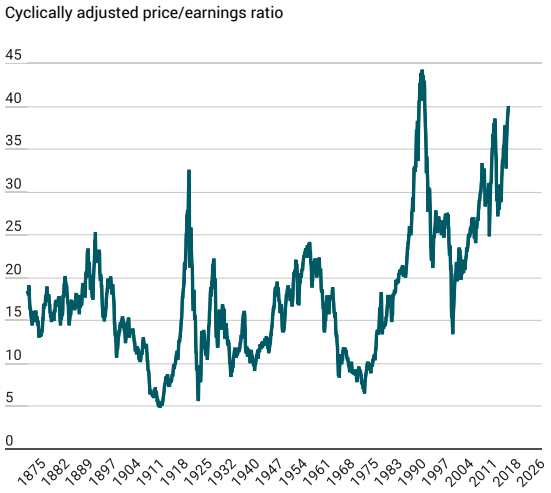
The past decade, then, shows a cumulative outperformance of about 100% for portfolios of the top seven and top 10 stocks relative to the rest

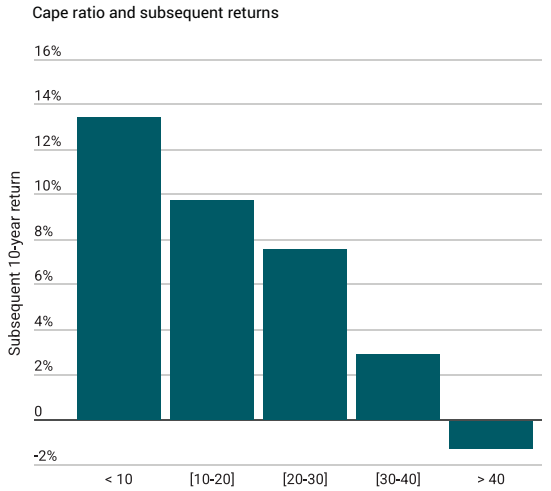
9 Percentage of stocks outperforming the market across multiple horizons



Monthly data from December 1990 to December 2025. Source: iMGP

10 Level of US equity market Cape ratio versus 10-year subsequent return





Monthly data from January 1881 to December 2025. The Cape ratio compares equity prices with the inflation-adjusted average earnings of the past 10 years. Source: Robert J Shiller (https://shillerdata.com/)

of the market. Excess returns of the effective holdings portfolios are muted by comparison, underscoring that the phenomenon is predominantly concentrated in the mega-cap stocks.

And because most of the market's gains have been driven by a small group of mega caps, the pool of stocks beating the market has shrunk (see figure 9). Only 19% of stocks outperformed over the past three years, and only 24% over a 10-year horizon.

Bad news

This has been unwelcome news for the imaginary monkeys. Random portfolios have a low probability of selecting enough of the outperforming stocks to beat the market, making underperformance the most likely outcome. It's been bad news, also, for active managers more broadly.

When the size bias works, active managers – just like the monkeys – outperform effortlessly because they also are naturally tilted toward smaller caps. The opposite holds in the current environment. Periods of extreme market concentration require high levels of idiosyncratic risk-taking. These are times when for even the most skilled active managers, beating the market can be a challenge.

All of which leads us to the idea of a Malkiel's Monkeys Index. Benchmarking to the performance of random portfolios can help isolate and shed light on a manager's skill, without crediting them either for implicit factor exposures, as before 2012, or allowing a market dominated by a few mega caps to obscure the talent they possess.

Positive outlook

If today's market concentration makes outperformance harder to achieve, should asset owners steer away from active management for now? We'd argue not.

Reasons exist to believe mega caps might be set to lose their dominance. In fact, nearly two-thirds of institutional investors in a recent survey by Natixis Investment Managers said they expected active management to outperform passive strategies over the coming year.

First, US equity valuations stand at extreme levels. Shiller's US equity market cyclically adjusted price/earnings (Cape) ratio sat close to 40 at year-end 2025, more than 2.2 standard deviations above its long-term mean of 17.7 (see the top half of figure 10).

Alternative valuation measures – including trailing and forward P/E ratios, price-to-book, price-to-sales, and price-to-cashflow multiples – cluster in the upper range of their historical distributions.

Valuation regimes such as this in the past have tended to increase the risk of subsequent market declines (see the bottom half of figure 10).

And when corrections occur, they are typically accompanied by higher volatility, which in turn fuels greater cross-sectional dispersion (see figure 11) and broader market breadth (see figure 9).

We saw this in the 2000–03 unwinding of the technology bubble and the 2008–09 financial crisis. More moderate drawdowns – such as during the 2011 sovereign-debt crisis, the 2015 China growth scare, the 2020 Covid-19 shock, the 2022 valuation-driven episode, and the early-2025 tariff-related turmoil – have also been associated with a broadening of stock-level opportunities.

Second, short of a downturn, an orderly rotation away from mega-caps toward smaller-cap stocks may be in train already.

In the final two months of 2025 the overall market remained broadly stable while the so-called Magnificent Seven underperformed by about -1%, to the benefit of the rest of the market (around +1%).

Notably, mega-caps can underperform in a rising market. Between March 2003 and mid-2007, the largest stocks lagged smaller stocks by roughly 50% (see figure 8) while the overall market gained more than 100%.

Such a rotation might gather pace if investors start to pay more attention to current distortions in factor valuations. The size factor is trading at historically depressed valuation levels (see figure 12). A repricing of this factor would almost mechanically widen the opportunity set, as observed during the 2003–07 period. ■

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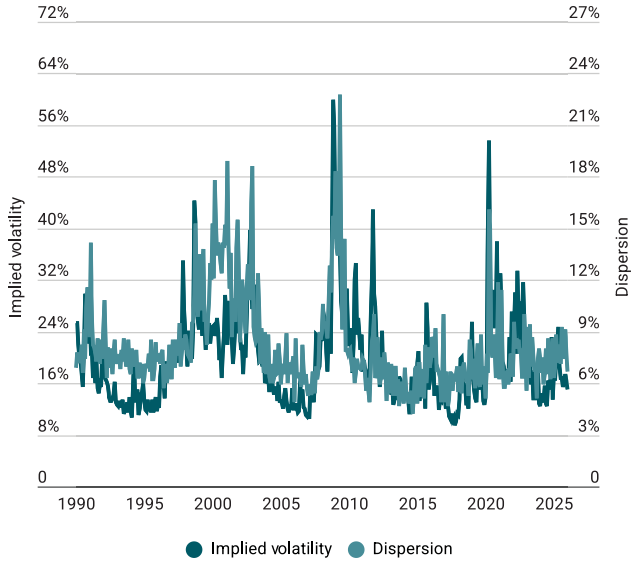
This article was written with contributions from Baptiste Fullana, VP – Research & Investment at iM Global Partner.

11 Implied volatility and equal-weighted cross-sectional monthly dispersion



Monthly data from December 1989 to December 2025. Source: iMGP

12 Historical distribution of relative valuation between larger and smaller stocks

The relative valuation between larger and smaller constituents is defined as the difference in median valuation metrics (P/B, trailing P/E, forward P/E, P/CF, or P/S) between the top- and bottom-quintile portfolios formed on market capitalisation within the universe of the 500 largest US stocks. Monthly data from December 2001 to December 2025. Source: iMGP