

## GLOBAL STRATEGY PAPER NO. 71

# Updating our long-term return forecast for US equities to incorporate the current high level of market concentration



- **We estimate the S&P 500 will deliver an annualized nominal total return of 3% during the next 10 years (7<sup>th</sup> percentile since 1930) and roughly 1% on a real basis.** Annualized nominal returns between -1% and +7% represents a range of likely outcomes around our baseline forecast and reflects the uncertainty inherent in forecasting the future. During the past decade the S&P 500 posted a 13% annualized total return (58<sup>th</sup> percentile).
- **We model prospective long-term equity returns as a function of five variables:** (1) starting absolute valuation, (2) stock market concentration, (3) economic contraction frequency, (4) corporate profitability, and (5) interest rates.
- **Our forecast would be 4 pp greater than our baseline if we exclude a variable for market concentration that currently ranks near the highest level in 100 years.** The 7% return would rank in the 22<sup>nd</sup> historical percentile.
- **The intuition for why concentration matters for long-term returns relates to growth in addition to valuation.** Our historical analyses show that it is extremely difficult for any firm to maintain high levels of sales growth and profit margins over sustained periods of time. The same issue plagues a highly concentrated index. Furthermore, the risk embedded in high concentration markets is not always reflected in valuation.
- **We expect the return structure of the stock market will broaden in the future.** Today's extremely high market concentration suggests that the S&P 500 equal-weight benchmark (SPW) is likely to outperform the cap-weighted aggregate index (SPX) during the next decade by an annualized 200 bp-800 bp.
- **Our forecast suggests equities will face stiff competition from other assets during the next decade.** Our 3% annualized equity return forecast combined with a current ten-year US Treasury yield of 4% and ten-year breakeven inflation of 2.2% suggests the S&P 500 has roughly a 72% probability of trailing bonds and a 33% likelihood of lagging inflation through 2034. Excluding concentration, the probabilities of underperforming would be 7% and 1%, respectively.
- **Our S&P 500 baseline 10-year return forecast is lower than the estimates of other market participants.** Buy- and sell-side projections of the long-term return of US stocks averages 6% (range of 4% to 7%).

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Investors should consider this report as only a single factor in making their investment decision. For Reg AC certification and other important disclosures, see the Disclosure Appendix, or go to [www.gs.com/research/hedge.html](http://www.gs.com/research/hedge.html).

The Goldman Sachs Group, Inc.

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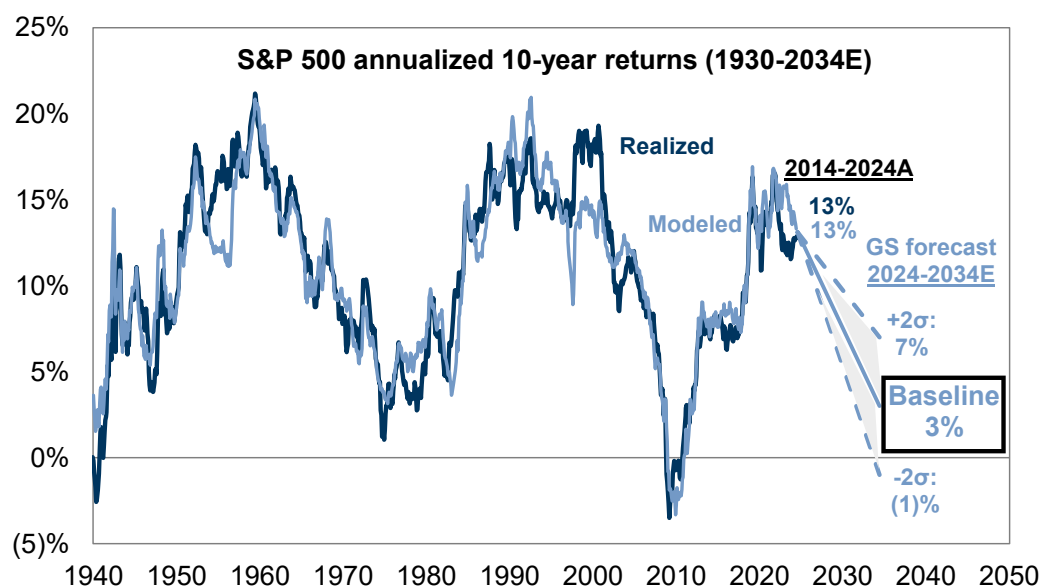
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## Forecasting long-term S&P 500 returns

**This report explores and forecasts the prospective S&P 500 return during the next decade (2024-2034).** In general, long-term equity returns are driven by the earnings growth of the asset and the change in valuation. Forecasting returns requires estimating how those components will change in the future and identifying variables that are statistically and economically linked to prospective changes in earnings and valuation. We find that a model that incorporates starting equity valuations, initial market concentration, starting 10-year US Treasury note yields, initial S&P 500 return on equity (ROE), and an estimate of forward economic contraction frequency best helps explain and forecast long-term equity returns. A differentiating feature of our forecast model is the inclusion of a variable for market concentration, a metric that is currently close to the highest level in 100 years. In Appendix A, we discuss details behind each variable in our model.

**Our model forecasts that the S&P 500 will generate a 3% annualized nominal total return through 2034.** This return would rank in the 7<sup>th</sup> percentile of 10-year returns since 1930. In addition to our baseline estimate of 3%, our forecast includes a range of outcomes, with a +7% return on the high end and a -1% return on the low end of the range ([Exhibit 1](#)). This range roughly corresponds with a 95% confidence band around our estimate and reflects the uncertainty inherent in forecasting the future. In the Appendix, we explore historical episodes when the modeled returns have differed most from realized returns.

**Exhibit 1: S&P 500 annualized trailing 10-year returns: modeled vs. realized (1930-2024) and forecast (2024-34E)**



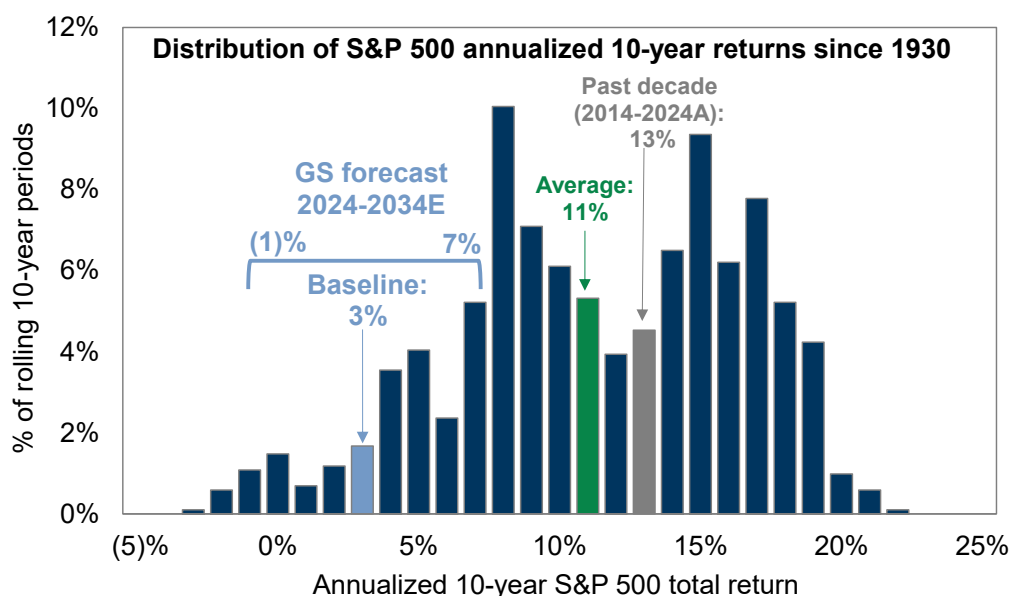
Source: Robert Shiller, Goldman Sachs Global Investment Research

**The S&P 500 index during the past decade has posted an annualized total return of 13%.** The annualized return translates into a cumulative 233% total return across the period. Dividends contributed 54 pp (roughly 1/4) of the total return. Of the remaining

178% of price gain, 127 pp (nearly 3/4) was attributable to increased earnings during the period and 52 pp (approximately 1/4) was attributable to valuation expansion. Increased sales, higher operating margins, and lower tax rates contributed to annualized earnings growth of 7% over the period while the forward P/E multiple expanded from 16x to 22x.

**The 13% annualized stock market return during the past ten years exceeded the long-term average of 11%.** However, the distribution of 10-year returns since 1930 has not been symmetrically distributed. Instead, it exhibits a modest left tail reflecting stretches of poor forward equity returns during the 1930s, 1960s and the start of the 2000s. Conversely, periods of strong and sustained forward equity returns throughout the 1940s, 1950s, and 1980s are reflected in the sizable right portion of the return distribution. This historical distribution reflects the negative skewness generally observed in equity returns (a longer left tail than right tail with the bulk of observations falling above the mean) and excess kurtosis (“fat tails”) compared with a normal distribution ([Exhibit 2](#)).

**Exhibit 2: Distribution of S&P 500 annualized 10-year total returns, 1930-2024**



Source: Robert Shiller, Goldman Sachs Global Investment Research

**We model 10-year forward annualized total returns for the S&P 500 on a monthly basis using five variables:**

- **Valuation:** S&P 500 cyclically adjusted P/E multiple (CAPE)
- **Economic fundamentals:** Economic contraction frequency
- **Interest rates:** 10-year US Treasury yield
- **Market concentration:** Ratio of the market cap of the largest-cap stock vs. the 75<sup>th</sup> percentile stock
- **Profitability:** LTM S&P 500 return on equity (ROE)

**We model forward equity returns using the value of each variable at the start of the return period.** The sole exception relates to economic growth because forward economic contraction frequency requires an assumption of the future. Our regression model takes the log of variables on both sides of the regression to account for non-linearity and t-stats are adjusted to account for the use of overlapping data to fit the model. Adjusted t-stats reflect the strength and direction of the statistical relationship of each variable with long-term returns. As a result of overlapping data, the r-squared value of 87% is not a useful metric to evaluate the strength of the model.

**Exhibit 3: Details behind our regression model of S&P 500 10-year forward returns**

Regression of 10-year annualized S&P 500 forward returns (log-log)						
Variable	Cyclically adjusted P/E	Market concentration	Recession frequency	10-year US Treasury yield	S&P 500 ROE	Intercept
<i>Description</i>	<i>S&amp;P 500 price divided by average 10-year trailing earnings at start of return period</i>	<i>Market cap of largest stock relative to 75th percentile stock at start of return period</i>	<i>Frequency of recession over return period</i>	<i>Nominal 10-year US Treasury at start of return period</i>	<i>S&amp;P 500 trailing twelve month return on equity at start of return period</i>	
<b>Beta</b>	-0.12	-0.04	-0.20	-0.02	0.05	0.82
<b>Adjusted T-stat</b>	-6.1	-1.8	-2.1	-1.9	2.1	7.0
<b>Time period</b>	1930-2014					
<b>Frequency</b>	Monthly					

Source: Goldman Sachs Global Investment Research

**We present a sensitivity analysis around our baseline long-term US equity return forecast in Exhibit 4.** Our baseline return forecast is most sensitive to changes in starting valuation. All else equal a one multiple change in starting valuations would change our baseline return forecast by 31 bp. Similarly, a 5% change in starting market concentration would shift our baseline return forecast by roughly 20 bp.

**Exhibit 4: Sensitivity analysis around our baseline long-term US equity return forecast**

Sensitivity analysis				
Variable	Baseline input	Percentile since 1930	Change from baseline	Return impact (bp)
Market concentration	690 x	99 %	+ 5 %	(19)
LTM ROE	20 %	99 %	+ 100 bp	25
S&P 500 CAPE	38 x	97 %	+ 1 x	(31)
GDP contraction frequency (10 years)	4 qtrs	33 %	+ 1 qtr	(46)
10Y US Treasury yield	4 %	46 %	+100 bp	(57)

GDP contraction frequency represents the percentage of quarters with a contraction in real GDP during the next 10 years (40 quarters). Market concentration is measured as the ratio between the market cap of the largest stock in the market relative to the market cap of the 75th percentile stock.

Source: Goldman Sachs Global Investment Research

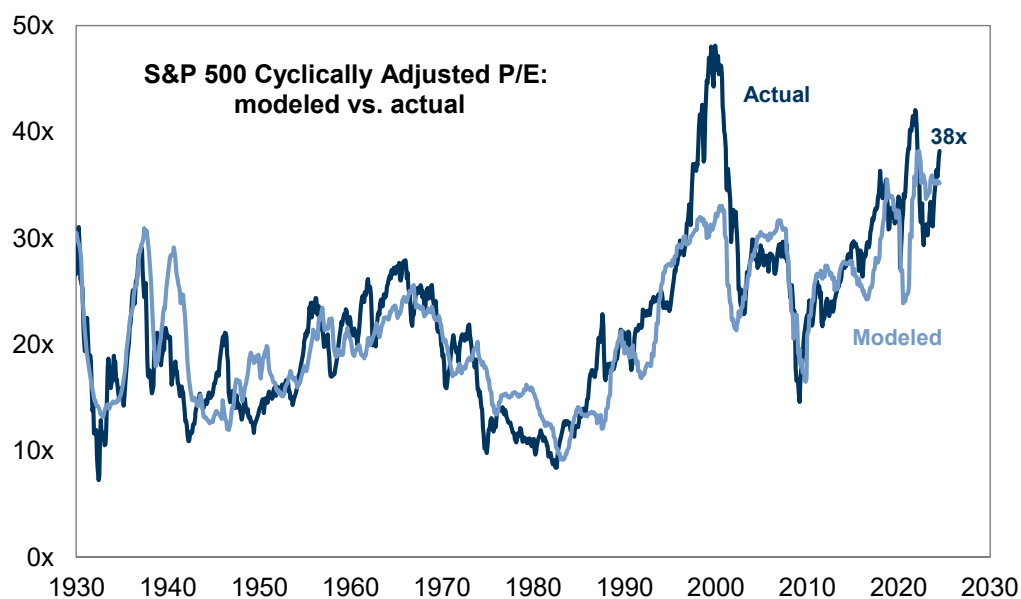
## Valuation

**Through the lens of our model, the most important variable for our forecast is starting valuation, in particular the current level of S&P 500 cyclically adjusted P/E ratio (CAPE).** In theory, a high starting price, all else equal, implies a lower forward return. This theory is borne out in the data, in particular over longer horizons. A stronger

relationship exists between starting valuation and forward 10-year returns compared with forward 1-year or 5-year horizons. The current high level of equity valuations is a key reason our 10-year forward return forecast sits at the lower end of the historical distribution. The CAPE ratio currently equals 38x, ranking at the 97<sup>th</sup> percentile since 1930. In Appendix A, we discuss how we incorporate the S&P 500 CAPE metric in our forecast return model.

**Valuation alone may send a misleading signal, and it should be viewed in the context of the fundamental and structural profile of the index.** Equity valuation reflects investor perceptions of profitability, future earnings growth, and the discount rate applied to future profits. By controlling for concurrent levels of profitability (S&P 500 trailing four-quarter ROE) and interest rates (nominal 10-year US Treasury yield) in our model, the signal sent by starting valuation can be tempered or strengthened based on whether valuations appear detached from fundamentals. For example, 10-year forward annualized returns starting in the mid-1940s were strong despite relatively elevated valuations at the time. In today's environment, although valuations are unconditionally high relative to history, they are not overly alarming when viewed in the context the underlying interest rate environment and current profitability profile of the index.

**Exhibit 5: Episodes exist when valuations are stretched relative to fundamental and macro variables**



S&P 500 total return CAPE modeled using LTM ROE, 10-year trailing inflation, 10Y UST yields, and market concentration

Source: Robert Shiller, Goldman Sachs Global Investment Research

## Market Concentration

**In addition to current levels of profitability (trailing S&P 500 ROE) and interest rates (10-year Treasury), we believe forward expected returns should also take into account the starting level of market concentration.** The metric is particularly important today because the US equity market is currently near its highest level of concentration in 100 years. When equity market concentration is high, performance of the aggregate index is strongly dictated by the prospects of a few stocks. Index

performance in a high concentration environment will reflect a less diversified set of risks and will likely have greater realized volatility compared with returns in a less concentrated and more diversified market.

**Higher starting market concentration has historically been associated with greater forward realized volatility.** Although greater volatility does not necessarily imply an increased likelihood of downside relative to upside return, valuation should reflect a discount for higher volatility and less diversification during periods of extreme market concentration. Empirically, the inverse relationship between market concentration and concurrent valuations is not strong. However, an inverse relationship is more apparent between starting concentration and 10-year forward returns. This dynamic suggests investors typically do not immediately price in risk from elevated market concentration, but long-term returns are negatively affected as a result of overpaying for a less diversified asset.

**The intuition for why concentration matters for long-term returns relates to growth in addition to valuation.** Our historical analyses show that it is extremely difficult for any firm to maintain high levels of sales growth and profit margins over sustained periods of time. The same issue plagues a highly concentrated index. As sales growth and profitability for the largest stocks in an index decelerate, earnings growth and therefore returns for the overall index will also decelerate.

**If we add valuations back into the picture, we find that, despite the historical precedent of slowing growth for the dominant firms in the index over time, valuations for these stocks do not always price this risk.** Stocks perceived to have higher risk and greater potential return should trade at discount valuations. However, the lack of valuation discount means the market does not always offer a risk premium for concentration risk.

**The current extremely high level of market concentration is one of the main drags on our return forecast. If our model were to exclude this variable, our baseline return forecast would be roughly 4 pp higher (7% rather than 3%) and the range would be 3% to 11% rather than -1% to 7%.** Although the market concentration variable sits on the cusp of the 5% significance threshold, the benefit of including the market concentration variable in our forecast model is twofold. First, it helps explain residual variation in returns that cannot be explained by the other variables in our model. Second, forward returns will depend on whether valuations accurately reflect the less diversified set of risks that a concentrated market represents.

Exhibit 6: Annualized S&P 500 total return with and without market concentration variable

Annualized S&P 500 total return, 2024-2034E				
	Baseline forecast (includes concentration)		Forecast excluding concentration variable	
	Return	Percentile since 1930	Return	Percentile since 1930
+2σ	7%	22 %	11%	50 %
<b>Baseline</b>	<b>3%</b>	<b>7 %</b>	<b>7%</b>	<b>22 %</b>
-2σ	-1%	2 %	3%	7 %

Source: Goldman Sachs Global Investment Research

**Market concentration has recently surged to a multi-decade high (Exhibit 7).**

Previously we have identified seven other episodes when concentration rose sharply and peaked. These episodes include 1932, 1939, 1964, 1973, 2000, 2009, and 2020 (Exhibit 8).

Exhibit 7: The 10 largest stocks in the S&P 500 account for more than a third of total market cap



Source: FactSet, Compustat, Goldman Sachs Global Investment Research

Exhibit 8: US equity market concentration 1925-2024



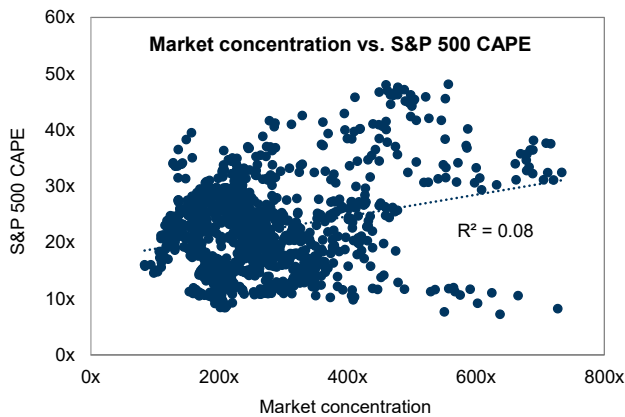
Universe consists of US stocks with price, shares, and revenue data listed on the NYSE, AMEX, or NASDAQ exchanges. Series prior to 1985 estimated based on data from the Kenneth French data library, sourced from CRSP, reflecting the market cap distribution of NYSE stocks.

Source: Compustat, CRSP, Kenneth R. French, Goldman Sachs Global Investment Research

**Market concentration is not directly driven by valuation.** A linear relationship between the CAPE and market concentration shows that only 8% of the variation in market concentration can be explained by variation in valuation (Exhibit 9). Furthermore, the relationship between concentration and valuation changes over time, shifting from being negatively correlated across the 1940s and 1990s to highly correlated during the tech bubble and the early 1980s. The correlation has recently been above average (Exhibit 10).

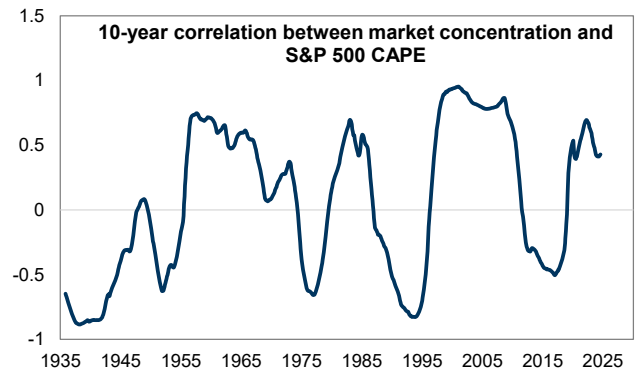


**Exhibit 9: Valuation is not a perfect predictor of market concentration**



Source: Goldman Sachs Global Investment Research

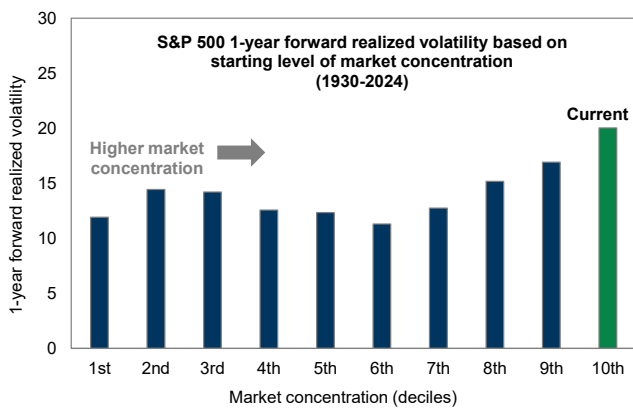
**Exhibit 10: Relationship between concentration and valuation shifts over time**



Source: Goldman Sachs Global Investment Research

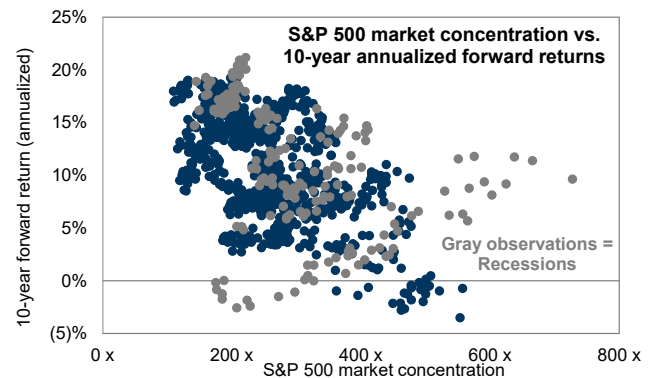
**Although elevated market concentration is not a sign of near-term downside risk, high concentration is associated with lower returns over longer horizons.** A highly concentrated index is typically associated with greater volatility in the near term. As a result valuations should be lower amid extreme market concentration to compensate for the risk tied to a more volatile group of stocks (Exhibit 11). While the univariate relationship between concentration and valuation does not show that investors always price this risk, returns are ultimately higher-than-average following periods when valuations were low and market concentration was high to compensate for this risk (e.g., coming out of recessions; Exhibit 12).

**Exhibit 11: Higher starting market concentration associated with higher volatility**



Source: Goldman Sachs Global Investment Research

**Exhibit 12: Outside of recessions higher market concentration is associated with lower forward returns**



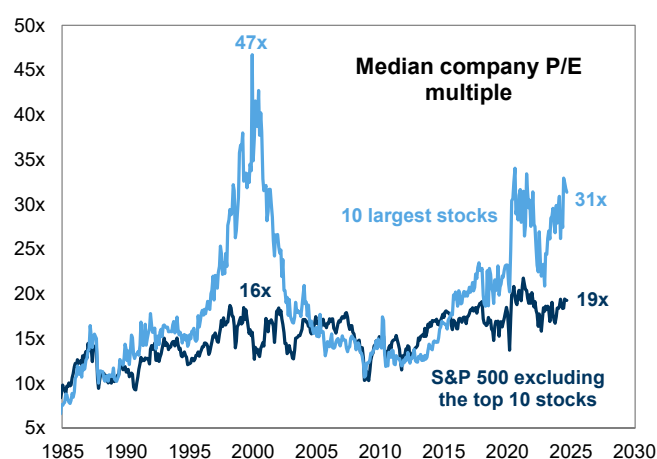
Market concentration defined as the market cap of the largest stock relative to the 75th percentile stock

Source: Goldman Sachs Global Investment Research

The rise of “superstar” firms with economies of scale such as today’s mega-cap tech stocks is one reason why the aggregate S&P 500 index trades at an elevated P/E multiple. As noted above, the ten largest constituents in the S&P 500 index account for 36% of the overall index and trade at a forward P/E of 31x, substantially above the 19x multiple of the remaining 490 stocks. The premium valuation for the top 10 stocks is the largest since the peak of the Dot Com boom in 2000 (Exhibit 13).

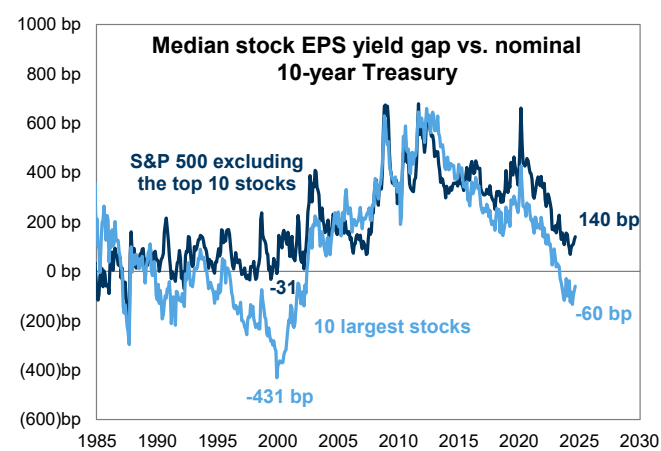
From an earnings yield gap perspective, the 10 largest stocks in the S&P 500 now trade at a 60 bp *negative* risk premium vs. nominal 10-year Treasury notes, a situation that has not occurred in the US equity market since the early 2000s. The remaining 490 stocks collectively trade with a positive risk premium of 140 bp (Exhibit 14).

**Exhibit 13: Absolute valuations for top 10 and remaining S&P 500 stocks over time**



Source: Compustat, Goldman Sachs Global Investment Research

**Exhibit 14: Yield gaps for top 10 and remaining S&P 500 stocks over time**

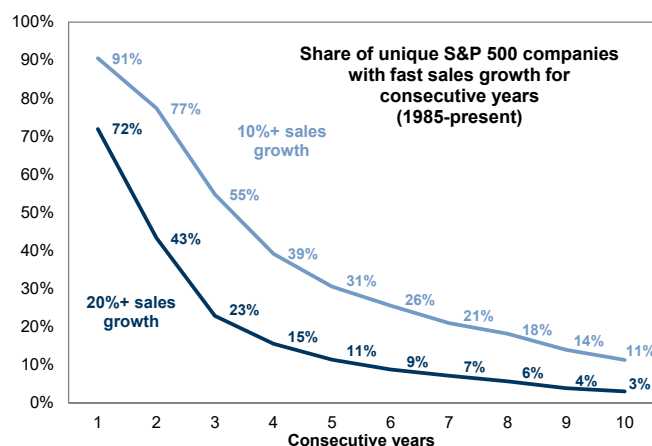


Source: Compustat, Goldman Sachs Global Investment Research

The competitive moats possessed by the largest companies in the S&P 500 have allowed them to maintain high levels of growth and margins. Their industry dominance has supported premium valuations and market capitalization relative to the rest of the equity market. Nevertheless, it is a subject of debate among portfolio managers whether the market dominance of the leading firms will persist over the next decade.

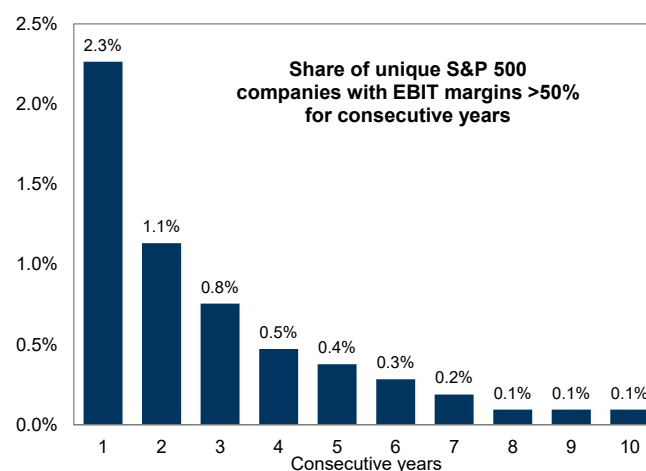
**Our previous research on growth/profitability demonstrated how difficult it can be for firms to maintain strong growth and high margins over an extended period of time.** For example, during the past 40 years, the share of unique S&P 500 companies able to consistently generate 20%+ revenue growth faded sharply after ten years (Exhibit 15). Similarly, only a small share of firms were able to maintain EBIT margins greater than 50% for more than a few years (Exhibit 16).

**Exhibit 15: Maintaining rapid sales growth for 10 consecutive years is rare**



Source: Compustat, Goldman Sachs Global Investment Research

**Exhibit 16: Maintaining high levels of profitability for 10 consecutive years is also challenging**



Source: Compustat, Goldman Sachs Global Investment Research

**Government regulation was one reason why previous generations of “superstar” firms eventually experienced slower growth and lower valuations.** We explored this important dynamic in a report titled [Concentration, competition, and regulation: “Superstar” firms and the specter of antitrust scrutiny](#). In the past, stock valuations and share prices declined between the date of a lawsuit filing and resolution (after years of litigation), and this was followed by a downshift in the trajectory of sales growth ([Exhibit 17](#)).

**Exhibit 17: Historical examples of regulatory scrutiny**

Company	Lawsuit filing year	Impact between lawsuit & resolution	Resolution year	Resolution	Impact post-resolution
IBM	1969	Valuations fall	1982	Dropped lawsuit	Growth slows, valuations initially rise but then continue to fall
AT&T	1974	Valuations fall	1982	Breakup ordered	Growth slows, valuations rise
Microsoft	1998	Valuations fall	2000/2001	Settlement, ordered to change practices	Growth slows, valuations continue to fall in settlement era through 2011

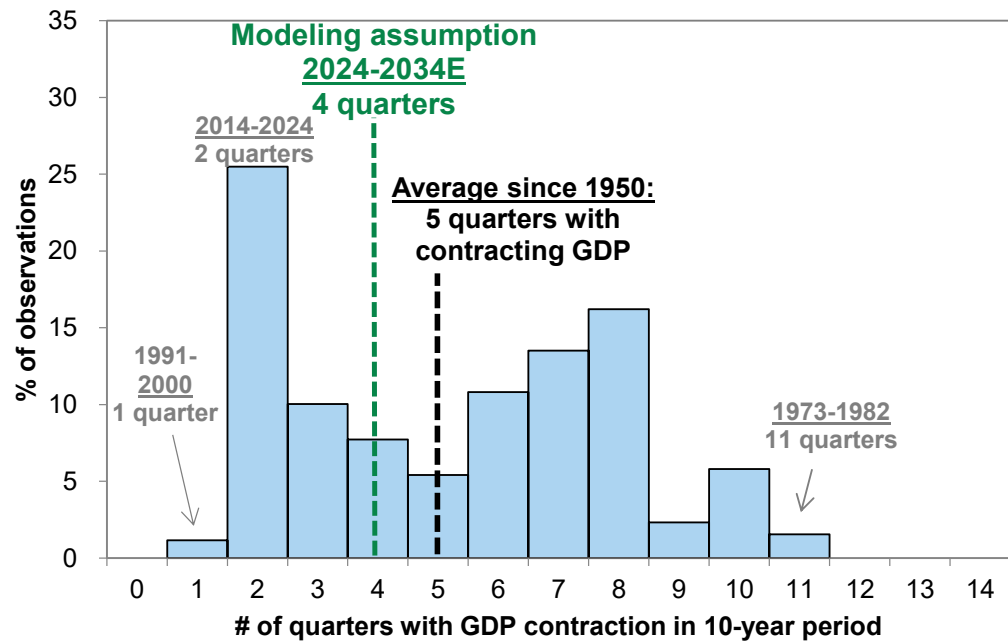
Source: Goldman Sachs Global Investment Research

### Economic contraction frequency

**Finally, we control for the frequency of economic contractions during the forecast period.** Controlling for contraction frequency helps capture large shocks to earnings during the forecast period and potential shocks to the dividend portion of total returns. Unlike the four other variables in our model that take values at the start of the return period, we estimate the frequency of economic contractions during the 10-year forward return period. Consequently, our equity return forecast will be partly influenced by our assumption regarding economic contraction frequency during the next decade.

**Our baseline scenario assumes that US GDP contracts in four quarters (10% of the time) during the next 10 years.** Our assumption is slightly greater than the past decade’s experience of 2 quarters (5% of time) and slightly less than the 5 quarter (13% of time) rolling 10-year historical average since 1950 (Exhibit 18). A sensitivity analysis of our ten-year return forecast to the GDP contraction frequency assumption suggests that a one quarter increase or decrease in contraction frequency would change our baseline annualized return forecast by roughly 50 bp.

**Exhibit 18: Frequency of economic contractions in rolling 40-quarter (10-year) periods since 1950**



Source: Haver, Goldman Sachs Global Investment Research

**Risks to our forecast**

**If economic growth during the next decade is stronger than our baseline expectation, the prospective equity return could exceed the high end of our forecast scenario.** Lower-than-expected economic contraction frequency represents another potential reason why returns during the next ten years might exceed the upper end of our forecast distribution. Superior economic growth explains why realized 10-year returns were greater than our modeled returns during previous periods such as 1945-1955, 1973-1983, and the 1990s. Conversely, if economic growth over the next decade is weaker than our baseline expectation, equity returns would be lower than our baseline forecast.

**Forward returns could be stronger than anticipated if current high valuation multiples and market concentration are sending misleading signals.** If valuation and market concentration are structurally higher going forward than in the past, future returns would be greater than our model projects. In particular, market concentration appears to be less mean reverting than valuations, and episodes of extreme market concentration such as today do not exhibit a straightforward pattern in terms of

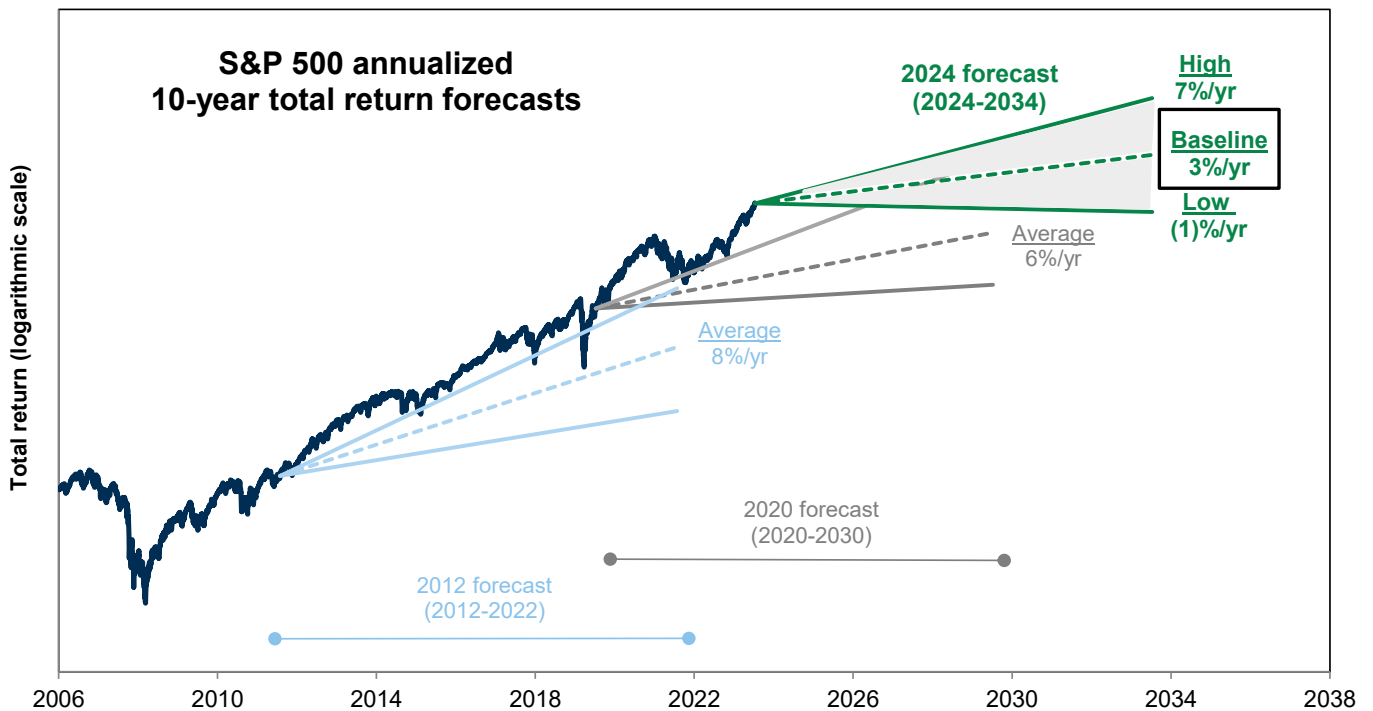
normalization and timing between episodes. Furthermore, while valuations exhibit more of a mean-reverting tendency compared with market concentration, multiples have trended upwards during the post-1990 period and could continue to exhibit greater persistence and could remain above the historical average due to factors including demographics and technological shifts such as AI. Historically, our model has done a poor job of explaining returns across periods containing large shocks to the economic backdrop or periods of rapid technological change.

**Appendix B discusses additional upside and downside risks to our forecast.**

Examples include interest rates, constituent turnover, productivity, demographics, and corporate tax rates.

**In July 2012, we published our original report detailing our view of prospective 10-year annualized total returns for US equities.** At that time, we projected the S&P 500 index would deliver an 8% annualized total return during the subsequent 10 years. We also put forward high and low scenarios. These scenarios reflected annualized 10-year total returns of 12% and 4%, respectively (Exhibit 19). The S&P 500 actually delivered a 13.3% annualized total return during the 2012-2022 period. Our updated model would have forecast an annualized 10-year return of 14% as of July 2012 (with high and low scenarios of 18% and 10%, respectively).

**Exhibit 19: Our S&P 500 annualized 10-year total return forecasts: 2012 vs. 2020 vs. 2024**



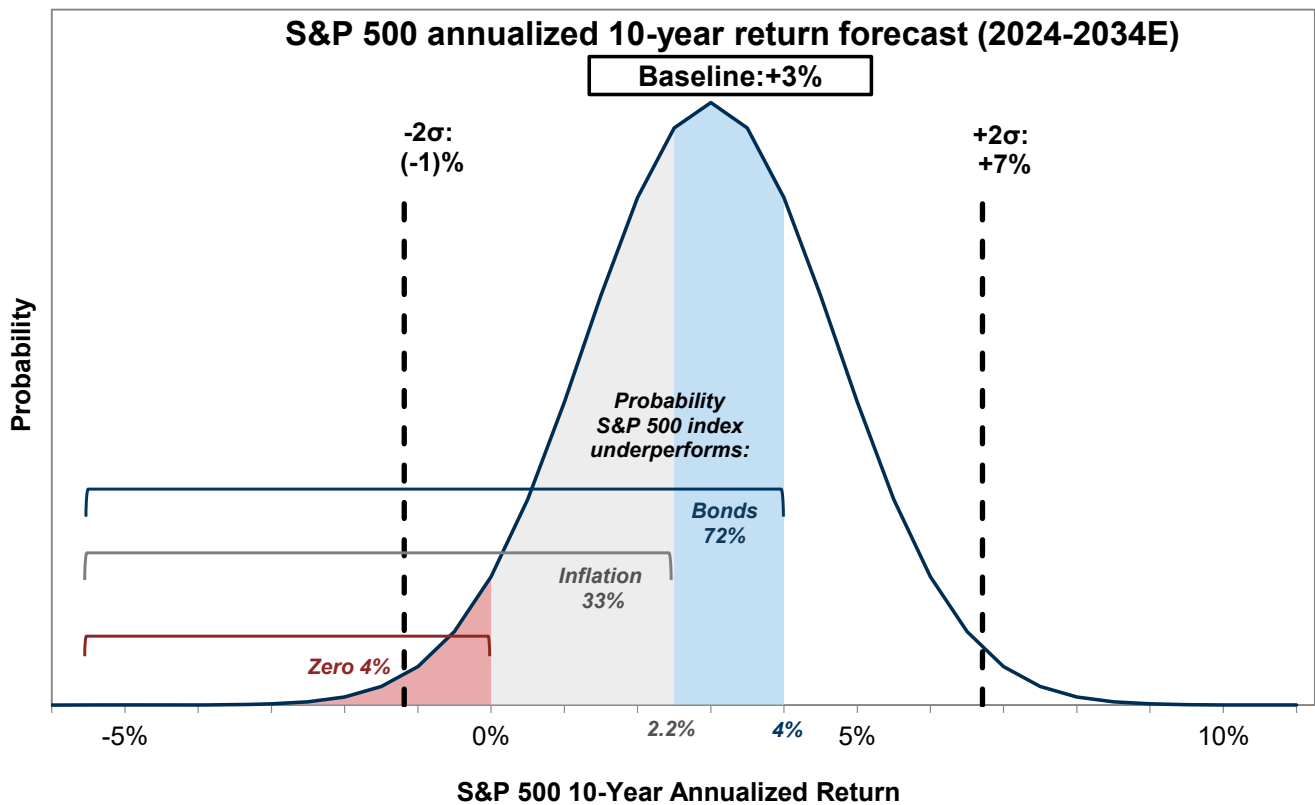
Source: Goldman Sachs Global Investment Research

# Investment implications

**Our model indicates a distribution of potential outcomes around our baseline forecast.** Using this probability distribution around our forecast, the current level of the 10-year US Treasury yield, and the current level of 10-year breakeven inflation, we estimate the probability that equities underperform bonds and inflation during the next decade.

**The distribution around our 10-year annualized total return forecast implies a 72% probability that the S&P 500 underperforms bonds, a 33% likelihood that equities generate a return less than inflation, and a 4% probability stocks post a negative absolute return (Exhibit 20).**

Exhibit 20: Distribution of S&P 500 annualized 10-year return forecast, 2024-2034E

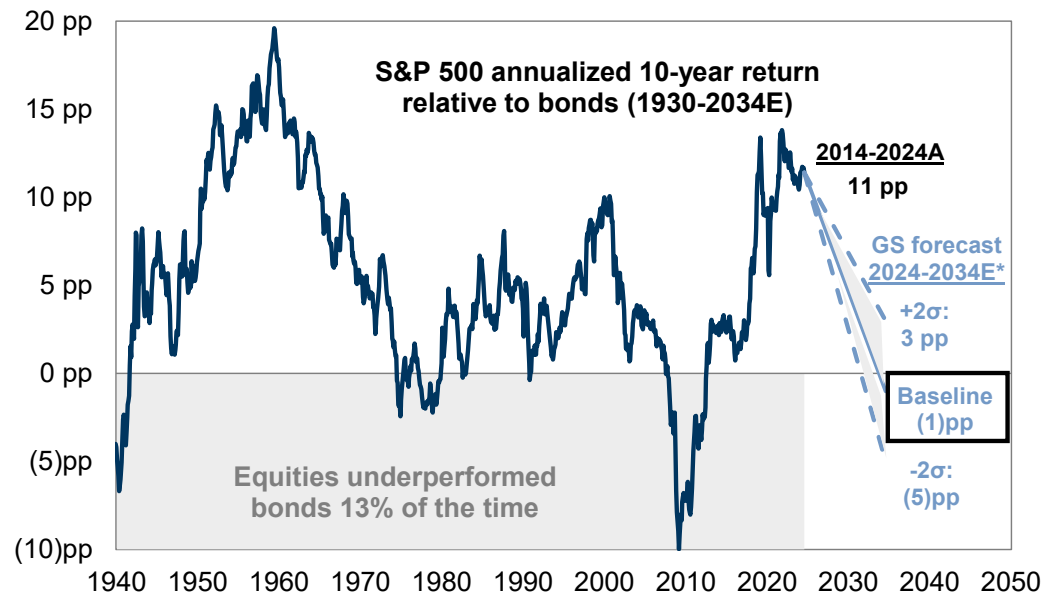


Source: Goldman Sachs Global Investment Research

**Historically, equities have underperformed 10-year Treasury notes during 13% of rolling 10-year periods since 1930.** Our model-implied 72% probability that stocks lag bonds during the next decade suggests that today equities are 5 times as likely to underperform bonds going forward compared with the historical average. The elevated probability that stocks underperform bonds reflects the 7<sup>th</sup> historical percentile return that we forecast for equities vs. the current 10-year Treasury yield that ranks in the 48<sup>th</sup> percentile relative to history.

**Our baseline forecast of 3% annualized return for equities and the current level of the 10-year US Treasury yield (4%) implies 1 pp of underperformance (10<sup>th</sup> percentile) during the next decade.** Our return distribution forecast implies a range of relative returns with 3 pp of outperformance on the high end and -5 pp of underperformance on the low end. The most recent period with realized data saw equities outperform bonds by 11 pp, a relative return ranking in the 83<sup>rd</sup> percentile since 1930 ([Exhibit 21](#)). If we exclude the market concentration variable from our model, the resulting 7% annualized 10-year return implies only a 7% likelihood that equities will underperform bonds over the next decade.

**Exhibit 21: Relative 10-year performance of equities vs. bonds**

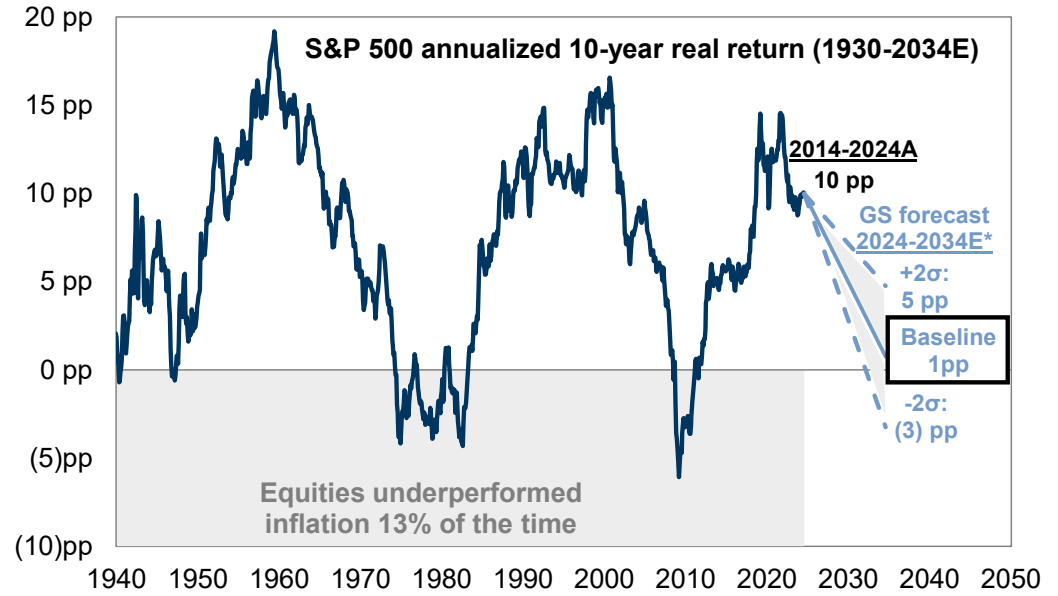


For the forecast horizon, we assume the 10-year bond return at the end of the period will equal the current yield on a 10-year US Treasury note.

Source: Robert Shiller, Goldman Sachs Global Investment Research

**The prospect that equities outperform inflation is more favorable than the likelihood of outperforming bonds.** We estimate that the probability equities underperform inflation during the next ten years is 33%, more than double the historical frequency of underperformance (13%). Taking our baseline forecast of a 3% annualized return for equities and current market pricing of 2.2% inflation over the next 10 years implies equities will outperform inflation by 1 pp (17<sup>th</sup> percentile) with a range of 5 pp on the high end (30<sup>th</sup> percentile) and -3 pp on the low end (3<sup>rd</sup> percentile). If we exclude the market concentration variable from our model, the resulting 7% annualized 10-year return implies only a 1% likelihood that equities will lag inflation over the next decade.

**Exhibit 22: Relative performance of equities and inflation**



For the forecast period we assume 10 year trailing inflation at the end of the period will be the current 10-year breakeven inflation rate implied by the difference between current levels of the 10-year UST yield and 10-year TIPS yield. Realized real returns subtract realized headline CPI inflation over the return period from S&P 500 returns.

Source: Robert Shiller, Goldman Sachs Global Investment Research

**Taken together, these relative return forecasts suggest investors should be prepared for equity returns during the next decade that are towards the lower end of their typical performance distribution relative to bonds and inflation.** Our view of the relative returns of US equities mirrors our cross asset strategists' recent research that suggests cross-asset portfolios should become more balanced rather than tilting towards one asset class.



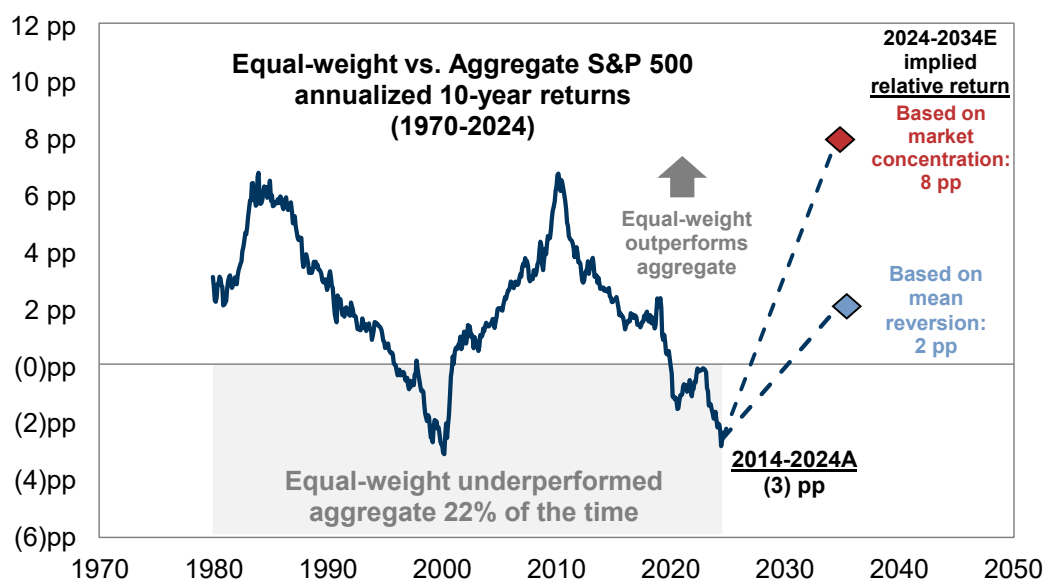
# Outlook for aggregate vs. equal-weight performance

**History and the current high level of market concentration suggest that the equal-weight S&P 500 (SPW) will outperform the aggregate index (SPX) over the next decade.**

**From a historical perspective, the equal-weight S&P 500 index has typically outperformed the aggregate S&P 500 index during 10-year horizons.** Since 1970, the equal-weight benchmark has outperformed the aggregate S&P 500 index during 78% of rolling 10-year periods by an annualized average of 2 pp. More recently however, 10-year (2014-2024) trailing returns for the aggregate index have outpaced returns for the equal-weight index by an annualized 3 pp ([Exhibit 23](#)).

**The periods of sharpest outperformance of the equal-weight weight index occurred in the 10-year periods spanning 1973-1983 (7 pp) and 2000-2010 (7 pp).** Both these periods correspond with the decade following a peak in S&P 500 market concentration. Conversely, the trough in 10-year relative underperformance of the equal-weight vs. cap-weight index occurred during the lead-up to the Dot Com bubble (1990-2000). That shortfall that has been matched during the past decade (2014-2024E) as the aggregate index has been powered by a few mega-cap Tech stocks and AI euphoria.

**Exhibit 23: Equal-weight S&P 500 has typically outperformed the aggregate index**



Note: Equal-weight S&P index data begins in 1970.

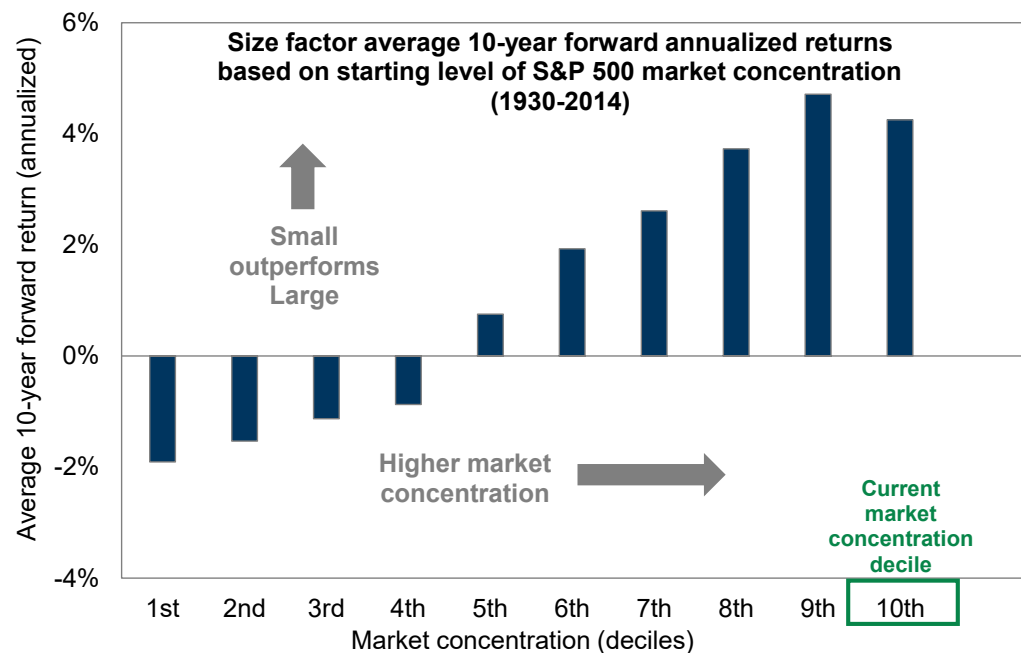
Source: Goldman Sachs Global Investment Research

**By construction, the equal-weight index’s tilt towards smaller stocks means its performance relative to the aggregate index is driven by the performance of smaller vs. larger market cap stocks.** The nature of an equal-weighted index also implies that stocks with relatively lower weights in the aggregate index will have larger weights in the equal-weight index (and vice versa for larger stocks). As a result, the historical trend of equal-weight outperformance can be in part attributable to the historical outperformance of small stocks over large stocks. In particular, 60% of the variation in equal-weight vs. aggregate S&P 500 returns can be explained by returns of our size factor, which is long small and short large stocks within the S&P 500 and is sector neutral.

**Long-term outperformance of small stocks vs. large stocks is inversely related to the starting level of market concentration.** When market concentration is high, small stocks tend to outperform larger stocks by a greater magnitude relative to a more normal market concentration environment. Furthermore, this relationship exhibits some asymmetry. Extremely high starting market concentration is associated with stronger forward annualized performance of the size factor (+4%) relative to the magnitude of size factor weakness when starting market concentration is extremely low (-2%; [Exhibit 24](#)).

**Exhibit 24: Higher market concentration implies future outperformance of low market cap vs. high market cap stocks**

Size factor refers to Fama French SMB (small minus big) factor



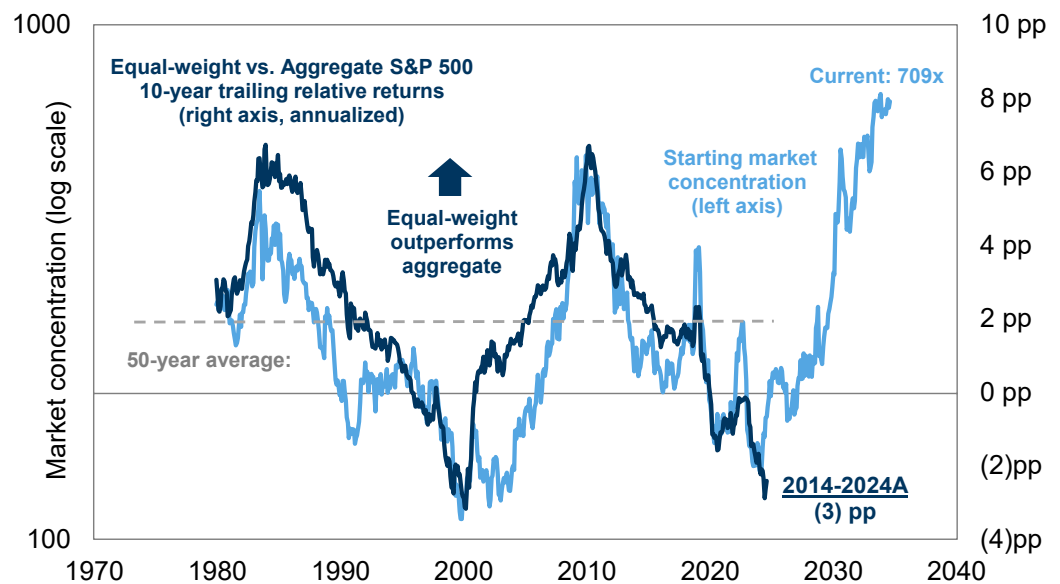
Market concentration is defined as the market cap of the largest stock relative to the 75th percentile stock

Source: Kenneth R. French, Goldman Sachs Global Investment Research

**The relationship between market concentration and forward performance of the size factor means today’s level of market concentration may be used to gauge the potential magnitude of equal-weight vs. aggregate outperformance over the next decade.** Today’s extreme level of market concentration (99<sup>th</sup> percentile) suggests the magnitude of equal-weight outperformance over the next decade should also be stronger than average. A regression of equal-weight vs. aggregate forward returns on market concentration implies that conditional on today’s level of market concentration investors should expect the equal-weight index to outperform by 8 pp (Exhibit 25). This scenario may be too extreme given such a magnitude of equal-weight outperformance has not been realized in more than four decades. However, the equity market has also rarely been as concentrated as it is now.

**The previous record 10-year outperformance by the equal-weight index was 7 pp (reached in both 1983 and 2010) and corresponded with the decade following a peak in market concentration.** Alternatively, if we make a simpler assumption that the magnitude of equal-weight outperformance will revert to its historical average, then this would imply a less dramatic 2 pp of annualized outperformance (Exhibit 25).

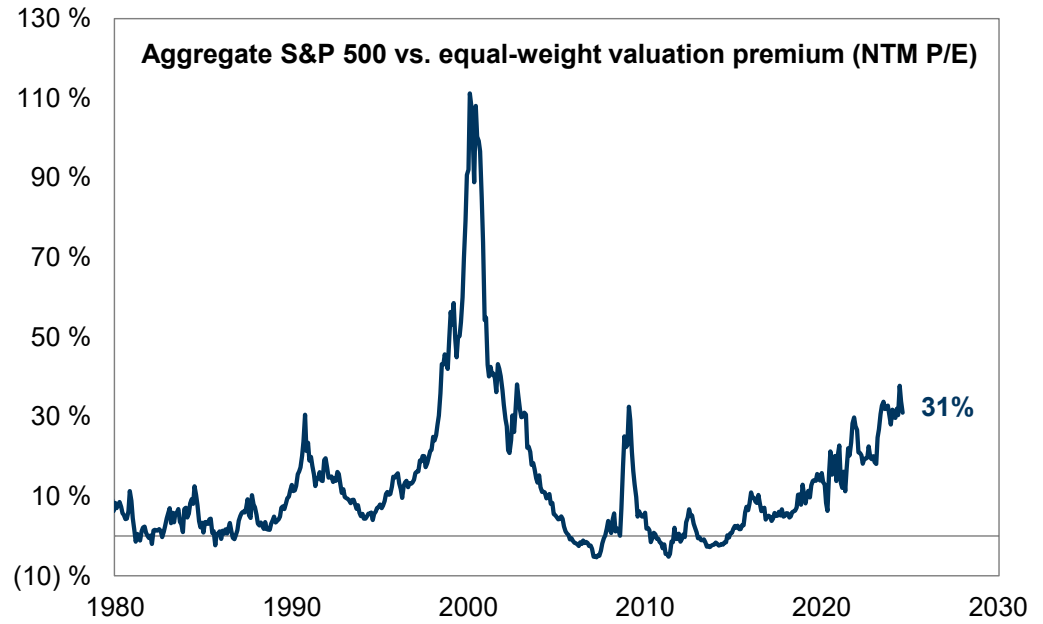
**Exhibit 25: The current high level of market concentration suggests the equal-weight S&P 500 will outperform the aggregate index by an annualized 8 pp during the next decade**



Source: Goldman Sachs Global Investment Research

**The aggregate S&P 500 currently trades at a 31% P/E valuation premium to the equal-weight index (22x vs. 17x).** This valuation premium has risen from a 1% discount a decade ago. The valuation premium between the two indices is an imperfect signal for forward relative returns. Although there is a positive relationship between the valuation premium and forward outperformance of the equal-weight index, the relationship has not been strong across the entire sample period and is skewed heavily by the drastic premium between the aggregate and equal-weight index during the tech bubble ([Exhibit 26](#)).

**Exhibit 26: The aggregate S&P 500 trades at a 31% valuation premium to the equal-weight index**

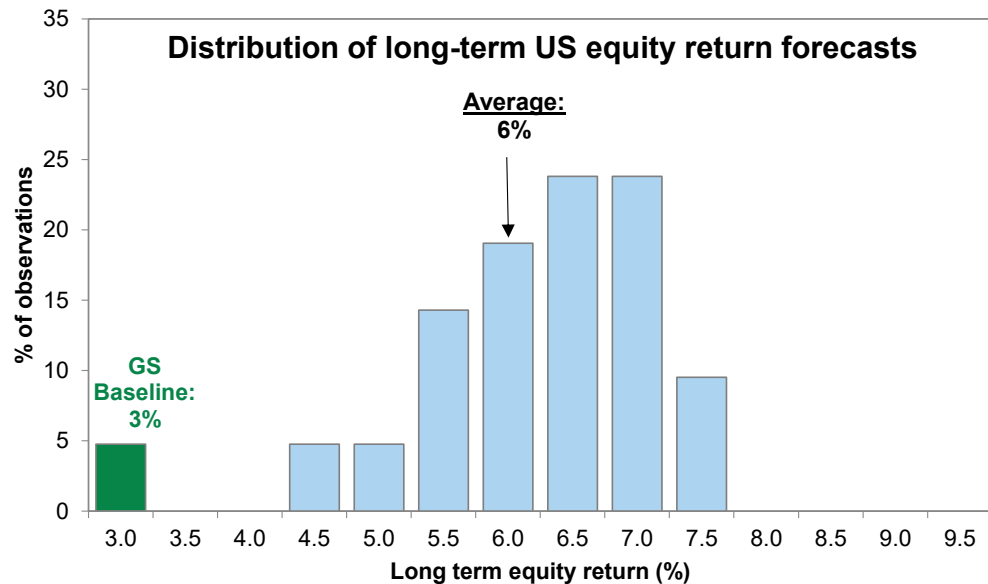


Source: Goldman Sachs Global Investment Research

## How our long-term equity return forecast compares with consensus

**Our 3% annualized 10-year return forecast for the S&P 500 is below the consensus average of 6%.** We collected publicly available data on the long-term capital markets assumptions of 21 asset managers and constructed a distribution of the US equity return component of these capital markets assumptions. The distribution of consensus annualized ten-year return assumptions ranges from a low of 4.4% to a high of 7.4% with an average of 6% (Exhibit 27).

**Exhibit 27: Goldman Sachs vs. consensus long-term US equity return forecasts**

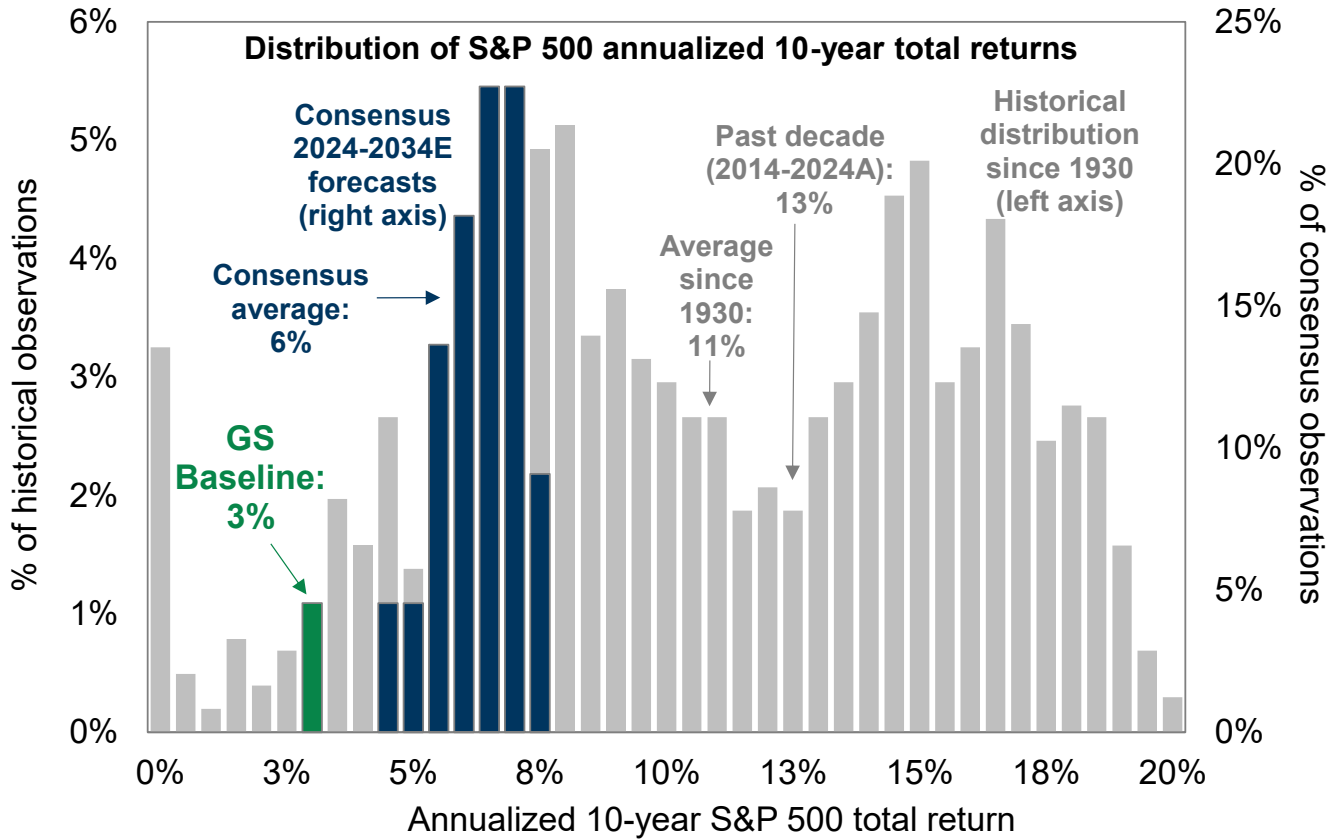


N = 21

Source: Goldman Sachs Global Investment Research

**Our long-term equity return forecast sits below the entire distribution of forecasts by market participants.** However, this distribution is consistent with our baseline expectation that US equity returns during the next decade will be below the historical average. Even the highest forecast from the distribution of estimates (7.4%) is roughly 4 pp below the long-term average annualized return of 11% and roughly 6 pp below the annualized return over the past decade (13%). The annualized return at the low end of the distribution is 7 pp below the historical average and 9 pp below the return during the past ten years. Several forecasts take into account variables that are in our forecasting model such as starting valuations and the current level of interest rates, likely explaining why these forecasters also anticipate below-average equity returns during the coming decade.

**Exhibit 28: Goldman Sachs and consensus forecast the S&P 500 index will deliver a below-average annualized return during the next decade**



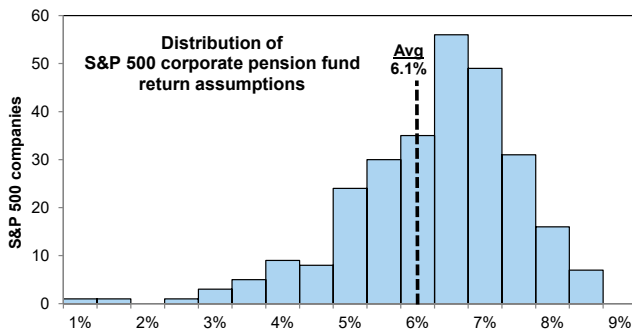
Source: Robert Shiller, Goldman Sachs Global Investment Research

# Considerations for portfolio managers with long investment horizons

**Our long-term US equity return forecast suggests that the return assumptions of many corporate and public pension plans may be too optimistic.** The average S&P 500 company with a defined benefit pension plan assumes a long-term return on its aggregate plan assets of 6.1%, and more than 90% of corporate pension plan return assumptions exceed our long-term US equity return forecast ([Exhibit 29](#)). However, the risk that the corporate pension fund return assumptions are too optimistic is mitigated by the fact that at the end of last year the funded ratios averaged nearly 100%.

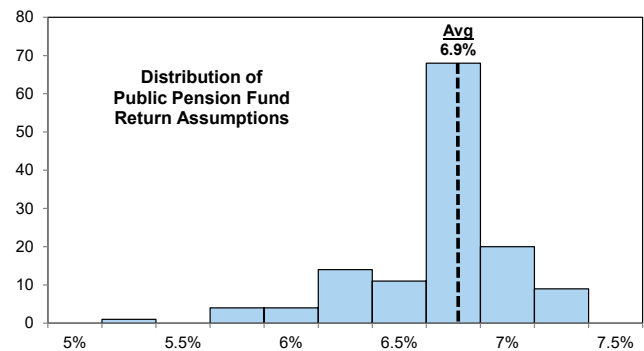
**Public pension plan return assumptions are even more optimistic than private pensions, with an average forecast of 6.9%.** Notably, no long-term return forecast out of 131 public pension plans is as low as our long-term US equity forecast ([Exhibit 30](#)).

**Exhibit 29: Corporate pension plan long-term annualized return assumptions**  
as of year-end 2023



Source: Compustat, FactSet, Goldman Sachs Global Investment Research

**Exhibit 30: Public pension plan return assumptions**  
as of July 2024

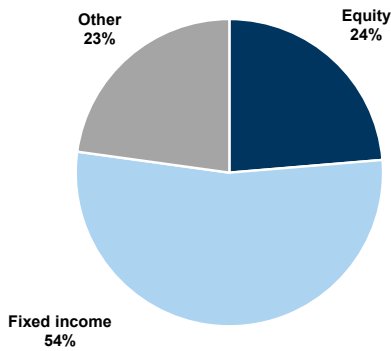


Source: NASRA, Goldman Sachs Global Investment Research

**Note that the above return assumptions are for the plans' entire portfolios and not just the equity component.** Current asset allocation data for both corporate and public pension plans coupled with high expected long-term returns on plan assets imply a risk of potential shortfall in the returns necessary to fund future retiree obligations. Public pension funds allocate 47% of their portfolios to equities while corporate pension plans allocate 24% ([Exhibit 31](#) and [Exhibit 32](#)).

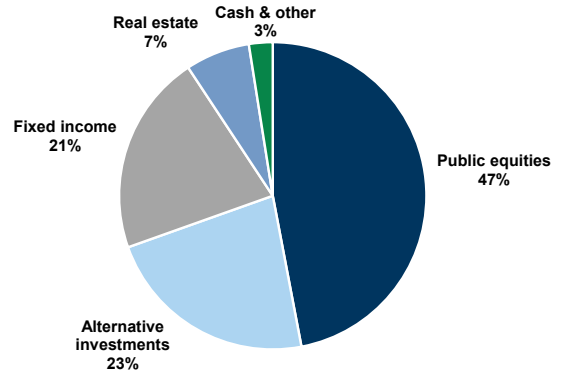
**If realized long-term US equity returns are near our baseline forecast, then other asset classes would have to post extremely strong performance in order for funds to meet their long-term portfolio return assumptions.** However, fixed-income returns are not much greater than our current US equity forecast: the 10-year US Treasury note yields 4%, investment-grade bonds yield 4.8%, and high-yield bonds yield 7%.

**Exhibit 31: Asset allocation among corporate pension funds**



Source: Milliman, Goldman Sachs Global Investment Research

**Exhibit 32: Asset allocation among public pension funds**



Source: NASRA, Goldman Sachs Global Investment Research

**Combining the holdings of defined benefit plans with the return assumptions above suggests fiduciaries, consultants, and their portfolio managers expect one or more of the following possibilities.** First, US equity holdings will generate a return greater than our analysis suggests. Second, the return delivered by non-US equities will significantly outpace the return from domestic stocks. Note that the return from international stocks would have to be extremely strong in order to offset the fact that US equities account for 65% of the MSCI All-Country World Index. Third, the return on other plan assets such as private equity, private credit, and real estate will be sufficiently large in order to offset any shortfall in returns from public equities.



## Appendix A: Components of our long-term equity return model

### Components of our long-term return forecast model

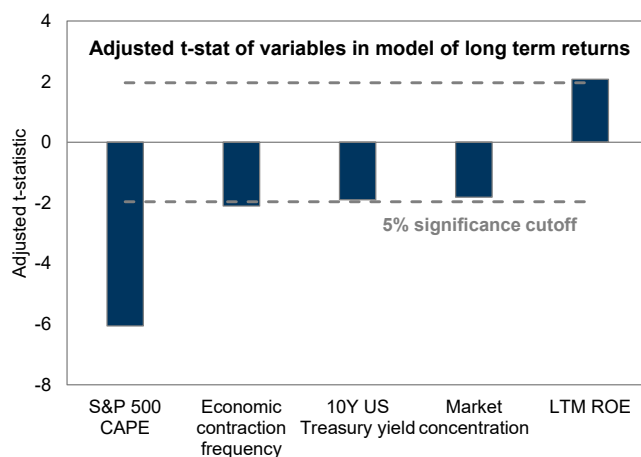
We model 10-year forward annualized total returns for the S&P 500 on a monthly basis using five variables:

- **Valuation:** S&P 500 cyclically adjusted P/E multiple (CAPE)
- **Economic fundamentals:** Economic contraction frequency
- **Interest rates:** 10 year US Treasury yield
- **Market concentration:** Ratio of the market cap of the largest-cap stock vs. the 75th percentile stock
- **Profitability:** LTM S&P 500 return on equity (ROE)

We model forward equity returns using the value of each variable at the start of the return period. The sole exception relates to economic growth because forward economic contraction frequency requires an assumption of the future. Our regression model takes the log of variables on both sides of the regression to account for non-linear relationships and t-stats are adjusted to account for the use of overlapping data to fit the model. Adjusted t-stats reflect the strength and direction of the statistical relationship of each variable with long-term returns. We discuss each variable in further detail below.

In order to test the robustness of our model we tested the same regression specification on both different time periods (post 1950, post 1990), out of sample from 1990 onward, and tested the model on real as well as nominal returns. Across these robustness tests, results did not vary drastically from our baseline forecast.

#### Exhibit 33: Starting valuation is the most important variable in helping explain forward returns

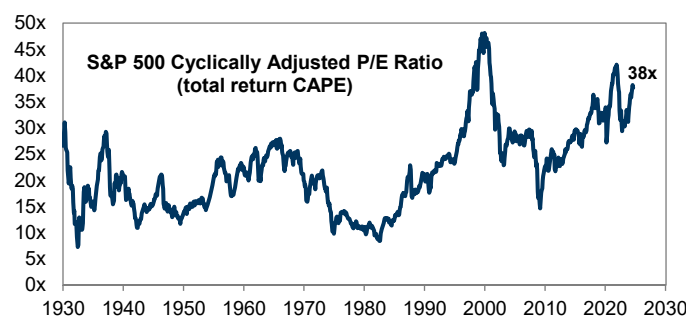


Source: Goldman Sachs Global Investment Research

## Valuation

**The level of valuation at the time of investment is the most significant variable in our model for forecasting 10-year forward equity total returns.** We use the Cyclically-Adjusted S&P 500 P/E ratio (CAPE) in our model as a control for valuation. This metric compares the index level to 10-year average trailing earnings and provides the strongest signal for long-term forward returns. By using the average of 10 years of trailing earnings the metric reflects valuation of the underlying trend in S&P 500 earnings and minimizes the impact of large fluctuations in earnings across business cycles. Today, the P/E multiple of 38x based on cyclically-adjusted operating earnings ranks in the 97<sup>th</sup> percentile since 1930 ([Exhibit 34](#)). The valuation ranks in the 94<sup>th</sup> percentile and in the 88<sup>th</sup> percentile since 1990.

**Exhibit 34: S&P 500 Cyclically-adjusted P/E ratio**

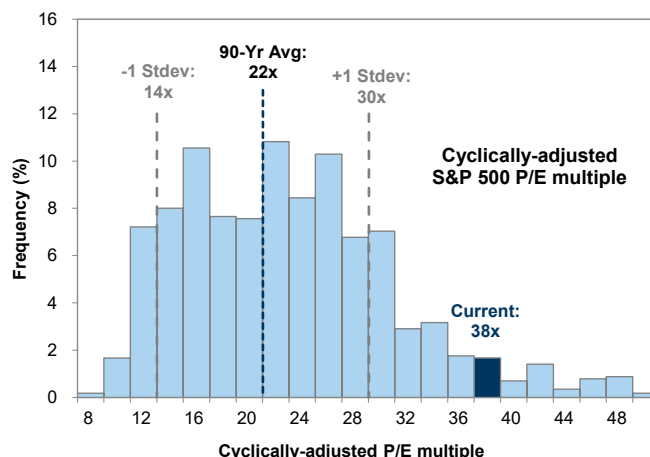


Total return CAPE reinvests dividends into the price index and scales earnings per share to account for changes in corporate payout policies.

Source: Robert Shiller, Goldman Sachs Global Investment Research

**Since 1930, the S&P 500 CAPE has averaged 22x, yet the historical distribution exhibits a skew towards the upper end of the distribution.** Since 1930, the S&P 500 CAPE has roughly exhibited a mean-reverting pattern. However, since 1990 the metric appears to have shifted higher. Despite the fact that the post-2000 period of data composes only 25% of the sample period, 70% of CAPE readings during this period have been in the top quartile of the data (63% if looking at the post-1990 period). One explanation for why valuation multiples have trended upwards in the post-1990 period has been the decline in interest rates over this period, subsequently lowering the discount rate and leading to a higher valuation all else equal. The other rational explanations for higher multiples are related to changes in fundamental growth expectations embedded in valuations ([Exhibit 35](#)).

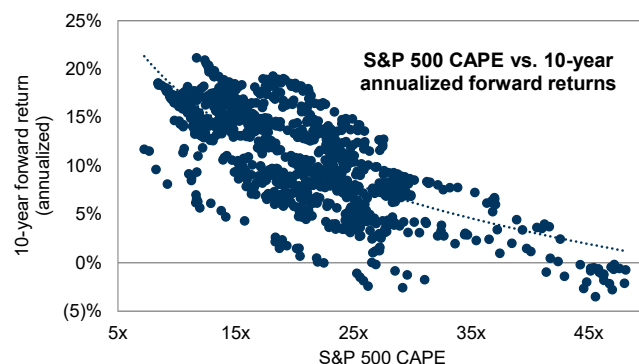
**Exhibit 35: Historical distribution of S&P 500 CAPE multiples**



Source: Robert Shiller, Goldman Sachs Global Investment Research

**The historical relationship between starting valuation and forward return is inverse and not perfectly linear.** The nature of the historical relationship reflects the theoretical underpinning that higher prices (relative to fundamentals) imply lower forward returns all else equal, but also empirically suggests that a linear relationship between the two variables is slightly weaker at extreme levels of valuation. Based on the linear relationship fitted on historical data, today’s S&P 500 CAPE of 38x implies a 10-year annualized forward return of 4% (Exhibit 36).

**Exhibit 36: 10-year annualized S&P 500 returns based on valuation at initial investment data since 1930**



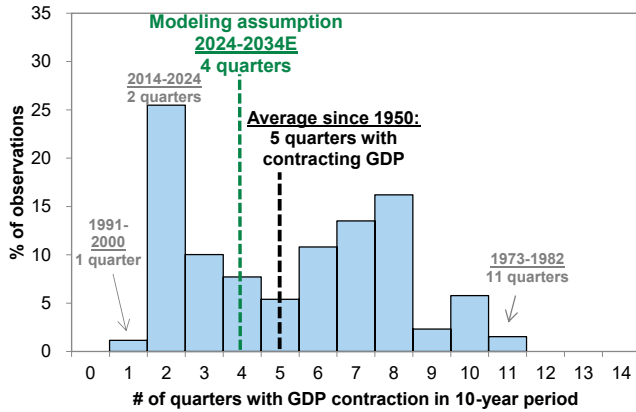
Source: Robert Shiller, Goldman Sachs Global Investment Research

### Economic contraction frequency

**The frequency of GDP contraction during the forecast period will determine whether earnings growth during the forecast period will deviate substantially from average.** In our model we utilize the frequency that the economy contracts over the forecast period to control for this risk. For our baseline forecast, we assume that US GDP growth will contract in 4 quarters over the next 10-years. Four quarters is below the rolling 10-year average of 5 quarters (13% of the time) since 1950 but greater than the 2 quarters of contraction experienced during the past decade (Exhibit 37). The

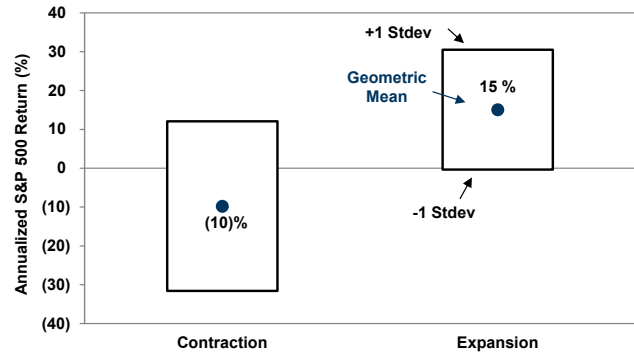
contraction frequency has trended downwards over time and, absent unforeseen shocks, monetary policy appears to have evolved over time to lengthen expansions. Annualized equity returns have averaged -10% during quarters when GDP contracted and averaged 15% when quarterly GDP growth was positive (Exhibit 38).

**Exhibit 37: Frequency of economic contractions in rolling 40-quarter (10-year) periods since 1950**



Source: Goldman Sachs Global Investment Research

**Exhibit 38: Distribution of annualized total returns during economic expansion vs. contraction**

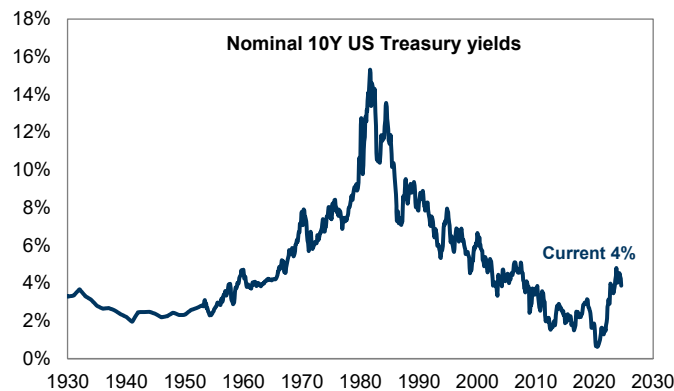


Source: Goldman Sachs Global Investment Research

## Interest Rates

**We control for the starting level of interest rates in our model by using the current 10-year US Treasury yield.** Since 1930, interest rates trended upwards from the start of the period and peaked 1981 at 16%. Following the peak, rates generally trended downwards for 40 years until 2021 when they began to rise alongside the most recent Fed hiking cycle and most recently peaked near 5% in 2023 (Exhibit 39).

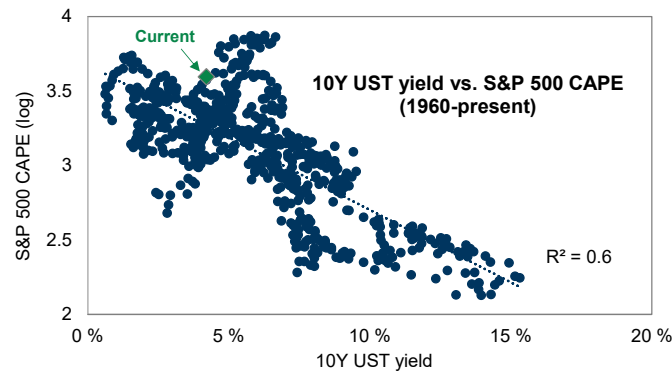
**Exhibit 39: Nominal 10-year US Treasury yields, 1930-2024**



Source: Robert Shiller, Goldman Sachs Global Investment Research

**Interest rates do not have a strong direct link to returns; however, they are indirectly linked to returns through their relationship with valuations.** Long-dated interest rates such as the 10-year US Treasury yields serve as an anchor for the discount rate used by equity investors to discount future earnings. This relationship appears in the data as an inverse and nonlinear relationship—higher rates are associated with lower valuations, and this relationship is more acute at lower levels of interest rates ([Exhibit 40](#)).

**Exhibit 40: Valuations are inversely related to interest rates**

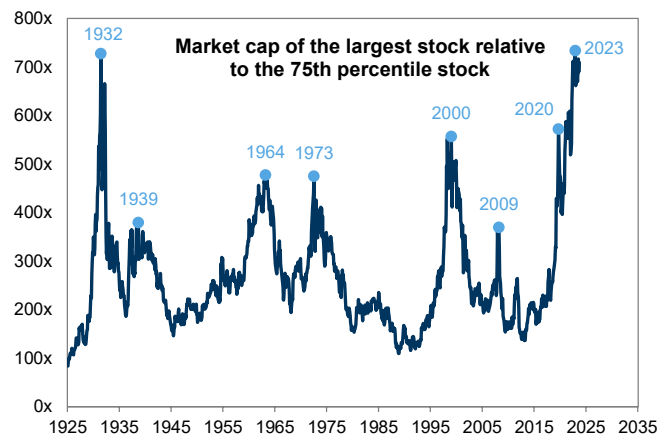


Source: Goldman Sachs Global Investment Research

### Market Concentration

**Our model controls for the starting level of market concentration, which has recently surged to a multi-decade high.** Previous episodes of extreme market concentration include 1932, 1939, 1964, 1973, 2000, 2009, and 2020 ([Exhibit 41](#)).

**Exhibit 41: Market concentration over time**



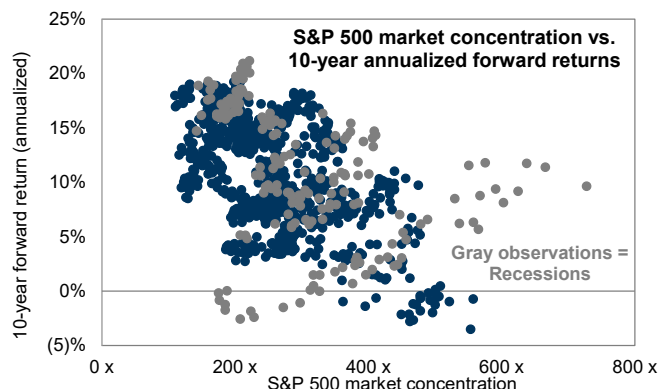
Universe consists of US stocks with price, shares, and revenue data listed on the NYSE, AMEX, or NASDAQ exchanges. Series prior to 1985 estimated based on data from the Kenneth French data library, sourced from CRSP, reflecting the market cap distribution of NYSE stocks.

Source: Compustat, CRSP, Kenneth R. French, Goldman Sachs Global Investment Research

**High concentration is associated with lower returns over longer horizons.** We show in the first section of the report that a highly concentrated index is typically associated with higher volatility. Furthermore, the link between forward returns and starting concentration reflects the fact that valuations do not always price in this higher

risk. As a result forward returns are typically lower due to a lack of risk premium to compensate for higher volatility and a less diversified set of risks when a greater share of index market capitalization is tied to the prospects of a handful of companies ([Exhibit 42](#)).

**Exhibit 42: Outside of recessions higher market concentration is associated with lower forward returns**



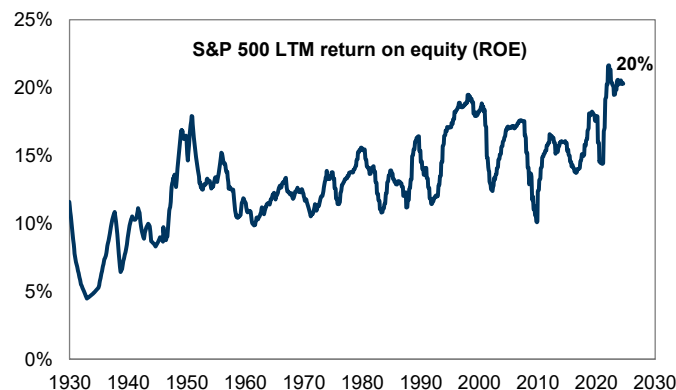
Market concentration defined as the market cap of the largest stock relative to the 75th percentile stock

Source: Goldman Sachs Global Investment Research

### Profitability

**We also control for the current level of S&P 500 profitability, measured by LTM return on equity (ROE).** Over time, the level of S&P 500 profitability has risen and currently stands at 20%. The trend is not perfectly linear however, and is fairly cyclical, falling sharply during recessions and rising during expansionary periods ([Exhibit 43](#)). Since 1990, profit margin expansion has helped keep earnings growing in line with a long-term historical trend despite slowing revenue and GDP growth. By taking into account the level of profitability at the start of our forecast period our model is able to gauge whether valuations are stretched relative to the profitability of the index.

**Exhibit 43: S&P 500 LTM ROE**



Source: Goldman Sachs Global Investment Research

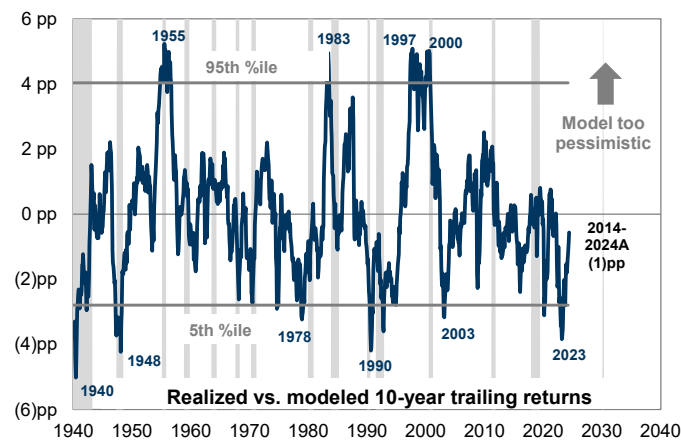
## Historical periods where our model fails to explain returns

Historically, our model has done a poor job of explaining returns across periods containing large shocks to the economic backdrop or periods of rapid technological change (Exhibit 44).

Periods when the model was too pessimistic relative to realized returns include **1945-1955**, which captured one of the strongest periods of US economic growth coming out of World War II, **1973-1983**, which captured the tail end of the stagflationary 1970s and peak in interest rates in 1981, and **1987-1997/1990-2000**, which captured one of the longest economic expansions in US history and was marked by rapid technological change.

On the other hand, periods when our model was too optimistic took place in **1930-1940/1938-1948** when the economy continued to struggle to come out of the great depression, **1968-1978**, which captured most of the stagflationary period of the 1970s, **1980-1990**, which contained the market crash of 1987, **1993-2003**, which captured the deflating of the tech bubble, and **2013-2023**, which captured the COVID period, market decline in the face of a spike in inflation, and a Fed hiking cycle.

**Exhibit 44: Difference between actual and modeled long-term returns**



Source: Goldman Sachs Global Investment Research

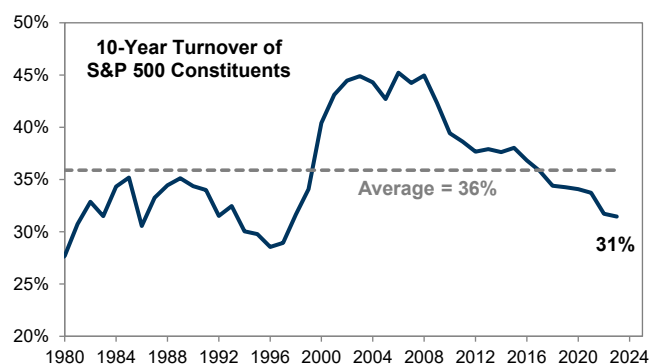
## Appendix B: Risks to our forecast

**Our long-term return forecast falls within the bottom decile of the historical distribution of returns.** Nevertheless, we acknowledge the large amount of uncertainty inherent in forecasting the future and highlight several risks to our forecast.

**Interest rates:** The most recent hiking cycle brought the level of the 10-year US Treasury yield from its lowest level in 100 years (0.5% in 2020) to a recent peak of nearly 5% in late 2023. Although investors continue to debate the appropriate neutral level of the fed funds rate, the possibility exists that during the next decade short- and long-term rates again fall to a historically low levels. Such a development would in turn create upside valuation risk during the next 10 years and upside risk to our return forecast.

**Constituent turnover:** Since 1980, 36% of S&P 500 constituents have turned over during the average 10-year period ([Exhibit 45](#)). As a result, the index is continually reconstituted and less successful companies are replaced by new firms that may have better growth prospects. If faster growing and more profitable companies enter and remain in the index during the next decade, returns would be boosted as the index would benefit from an improvement in its overall growth and profitability profile.

**Exhibit 45: 36% of S&P 500 constituents turnover during the typical 10-year period**

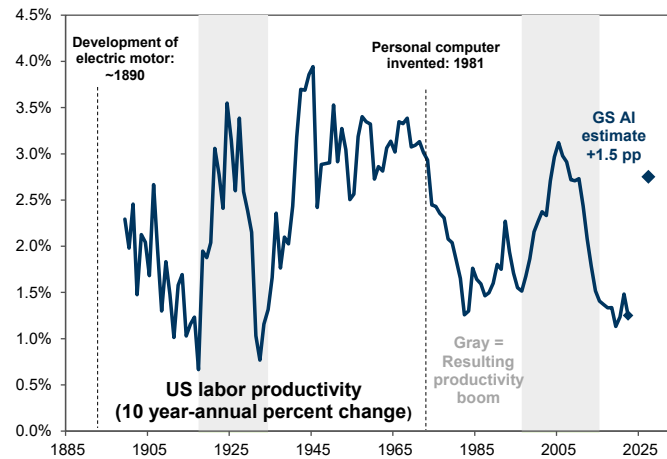


Source: Compustat, Goldman Sachs Global Investment Research

**Productivity:** Conceptually, the earnings of companies in the index will be tied to the productivity of the inputs they utilize to generate revenues. A large increase in labor productivity over the forecast period would in turn boost earnings and total returns. The clearest upside risk to productivity today is the advent of generative AI. Using our economists' [assumption](#) that widespread AI adoption could boost productivity growth by 1.5 pp per year over a 10-year period, [we estimate](#) that AI could in turn boost S&P 500 CAGR EPS by 1 pp over the long term relative to the current pace of growth implied by our dividend discount model.



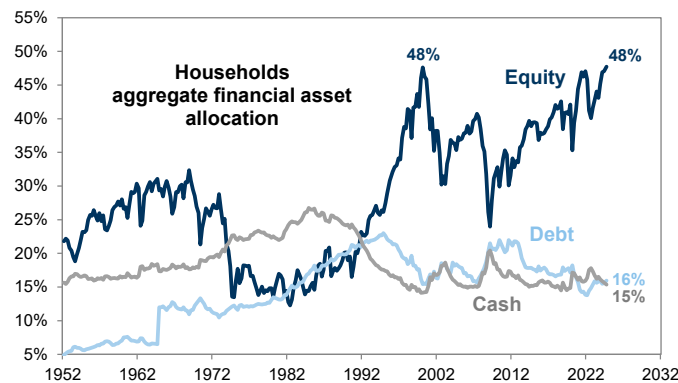
**Exhibit 46: Historical 10-year annual productivity**



Source: US Bureau of Labor Statistics, Goldman Sachs Global Investment Research

**Demographics:** As new generations become investors in the equity market, their risk tolerance profiles may affect forward returns. The shifting investor profile was one proposed explanation for extreme P/E multiple expansion in the late 1990s. Market observers at the time posited that the Baby-Boom generation was more risk tolerant and more willing to assign greater valuations to stocks. Note that the current Household asset allocation to equities equals 48%, the highest share since the Federal Reserve began monitoring this data in 1952. In contrast with the elevated stock positioning, bond (16%) and cash (15%) allocations stand at the 52<sup>nd</sup> and 14<sup>th</sup> percentile, respectively (Exhibit 47).

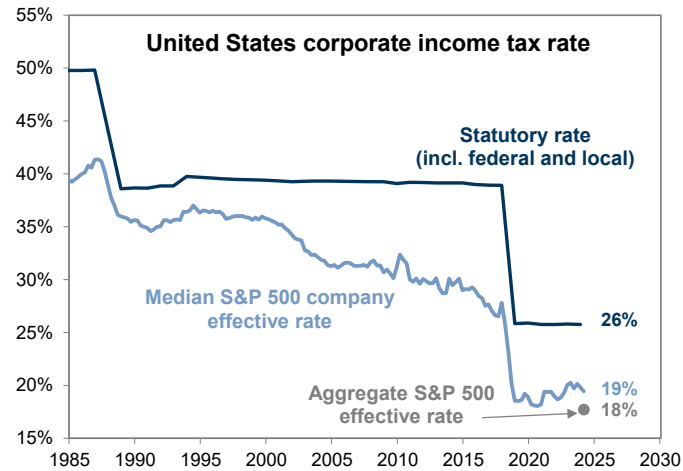
**Exhibit 47: US household allocations to equities are at all-time highs**



Source: Federal Reserve Board, Goldman Sachs Global Investment Research

**Corporate tax rates:** Currently the median S&P 500 stock has an effective tax rate of 19%, the lowest in nearly four decades (Exhibit 48). S&P 500 margins have been a direct beneficiary of declining corporate tax rates and long-term returns will be impacted if there are any major changes to current tax policies. We recently outlined the potential implications of corporate tax reform for S&P 500 earnings ahead of this year’s US election and highlight the fact that a 1pp change in the statutory domestic tax rate would shift S&P 500 EPS by slightly less than 1%.

**Exhibit 48: S&P 500 companies’ tax rate has declined over the past several decades**



Source: Compustat, OECD, Goldman Sachs Global Investment Research

# Disclosure Appendix

## Reg AC

We, David J. Kostin, Ben Snider, Ryan Hammond, Jenny Ma and Daniel Chavez, hereby certify that all of the views expressed in this report accurately reflect our personal views, which have not been influenced by considerations of the firm's business or client relationships.

Unless otherwise stated, the individuals listed on the cover page of this report are analysts in Goldman Sachs' Global Investment Research division.

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