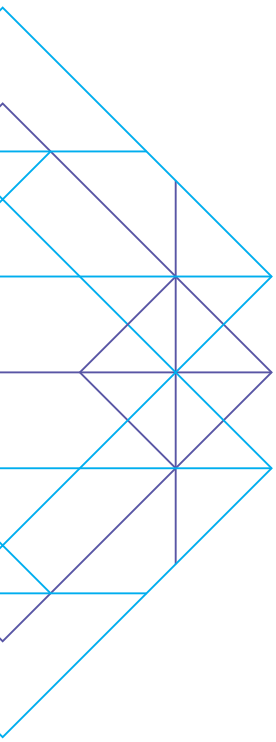


April 2025

How Do Investors Form Long-Run Return Expectations?

Understanding Return Expectations, Part 1 (Series Overview)

Executive Summary

This paper is an overview of a forthcoming series which tries to understand how investors actually form long-run return expectations. It contrasts "objective" yield-based expected returns (which historically display some predictive ability) and "subjective" rearview-mirror expectations (which excessively extrapolate past 3-10 -year returns or growth).

Objectively feasible expected returns are low when market valuations are high and starting yields low. Yet, surveys reveal that the consensus expectations of some market participants (individual investors, equity analysts) can exhibit opposite behavior. The tension between objective and subjective expectations was most pronounced near market peaks (2000, 2021) and troughs (2009).

The story is nuanced. Academics and practitioners may mean different things when they talk about expected returns. Some subjective expectations appear more rational and less extrapolative, such as those of institutions and those on interest rates. Even rational predictions only work on average and can fail for a long time.

Rearview-mirror expectations have made many investors too optimistic on risky and private assets after the good times following the Global Financial Crisis, and too cautious on liquid diversifiers. The dangers of a rearview-mirror mindset are most pronounced in the case of US equities versus the rest of the world.

Antti Ilmanen
Principal and Global Co-Head of Portfolio Solutions Group

I thank my colleagues, especially Thomas Maloney, for helpful comments and conversations. I thank Couts-Goncalves-Loudis (2023), Graham-Harvey (2018), Greenwood-Shleifer (2014), and Robert Shiller for the use of their data. The series title is a play on my original claim to fame, a seven-part series Understanding the Yield Curve I wrote at Salomon Brothers in the mid-1990s straight after my Chicago PhD.

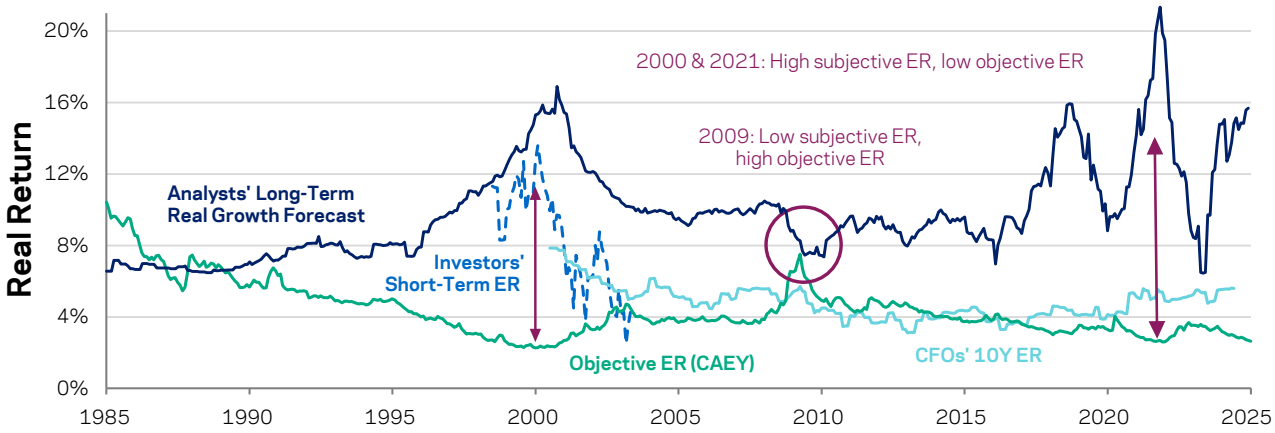
Introduction

I have written two books on expected returns – what more could there be to say?[1] Plenty, it turns out. Foremost, the expected returns I have focused on (in line with most academic research and capital market assumptions providers) are **objectively feasible expectations** *rationally* held by investors and set by the market in aggregate. These can be contrasted with **subjective return expectations** of different investor groups which may be quite heterogeneous and sometimes unrealistic and *irrational*.

Indeed, many surveys of subjective equity market expectations (blue lines in **Exhibit 1**) peaked in 2000 and 2021 after strong bull markets, just when objective expected return measures (green line) troughed based on high valuations and low starting yields. Conversely, subjective expectations can fall in times like 2008-9 when objective expected returns rise given lower valuations.

Exhibit 1. Great and Not-So-Great Expectations

Subjective and Objective Real Return Expectations for the US Stock Market, January 1, 1985-December 31, 2025



Sources: AQR, Blue Chip Economic Indicators, Consensus Economics, Credit Suisse, Graham-Harvey "The Equity Risk Premium in 2018" (2018), Hillenbrand-McCarthy "Heterogeneous Beliefs and Stock Market Fluctuations" (2022), IBES, Robert Shiller's website. Notes: Analysts' Long-Term Growth Forecast is the IBES consensus forecast of 3-5 -year growth in the earnings per share of US large-cap stocks. (As a return proxy it omits dividend income but compensates this with abundant growth optimism.) Investors' Short-Term Expected Return is the UBS Gallup individual investor survey consensus forecast of next-year expected market return from June 1998 to April 2003. (Individual investor surveys do not have long histories but the U.Michigan's consumer survey 2000-06 shows a similar expected return peak in 2000.) CFOs' 10-year Expected Return is the consensus forecast in the Graham-Harvey CFO survey conducted by the Duke University and Fed Richmond. All survey series subtract expected 10-year or 1-year inflation based on consensus forecasts. Objective real expected return proxy CAEY is the cyclically-adjusted (real) earnings yield (i.e. inverse of the cyclically-adjusted price/earnings ratio CAPE).

Apparently, many practitioners associate high expected returns (for the equity market overall or certain sectors or single stocks) with high cash flow growth rather than with high required returns or discount rates (which are the relevant expected returns according to academic logic). So subjective expectations are dominated by high growth optimism in good times, while objective expectations are driven by high required returns in bad times.

1 See Ilmanen (2011, 2022), AQR Portfolio Solutions Group (2025).

When Asness (2024) argued that markets have become less efficient in recent decades, he did not use these market-level expectations as his prime evidence. The extreme relative value divergence between cheap and expensive stocks was even more compelling, as were other signs of speculative excess in meme stocks, crypto trading, etc. But it is no coincidence that such extremes tend to, well, coincide. They are all signs of animal spirits having a party.[2]

A related distinction is between **forward-looking and rearview-mirror expectations**. The former are often based on current market yields and valuations, while the latter are based on historical returns. The rearview mirror is especially harmful when it extrapolates the past 3-10 years' experience instead of using longer or shorter windows which could be empirically more justifiable.

Why should *you* care? Long-run expectations formation may sound abstract and ivory-tower, but **these issues have become very topical in the mid-2020s.** Investor memories and rearview-mirror expectations are dominated by the benign market experience since the 2008 Global Financial Crisis (GFC). Such a rearview mirror points to aggressive bullishness on risky assets and to US exceptionalism, while cautioning against many diversifying alternatives. Relatedly, capital market assumptions (CMAs) based on objectively feasible forward-looking expectations served investors well in the aftermath of the 1999-2000 tech bubble but had some large misses in the past decade. **Investors may be losing faith in CMAs and going all-in with the rearview-mirror mindset just when there appear to be dangerous bumps in the road ahead.**[3]

In the coming months, I plan to write or coauthor several short papers on these broad themes, addressing the following questions:

- **What sources can we use to estimate return expectations?** The list includes market yields and valuations, historical average returns and regression-based estimates, survey-based evidence, and economic theories. We'll be especially interested in survey-based subjective expectations – evidence "from the horse's mouth" – and whether they differ meaningfully from objectively feasible expected returns. (They do: Sometimes a comically inverse relationship.)

- **How do investors actually set their long-run return expectations?** Clearly in diverse ways, but how important is extrapolation of past growth or returns compared to more forward-looking and often contrarian yields and valuations? (The answer varies.) Which approach has served us better over long histories? (The latter.) Has the academic and practitioner use of these approaches changed over time? (Yes: "What have you done for me lately?" matters also here.) Does the answer differ for different asset classes? (Yes: Equity return expectations tend to be extrapolative, while interest rate expectations tend to be more mean-reverting.) And does it differ across investor groups? (Yes: Individual investors tend to be more extrapolative, while many institutions are more contrarian.)

2 Beyond meme stocks and cryptos, recent years have seen not just high concentration of returns and profits but exceptionally high correlations between many market-directional themes: Magnificent Seven vs 493 other stocks in the S&P500, growth vs value style, tech vs other US sectors, US vs non-US. This makes diversification harder to maintain, a topic for the last paper in this series.

3 See Asness (2025) for a shorter and more humorous way of fighting the rearview-mirror mindset at this critical juncture. In a sense, this series is a complement which provides multi-faceted historical analysis for that fight, besides offering frameworks for understanding your own and other investors' return expectations.

- **Can this analysis shed light on the current market outlook?** Can it help us understand strong post-GFC risky asset returns, the US equity market's outperformance over the rest of the world, the flipping signs of major yield curves over time, the dwindling popularity of liquid diversifiers, and the surging nad, in my view, excessive popularity of private assets? (Yes to all.) One lesson is to quantify the impact of sample-specific valuation changes, as it is dangerous to extrapolate these further.

This first paper is only an appetizer. Further papers will delve deeper in the topics above and provide plentiful references. I hope the series will find an audience not just among CMA providers and users, but also among investors evaluating current market opportunities and risks (even if we do not opine on the latest policy debates and market gyrations at the time of writing).

Visual Evidence Related to Equity Market Expected Returns

Most readers are keener on empirics than theory, so I'll present visual evidence before drilling into methods of forming and measuring expected returns. Here I focus on US equities and use very long histories.[4] Zooming out is essential when we want to judge 10-year return predictions; one decade or even a few can provide anecdotes but not statistics.

For setting long-term expected returns, there are broadly speaking two competing approaches — a rearview mirror of historical average return or a forward-looking measure based on market yields and valuations. If we've just experienced a very bullish decade, these two approaches point to opposite directions, as was the case in 2000. Since the bearish forward-looking forecast trounced the bullish rearview-mirror forecast in the subsequent decade, most CMA providers since then use the forward-looking yield-based approach. However, the scales turned in recent years and a "what have you done for me lately" mindset may now favor the rearview mirror. (That said, the rearview mirror gave terrible next-decade predictions both in 2000 and 2010.)

AQR and many other CMA providers try to use a consistent forward-looking approach, for equities either based on the cyclically-adjusted earnings yield or the sum of payout yield and expected payout growth (in the spirit of the dividend discount model, though with much debate about the details). If instead a rearview mirror is used for the total equity return or the growth component, I argue below that long histories are needed. Using the past decade's

4 The empirical focus on predicting US equity markets in this series reflects all readers' familiarity with this large market and its better and longer data sets. I am not implying that anyone's investment process should focus on US market timing. If anything, I am a preacher of bold diversification, including the use of many lowly-correlated rewarded market-neutral long/short strategies. Moreover, long-term forecasts like CMAs are not the best raw material for market timing, they are more useful for anchoring long-run beliefs.

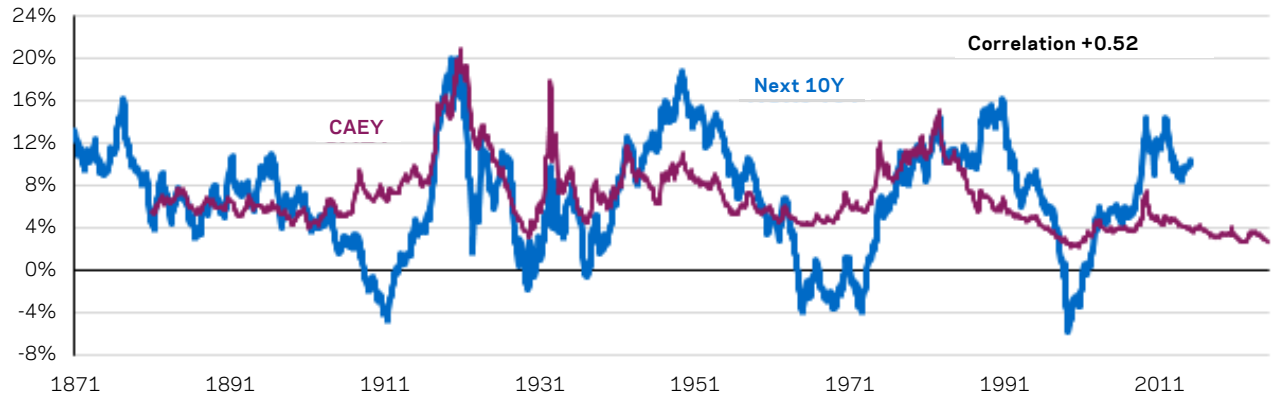
mirror is especially dangerous (prone to reversals), yet it may be quite common.

Exhibit 2 thus contrasts the long-run ability to predict next-decade market returns of a common yield-based expected return measure, the inverse of Shiller's cyclically-adjusted price/earnings ratio (CAPE) on the upper panel, and a common rearview-mirror indicator, past decade's real market return on the lower. The yield-based measure is not always close to the subsequent return (the most recent decade produced one of the larger errors), but it wins this competition hands down. Its predictive correlation is 0.52, while the rearview mirror's correlation has the wrong sign (-0.37). So, the empirical evidence suggests that the forward-looking approach gives a better objective expectation.

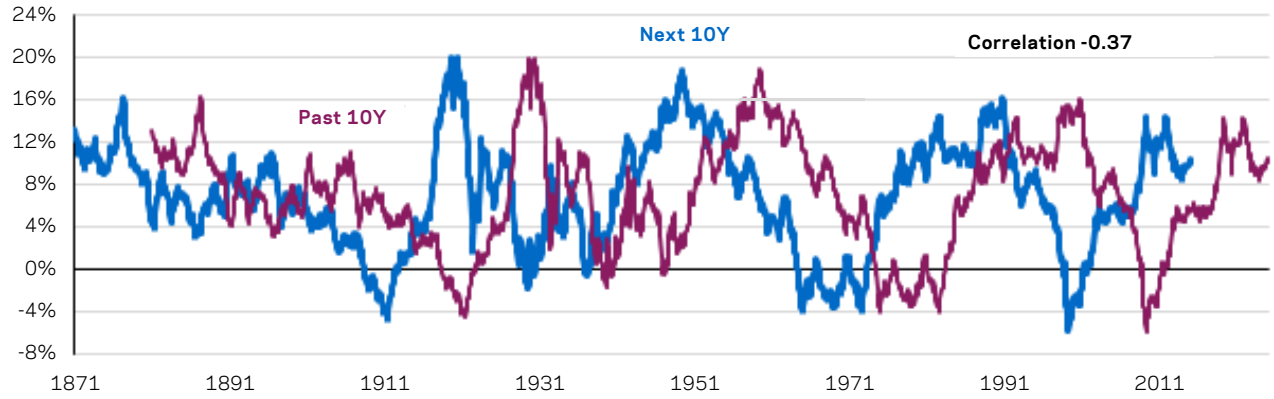
Exhibit 2. Predicting Next-Decade US Stock Market Returns

January 1, 1871 – December 31, 2024

A. Starting Yield (Inverse Valuation) Predicts Positively but Imperfectly



B. Rearview Mirror (Past 10Y Return) Predicts with Wrong Sign



Source: Professor Shiller's website. All series are for the S&P500. CAEY is the cyclically-adjusted earnings yield (i.e. inverse of the cyclically-adjusted price/earnings ratio CAPE). Forecast error for any point in time is the vertical gap between the two lines.

On the surface, the key reason for the poor predictive record of past-decade returns is the mean-reversion tendency in market valuations. The deeper, underlying explanation may be equity investors' tendency to overextrapolate past earnings growth (which can lead to overpricing after strong growth phases), as implied by Exhibit 1.

Analyst forecasts of US large-cap stocks' long-term (3-5 -year) earnings growth are overoptimistic and overextrapolative. That is, they expect strong or weak past-decade growth to continue (correlation +0.2) even though the actual growth autocorrelation across decades is negative (-0.3). As a result, the subjective analyst forecast has a negative -0.5 correlation with next-decade actual growth. Instead, it is highly (+0.8) correlated with the Shiller CAPE, with both series reflecting excessive growth optimism in 2000 and 2021 (and perhaps in early 2025).

Equity analysts are just one example where subjective equity market expectations peaked when market valuations were record-high and objective return expectations thus record-low (again, recall Exhibit 1). Ilmanen (2011), Greenwood-Shleifer (2024), and Hillenbrand-McCarthy (2022) show that individual investor survey estimates of future equity market returns were similarly procyclic.

Digging deeper into overextrapolation patterns:

- There is further evidence of overextrapolation of earnings growth at the level of single stocks and maybe sector and country allocation. When it comes to single stocks, sorted into "growth" and "value" buckets based on valuation multiples or past cash flow growth, past growth edge does predict a future growth edge, but typically only for a few years. The market expects or discounts a more persistent growth edge, and when those expectations eventually fail to materialize, "growth" stocks tend to underperform "value" stocks.[5]

- Like many other regularities, the value-growth strategy only works on average; the 2010s turned out to be one of the exceptions. Larry Summers once suggested that the real danger is when overextrapolative investors get it right for a while, become overconfident and anticipate ever more persistent growth edge, creating a bubble in growth stocks. This is what happened in 2020-21, sending value spreads (relative valuations between "growth" and "value" stocks) to all-time highs.[6]

- Extrapolation may be empirically justified at short horizons due to continuation patterns in multi-month returns. However, my focus here is on multi-year return expectations, and those are more likely to exhibit reversal tendencies. Quoting Cliff Asness, "It is sadly common for investors to act like momentum investors at reversal horizons" -- using a 3-10 -year rearview mirror when chasing returns or capitulating after poor performance. If historical averages are used to assess future long-run growth, very long histories are needed.[7]

- Not all fundamental developments are extrapolated. In a future paper, I will contrast extrapolative equity market

5 Chan-Karceski-Lakonsihok (2003), updated in Rasmussen (2025)

6 Like most bubbles, this one had a reasonable underpinning – the structural shift from a physical to a digital world. But as usual markets took things too far, finding a digital winner (to take it all) with a presumed 10-20 -year abnormal growth within every industry. Most of growth stocks' outperformance in the late 2010s reflected such overoptimistic expectations and relative richening, rather than actually improving relative fundamentals. The growth bubble would have likely burst more dramatically after 2021 (and value spreads narrowed faster) if ChatGPT and the AI boom had not come to aid.

7 That said, if evidence from recent decades suggests a structural change, this could justify a shorter history. Smolyansky (2023) argues that we should *not* extrapolate recent decades' growth experience. He observes that US earnings growth has been abnormally fast (4% real compound) in the past 30-40 years, but he can attribute this fully to one-off drops in corporate tax rates and interest rates. If we do not extrapolate further falls in tax and interest rates from already-low levels, he argues that the long-run average growth rate near 2% is a better prediction than the recent 4%. He adds that recent decades were exceptionally corporate-friendly, as (above-average) earnings growth clearly exceeded (below-average) GDP growth – a trend that cannot last indefinitely.

expectations with mean-reverting rate expectations in bond markets. I have an idea of what causes this difference – stay tuned.

- It is possible to extrapolate naively past returns or somewhat-more-thoughtfully past fundamentals growth. Extrapolative investors may not be sufficiently discerning on whether a past multi-year return outcome is due to fundamentals or valuation changes – the latter are probably more reversal-prone. Investors should try to avoid the rearview-mirror mindset especially when past outperformance mainly reflects richening valuations.

So what? Apart from improving our understanding of expectations and markets, **all of this matters especially for investors in 2025** because of the exceptional dangers in rearview-mirror expectations. Currently the biggest rearview-mirror dangers involve**:**

- **A too-positive directional view of risky and private assets.** Studying longer histories, many risky assets offer a positive premium but a slimmer one at high valuations like today (especially versus cash or bond yields), or after an abnormally bullish decade.

- **A too-negative view on various diversifying alternatives** which disappointed in the 2010s. Liquid diversifiers have a great long-run history — many in standalone performance but even more so in portfolio return smoothing or risk-mitigation (helping when most needed) – and their relative performance versus stock/bond portfolios displays a decadal reversal pattern.

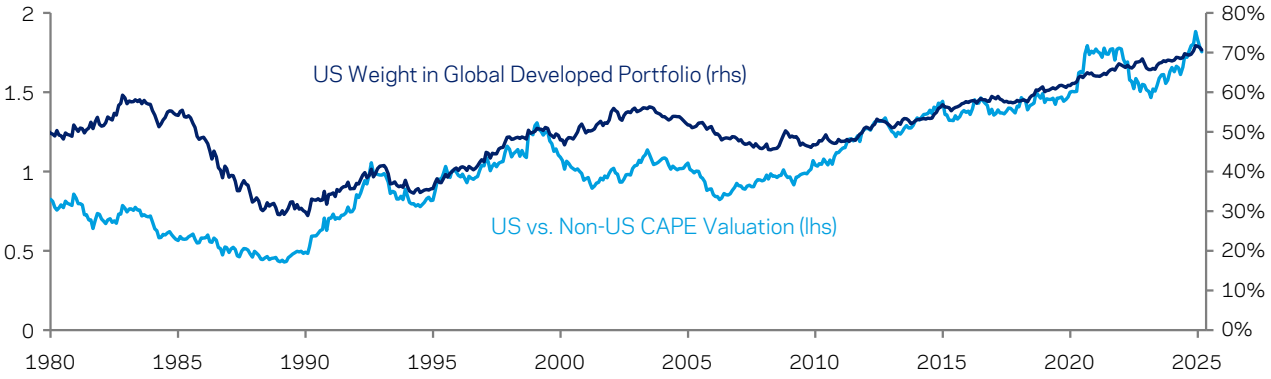
- **A too-positive relative view on US equity market exceptionalism** over other markets.

Summing up, the rearview mirror mindset is ((i) more pronounced if overextrapolators recently got it right and became more confident, (ii) more typical for stocks than bonds, (iii) more vulnerable when looking back 3-10 years (acting like a momentum investor at reversal horizons), (iv) more misleading when past outperformance mainly reflects richening valuations that have reached extreme levels; (v) more dangerous when the-times-they-are-a-changing (cf. today's high macro-policy/geopolitical uncertainty).

All these features coincide at the time of writing in the US vs rest of the world equity trade. Not surprisingly, then, US relative valuations reached almost twice the level of other developed markets near year-end 2024, having been at half-valuation level in 1990 and hovered near unity between 1995 and 2010. Despite record-high relative valuation, investors accepted a record-high 72% US weight in the MSCI developed markets index (see **Exhibit 3**).[8]

8 This relationship is partly mechanical, as persistent US outperformance boosted both its relative valuation and its portfolio weight. Still, it would be more sustainable to earn the large weight mainly through growth rather than repricing, and some investors may want to diversify away from one dominating market, especially at near-record valuations. I am not denying the US edge in AI and tech innovation (or other sources of US exceptionalism), but parroting Asness (2025) I suggest investors consider the possibility that: "over this (coming) decade, American exceptionalism in innovation << American exceptionalism in overvaluation."

Exhibit 3. US Stock Market Weight and Valuation vs. Non-US
Jan 1, 1980 – Feb 28, 2025



Sources: AQR, Bloomberg. US weight in MSCI World. Cyclically-adjusted price-to-earnings ratios for the US and the eight largest markets in MSCI World ex US: Japan, Australia, Canada, United Kingdom, Germany, France, Netherlands, and Switzerland.

Contrasting Different Expected Return Formation Approaches

Academics and practitioners often misunderstand each other. The term "expected returns" is a case in point. What academics mean by "expected returns" – what I too learned in Chicago from Professors Fama, French, and Cochrane, and what I used in my books – is really the *required returns* by market participants collectively, which are also the objectively feasible returns that rational investors can expect. Demanded and supplied returns must match for the market to clear.

Let's spell it out. The discounted cash flow model of asset pricing states that the fair price of any asset reflects its expected future cash flows discounted by a risk-appropriate discount rate. *The relevant expected returns are thus the required discount rates in the denominator and not the expected cash flows in the numerator!*

"Expected return" to many investors

$$Price = \frac{Expected\ Future\ Cash\ Flows}{(1 + Required\ Discount\ Rate)}$$

"Expected return" to academics

These discounted cash flow models imply that high asset prices/valuations today reflect some mix of high (earnings or dividend) growth forecasts and low required discount rates. We just cannot know for sure the mix![9]

9 Predictive regressions and survey evidence can give us some guidance on whether high valuations reflect mainly growth optimism or strong risk appetite. The discounted cash flow model equations can also be reshuffled to state that the rational expected return on equities equals the sum of yield income and expected cash flow growth (to which one could add the return from any expected change in valuation). ER = Y + G. These statements apply both to the simple Gordon growth model (which assumes constant growth and discount rates) and to the smarter Campbell-Shiller model (which allows time-varying cash flow growth and discount rates).

In contrast to objective expected returns, survey evidence on individual investors' subjective return expectations suggests that investors are often bullish (on the market or on single stocks) after a period of high realized returns or high cash flow growth. Investors seem to extrapolate the past to the future, and they seem to associate expected returns more with cash flow growth than discount rates. Academics would argue that high cash flow growth is already "priced in" and does not boost expected returns; if anything, investors' overextrapolation tendency may mean that that high past growth leads to overpricing and lower objectively feasible returns.

The tension between these approaches was most pronounced during the 2000 tech bubble, when both market valuations and many subjective equity expectations peaked just when objectively feasible expected returns were very low. The converse happened in spring 2009.

Objectively feasible expected returns anchor on what is realistically available in the market given current asset valuations or yields, but they may also take into account historically reasonable patterns on expected growth rates or past average returns.[10] Note that the objective expected return measures can also be wrong for a long time, if the market keeps reaching ever higher (or lower) valuations.

Subjective return expectations may be revealed in the cleanest and most timely way by surveys. They can differ across investor groups and may be opposite to objective expectations due to growth overextrapolation. They can also be optimistically biased (as seems to be the case with analysts' earnings forecasts at horizons beyond a year, and with individual investors' market forecasts). Debiasing would be needed before such surveys could be used as part of realistic CMAs (but poor timing from overextrapolation would remain).

Whereas my books and all CMAs emphasize objective expected returns, in this series I want to explore more the role of subjective return expectations. Academics used to have serious doubts about the usefulness of survey data, arguing it was too noisy and irrelevant.[11] They claimed it is better to use market yields even if it is hard to separate the role of required returns and expectations on fundamentals. However, attitudes have changed and there is now a burgeoning academic literature using survey-based expectations, and more available survey data to study.[12]

Not all investor groups look irrational. While individual investors' subjective return expectations tend to be extrapolative and procyclic, institutional investors and CMA providers' expectations tend to be more rationally anchored and contrarian, as shown by Dahlquist-Ibert (2024, 2025) and Couts et al. (2023). **Exhibit 4** juxtaposes these contrasting tendencies.

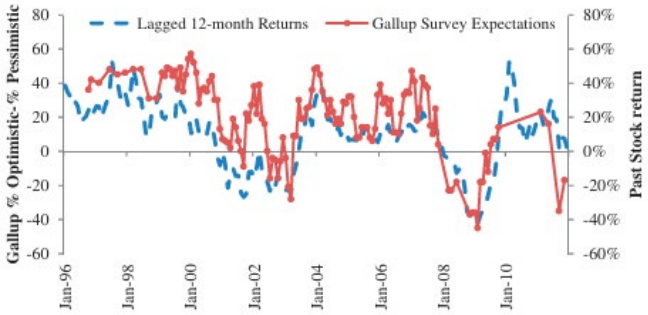
10 Historical average returns should not just be naively extrapolated. Thoughtful statistical analysis favors long histories unless structural changes make old data irrelevant; it may adjust past returns for sample-specific valuation changes and other one-off effects, and it considers the impact of possible investor irrationality or learning on past returns, as well as the prospective impact of momentum or mean-reversion forces (the way past returns tend to predict future returns). No wonder there is little agreement on the optimal statistical forecast.

11 A personal anecdote: In 1992, as a young Ph.D. student I was in my thesis advisor Professor Fama's office and suggested I might use some survey evidence on interest rate expectations in my research on bond markets. Fama smiled and asked "Do you want to know what I think of survey data?" He took a sheet of paper, crumpled it into a ball, and threw it over his shoulder, hitting the garbage bin (nothing but net, by itself pretty impressive).
I did not use survey data in my Ph.D. thesis, but I retained my interest. Fama's attitude reflected then-common academic belief in rational expectations and suspicion that investors may not bother to answer surveys carefully or truthfully. Yet, later research shows that investors do tend to put their money where their mouth is (survey responses and portfolio flows are correlated) and results from different surveys of similar groups give consistent patterns (see Handbook of Economic Expectations (2022)).

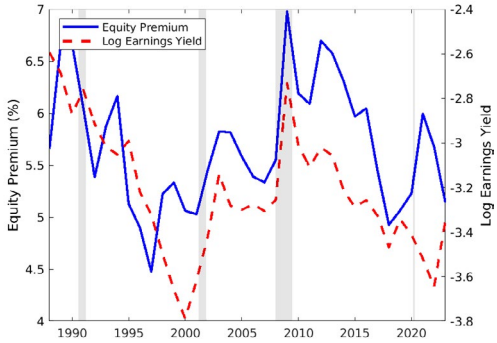
12 See Handbook of Economic Expectations (2022) and Gennaioli-Shleifer (2018).

Exhibit 4. Individual Investors Extrapolate, Institutional Investors Act Like Contrarians

A. Individual Investors' (Near-Term) Return Expectations vs. Past-Year Market Return (Greenwood-Shleifer (2014))



B. Institutions' (Long-Term) Return Expectations vs. Valuation-Based Yield (Couts et al. (2023))



Sources: Greenwood-Shleifer (2014), Couts-Goncalves-Loudis (2023). Notes: Chart A plots the lagged 12-month returns versus Gallup survey consensus expectations, 1996-2011; Figure 6 ("The Role of Past Stock Market Returns in Explaining Survey Expectations") of the Greenwood-Shleifer 2014 article "Expectations of Returns and Expected Returns" in the Review of Financial Studies (Oxford University Press) reused with permission). Chart B plots the subjective (CMA) equity premium aggregated across surveyed institutions together with the S&P 500 earnings yield, proxied with log(1/CAPE); Figure 2 ("The Aggregate Subjective Equity Premium From Institutions") in Couts-Goncalves-Loudis (2023) working paper "The Subjective Risk and Return Expectations of Institutional Investors" reused with permission.

The contrast between objective and subjective return expectations is arguably a distinction between normative and descriptive expectations. In the spirit of Kahneman's (2011) fast versus slow thinking, past performance comes easily to mind, while required discount rates need more effortful thinking. Objective expected returns are often rational and anchored to forward-looking market yields (more visible for bonds than stocks), while actual subjective expectations can be irrational and driven by a rearview-mirror mindset.

In this series of papers, I'll especially emphasize the choice between forward-looking and rearview mirror expectations, favoring the former. The length of the rearview mirror and the investment horizon matters, though:

- **30 years and more:** If the rearview perspective is several decades long, and the horizon is likewise long, the historical average return may be a useful anchor (assuming constant expected returns, and assuming current valuations are not far from historical norms).

- **3-10 years:** If the rearview mirror and investment horizon are shorter than a decade, then the yield-based approach has tended to be the historically more successful (though not in the past decade as some richening trends have persisted). Note that even without assuming mean-reverting valuations, a yield-based approach has a contrarian flavor, because high valuations imply low starting yields and thus low expected return through low income.

- **Less than a year:** For a within-year rearview and horizon, momentum tendencies tend to dominate. Objective expected returns take this into account, so extrapolation can make sense for near-term predictions. Short horizons are not the focus in these papers.

For some asset classes (say, many commodities) there are no useful yield measures. For others (say, hedge funds and other active strategies), yield or valuation measures cannot matter much since asset turnover is high. In these cases, forward-looking metrics are not good anchors of future returns, and it is better to use some combination of historical evidence, finance theory, and comparisons to other asset classes to determine objectively feasible expected returns.

Exhibit 5 gives a scheme that summarizes many distinctions between objective and subjective expectations, each of which will be explored later in this series. Anyone can have subjective expectations but here I refer to a stereotype like analyst growth forecasts in Exhibit 1. Not all features can fit neatly to this binary scheme; as previously noted, some investors' subjective expectations appear rational (institutional CMAs track objective expectations) and even some rearview-mirror expectations can be rational (if they use a very long history and expected returns truly are constant). Structural changes create problems for any expectations setting method.

Exhibit 5. A Simplified Scheme of Contrasting Types of Long-Run Expectations

	Objective Expectations	**Subjective Expectations**
Rationality	Rationally feasible	Often irrational/infeasible (but some groups make rational forecasts)
Kahneman jargon	Slow thinking (system 1)	Fast thinking (system 2)
Main use of exp's	Normative	Descriptive
Main source of exp's	Market yields or valuations	Surveys
Directional tendency	Contrarian (more so if mean-reverting valuations are assumed)	Extrapolative (most unhelpful if use 3-10 -year rearview mirror)
Academic premise	Time-varying expected returns i.e. TV required risk premia	Irrational growth expectations (or assumed constant premia)
Role of risk premia	Market prices reflect a *blend* of expected fundamentals and required risk premia	Surveys reveal purer exp's (for some investor group); may help disentangle premia
Main information in high market valuations	Low required risk premia (making discount rates low)	Exuberant growth optimism (making cash flow exp's high)
Return expectations amid high valuations after a long bullish run	Low expected returns (more often turn out correct)	High return expectations (more often turn out wrong)
More typical exp's of…	Institutions	Individual investors
More typical exp's for…	Bond markets	Equity markets
How can structural changes trip investors?	By shifting long-run valuation or growth anchors	By making long-run or recent mean return misleading

Source: AQR.

What's Ahead?

Here is an outline of the series. Part 2 will immediately turn to the most pressing application of these ideas: expectations for U.S. equities versus the rest of the world. Part 3 will explore the striking difference between extrapolative equity return expectations and mean reverting rate expectations. Part 4 takes a step back to describe evolving investor practices and academic thinking on setting long-run capital market assumptions.

The next papers will focus on equity markets and study historical return decompositions, objective forward-looking expected returns (based on valuations or starting yields), and subjective return expectations (based on surveys of different investor groups). While I mainly use data on the US equity market, I will highlight commonalities with other asset classes.[13]

The final papers will turn to bond markets and other diversifiers. The bond yield curve was my original specialty in the 1990s, and I will give my revised thinking on *Understanding the Yield Curve*, emphasizing the role of mean-reverting rate expectations. I will also review the Treasury yield history through the lens of survey-based rate expectations and term premia, stressing how learning of gradual structural changes may explain the persistent forecast errors in surveys and forward rates. My coauthor Thomas Maloney and I will conclude by exploring expectations on diversifying alternatives, again highlighting the dangers of excessive rearview mirror.

Some caveats are always warranted when discussing expected returns. Despite our deeper understanding of expected returns and their drivers, *unexpected* returns are always lying in wait to surprise us. The return forecasting effort combines art and science. Thoughtful observers will disagree – but they understand why, and their estimates tend to be in the same ballpark. Yet, even the best expected return estimates can be humbled by subsequent reality. Luck trumps skill, chance beats edge, unexpected returns overcome expected returns (even for uncomfortably long horizons), especially if structural shifts materialize. Humility is appropriate but evidence suggests that if we must assess long-run expected returns, the forward-looking methods we discuss are *our best starting point*. To describe the challenge elegantly, I copy the late, great Peter Bernstein in reciting G.K. Chesterton:[14]

The real trouble with this world of ours is not that it is an unreasonable world, nor even that it is a reasonable one. The commonest kind of trouble is that it is nearly reasonable, but not quite. Life is not an illogicality; yet it is a trap for logicians. It looks just a little more mathematical and regular than it is; its exactitude is obvious, but its inexactitude is hidden; its wildness lies in wait.

13 One consistent framework that reveals many similar patterns across asset classes involves assessing how well carry/value measures predict future excess returns or fundamentals (see Ilmanen 2011 ch.22, Cochrane 2011, Koijen etal. 2018). All forward-looking carry/value measures reflect some (unlikely constant) mix of required risk premia and expectations on fundamentals (e.g., equity growth, credit defaults, bond interest rates, currency spot rates). Surveys or predictive regressions can help disentangle how much of each.

14 This series bypasses deeper topics regarding the nature (frequentist vs Bayesian) or existence of probabilities and the possibly futile quest to predict the future in a random (unstable, possibly chaotic) world; see Spiegelhalter (2024) for a readable treatment. Financial market forecasts are further plagued by diverse actors who respond to predictions and accentuate or offset them; famous examples include Keynes's beauty contest, Soros's reflexivity / positive-feedback-trading, and the Fed's countercyclic policy efforts.

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